UNITED STATES SECURITIES AND EXCHANGE COMMISSION
Washington, DC 20549
Form 10-K

(MARK ONE)

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

For the fiscal year ended October 31, 2021

OR

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

For the transition period from to

Broadcom Inc.

Delaware	**1320 Ridder Park Drive**	**001-38449**	**35-2617337**
(State or Other Jurisdiction of Incorporation or Organization)	**San Jose, CA 95131-2313**	**(Commission File Number)**	**(I.R.S. Employer Identification No.)**
	(408) 433-8000		

(Exact Name of Registrant as Specified in Its Charter
Address of Principal Executive Offices, Including Zip Code
Registrant's Telephone Number, Including Area Code)

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

Title of Each Class	Trading Symbol(s)	Name of Each Exchange on Which Registered
Common Stock, $0.001 par value	AVGO	The NASDAQ Global Select Market
8.00% Mandatory Convertible Preferred Stock, Series A, $0.001 par value	AVGOP	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 Regulation S-T (§232.405 of this chapter) during the preceding 12 months (or for such shorter period that the registrant was required to submit such files). Yes ☑ No ☐

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

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

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

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

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

The aggregate market value of voting and non-voting common equity held by non-affiliates as of April 30, 2021, based upon the closing sale price of such shares on The Nasdaq Global Select Market on such date was approximately $182.8 billion.

As of November 26, 2021, there were 412,873,968 shares of our common stock outstanding.

Documents Incorporated by Reference

Portions of the registrant's definitive Proxy Statement for its 2022 Annual Meeting of Stockholders are incorporated by reference into Part III of this Annual Report on Form 10-K.

BROADCOM INC.
2021 ANNUAL REPORT ON FORM 10-K

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PART I

The following discussion should be read in conjunction with the consolidated financial statements and notes thereto included elsewhere in this Annual Report on Form 10-K. This Annual Report on Form 10-K contains forward-looking statements within the meaning of the federal securities laws and particularly in Item 1: “Business,” Item 1A: “Risk Factors,” Item 3: “Legal Proceedings” and Item 7: “Management’s Discussion and Analysis of Financial Condition and Results of Operations” of this Annual Report on Form 10-K. These statements are indicated by words or phrases such as “anticipate,” “expect,” “estimate,” “seek,” “plan,” “believe,” “could,” “intend,” “will,” and similar words or phrases. These forward-looking statements may include projections of financial information; statements about historical results that may suggest trends for our business; statements of the plans, strategies, and objectives of management for future operations; statements of expectation or belief regarding future events (including any acquisitions we may make), technology developments, our products, product sales, expenses, liquidity, cash flow and growth rates, or enforceability of our intellectual property rights; any backlog; and the effects of seasonality on our business. Such statements are based on current expectations, estimates, forecasts and projections of our industry performance and macroeconomic conditions, based on management’s judgment, beliefs, current trends and market conditions, and involve risks and uncertainties that may cause actual results to differ materially from those contained in the forward-looking statements. We derive most of our forward-looking statements from our operating budgets and forecasts, which are based upon many detailed assumptions. While we believe that our assumptions are reasonable, we caution that it is very difficult to predict the impact of known factors, and it is impossible for us to anticipate all factors that could affect our actual results. Accordingly, we caution you not to place undue reliance on these statements. Material factors that could cause actual results to differ materially from our expectations are summarized and disclosed under “Risk Factors” in Part I, Item 1A of this Annual Report on Form 10-K.

Unless stated otherwise or the context otherwise requires, references to “Broadcom,” “we,” “our,” and “us” mean Broadcom Inc. and its consolidated subsidiaries. Our fiscal year ends on the Sunday closest to October 31 in a 52-week year and the first Sunday in November in a 53-week year. We refer to our fiscal years by the calendar year in which they end. For example, the fiscal year ended October 31, 2021 was a 52-week year.

ITEM 1. BUSINESS

Overview

We are a global technology leader that designs, develops and supplies a broad range of semiconductor and infrastructure software solutions. Our over 50-year history of innovation dates back to our diverse origins from Hewlett-Packard Company, AT&T, LSI Corporation, Broadcom Corporation, Brocade Communications Systems LLC ("Brocade"), CA, Inc. and Symantec Enterprise Security. Over the years, we have assembled a large team of semiconductor and software design engineers around the world. We maintain design, product and software development engineering resources at locations in the U.S., Asia, Europe and Israel, providing us with engineering expertise worldwide. We strategically focus our research and development resources to address niche opportunities in our target markets and leverage our extensive portfolio of U.S. and other patents, and other intellectual property ("IP") to integrate multiple technologies and create system-on-chip ("SoC") component and software solutions that target growth opportunities. We design products and software that deliver high-performance and provide mission critical functionality.

We develop semiconductor devices with a focus on complex digital and mixed signal complementary metal oxide semiconductor ("CMOS") based devices and analog III-V based products. We have a history of innovation in the semiconductor industry and offer thousands of products that are used in end products such as enterprise and data center networking, home connectivity, set-top boxes, broadband access, telecommunication equipment, smartphones and base stations, data center servers and storage systems, factory automation, power generation and alternative energy systems, and electronic displays. We differentiate ourselves through our high performance design and integration capabilities and focus on developing products for target markets where we believe we can earn attractive margins.

Our infrastructure software solutions enable customers to plan, develop, automate, manage, and secure applications across mainframe, distributed, mobile, and cloud platforms. Many of the largest companies in the world, including most of the Fortune 500, and many government agencies rely on our software solutions to help manage and secure their on-premise and hybrid cloud environments. Our portfolio of industry-leading infrastructure and security software is designed to modernize, optimize, and secure the most complex hybrid environments, enabling scalability, agility, automation, insights, resiliency and security. We also offer mission critical fibre channel storage area networking ("FC SAN") products and related software in the form of modules, switches and subsystems incorporating multiple semiconductor products.

Business Strategy

Our strategy is to combine best-of-breed technology leadership in semiconductor and infrastructure software solutions, with unmatched scale, on a common sales and administrative platform to deliver a comprehensive suite of infrastructure technology products to the world's leading business and government customers. We seek to achieve this through responsibly financed acquisitions of category-leading businesses and technologies, as well as investing extensively in research and development, to ensure our products retain their technology leadership. This strategy results in a robust business model designed to drive diversified and sustainable operating and financial results.

Products and Markets

Semiconductor Solutions

Semiconductors are made by imprinting a network of electronic components onto a semiconductor wafer. These devices are designed to perform various functions such as processing, amplifying and selectively filtering electronic signals, controlling electronic system functions and processing, and transmitting and storing data. Our digital and mixed signal products are based on silicon wafers with CMOS transistors offering fast switching speeds and low power consumption, which are both critical design factors for the markets we serve. We also offer analog products, which are based on III-V semiconductor materials that have higher electrical conductivity than silicon, and thus tend to have better performance characteristics in radio frequency ("RF"), and optoelectronic applications. III-V refers to elements from the 3rd and 5th groups in the periodic table of chemical elements. Examples of these materials used in our products are gallium arsenide ("GaAs") and indium phosphide ("InP").

We provide semiconductor solutions for managing the movement of data in data center, telecom, enterprise and embedded networking applications. We provide a broad variety of RF semiconductor devices, wireless connectivity solutions and custom touch controllers for the wireless market. We also provide semiconductor solutions for enabling the set-top box and broadband access applications and for enabling secure movement of digital data to and from host machines, such as servers, personal computers and storage systems, to the underlying storage devices, such as hard disk drives and solid-state drives.

Our product portfolio ranges from discrete devices to complex sub-systems that include multiple device types and may also incorporate firmware for interfacing between analog and digital systems. In some cases, our products include mechanical hardware that interfaces with optoelectronic or capacitive sensors. We focus on markets that require high quality and the technology leadership and integrated performance characteristic of our products. The table below presents our material semiconductor product families and their major end markets and applications during fiscal year 2021.

Major End Markets	Major Applications	Material Product Families
Broadband	• Set-top Box ("STB") and Broadband Access	• STB SoCs • Cable, digital subscriber line ("DSL") and passive optical networking ("PON") central office/consumer premise equipment ("CO/CPE") SoCs • Wireless local area network ("WLAN") access point SoCs
Networking	• Data center, Telecom, Enterprise and Embedded Networking	• Ethernet switching and routing merchant silicon • Embedded processors and controllers • Serializer/Deserializer ("SerDes"), application specific integrated circuits ("ASICs") • Optical and copper, physical layer ("PHYs") • Fiber optic transmitter and receiver components
Wireless	• Mobile Handsets	• RF front end modules ("FEMs"), filters, power amplifiers • Wi-Fi, Bluetooth, global positioning system/global navigation satellite system ("GPS/GNSS") SoCs • Custom touch controllers
Storage	• Servers and Storage Systems	• Serial attached small computer system interface ("SAS") and redundant array of independent disks ("RAID") controllers and adapters • Peripheral component interconnect express ("PCIe") switches • Fibre channel host bus adapters ("HBA")
	• Hard Disk Drives ("HDD"); Solid-State Drives ("SSD")	• Read channel based SoCs; Custom flash controllers • Preamplifiers
Industrial	• Power isolation, conversion and protection • Factory automation, in-car infotainment and renewable energy systems • Motor Controls and Factory Automation, In-car Infotainment Automation	• Optocouplers • Industrial fiber optics • Motion control encoders and subsystems

Set-Top Box Solutions: We offer complete SoC platform solutions for cable, satellite, Internet Protocol television, over-the-top and terrestrial STBs. Our products enable global service providers to introduce new and enhanced technologies and services in STBs, including transcoding, digital video recording functionality, higher definition video processing, increased networking capabilities, and more tuners to enable faster channel change and more simultaneous recordings. We are also enabling service providers in deploying High Efficiency Video Coding ("HEVC"), a video compression format that is a successor to the H.264/MPEG-4 format. HEVC enables ultra-high definition ("Ultra HD"), services by effectively doubling the capacity of existing networks to deploy new or existing content. Our families of STB solutions support the complete range of resolutions, from standard definition, to high definition, and Ultra HD.

Broadband Access Solutions: We offer complete SoC platform solutions for DSL, cable, PON and WLAN for both CPE and CO deployments. Our CPE devices are used in broadband modems, residential gateways and Wi-Fi access points and routers. Our CO devices, including DSL Access Multiplexer, cable modem termination systems and PON optical line termination medium access controller, are empowering modern operator broadband infrastructure. Our products enable global service providers to continue to deploy next generation broadband access technologies across multiple standards, including DOCSIS, G.Fast, data over cable service interface specification, PON and Wi-Fi to provide more bandwidth and faster speeds to consumers.

Ethernet Switching & Routing: Ethernet is a ubiquitous interconnection technology that enables high performance and cost effective networking infrastructure. We offer a broad set of Ethernet switching and routing products that are optimized for data center, service provider network, enterprise network, and embedded network applications. In the data center market, our high capacity, low latency, switching silicon supports advanced protocols around virtualization and multi-pathing. Our Ethernet switching fabric technologies provide the ability to build highly scalable flat networks supporting tens of thousands of servers. Our service provider switch portfolio enables carrier/service provider networks to support a large number of services in the wireless backhaul, access, aggregation and core of their networks. For enterprise networks and embedded Ethernet applications, we offer product families that combine multi-layer switching capabilities and support lower power modes that comply with industry standards around energy efficient Ethernet.

Embedded Processors & Controllers: Our embedded processors leverage our ARM central processing unit and Ethernet switching technology to deliver SoCs for high performance embedded applications in a wide range of communication products such as voice-over-internet-protocol, telephony, point-of-sale devices and enterprise and retail access points and gateways. We offer a range of knowledge-based processors to enable high-performance decision-making for packet processing in a variety of advanced devices in the enterprise, metro, access, edge and core networking spaces. We also offer a range of Ethernet controllers for servers and storage systems supporting multiple generations of Ethernet technology.

SerDes ASICs: For data center and enterprise networking, and high performance computing applications, we supply high speed SerDes technology integrated into ASICs. These ASICs are custom products built to individual customers specifications. Our ASICs are designed on advanced CMOS process technologies, focused primarily on leading edge geometries.

Physical Layer Devices: These devices, also referred to as PHYs, are transceivers that enable the reception and transmission of Ethernet data packets over a physical medium such as copper wire or optical fibers. Our high performance Ethernet transceivers are built upon a proprietary digital signal processing communication architecture optimized for high-speed network connections and support the latest standards and advanced features, such as energy efficient Ethernet, data encryption and time synchronization. We also offer a range of automotive Ethernet products to meet growing consumer demand for in-vehicle connectivity.

Fiber Optic Components: We supply a wide array of optical components to the Ethernet networking, storage, and access, metro- and long-haul telecommunication markets. Our optical components enable the high speed reception and transmission of data through optical fibers.

RF Semiconductor Devices: Our RF semiconductor devices selectively filter, as well as amplify, RF signals. Filters enable modern wireless communication systems to support a large number of subscribers simultaneously by ensuring that the multiple transmissions and receptions of voice and data streams do not interfere with each other. We were among the first to deliver commercial film bulk acoustic resonator (“FBAR”) filters that offer technological advantages over competing filter technologies, to allow mobile handsets to function more efficiently in today's congested RF spectrum. FBAR technology has a significant market share within the cellular handset market. Our RF products include FEMs that incorporate multiple die into multi-function RF devices, duplexers and multiplexers, which are a combination of two or more transmit and receive filters in a single device, using our proprietary FBAR technology, discrete filters and discrete power amplifiers.

Our expertise in FBAR technology, amplifier design, and module integration enables us to offer industry-leading performance in cellular RF transceiver applications. Our proprietary GaAs wafer manufacturing processes are critical to the production of power amplifier and low noise amplifier products.

Connectivity Solutions: Our connectivity solutions include discrete and integrated Wi-Fi and Bluetooth solutions, and satellite-based GPS/GNSS mobile navigation receivers.

Wi-Fi allows devices on a local area network to communicate wirelessly, adding the convenience of mobility to the utility of high-speed data networks. We offer a family of high performance, low power Wi-Fi chipsets. Bluetooth is a low power technology that enables direct connectivity between devices. We offer a complete family of Bluetooth silicon and software solutions that enable manufacturers to easily and cost-effectively add Bluetooth functionality to virtually any device. These solutions include combination chips that offer integrated Wi-Fi and Bluetooth functionality, which provides significant performance advantages over discrete solutions.

We also offer a family of GPS, assisted-GPS and GNSS semiconductor products, software and data services. These products are part of a broader location platform that leverages a broad range of communications technologies, including Wi-Fi, Bluetooth and GPS, to provide more accurate location and navigation capabilities.

Custom Touch Controllers: Our touch controllers process signals from touch screens in mobile handsets and tablets.

SAS, RAID & PCIe Products: We provide SAS and RAID controller and adapter solutions to server and storage system original equipment manufacturers (“OEMs”). These solutions enable secure and high speed data transmission between a host computer, such as a server, and storage peripheral devices, such as HDD, SSD and optical disk drives and disk and tape-based storage systems. Some of these solutions are delivered as stand-alone semiconductors, typically as a controller. Other solutions are delivered as circuit boards, known as adapter products, which incorporate our semiconductors onto a circuit board with other features. RAID technology is a critical part of our server storage connectivity solutions as it provides protection against the loss of critical data resulting from HDD failures.

We also provide interconnect semiconductors that support the PCI and PCIe communication standards. PCIe is the primary interconnection mechanism inside computing systems today.

Fibre Channel Products: We provide Fibre Channel HBAs, which connect host computers such as servers to FC SANs.

HDD & SSD Products: We provide read channel-based SoCs and preamplifiers to HDD OEMs. These are the critical chips required to read, write and protect data. An HDD SoC is an integrated circuit that combines the functionality of a read channel, serial interface, memory and a hard disk controller in a small, high-performance, low-power and cost-effective package. Read channels convert analog signals that are generated by reading the stored data on the physical media into digital signals. In addition, we sell preamplifiers, which are used to amplify the initial signal to and from the drive disk heads so the signal can be processed by the read channel.

We also provide custom flash controllers to SSD OEMs. An SSD stores data in flash memory instead of on a hard disk, providing high speed access to the data. Flash controllers manage the underlying flash memory in SSDs, performing critical functions such as reading and writing data to and from the flash memory and performing error correction, wear leveling and bad block management.

Industrial End Markets: We also provide a broad variety of products for the general industrial and automotive markets. We offer optocouplers, which provide electrical insulation and signal isolation for signaling systems that are susceptible to electrical noise or interference. Optocouplers are used in a diverse set of applications, including industrial motors, automotive systems including those used in hybrid engines, power generation and distribution systems, switching power supplies, motion sensors, telecommunications equipment, computers and office equipment, plasma displays, and military electronics. We also provide industrial fiber optics, Ethernet, motion encoders and LED products.

Infrastructure Software

Our mainframe software provides market-leading DevOps, AIOps, Security and Data Management Systems solutions. We help enterprises embrace open tools and technologies, integrate their mainframe into their cloud infrastructures, and increase the value of their mainframe investments. By partnering with our customers and providing creative value-added programs, we help customers overcome challenges related to skills development, technical education, strategy and planning, and the need for cloud-like pricing flexibility to support their overall business success with the platform.

Our distributed software solutions enable global enterprises to optimize the planning, development and delivery of software, powering their business critical digital services. Our solutions are designed to enable customers to innovate, improve customer experience, and drive profitability by aligning business, development, and operational teams. Our products, organized in the domains of ValueOps, DevOps, and AIOps, deliver end-to-end visibility across all stages of the digital lifecycle and help our customers realize better business outcomes and better experiences for their customers.

Our Symantec cyber security software solutions help organizations and governments secure against threats and compliance risks by protecting their users and data on any app, device, or network. Our integrated cyber defense approach simplifies cyber security with comprehensive solutions designed to secure critical business assets across on-premises and cloud infrastructures. Our Symantec solutions utilize rich threat intelligence from a global network of security engineers, threat analyst and researchers, as well as advanced AI and machine-learning engines, enabling customers to protect data, connect authorized users with trusted applications, and detect and respond to the most advanced targeted attacks.

We also offer mission critical FC SAN products designed to help customers reduce the cost and complexity of managing business information within a shared data storage environment, enabling high levels of availability of mission critical applications in the form of modules, switches and subsystems incorporating multiple semiconductor products. We deliver reliable and simplified management of these FC SAN products through our software-based management tools designed to maximize uptime, dramatically simplify storage area networking deployment and management, and provide high levels of visibility and insight into the storage network.

The table below presents our software portfolios and their material offerings during fiscal year 2021.

Software Portfolio	Portfolio Description	Major Portfolio Offerings
Mainframe Software	• Solutions for DevOps, AIOps, Security and Database Management Systems	• Operational Analytics & management • Automation • Database & Database Management • Application Development & Testing • Identity & Access Management • Compliance & Data Protection • Security Insights
Distributed Software	• Solutions that optimize the planning, development and delivery of business critical services	• ValueOps • DevOps • AIOps
Symantec Cyber Security	• Comprehensive threat protection and compliance solutions that secure against threats and compliance risks by protecting users and data on any app, device, or network	• Endpoint Security • Network Security • Information Security • Identity Security
FC SAN Management	• Solutions that transforms current storage networks with autonomous SAN capabilities	• Fibre Channel switch
Payment Authentication	• Software designed to reduce Card Not Present	• Payment Security Suite

Operational Analytics & Management*:* These solutions combine big data, machine learning and artificial intelligence ("AI") with mainframe expertise to deliver meaningful and actionable insights to augment and automate day-to-day operations and deliver exceptional customer experiences.

Automation*:* These solutions reduce manual effort by enabling customers to proactively optimize resources and orchestrate automation across enterprise applications and systems.

Databases & Database Management*:* These high-performance databases and management tools store, organize, and manage mainframe data to ensure optimal performance, efficient administration, and reliability of critical systems.

Application Development & Testing*:* These solutions enable customers to accelerate software delivery while increasing code quality through the use of our agile processes and tools, and DevOps solutions. Our open-first strategy helps customers modernize their mainframe environment through the use of open source and open application programming technologies across people, process, tooling and applications, resulting in greater synergy and alignment with their corporate information technology ("IT").

Identity & Access Management*:* These solutions manage mainframe access and elevate it with modern practices such as multi-factor authentication, managing access for privileged users, and supporting all external security managers.

Compliance & Data Protection*:* These solutions locate and protect sensitive mainframe data to ensure compliance and identify risk, identify and proactively respond to potential risks and bad actors, and reduce risk and lighten security management load with automated identification and authorization cleanup.

Security Insights Platform*:* This solution helps ensure a trusted environment for customers and their employees by quickly interpreting and assessing mainframe security posture, identifying risks and developing remediation steps on an ongoing and ad hoc basis. This data is available for use with in-house tools for security information and event management.

ValueOps*:* This solution delivers value stream management capabilities that enable customers to schedule, track, and manage work throughout its lifecycle from investment planning to execution. It aligns business and development teams across the enterprise, increasing transparency, reducing inefficiencies, and improving time to value.

DevOps: This solution offers capabilities that empower users of our agile processes and tools to track development progress and deploy releases confidently with assurance of feature completeness, high-quality and reduced risk. Key stakeholders have a single view of key insights into release progress, health, quality, and defect trends, and metrics that drive focus, gauge readiness, and help to ensure successful, quality releases.

AIOps: This solution combines application, infrastructure and network monitoring and correlation with intelligent remediation capabilities to help customers create more resilient production environments and improve customer experience.

Endpoint Security: Endpoints are the critical last line of defense against cyber attackers. Our Symantec endpoint security solutions prevent, detect and respond to emerging threats across all devices and operating systems including laptops, desktops, tablets, mobile phones, servers and cloud workloads through an intelligent AI driven security console and single agent.

Network Security: Email and web access are the lifeblood and essential communication means for every modern organization. We have a full array of network security solutions, as well as a shared set of advanced threat protection technologies to stop inbound and outbound threats targeting end users, information and key infrastructure.

Information Security: Information protection and compliance is critical to managing risk. We offer integrated information security solutions, based on an efficient, single-policy that can be applied across the entire environment, to help organizations identify and protect risky users, applications and their most sensitive data everywhere across endpoints, on-premises networks, cloud services and private applications.

Identity Security: User identities are under attack by cyber criminals hoping to exploit their access and privileges and do harm. We mitigate these attacks by enforcing granular security policies to stop unauthorized access to sensitive resources and data.

Fibre Channel Switch Products: Our Brocade Fibre Channel switch products provide interconnection, bandwidth and high-speed switching between servers and storage devices which are in a FC SAN. FC SANs are networks dedicated to mission critical storage traffic, and enable simultaneous high speed and secure connections among multiple host computers and multiple storage arrays.

Payment Security Suite: This is a software as a service (“SaaS”)-based payment authentication service to help banks protect against fraud and ensure a hassle-free online shopping experience for their customers.

Research and Development

We are committed to continuous investment in product development and enhancement, with a focus on rapidly introducing new, proprietary products and releases. Many of our products have grown out of our own research and development efforts, and have given us competitive advantages in certain target markets due to performance differentiation. However, we opportunistically seek to enhance our capabilities through the acquisition of engineers with complementary research and development skills and complementary technologies and businesses. We focus our research and development efforts on the development of mission critical, innovative, sustainable and higher value product platforms and those that improve the quality and stability in our broadly deployed products. We leverage our design capabilities in markets where we believe our innovation and reputation will allow us to earn attractive margins by developing high value-add products.

We plan to continue investing in product development, both organically and through acquisitions, to drive growth in our business. We also invest in process development and improvements to product features and functions, as well as fabrication capabilities to optimize processes for devices that are manufactured internally. Our field application engineers, design engineers, and product and software development engineers are located in many places around the world, and in many cases near our top customers. This enhances our customer reach and our visibility into new product opportunities and, in the case of our semiconductor customers, enables us to support our customers in each stage of their product development cycle, from the early stages of production design to volume manufacturing and future growth. By collaborating with our customers, we have opportunities to develop high value-added, customized products for them that leverage our existing technologies. We anticipate that we will continue to make significant research and development expenditures in order to maintain our competitive position, and to ensure a continuous flow of innovative and sustainable product platforms.

Customers, Sales and Distribution

We sell our products through our direct sales force and a select network of distributors and channel partners globally. Distributors and OEMs, or their contract manufacturers, typically account for the substantial majority of our semiconductor sales. A relatively small number of customers account for a significant portion of our net revenue. Sales to distributors accounted for 53% and 42% of our net revenue for fiscal years 2021 and 2020, respectively. We believe aggregate sales to our top five end customers, through all channels, accounted for more than 35% and 30% of our net revenue for each of our fiscal years 2021 and 2020, respectively. We believe aggregate sales to Apple Inc., through all channels, accounted for approximately 20% and 15% of our net revenue for fiscal years 2021 and 2020, respectively. We expect to continue to experience significant customer concentration in future periods. The loss of, or significant decrease in demand from, any of our top five end customers could have a material adverse effect on our business, results of operations and financial condition.

Many of our semiconductor customers design products in North America or Europe that are then manufactured in Asia. To serve customers around the world, we have strategically developed relationships with large global electronic component distributors, complemented by a number of regional distributors with customer relationships based on their respective product ranges. We also sell our products to a wide variety of OEMs or their contract manufacturers. We have established strong relationships with leading OEM customers across multiple target markets. Our direct sales force focuses on supporting our large OEM customers, and has specialized product and service knowledge that enables us to sell specific offerings at key levels throughout a customer’s organization. Certain customers require us to contract with them directly and with specified intermediaries, such as contract manufacturers. Many of our major customer relationships have been in place for many years and are often the result of years of collaborative product development. This has enabled us to build our extensive IP portfolio and develop critical expertise regarding our customers’ requirements, including substantial system-level knowledge. This collaboration has provided us with key insights into our customers' businesses and has enabled us to be more efficient and productive and to better serve our target markets and customers. Many of our customers and their contract manufacturers often require time critical delivery of our products to multiple locations around the world. With sales offices located in various countries, our primary warehouse in Malaysia, and dedicated regional customer support call centers, where we address customer issues and handle logistics and other order fulfillment requirements, we believe we are well-positioned to support our customers throughout the design, technology transfer and manufacturing stages across all geographies.

Our software customers are in most major industries worldwide, including banks, insurance companies, other financial services providers, government agencies, global IT service providers, telecommunication providers, transportation companies, manufacturers, technology companies, retailers, educational organizations and health care institutions. Our customers generally consist of large enterprises that have computing environments from multiple vendors and are highly complex. We remain focused on strengthening relationships and increasing penetration within our existing core, mainframe-centric, and Symantec endpoint customers and expanding the adoption of our enterprise software offerings with these customers. We believe our enterprise-wide license model will continue to offer our customers reduced complexity, more flexibility and an easier renewal process that will help drive revenue growth.

Manufacturing Operations

We focus on maintaining an efficient global supply chain and a variable, low-cost operating model. Accordingly, we outsource a majority of our manufacturing operations, utilizing third-party foundry and assembly and test capabilities, as well as some of our corporate infrastructure functions. The majority of our front-end wafer manufacturing operations is outsourced to external foundries, including Taiwan Semiconductor Manufacturing Company Limited (“TSMC”). We use third-party contract manufacturers for a significant majority of our assembly and test operations, including Advanced Semiconductor Engineering, Inc., Foxconn Technology Group, Amkor Technology, Inc. and Siliconware Precision Industries Co., Ltd. We use our internal fabrication facilities for products utilizing our innovative and proprietary processes, such as our FBAR filters for wireless communications and our vertical-cavity surface emitting laser and side emitting lasers-based on GaAs and InP lasers for fiber optic communications, while outsourcing commodity processes such as standard CMOS. By doing so, we can protect our IP and accelerate time to market for our products. The majority of our internal III-V semiconductor wafer fabrication is done in the U.S. and Singapore.

We also have a long history of operating in Asia where we manufacture and source the majority of our products and materials. We store the majority of our product inventory in our warehouse in Malaysia and our presence in Asia places us in close proximity to many of our customers’ manufacturing facilities.

Manufacturing Materials and Suppliers

Our manufacturing operations employ a wide variety of semiconductors, electromechanical components and assemblies and raw materials. We purchase materials from hundreds of suppliers on a global basis. These purchases are generally on a purchase order basis and some parts are not readily available from alternate suppliers due to their unique design or the length of time and cost necessary for re-design or qualification. To address the potential disruption in our supply chain, we may use a number of techniques, including redesigning products for alternative components, making incremental or “lifetime” purchases, or qualifying more than one source of supply. Our long-term relationships with our suppliers allow us to proactively manage our technology development and product discontinuance plans, and to monitor our suppliers' financial health. Some suppliers may, nonetheless, extend their lead times, limit supplies, increase prices or cease to produce necessary parts for our products. If these are unique or highly specialized components, we may not be able to find a substitute quickly, or at all.

Competition

The markets in which we participate are highly competitive. Our competitors range from large, international companies offering a wide range of products to smaller companies specializing in narrow markets. The competitive landscape is changing as a result of a trend toward consolidation within many industries, as some of our competitors have merged with or been acquired by other competitors, while others have begun collaborating with each other. We expect this consolidation trend to continue. We expect competition in the markets in which we participate to continue to increase as existing competitors improve or expand their product offerings and as new companies enter the market. Additionally, our ability to compete effectively depends on a number of factors, including: quality, technical performance, price, product features, product system compatibility, system-level design capability, engineering expertise, responsiveness to customers, new product innovation, product availability, delivery timing and reliability, and customer sales and technical support.

In the semiconductor market, we compete with integrated device manufacturers, fabless semiconductor companies, as well as the internal resources of large, integrated OEMs. Our primary competitors are Amlogic Inc., Analog Devices, Inc., Advanced Micro Devices, Inc., Cisco Systems, Inc., Cree, Inc., GlobalFoundries, Hamamatsu Photonics K.K., Heidenhain Corporation, HiSilicon Technologies Co. Ltd., iC-Haus Gmbh, Intel Corp., Lumentum Holdings Inc., MACOM Technology Solutions Holdings, Inc., MaxLinear, Inc., Marvell Technology Inc., Mediatek Inc., NVIDIA Corporation, Microchip Technology Incorporated, Mitsubishi Electric Corporation, Murata Manufacturing Co., Ltd., NXP Semiconductors N.V., ON Semiconductor Corporation, OSRAM, Qorvo, Inc., Qualcomm Inc., Realtek Semiconductor Corp., Renesas Electronics Corporation, Skyworks Solutions, Inc., ST Microelectronics N.V., Sumitomo Corporation, Synaptics Incorporated, TDK-EPC Corporation, Toshiba Corporation, Texas Instruments, Inc. and II-VI Incorporated. We compete based on the strength and expertise of our high speed proprietary design expertise, FBAR technology, amplifier design, module integration, proprietary materials processes, multiple storage protocols and mixed-signal design, our broad product portfolio, support of key industry standards, reputation for quality products, and our customer relationships.

In the infrastructure software market, we compete with large enterprise software vendors who continue to expand their product and service offerings and consolidate offerings into broad product lines, and smaller, niche players focused on specific markets. Our primary competitors are Atlassian Corporation, Plc, BMC Software Inc., BeyondTrust Corporation, Cisco Systems, Inc., CrowdStrike Holdings, Inc., CyberArk Software, Ltd., International Business Machines Corporation, Micro Focus International Plc, Microsoft Corporation, New Relic, Inc., Oracle Corporation, Proofpoint, Inc., Rocket Software, Inc., SailPoint, Inc., Salesforce.com, Inc., ServiceNow, Inc., SolarWinds, Inc., Splunk, Inc. and Zscaler, Inc. We compete based on our breadth of portfolio of enterprise management tools, breadth and synergy of offerings, our platform and hardware independence, our global reach, and our deep customer relationships and industry experience.

Intellectual Property

Our success depends in part upon our ability to protect our IP. To accomplish this, we rely on a combination of IP rights, including patents, copyrights, trademarks, service marks, trade secrets and similar IP, as well as customary contractual protections with our customers, suppliers, employees and consultants, and through security measures to protect our trade secrets. We believe our current product expertise, key engineering talent and IP portfolio provide us with a strong platform from which to develop application specific products in key target markets.

As of October 31, 2021, we had 19,170 U.S. and other patents and 511 U.S. and other pending patent applications. The expiration dates of our patents range from 2020 to 2039, with a small number of patents expiring in the near future, none of which are expected to be material to our IP portfolio. We are not substantially dependent on any single patent or group of related patents.

We focus our patent application program to a greater extent on those inventions and improvements that we believe are likely to be incorporated into our products, as contrasted with more basic research. However, we do not know how many of our pending patent applications will result in the issuance of patents or the extent to which the examination process could require us to narrow our claims.

We and our predecessors have also entered into a variety of IP licensing and cross-licensing arrangements that have both benefited our business and enabled some of our competitors. A portion of our revenue comes from IP licensing royalty payments and from litigation settlements relating to such IP. We also license third-party technologies that are incorporated into some elements of our design activities, products and manufacturing processes. Historically, licenses of the third-party technologies used by us have generally been available to us on acceptable terms.

The industries in which we compete are characterized by the existence of a large number of patents, copyrights, trademarks and trade secrets and by the vigorous pursuit, protection and enforcement of IP rights, including by patent holding companies that do not make or sell products. Some of our customer agreements require us to indemnify our customers for third-party IP infringement claims arising from our products. Claims of this sort could harm our relationships with our customers and might deter future customers from doing business with us. With respect to any IP rights claims against us or our customers or distributors, we may be required to defend ourselves or our customers or distributors in litigation, cease manufacture the infringing products, pay damages, expend resources to develop non-infringing technology, seek a license which may not be available on commercially reasonable terms or at all, or relinquish patents or other IP rights.

With respect to our infrastructure software, the proprietary portions of our source code for our products are protected both as a trade secret and as copyrighted works. Except with respect to software components that are subject to open source licenses, our customers do not generally have access to the source code for our products. Rather, on-premise customers typically access only the executable code for our products, and SaaS customers access only the functionality of our SaaS offerings. Under certain contingent circumstances, some of our customers are beneficiaries of a source code escrow arrangement that would enables them to obtain a limited right to access and use our source code if specific conditions are met.

Employees

Our success depends on our continued ability to attract, motivate and retain our workforce. As the source of our technological and product innovations, our engineering and technical personnel are a significant asset. Competition for these and other talented employees is significant in many locations where we operate, such as Silicon Valley and Southeast Asia.

We measure our employees' engagement by our voluntary attrition rate and employee feedback. Our global voluntary attrition rate in fiscal year 2021 was approximately 7%, below the technology industry benchmark (AON, 2021 Salary Increase and Turnover Study — Second Edition, September 2021).

We also track the portion of our workforce in research and development roles. As of October 31, 2021, we had approximately 20,000 employees worldwide, with approximately 63% in research and development roles. By geography, approximately 54% of our employees are located in North America, 35% in Asia, and 11% in Europe, the Middle East and Africa.

Governmental Regulation

Our semiconductor manufacturing operations and research and development involve the use of hazardous substances and are regulated under international, federal, state and local laws governing health, safety and the environment. These regulations include limitations on discharge of pollutants to air, water, and soil; remediation requirements; product chemical content limitations; manufacturing chemical use and handling restrictions; pollution control requirements; waste minimization considerations; and treatment, transport, storage and disposal of solid and hazardous wastes. We are also subject to regulation by the U.S. Occupational Safety and Health Administration and similar health and safety laws in other jurisdictions.

We believe that our properties and operations at our facilities comply in all material respects with applicable environmental laws and worker health and safety laws. However, the risk of environmental liabilities cannot be completely eliminated and there can be no assurance that the application of environmental, health and safety laws to our business will not require us to incur significant expenditures.

We are also regulated under a number of international, federal, state and local laws regarding recycling, product packaging and product content requirements, including legislation enacted in the U.S., European Union and China, among a growing number of jurisdictions, which have placed greater restrictions on the use of lead, among other substances, in electronic products, which affects materials composition and semiconductor packaging. In addition, our business is subject to various import/export regulations, such as the U.S. Export Administration Regulations, and applicable executive orders, and rules of industrial standards bodies, like the International Standards Organization, as well as regulation by other agencies, such as the U.S. Federal Trade Commission ("FTC"). These laws, regulations and orders are complex, may change frequently and with limited notice, have generally and may continue to become more stringent over time. We may incur significant expenditures in future periods as a result.

Seasonality

Historically, our net revenue has typically been higher in the second half of the fiscal year than in the first half, primarily due to seasonality in our wireless communications products. These products have historically experienced seasonality due to launches of new mobile handsets manufactured by our OEM customers. However, from time to time, typical seasonality and industry cyclicality are overshadowed by other factors such as wider macroeconomic effects, the timing of significant product transitions and launches by large OEMs, particularly with our wireless communications products. We have a diversified business portfolio and we believe that our overall revenue is less susceptible to seasonal variations as a result of this diversification.

Other Information

Our website is www.broadcom.com. You may access our annual reports on Form 10-K, quarterly reports on Form 10-Q, current reports on Form 8-K and other reports (and amendments thereto) filed or furnished pursuant to Section 13(a) or 15(d) of the Securities Exchange Act of 1934 (the "Exchange Act") with the Securities and Exchange Commission (the "SEC"), as well as proxy statements filed by Broadcom, free of charge at the "Investor Center - SEC Filings" section of our website at www.broadcom.com, as soon as reasonably practicable after such material is electronically filed with, or furnished to, the SEC. Such periodic reports, proxy statements and other information are also available at the SEC's website at http://www.sec.gov. The reference to our website address does not constitute incorporation by reference of the information contained on or accessible through our website.

Information About Our Executive Officers

The following table provides information regarding our executive officers as of December 17, 2021:

Name and Title	Age	Position and Offices
Hock E. Tan	70	President, Chief Executive Officer and Director
Kirsten M. Spears	57	Chief Financial Officer and Chief Accounting Officer
Mark D. Brazeal	53	Chief Legal and Corporate Affairs Officer
Charlie B. Kawwas, Ph.D.	51	Chief Operating Officer
Thomas H. Krause, Jr.	44	President, Broadcom Software Group

Hock E. Tan has served as our President and Chief Executive Officer since March 2006. He was President and Chief Executive Officer at Integrated Circuit Systems, Inc., a publicly traded timing solutions IC company, from 1999 until its acquisition by Integrated Device Technology, Inc. in 2005, Chief Operating Officer from 1996 to 1999 and Senior Vice President and Chief Financial Officer from 1995 to 1999. He was Vice President of Finance at Commodore International, Ltd. from 1992 to 1994, and held senior management positions at PepsiCo, Inc. and General Motors Corporation. He was also managing director of Pacven Investment, Ltd., a venture capital fund in Singapore, from 1988 to 1992, and was managing director of Hume Industries Ltd. in Malaysia from 1983 to 1988.

Kirsten M. Spears has served as our Chief Financial Officer and Chief Accounting Officer since December 2020. She served as our Principal Accounting Officer from March 2016 to December 2020 and Vice President and Corporate Controller from May 2014 to December 2020. She was Vice President and Corporate Controller at LSI Corporation from 2007 until its acquisition by us in 2014. She held several management positions in accounting and reporting at LSI from 1997 to 2007. She also worked for PriceWaterhouseCoopers prior to joining LSI.

Mark D. Brazeal has served as our Chief Legal and Corporate Affairs Officer since December 2021. He served as our Chief Legal Officer from March 2017 to December 2021. He was Chief Legal Officer and Senior Vice President, IP Licensing for SanDisk Corporation from 2014 until its acquisition by Western Digital Corporation in 2016. He held several senior legal positions at Broadcom Corporation from 2000 to 2014, most recently as the Senior Vice President and Senior Deputy General Counsel in charge of all commercial, operational, IP licensing and litigation matters. He was also an attorney in the transactional and IP groups at the law firms of Wilson Sonsini Goodrich & Rosati, Yuasa & Hara and Howrey & Simon prior to joining Broadcom Corporation.

Charlie B. Kawwas has served as our Chief Operating Officer since December 2020. He served as our Senior Vice President and Chief Sales Officer from June 2015 to December 2020 and Senior Vice President, Worldwide Sales from May 2014 to June 2015. He was head of worldwide sales at LSI Corporation from 2010 until its acquisition by us in 2014. He held several executive leadership positions at LSI from 2007 to 2010, including Vice President of Sales and Marketing for the networking division and Vice President of Marketing for the networking and storage products group. He was also the leader of Product Line Management for the Optical Ethernet and Multi-service Edge portfolio at Nortel Networks Corporation prior to joining LSI.

Thomas H. Krause, Jr. has served as our President, Broadcom Software Group since December 2020. He served as our Chief Financial Officer from October 2016 to December 2020, Vice President and acting Chief Financial Officer from March 2016 to October 2016 and Vice President of Corporate Development from January 2012 to March 2016. He founded a financial advisory firm where he represented public and private technology companies from 2010 to 2012. He was Vice President of Business Development at Techwell, Inc. from 2007 until its acquisition by Intersil Corporation in 2010. He also held several roles at Technology Crossover Ventures and Robertson Stephens prior to joining Techwell.

ITEM 1A. RISK FACTORS

Our business, operations and financial results are subject to various risks and uncertainties, including those described below, that could adversely affect our business, financial condition, results of operations, cash flows, and the trading price of our common stock and preferred stock. Many of the following risks and uncertainties are, and will continue to be, exacerbated by the COVID-19 pandemic and any worsening of the global business and economic environment as a result. The following material factors, among others, could cause our actual results to differ materially from historical results and those expressed in forward-looking statements made by us or on our behalf in filings with the SEC, press releases, communications with investors and oral statements.

Risk Factors Summary

The following is a summary of the principal risks that could adversely affect our business, operations and financial results.

Risks Related to Our Business

- The ongoing COVID-19 pandemic has disrupted and will likely continue to disrupt normal business activity.
- The majority of our sales come from a small number of customers and a reduction in demand or loss of one or more of our significant customers may adversely affect our business.
- Dependence on contract manufacturing and suppliers of critical components within our supply chain may adversely affect our ability to bring products to market.
- We purchase a significant amount of the materials used in our products from a limited number of suppliers.
- Our business is subject to various governmental regulations and trade restrictions. Compliance with these regulations may cause us to incur significant expense and, if we fail to maintain compliance, we may be forced to cease manufacture and distribution of certain products or subjected to administrative proceedings and civil or criminal penalties.
- Adverse global economic conditions could have a negative effect on us.
- We operate in the highly cyclical semiconductor industry.
- Global political and economic conditions and other factors related to our international operations could adversely affect us.
- We are subject to risks associated with our distributors and other channel partners, including product inventory levels and product sell-through.
- Our dependence on senior management and if we are unable to attract and retain qualified personnel, we may not be able to execute our business strategy effectively.
- We may pursue acquisitions, investments, joint ventures and dispositions, which could adversely affect our results of operations.
- We may be involved in legal proceedings, including IP, securities litigation, and employee-related claims.
- Our operating results are subject to substantial quarterly and annual fluctuations.
- Failure to adjust our manufacturing and supply chain to accurately meet customer demand could adversely affect our results of operations.
- Winning business in the semiconductor solutions industry is subject to a lengthy process that often requires us to incur significant expense, from which we may ultimately generate no revenue.
- Competition in our industries could prevent us from growing our revenue.
- A prolonged disruption of our manufacturing facilities, research and development facilities, warehouses or other significant operations, or those of our suppliers, could have a material adverse effect on us.
- We may be unable to maintain appropriate manufacturing capacity or product yields at our own manufacturing facilities.
- Any failure of our IT systems or one or more of our corporate infrastructure vendors to provide necessary services could have a material adverse effect on our business.
- Our ability to maintain or improve gross margin.
- Our ability to protect the significant amount of IP in our business.
- Incompatibility of our software products with operating environments, platforms, or third-party products, demand for our products and services could decrease.
- Failure to enter into software license agreements on a satisfactory basis could adversely affect us.

- Licensed third party software used in our products may not be available to us in the future, which may delay product development and production or cause us to incur additional expense.
- Use of open source code sources, which, under certain circumstances could materially adversely affect us.
- We are subject to warranty claims, product recalls and product liability.
- The complexity of our products could result in unforeseen delays or expense or undetected defects or bugs.
- We make substantial investments in research and development and unsuccessful investments could materially adversely affect our business, financial condition and results of operations.
- We collect, use, store, or otherwise process personal information, which subjects us to privacy and data security laws and contractual commitments, and our actual or perceived failure to comply with such laws and commitments could harm our business.
- We are subject to environmental, health and safety laws, which could increase our costs, restrict our operations and require expenditures.
- Social and environmental responsibility regulations, policies and provisions, as well as customer and investor demands, may make our supply chain more complex and may adversely affect our relationships with customers and investors.
- The average selling prices of semiconductor products in our markets have often decreased rapidly and may do so in the future.
- A breach of our security systems may have a material adverse effect on our business.
- Fluctuations in foreign exchange rates could result in losses.

Risks Relating to Taxes

- Changes in tax legislation or policies could materially impact our financial position and results of operations.
- Our corporate income taxes could significantly increase if we are unable to maintain our tax concessions or if our assumptions and interpretations regarding tax laws and concessions prove to be incorrect.
- Our income taxes and overall cash tax costs are affected by a number of factors that could materially, adversely affect financial results.

Risks Relating to Our Indebtedness

- Our substantial indebtedness could adversely affect our financial health and our ability to execute our business strategy.
- The instruments governing our indebtedness impose certain restrictions on our business.
- Servicing our debt requires a significant amount of cash, and we may not have sufficient cash flows from our business to pay our substantial debt.

Risks Relating to Owning Our Common Stock

- Volatility of our stock price could result in substantial losses for our investors as well as class action litigation against us and our management.
- The amount and frequency of our stock repurchases may fluctuate.
- A substantial amount of our stock is held by a small number of large investors.
- There can be no assurance that we will continue to declare cash dividends.

For a more complete discussion of the material risks facing our business, see below.

Risks Related to Our Business

The ongoing COVID-19 pandemic has disrupted and will likely continue to disrupt normal business activity, which may have an adverse effect on our results of operations.

The global spread of COVID-19 and the efforts to control it have disrupted, and reduced the efficiency of, normal business activities in much of the world. The pandemic has resulted in authorities around the world implementing numerous unprecedented measures such as travel restrictions, quarantines, shelter in place orders, factory and office shutdowns and vaccine mandates. These measures have impacted, and will likely continue to impact our workforce and operations, and those of our customers, contract manufacturers (“CMs”), suppliers and logistics providers.

We have been, and expect to continue, experiencing some disruption to parts of our global semiconductor supply chain, including procuring necessary components and inputs, such as wafers and substrates, in a timely fashion, with suppliers increasing lead times or placing products on allocation and raising prices. In addition, our primary warehouse and a number of our key suppliers, particularly assembly and test service providers, are in Malaysia. While our Malaysia warehouse has remained fully operational, many of the facilities of our key suppliers and other service providers were shut down or operated at reduced capacity for extended periods. This resulted in significant logistical challenges and product delays, which could recur in the event of any future closures of, or periods of reduced operations at, our warehouse or the facilities of our suppliers and providers. Any similar disruption at our Fort Collins, Colorado manufacturing facility would severely impact our ability to manufacture our FBAR products and adversely affect our wireless business. In addition, disruptions to commercial transportation infrastructure have increased delivery times for materials and components to our facilities, transfers of our products to our key suppliers and, in some cases, our ability to timely ship our products to customers. As a result of these supply chain disruptions, we have increased customer order lead times and placed some products on allocation. We are also largely building semiconductor products to order as demand continues to outpace supply. This has limited and may continue to limit our ability to fulfill orders and satisfy all of the demand for our products, which may adversely affect our relationships with our customers.

In response to governmental directives and recommended safety measures, we modified our workplace practices globally, which has resulted in many of our employees working remotely for extended periods of time. Working remotely for extended periods may reduce our employees' efficiency and productivity, which may cause product development delays, hamper new product innovation and have other unforeseen adverse effects on our business. In addition, if a significant number of our employees, or employees and third parties performing key functions, including our Chief Executive Officer and members of our board of directors, become ill, our business may be further adversely impacted. While we have implemented personal safety measures at all of our facilities where our employees are working onsite, we may need to modify our business practices and policies in a manner that may adversely impact our business, especially if the spread of COVID-19 (including any variants) worsen significantly, and existing and new precautionary measures could negatively impact our operations. In addition, any actions we take may not be sufficient to mitigate the risk of infection and could result in a significant number of COVID-19-related claims. Changes to state workers' compensation laws, such as those in California, may increase our potential liability for such claims.

While we continue to see robust demand in our semiconductor solutions segment and record profitability driven by the supply imbalance, and have seen little impact to our software business from the COVID-19 pandemic, the macroeconomic environment remains uncertain and it may not be sustainable over the longer term. The degree to which the pandemic ultimately impacts our business and results of operations will depend on future developments beyond our control, including the extent of actions to contain the virus (including any variants), availability and efficacy of the vaccines or other treatments, public acceptance of the vaccines (including boosters), and how quickly and to what extent normal economic and operating conditions resume.

The majority of our sales come from a small number of customers and a reduction in demand or loss of one or more of our significant customers may adversely affect our business.

We are dependent on a small number of end customers, OEMs, their respective CMs, and certain distributors for a majority of our business, revenue and results of operations. For fiscal year 2021, sales to distributors accounted for 53% of our net revenue. We believe aggregate sales, through all channels, to Apple and our top five end customers, accounted for approximately 20% and more than 35% of our net revenue for fiscal year 2021, respectively. This customer concentration increases the risk of quarterly fluctuations in our operating results and our sensitivity to any material, adverse developments experienced by our significant customers.

The terms and conditions under which we do business with most of our semiconductor customers generally do not include commitments to purchase any specific quantities of products. Even in those instances where we have an arrangement under which a customer agrees to source an agreed portion of its product needs from us (provided we meet our contractual obligations), the arrangement often includes pricing schedules or methodologies that apply regardless of the volume of products purchased, and those customers may not purchase the amount of product we expect. As a result, we may not generate the amount of revenue or achieve the level of profitability we expect under such arrangements. Moreover, our top customers' purchasing power has, in some cases, given them the ability to make greater demands on us with regard to pricing and contractual terms in general. We expect this trend to continue, which may adversely affect our gross margin on certain products and, should we fail to perform under these arrangements, we could also be liable for significant monetary damages.

The loss of, or any substantial reduction in sales to, any of our major customers could have a material adverse effect on our business, financial condition, results of operations and cash flows.

Dependence on contract manufacturing and suppliers of critical components within our supply chain may adversely affect our ability to bring products to market, damage our reputation and adversely affect our results of operations.

We operate a primarily outsourced manufacturing business model that principally utilizes CMs, such as third-party wafer foundries and module assembly and test capabilities. Our semiconductor products require wafer manufacturers with state-of-the-art fabrication equipment and techniques, and most of our products are designed to be manufactured in a specific process, typically at one particular fab or foundry, either our own or with a particular CM.

We depend on our CMs to allocate sufficient manufacturing capacity to meet our needs, to produce products of acceptable quality at acceptable yields, and to deliver those products to us on a timely basis. We do not generally have long-term capacity commitments with our CMs and substantially all of our manufacturing services are on a purchase order basis with no minimum quantities. Further, our CMs may fail to timely develop new, advanced manufacturing processes, including transitions to smaller geometry process technologies or, from time to time, will cease to, or will become unable to, manufacture a component for us. As lead times to identify, qualify and establish reliable production at acceptable yields with a new CM is typically lengthy, there is often no readily available alternative source and there may be other constraints on our ability to change CMs. In addition, qualifying such CMs is often expensive, and they may not produce products as cost-effectively as our current suppliers.

TSMC, one of our CMs, manufactured approximately 89% of the wafers manufactured by our CMs during fiscal year 2021. Our wafer requirements represent a significant portion of the total production capacity of TSMC. However, TSMC also fabricates wafers for other companies, including certain of our competitors, and could choose or be required to prioritize capacity for other customers or reduce or eliminate deliveries to us on short notice. In addition, TSMC has, and may in the future, raise their prices to us.

If any of the foregoing circumstances occur, we may be unable to meet our customer demand, or to the same extent as our competitors, fail to meet our contractual obligations or forgo revenue opportunities. This has in the past damaged, and may in the future damage, our relationships with our customers. This could also result in litigation for alleged failure to meet our obligations, payment of significant damages, and our net revenue could decline, adversely affecting our business, financial condition, results of operations, and gross margin.

Further, any substantial disruption in the contract manufacturing services that we utilize, including TSMC's supply of wafers to us, as a result of a natural disaster, climate change, water shortages, political unrest, military conflicts, geopolitical turmoil, trade tensions, government orders, medical epidemics, such as the COVID-19 pandemic, economic instability, equipment failure or other cause, could materially harm our business, customer relationships and results of operations.

We purchase a significant amount of the materials used in our products from a limited number of suppliers.

Our manufacturing processes and those of our CMs rely on many materials, including silicon, GaAs and InP wafers, copper lead frames, precious and rare earth metals, mold compound, ceramic packages and various chemicals and gases. We purchase a significant portion of our materials, components and finished goods used in our products from a few materials providers, some of which are single source suppliers. As certain materials are highly specialized, the lead time needed to identify and qualify a new supplier is typically lengthy and there is often no readily available alternative source. During fiscal year 2021, we purchased approximately two-thirds of our manufacturing materials from five materials providers. We do not generally have long-term contracts with our materials providers and substantially all of our purchases are on a purchase order basis. Suppliers may extend lead times, limit supplies, place products on allocation or increase prices due to commodity price increases, capacity constraints, inflation, or other factors, any of which could lead to interruption of supply or increased demand in the industry. For example, due to the COVID-19 pandemic, we have experienced some supply constraints and increases in prices, including with respect to wafers and substrates. Additionally, the supply of these materials may be negatively impacted by increased trade tensions between the U.S. and its trading partners, particularly China. These supply constraints have had, and may continue to have, a negative impact on our customer relationships. Further, continued supply constraints for these or any other reasons could result in loss of revenue opportunities and adversely impact our business, financial condition and results of operations.

Our business is subject to various governmental regulations, and compliance with these regulations may cause us to incur significant expense. If we fail to maintain compliance with applicable regulations, we may be forced to cease the manufacture and distribution of certain products, and we could be subject to administrative proceedings and civil or criminal penalties.

Our business is subject to various domestic and international laws and other legal requirements, including anti-competition and import/export regulations, such as the U.S. Export Administration Regulations, and applicable executive orders. These laws, regulations and orders are complex, may change frequently and with limited notice, have generally and may continue to become more stringent over time. We may be required to incur significant expense to comply with, or to remedy violations of, these regulations. In addition, if our customers fail to comply with these regulations, we may be required to suspend sales to these customers, which could damage our reputation and negatively impact our results of operations. The U.S. government may also add companies to its restricted entity list and/or technologies to its list of prohibited exports to specific countries, which have had and will continue to have an adverse effect on our ability to sell our products and our revenue. For example, Huawei Technologies Co., Ltd., one of our customers, is subject to certain U.S. export restrictions, which has required us to suspend sales to Huawei until we obtain licenses from the U.S. Department of Commerce. We may be unable to obtain or maintain the necessary licenses to allow us to export products to them. These restrictive governmental actions and any similar measures that may be imposed on U.S. companies by other governments, especially in light of ongoing trade tensions with China, will likely limit or prevent us from doing business with certain of our customers or suppliers and harm our ability to compete effectively or otherwise negatively affect our ability to sell our products, and adversely affect our business and results of operations.

Our products and operations are also subject to regulation by U.S. and non-U.S. regulatory agencies, such as the U.S. Federal Trade Commission ("FTC"). From time to time, we may also be involved or required to participate in regulatory investigations or inquiries, such as the ongoing investigation by the Korean Fair Trade Commission into certain of our contracting and business practices, which may evolve into legal or other administrative proceedings. Growing public concern over concentration of economic power in corporations is likely to result in increased anti-competition legislation, regulation, administrative rule making, and enforcement activity. Involvement in regulatory investigations or inquiries, can be costly, lengthy, complex and time consuming, diverting the attention and energies of our management and technical personnel.

If any pending or future governmental investigations result in an unfavorable resolution, we could be required to cease the manufacture and sale of the subject products or technology, pay fines or disgorge profits or other payments, and/or cease certain conduct and/or modify our contracting or business practices, which could have a material adverse effect on our business, financial condition and results of operations. We may be obligated to indemnify our current or former directors or employees, or former directors or employees of companies that we have acquired, in connection with regulatory investigations. These liabilities could be substantial and may include, among other things, the cost of government, law enforcement or regulatory investigations and civil or criminal fines and penalties.

In addition, the manufacture and distribution of our semiconductors must comply with various laws and adapt to changes in regulatory requirements as they occur. For example, if a country in which our products are manufactured or sold sets technical standards that are not widely shared, it may require us to stop distributing our products commercially until they comply with such new standards, lead certain of our customers to suspend imports of their products into that country, require manufacturers in that country to manufacture products with different technical standards and disrupt cross-border manufacturing relationships, any of which could have a material adverse effect on our business, financial condition and results of operations. If we fail to comply with these requirements, we could also be required to pay civil penalties or face criminal prosecution.

Adverse global economic conditions could have a negative effect on our business, results of operations and financial condition and liquidity.

A general slowdown in the global economy or in a particular region or industry, an increase in trade tensions with U.S. trading partners, inflation or a tightening of the credit markets could negatively impact our business, financial condition and liquidity. Adverse global economic conditions have from time to time caused or exacerbated significant slowdowns in the industries and markets in which we operate, which have adversely affected our business and results of operations. Macroeconomic weakness and uncertainty also make it more difficult for us to accurately forecast revenue, gross margin and expenses, and may make it more difficult to raise or refinance debt. An escalation of trade tensions between the U.S. and China has resulted in trade restrictions and increased tariffs that harm our ability to participate in Chinese markets or compete effectively with Chinese companies. Sustained uncertainty about, or worsening of, current global economic conditions and further escalation of trade tensions between the U.S. and its trading partners, especially China, and possible decoupling of the U.S. and China economies, could result in a global economic slowdown and long-term changes to global trade. Such events may also (i) cause our customers and consumers to reduce, delay or forgo technology spending, (ii) result in customers sourcing products from other suppliers not subject to such restrictions or tariffs, (iii) lead to the insolvency or consolidation of key suppliers and customers, and (iv) intensify pricing pressures. Any or all of these factors could negatively affect demand for our products and our business, financial condition and results of operations.

We operate in the highly cyclical semiconductor industry.

The semiconductor industry is highly cyclical and is characterized by constant and rapid technological change and price erosion, evolving technical standards, frequent new product introductions, short product life cycles (for semiconductors and for many of the end products in which they are used) and wide fluctuations in product supply and demand. From time to time, these factors, together with changes in general economic conditions, cause significant upturns and downturns in the industry in general, and in our business in particular. The industry has experienced a significant upturn due to the supply imbalance resulting in record profitability and increases in average selling prices, which may not be sustainable in the longer term.

Conversely, periods of industry downturns have been characterized by diminished demand for end-user products, high inventory levels and periods of inventory adjustment, under-utilization of manufacturing capacity, changes in revenue mix and accelerated erosion of average selling prices. We expect our business to continue to be subject to cyclical downturns even when overall economic conditions are relatively stable. If we cannot offset industry or market downturns, our net revenue may decline and our financial condition and results of operations may suffer.

Global political and economic conditions and other factors related to our international operations could adversely affect our business, financial condition and results of operations.

A majority of our products are produced, sourced and sold internationally and our international revenue represents a significant percentage of our overall revenue. In addition, as of October 31, 2021, approximately 48% of our employees were located outside the U.S. Multiple factors relating to our international operations and to particular countries in which we operate could have a material adverse effect on our business, financial condition and results of operations. These factors include:

- changes in political, regulatory, legal or economic conditions or geopolitical turmoil, including terrorism, war or political or military coups, or civil disturbances or political instability foreign and domestic;
- restrictive governmental actions, such as restrictions on the transfer or repatriation of funds and foreign investments, data privacy regulations, imposition of climate change regulations, and trade protection measures, including increasing protectionism, import/export restrictions, import/export duties and quotas, trade sanctions and customs duties and tariffs, all of which have increased in recent years;
- difficulty in obtaining product distribution and support, and transportation delays;
- potential inability to localize software products for a significant number of international markets;
- difficulty in conducting due diligence with respect to business partners in certain international markets;
- public health or safety concerns, medical epidemics or pandemics, such as COVID-19, and other natural- or man-made disasters;
- nationalization of businesses and expropriation of assets; and
- changes in U.S. and foreign tax laws.

A significant legal risk associated with conducting business internationally is compliance with the various and differing laws and regulations of the many countries in which we do business. In addition, the laws in various countries are constantly evolving and may, in some cases, conflict with each other. Although our policies prohibit us, our employees and our agents from engaging in unethical business practices, there can be no assurance that all of our employees, distributors or other agents will refrain from acting in violation of our related anti-corruption or other policies and procedures. Any such violation could have a material adverse effect on our business.

We are subject to risks associated with our distributors and other channel partners, including product inventory levels and product sell-through.

We sell our products through a direct sales force and a select network of distributors and other channel partners globally. Sales to distributors accounted for 53% of our net revenue in the fiscal year ended October 31, 2021 and are subject to a number of risks, including:

- fluctuations in demand based on our distributors’ product inventory levels and end customer demand in a given quarter;
- our distributors and other channel partners are generally not subject to minimum sales requirements or any obligation to market our products to their customers;
- our distributors and other channel partners agreements are generally nonexclusive and may be terminated at any time without cause;
- our lack of control over the timing of delivery of our products to end customers; and
- our distributors and other channel partners may market and distribute competing products and may place greater emphasis on the sale of these products.

In addition, we are selling our semiconductor products through an increasingly limited number of distributors, which exposes us to additional customer concentration and related credit risks.

We do not always have a direct relationship with the end customers of our products. As a result, our semiconductor products may be used in applications for which they were not necessarily designed or tested, including, for example, medical devices, and they may not perform as anticipated in such applications. In such event, failure of even a small number of parts could result in significant liabilities to us, damage our reputation and harm our business and results of operations.

Our business would be adversely affected by the departure of existing members of our senior management team.

Our success depends, in large part, on the continued contributions of our senior management team, and in particular, the services of Mr. Hock E. Tan, our President and Chief Executive Officer. Effective succession planning is also important for our long-term success. Failure to ensure effective transfers of knowledge and smooth transitions involving senior management could hinder our strategic planning and execution. None of our senior management is bound by written employment contracts. In addition, we do not currently maintain key person life insurance covering our senior management. The loss of any of our senior management could harm our ability to implement our business strategy and respond to the rapidly changing market conditions in which we operate.

If we are unable to attract and retain qualified personnel, especially our engineering and technical personnel, we may not be able to execute our business strategy effectively.

Our future success depends on our ability to attract, retain and motivate qualified personnel. As the source of our technological and product innovations, our engineering and technical personnel (including cyber security experts) are a significant asset. Competition for these employees is significant in many areas of the world in which we operate, particularly in Silicon Valley and Southeast Asia where qualified engineers are in high demand. In addition, current or future immigration laws may make it more difficult to hire or retain qualified engineers, further limiting the pool of available talent. Further, our employees may decide not to continue working for us and may leave with little or no notice. We believe equity awards provide a powerful long-term retention incentive and have historically granted these awards to the substantial majority of our employees. However, the amendments to our 2012 Stock Incentive Plan approved by our stockholders at our 2021 Annual Meeting of Stockholders significantly reduced the number of shares available for equity awards. As a result, we may need to change our current equity granting philosophy, which could impair our efforts to attract and retain necessary personnel. Any inability to retain, attract or motivate such personnel could have a material adverse effect on our business, financial condition and results of operations.

We may pursue acquisitions, investments, joint ventures and dispositions, which could adversely affect our results of operations.

Our growth strategy includes acquiring or investing in businesses that offer complementary products, services and technologies, or enhance our market coverage or technological capabilities.

Any acquisitions we may undertake and their integration involve risks and uncertainties, such as:

- unexpected delays, challenges and related expenses, and disruption of our business;
- diversion of management's attention from daily operations and the pursuit of other opportunities;
- incurring significant restructuring charges and amortization expense, assuming liabilities (some of which may be unexpected) and ongoing or new lawsuits related to the transaction or otherwise, potential impairment of acquired goodwill and other intangible assets, and increasing our expenses and working capital requirements;
- the potential for deficiencies in internal controls at the acquired business, as well as implementing our own management information systems, operating systems and internal controls for the acquired operations;
- our due diligence process may fail to identify significant issues with the acquired company's products, financial disclosures, accounting practices, legal, tax and other contingencies, compliance with local laws and regulations (and interpretations thereof) in the U.S. and multiple international jurisdictions;
- additional acquisition-related debt, which could increase our leverage and potentially negatively affect our credit ratings resulting in more restrictive borrowing terms or increased borrowing costs thereby limiting our ability to borrow;
- dilution of stock ownership of existing stockholders;
- difficulties integrating the acquired business or company and in managing and retaining acquired employees, vendors and customers; and
- inaccuracies in our original estimates and assumptions used to assess a transaction, which may result in us not realizing the expected financial or strategic benefits of any such transaction.

In addition, the current and the proposed changes to the U.S. and foreign regulatory approval process and requirements in connection with an acquisition may cause approvals to take longer than anticipated to obtain, not be forthcoming or contain burdensome conditions, which may jeopardize, delay or reduce the anticipated benefits of the transaction to us and could impede the execution of our business strategy.

From time to time, we may also seek to divest or wind down portions of our business, either acquired or otherwise, or we may exit minority investments, any of which could materially affect our cash flows and results of operations. Such dispositions involve risks and uncertainties, including our ability to sell such businesses on terms acceptable to us, or at all, disruption to other parts of our business, potential loss of employees or customers, or exposure to unanticipated liabilities or ongoing obligations to us following any such dispositions. In addition, dispositions may include the transfer of technology and/or the licensing of certain IP rights to third-party purchasers, which could limit our ability to utilize such IP rights or assert these rights against such third-party purchasers or other third parties.

We may be involved in legal proceedings, including IP, securities litigation, and employee-related claims, which could, among other things, divert efforts of management and result in significant expense and loss of our IP rights.

We are often involved in legal proceedings, including cases involving our IP rights and those of others, commercial matters, acquisition-related suits, securities class action suits, employee-related claims and other actions. Litigation or settlement of such actions, regardless of their merit, can be costly, lengthy, complex and time consuming, diverting the attention and energies of our management and technical personnel.

The industries in which we operate are characterized by companies holding large numbers of patents, copyrights, trademarks and trade secrets and by the vigorous pursuit, protection and enforcement of IP rights, including actions by patent-holding companies that do not make or sell products. From time to time, third parties assert against us and our customers and distributors their IP rights to technologies that are important to our business. For example, in August 2020 judgment was entered against Broadcom and Apple for infringement of certain patents pursuant to which California Institute of Technology was awarded past damages of $270.2 million from Broadcom and $837.8 million from Apple, for which Apple is seeking indemnification from Broadcom. Although we are appealing this judgment, there are no assurances that we will be successful.

Many of our customer agreements, and in some cases our asset sale agreements, and/or the laws of certain jurisdictions may require us to indemnify our customers or purchasers for third-party IP infringement claims, including costs to defend those claims, and payment of damages in the case of adverse rulings. However, our CMs and suppliers may or may not be required to indemnify us should we or our customers be subject to such third-party claims. Claims of this sort could also harm our relationships with our customers and might deter future customers from doing business with us. If any pending or future proceedings result in an adverse outcome, we could be required to:

- cease the manufacture, use or sale of the infringing products, processes or technology and/or make changes to our processes or products;
- pay substantial damages for past, present and future use of the infringing technology, including up to treble damages if willful infringement is found;
- expend significant resources to develop non-infringing technology;
- license technology from the third-party claiming infringement, which license may not be available on commercially reasonable terms, or at all;
- enter into cross-licenses with our competitors, which could weaken our overall IP portfolio and our ability to compete in particular product categories;
- pay substantial damages to our direct or end customers to discontinue use or replace infringing technology with non-infringing technology; or
- relinquish IP rights associated with one or more of our patent claims.

Any of the foregoing results could have a material adverse effect on our business, financial condition and results of operations.

In addition, we may be obligated to indemnify our current or former directors or employees, or former directors or employees of companies that we have acquired, in connection with such litigation. These liabilities could be substantial and may include, among other things, the cost of defending lawsuits against these individuals, as well as stockholder derivative suits; civil or criminal fines and penalties; legal and other expenses; and expenses associated with the remedial measure, if any, which may be imposed.

Our operating results are subject to substantial quarterly and annual fluctuations.

Our operating results have fluctuated in the past and are likely to fluctuate in the future. These fluctuations may occur on a quarterly and annual basis and are due to a number of factors, many of which are beyond our control. In addition to many of the risks described elsewhere in this "Risk Factors" section, these factors include, among others:

- the timing of launches by our customers of new product in which our products are included and changes in end-user demand for our customers' the products;
- fluctuations in the levels of component or product inventories held by our customers;
- the shift to cloud-based IT solutions and services, such as hyperscale computing, which may adversely affect the timing and volume of sales of our products for use in traditional enterprise data centers;
- the timing of new software contracts and renewals, as well as the timing of any terminations of software contracts that require us to refund to customers any pre-paid amounts under the contract;
- our ability to timely develop, introduce and market new products and technologies;
- the timing and extent of our software license and subscription revenue, and other non-product revenue;
- new product announcements and introductions by us or our competitors;
- seasonality or other fluctuations in demand in our markets;
- timing and amount of research and development and related new product expenditures, and the timing of receipt of any research and development grant monies; and
- timing of any regulatory changes, particularly with respect to trade sanctions and customs duties and tariffs, and tax reform.

The foregoing factors are often difficult to predict, and these, as well as other factors, could materially adversely affect our quarterly or annual operating results. In addition, a significant amount of our operating expenses are relatively fixed in nature. Any failure to adjust spending quickly enough to compensate for a revenue shortfall could magnify the adverse impact of such revenue shortfall on our results of operations. As a result, we believe that quarter-to-quarter comparisons of our revenue and operating results may not be meaningful or a reliable indicator of our future performance. If our operating results in one or more future quarters fail to meet the expectations of securities analysts or investors, a significant decline in the trading price of our common stock may occur, which may happen immediately or over time.

Failure to adjust our manufacturing and supply chain to accurately meet customer demand could adversely affect our results of operations.

We make significant decisions, including determining the levels of business that we will seek and accept, production schedules, levels of reliance on contract manufacturing and outsourcing, internal fabrication utilization and other resource requirements, based on our estimates of customer requirements, which may not be accurate.

During the COVID-19 pandemic, we have moved largely to a build to order model and have extended customer lead times substantially in light of supply chain challenges. More typically, however, to ensure the availability of our semiconductor products we start manufacturing based on customer forecasts, which are not binding. As a result, we incur inventory and manufacturing costs in advance of anticipated sales that may be substantially lower than expected. If actual demand for our products is lower than forecast, we may also experience higher inventory carrying and operating costs and product obsolescence. Because certain of our sales, research and development, and internal manufacturing overhead expenses are relatively fixed, a reduction in customer demand may also decrease our gross margin and operating income.

Conversely, customers often require rapid increases in production on short notice. If we are unable to meet such increases in demand, this could damage our customer relationships, reduce revenue growth and margins, subject us to additional liabilities, harm our reputation, and prevent us from taking advantage of opportunities.

Winning business in the semiconductor solutions industry is subject to a lengthy process that often requires us to incur significant expense, from which we may ultimately generate no revenue.

Our semiconductor business is dependent on us winning competitive bid selection processes, known as "design wins". These selection processes are typically lengthy and can require us to dedicate significant development expenditures and scarce engineering resources in pursuit of a single customer opportunity. Failure to obtain a particular design win may prevent us from obtaining design wins in subsequent generations of a particular product. This can result in lost revenue and can weaken our position in future selection processes.

Winning a product design does not guarantee sales to a customer. A delay or cancellation of a customer's plans could materially and adversely affect our financial results, as we incur significant expense in the design process and may generate little or no revenue from it. In addition, the timing of design wins is unpredictable and implementing production for a major design win, or multiple design wins at the same time, may strain our resources and those of our CMs. In such event, we may be forced to dedicate significant additional resources and incur additional costs and expenses. Further, often customers will only purchase limited numbers of evaluation units until they qualify the products and/or the manufacturing line for those products. The qualification process can take significant time and resources. Delays in qualification or failure to qualify our products may cause a customer to discontinue use of our products and result in a significant loss of revenue. Finally, customers could choose at any time to stop using our products or could fail to successfully market and sell their products, which could reduce demand for our products, and cause us to hold excess inventory, materially adversely affecting our business, financial condition and results of operations. These risks are exacerbated by the fact that many of our products, and the end products into which our products are incorporated, often have very short life cycles.

Competition in our industries could prevent us from growing our revenue.

The industries in which we operate are highly competitive and characterized by rapid technological changes, evolving industry standards, changes in customer requirements, often aggressive pricing practices and, in some cases, new delivery methods. We expect competition in these industries to continue to increase as existing competitors improve or expand their product offerings or as new competitors enter our markets.

Some of our competitors have longer operating histories, greater name recognition, a larger installed customer base, larger technical staffs, more established relationships with vendors or suppliers, or greater manufacturing, distribution, financial, research and development, technical and marketing resources than us. We also face competition from numerous smaller companies that specialize in specific aspects of the highly fragmented software industry, open source authors who provide software and IP for free, competitors who offer their products through try-and-buy or freemium models, and customers who develop competing products.

In addition, the trend toward consolidation is changing the competitive landscape. We expect this trend to continue, which may result in combined competitors having greater resources than us. Some of our competitors may also receive financial and other support from their home country government or may have a greater presence in key markets, a larger customer base, a more comprehensive IP portfolio or better patent protection than us.

The actions of our competitors, in the areas of pricing and product bundling in particular, could have a substantial adverse impact on us. Further, competitors may leverage their superior market position, as well as IP or other proprietary information, including interface, interoperability or technical information, in new and emerging technologies and platforms that may inhibit our ability to compete effectively. If we are unable to compete successfully, we may lose market share for our products or incur significant reduction in our gross margins, either of which could have a material adverse effect on our business and results of operations.

A prolonged disruption of our manufacturing facilities, research and development facilities, warehouses or other significant operations, or those of our suppliers, could have a material adverse effect on our business, financial condition and results of operations.

Although we operate a primarily outsourced manufacturing business model, we also rely on our own manufacturing facilities, in particular in Fort Collins, Colorado, Singapore, and Breinigsville, Pennsylvania. We use these internal fabrication facilities for products utilizing our innovative and proprietary processes. Our Fort Collins and Breinigsville facilities are the sole sources for the FBAR components used in many of our wireless devices and for the indium phosphide-based wafers used in our fibre optics products, respectively. Many of our facilities, and those of our CMs and suppliers, are located in California and the Pacific Rim region, which have above average seismic activity and severe weather activity. In addition, a significant majority of our research and development personnel are located the Czech Republic, India, Israel, Singapore and the U.S., with the expertise of the personnel at each such location tending to be focused on one or two specific areas, and our primary warehouse is in Malaysia.

A prolonged disruption at or shut-down of one or more of our manufacturing facilities or warehouses, especially our Colorado, Singapore, Malaysia and Pennsylvania facilities, or those of our CMs or suppliers, due to natural- or man-made disasters or other events outside of our control, such as equipment malfunction or widespread outbreaks of acute illness, including COVID-19, or for any other reason, would limit our capacity to meet customer demands and delay new product development until a replacement facility and equipment, if necessary, were found. Any such event would likely disrupt our operations, delay production, shipments and revenue, result in us being unable to timely satisfy customer demand, expose us to claims by our customers, result in significant expense to repair or replace our affected facilities, and, in some instances, could significantly curtail our research and development efforts in a particular product area or target market. As a result, we could forgo revenue opportunities, potentially lose market share, damage our customer relationships and be subject to litigation and additional liabilities, all of which could materially and adversely affect our business. Although we purchase insurance to mitigate certain losses, such insurance often carries a high deductible amount and any uninsured losses could negatively affect our operating results. In addition, even if we were able to promptly resume production of our affected products, if our customers cannot timely resume their own manufacturing following such an event, they may cancel or scale back their orders from us and this may in turn adversely affect our results of operations. Such events could also result in increased fixed costs relative to the revenue we generate and adversely affect our results of operations.

We may be unable to maintain appropriate manufacturing capacity or product yields at our own manufacturing facilities, which could adversely affect our relationships with our customers, and our business, financial condition and results of operations.

We must maintain appropriate capacity and product yields at our own manufacturing facilities to meet anticipated customer demand. From time to time, this requires us to invest in expansion or improvements of those facilities, which often involves substantial cost and other risks. Such expanded manufacturing capacity may still be insufficient, or may not come online soon enough, to meet customer demand and we may have to put customers on product allocation, forgo sales or lose customers as a result. Conversely, if we overestimate customer demand, we would experience excess capacity and fixed costs at these facilities will not be fully absorbed, all of which could adversely affect our results of operations. Similarly, reduced product yields, due to design or manufacturing issues or otherwise, may involve significant time and cost to remedy and cause delays in our ability to supply product to our customers, all of which could cause us to forgo sales, incur liabilities or lose customers, and harm our results of operations.

In addition, current and future government restrictions imposed as a result of the COVID-19 pandemic that limit our manufacturing capabilities could severely impact our ability to manufacture our proprietary products, adversely affecting our wireless business.

Any failure of our IT systems or one or more of our corporate infrastructure vendors to provide necessary services could have a material adverse effect on our business.

Our business depends on various IT systems and outsourced IT services. We rely on third-party vendors to provide critical corporate infrastructure services and to adequately address cyber security threats to their own systems. Services provided by these third parties include services related to financial reporting, product orders and shipping, human resources, benefit plan administration, IT network development and network monitoring. While we may be entitled to damages if our vendors fail to perform under their agreements with us, any award may be insufficient to cover the actual costs incurred by us and, as a result of a vendor’s failure to perform, we may be unable to collect any damages.

Any failure of these internal or third-party systems and services to operate effectively could disrupt our operations and could have a material adverse effect on our business, financial condition and results of operations.

Our gross margin is dependent on a number of factors, including our product mix, price erosion, acquisitions we may make, level of capacity utilization and commodity prices.

Our gross margin is highly dependent on product mix, which is susceptible to seasonal and other fluctuations in our markets. A shift in sales mix away from our higher margin products, as well as the timing and amount of our software licensing and non-product revenue, could adversely affect our future gross margin percentages. In addition, increased competition and the existence of product alternatives, more complex engineering requirements, lower demand or reductions in our technological lead compared to our competitors, and other factors have in the past and may in the future lead to further price erosion, lower revenue and lower margin. Conversely, periods of robust demand that create a supply imbalance, as we have seen recently, can lead to higher gross margins that may not be sustainable over the longer-term.

In addition, semiconductor manufacturing requires significant capital investment, leading to high fixed costs, including depreciation expense. If we are unable to utilize our owned manufacturing facilities at a high level, the fixed costs associated with these facilities will not be fully absorbed, resulting in higher average unit costs and a lower gross margin. Furthermore, we do not hedge our exposure to commodity prices, some of which are very volatile, and sudden or prolonged increases in commodities prices may adversely affect our gross margin.

Our gross margin may also be adversely affected if businesses or companies that we acquire have different gross margin profiles and by expenses related to such acquisitions.

We utilize a significant amount of IP in our business. If we are unable or fail to protect our IP, our business could be adversely affected.

Our success depends in part upon protecting our IP. To accomplish this, we rely on a combination of IP rights, including patents, copyrights, trademarks and trade secrets, as well as customary contractual protections with our customers, suppliers, employees and consultants. We spend significant resources to monitor and protect our IP rights, including the unauthorized use of our products, usage rates of the software seat licenses and subscriptions that we sell, and even with significant expenditures, we may not be able to protect the IP rights that are valuable to our business. We are unable to predict or assure that:

- our IP rights will not lapse or be invalidated, circumvented, challenged, or, in the case of third-party IP rights licensed to us, be licensed to others;
- our IP rights will provide competitive advantages to us;
- rights previously granted by third parties to IP licensed or assigned to us, including portfolio cross-licenses, will not hamper our ability to assert our IP rights or hinder the settlement of currently pending or future disputes;
- any of our pending or future patent, trademark or copyright applications will be issued or have the coverage originally sought;
- our IP rights will be enforced in certain jurisdictions where competition is intense or where legal protection may be weak; or
- we have sufficient IP rights to protect our products or our business.

Effective IP protection may be unavailable or more limited in other jurisdictions, relative to those protections available in the U.S., and may not be applied for or may be abandoned in one or more relevant jurisdictions. In addition, when patents expire, we lose the protection and competitive advantages they provided to us.

We also generate revenue from licensing royalty payments and from technology claim settlements relating to certain of our IP. Licensing of our IP rights, particularly exclusive licenses, may limit our ability to assert those IP rights against third parties, including the licensee of those rights. In addition, we may acquire companies with IP that is subject to licensing obligations to other third parties. These licensing obligations may extend to our own IP following any such acquisition and may limit our ability to assert our IP rights. From time to time, we pursue litigation to assert our IP rights, including, in some cases, against our customers and suppliers. Claims of this sort could also harm our relationships with our customers and might deter future customers from doing business with us. Conversely, third parties have and may in the future pursue IP litigation against us, including as a result of our IP licensing business. An adverse decision in such types of legal action could limit our ability to assert our IP rights and limit the value of our technology, including the loss of opportunities to sell or license our technology to others or to collect royalty payments, which could otherwise negatively impact our business, financial condition and results of operations.

From time to time, we may need to obtain additional IP licenses or renew existing license agreements. We are unable to predict whether these license agreements can be obtained or renewed on acceptable terms or at all.

If our software products do not remain compatible with ever-changing operating environments, platforms, or third-party products, demand for our products and services could decrease, which could materially adversely affect our business.

We may be required to make substantial modification of our products to maintain compatibility with operating systems, systems software and computer hardware used by our customers or to provide our customers with desired features or capabilities. We must also continually address the challenges of dynamic and accelerating market trends and competitive developments, such as the emergence of advanced persistent threats in the security space to compete effectively. There can be no assurance that we will be able to adapt our products in response to these developments.

Further, our software solutions interact with a variety of software and hardware developed by third parties. If we lose access to third-party code and specifications for the development of code, this could negatively impact our ability to develop compatible software. In addition, if software providers and hardware manufacturers, including some of our largest vendors, adopt new policies restricting the use or availability of their code or technical documentation for their operating systems, applications, or hardware, or otherwise impose unfavorable terms and conditions for such access, this could result in higher research and development costs for the enhancement and modification of our existing products or development of new products. Any additional restrictions could materially adversely affect our business, financial condition and operating results and cash flow.

Failure to enter into software license agreements on a satisfactory basis could materially adversely affect our business.

Many of our existing customers have multi-year enterprise software license agreements, some of which involve substantial aggregate fee amounts. Customer renewal rates may decline or fluctuate as a result of a number of factors, including the level of customer satisfaction with our solutions or customer support, customer budgets and the pricing of our solutions as compared with the solutions offered by our competitors, any of which may cause our revenue to grow more slowly than expected, if at all. The failure to renew customer agreements of similar scope, on terms that are commercially attractive to us, could materially adversely affect our business, financial condition and operating results and cash flow.

Certain software that we use in our products is licensed from third parties and may not be available to us in the future, which may delay product development and production or cause us to incur additional expense.

Some of our solutions contain software licensed from third parties, some of which may not be available to us in the future on terms that are acceptable to us or allow our products to remain competitive. The loss of these licenses or the inability to maintain any of them on commercially acceptable terms could delay development of future products or the enhancement of existing products.

Certain software we use is from open source code sources, which, under certain circumstances could materially adversely affect our business, financial condition, operating results and cash flow.

Some of our products contain software from open source code sources, the use of which may subject us to certain conditions, including the obligation to offer such products for no cost or to make the proprietary source code of those products publicly available. Further, although some open source vendors provide warranty and support agreements, it is common for such software to be available "as-is" with no warranty, indemnity or support. Although we monitor our use of such open source code to avoid subjecting our products to unintended conditions, such use, under certain circumstances, could materially adversely affect our business, financial condition and operating results and cash flow, including if we are required to take remedial action that may divert resources away from our development efforts.

We are subject to warranty claims, product recalls and product liability.

From time to time, we may be subject to warranty or product liability claims that may lead to significant expense. Our customer contracts typically contain warranty and indemnification provisions, and in certain cases may also contain liquidated damages provisions, relating to product quality issues. The potential liabilities associated with such provisions are significant, and in some cases, including in agreements with some of our largest customers, are potentially unlimited. Any such liabilities may greatly exceed any revenue we receive from the relevant products. Costs, payments or damages incurred or paid by us in connection with warranty and product liability claims and product recalls could materially adversely affect our financial condition and results of operations. We may also be exposed to such claims as a result of any acquisition we may undertake in the future.

Product liability insurance is subject to significant deductibles and there is no guarantee that such insurance will be available or adequate to protect against all such claims, or we may elect to self-insure with respect to certain matters. For example, it is possible for one of our customers to recall a product containing one of our semiconductor devices. In such an event, we may incur significant costs and expenses, including among others, replacement costs, contract damage claims from our customers and reputational harm. Although we maintain reserves for reasonably estimable liabilities and purchase product liability insurance, our reserves may be inadequate to cover the uninsured portion of such claims. Conversely, in some cases, amounts we reserve may ultimately exceed our actual liability for particular claims and may need to be reversed.

The complexity of our products could result in unforeseen delays or expense or undetected defects or bugs, which could adversely affect the market acceptance of new products, damage our reputation with current or prospective customers, and materially and adversely affect our operating costs.

Highly complex products, such as those we offer, may contain defects and bugs when they are first introduced or as new versions, software documentation or enhancements are released, or their release may be delayed due to unforeseen difficulties during product development. If any of our products or third-party components used in our products, contain defects or bugs, or have reliability, quality or compatibility problems, we may not be able to successfully design workarounds. Furthermore, if any of these problems are not discovered until after we have commenced commercial production or deployment of a new product, we may be required to incur additional development costs and product recall, repair or replacement costs. Significant technical challenges also arise with our software products because our customers license and deploy our products across a variety of computer platforms and integrate them with a number of third-party software applications and databases. As a result, if there is system-wide failure or an actual or perceived breach of information integrity, security or availability occurs in one of our end-user customer's system, it can be difficult to determine which product is at fault and we could ultimately be harmed by the failure of another supplier's product. Consequently, our reputation may be damaged and customers may be reluctant to buy our products, which could materially and adversely affect our ability to retain existing customers and attract new customers. To resolve these problems, we may have to invest significant capital and other resources and we would likely lose, or experience a delay in, market acceptance of the affected product or products. These problems may also result in claims against us by our customers or others. For example, if a delay in the manufacture and delivery of our products causes the delay of a customer's end-product delivery, we may be required, under the terms of our agreement with that customer, to compensate the customer for the adverse effects of such delays. As a result, our financial results could be materially adversely affected.

We make substantial investments in research and development and unsuccessful investments could materially adversely affect our business, financial condition and results of operations.

The industries in which we compete are characterized by rapid technological change, changes in customer requirements, frequent new product introductions and enhancements, short product cycles and evolving industry standards, and new delivery methods. In addition, semiconductor products transition over time to increasingly smaller line width geometries and failure to successfully transition to smaller geometry process technologies could impair our competitive position. In order to remain competitive, we have made, and expect to continue to make, significant investments in research and development. If we fail to develop new and enhanced products and technologies, if we focus on technologies that do not become widely adopted, or if new competitive technologies that we do not support become widely accepted, demand for our products may be reduced. Increased investments in research and development or unsuccessful research and development efforts could cause our cost structure to fall out of alignment with demand for our products, which would have a negative impact on our financial results.

We collect, use, store, or otherwise process personal information, which subjects us to privacy and data security laws and contractual commitments, and our actual or perceived failure to comply with such laws and commitments could harm our business.

We collect, use and store (collectively, “process”) a high volume, variety and velocity of certain personal information in connection with the operation of our business. This creates various levels of privacy risks across different parts of our business, depending on the type of personal information, the jurisdiction in question and the purpose of their processing. The personal information we process is subject to an increasing number of federal, state, local, and foreign laws and regulations regarding privacy and data security, as well as contractual commitments. Privacy legislation and other data protection regulations, enforcement and policy activity in this area are expanding rapidly in many jurisdictions and creating a complex regulatory compliance environment. Sectoral legislation, certification requirements and technical standards applying to certain categories of our customers, such as those is the financial services or public sector, are likely to further exacerbate this trend. The cost of complying with and implementing these privacy-related and data governance measures could be significant as they may create additional burdensome security, business process, business record or data localization requirements. Concerns about government interference, sovereignty, expanding privacy, cyber security and data governance legislation could adversely affect our customers and our products and services, particularly in cloud computing, artificial intelligence and our own data management practices. The theft, loss or misuse of personal data collected, used, stored or transferred by us to run our business could result in significantly increased business and security costs or costs related to defending legal claims. Any inadvertent failure or perceived failure by us to comply with privacy, data governance or cyber security obligations may result in governmental enforcement actions, litigation, substantial fines and damages, and could cause our customers to lose trust in us, which could have an adverse effect on our reputation and business.

We are subject to environmental, health and safety laws, which could increase our costs, restrict our operations and require expenditures that could have a material adverse effect on our results of operations and financial condition.

We are subject to a variety of international laws and regulations relating to the use, disposal, clean-up of and human exposure to hazardous materials. Compliance with environmental, health and safety requirements could, among other things, require us to modify our manufacturing processes, restrict our ability to expand our facilities, or require us to acquire pollution control equipment, all of which can be very costly. Any failure by us to comply with such requirements could result in the limitation or suspension of the manufacture of our products and could result in litigation against us and the payment of significant fines and damages by us in the event of a significant adverse judgment. In addition, complying with any cleanup or remediation obligations for which we are or become responsible could be costly and have a material adverse effect on our business, financial condition and results of operations.

Changing requirements relating to the materials composition of our semiconductor products, including the restrictions on lead and certain other substances in electronic products sold in various countries, including the U.S., China and Japan, and in the European Union, increase the complexity and costs of our product design and procurement operations and may require us to re-engineer our products. Such re-engineering may result in excess inventory or other additional costs and could have a material adverse effect on our results of operations. We may also experience claims from employees from time to time with regard to exposure to hazardous materials or other workplace related environmental claims.

Social and environmental responsibility regulations, policies and provisions, as well as customer and investor demands, may make our supply chain more complex and may adversely affect our relationships with customers and investors.

There is an increasing focus on corporate social and environmental responsibility in the semiconductor industry, particularly with OEMs that manufacture consumer electronics. A number of our customers have adopted, or may adopt, procurement policies that include social and environmental responsibility provisions or requirements that their suppliers should comply with, or they may seek to include such provisions or requirements in their procurement terms and conditions.

An increasing number of investors are also requiring companies to disclose corporate social and environmental policies, practices and metrics. In addition, various jurisdictions are developing climate change-based laws or regulations that could cause us to incur additional direct costs for compliance, as well as indirect costs resulting from our customers, suppliers, or both incurring additional compliance costs that are passed on to us. These legal and regulatory requirements, as well as investor expectations, on corporate environmental and social responsibility practices and disclosure, are subject to change, can be unpredictable, and may be difficult and expensive for us to comply with, given the complexity of our supply chain and our significant outsourced manufacturing. If we are unable to comply, or are unable to cause our suppliers or CMs to comply, with such policies or provisions or meet the requirements of our customers and investors, a customer may stop purchasing products from us or an investor may sell their shares, and may take legal action against us, which could harm our reputation, revenue and results of operations.

In addition, as part of their corporate social and environmental responsibility programs, an increasing number of OEMs are seeking to source products that do not contain minerals sourced from areas where proceeds from the sale of such minerals are likely to be used to fund armed conflicts, such as in the Democratic Republic of Congo. This could adversely affect the sourcing, availability and pricing of minerals used in the manufacture of semiconductor devices, including our products. As a result, we may face difficulties in satisfying these customers' demands, which may harm our sales and operating results.

The average selling prices of semiconductor products in our markets have often decreased rapidly and may do so in the future, which could harm our revenue and gross profit.

The semiconductor products we develop and sell are used for high volume applications. As a result, the prices of those products have often decreased rapidly. Gross profit on our products may be negatively affected by, among other things, pricing pressures from our customers. In the past, we have reduced the average selling prices of our products in anticipation of future competitive pricing pressures, new product introductions by us or our competitors and other factors. In addition, some of our customer agreements provide for volume-based pricing and product pricing roadmaps, which can also reduce the average selling prices of our products over time. Our margins and financial results will suffer if we are unable to offset any reductions in our average selling prices by increasing our sales volumes, reducing manufacturing costs, or developing new and higher value-added products on a timely basis.

A breach of our security systems may have a material adverse effect on our business.

Our security systems are designed to protect and secure our facilities and our customers', suppliers' and employees' confidential information, as well as our own proprietary information. However, we are also dependent on a number of third-party cloud-based and other service providers of critical corporate infrastructure services relating to, among other things, human resources, electronic communication services and certain finance functions, and we are, out of necessity, dependent on the security systems of these providers. In addition, all software, including the security technologies produced by us have had occasionally in the past and may have in the future, vulnerabilities that, if left unmanaged could reduce the overall level of security.

Accidental or willful security breaches or other unauthorized access of our facilities, our information systems or the systems of our service providers, or the existence of computer viruses or malware (such as ransomware) in our or their data or software could expose us to a risk of information loss, business disruption, and misappropriation of proprietary and confidential information, including information relating to our products or customers and the personal information of our employees. We have, from time to time, been subject to or there have been attempts of unauthorized network intrusions and malware on our own IT networks. As a result of the COVID-19 pandemic, remote access to our networks and systems has increased substantially. While we have taken steps to secure our networks and systems, we may be more vulnerable to a successful cyber-attack or information security incident when our workforce works remotely.

Certain aspects of our software products are intended to manage and secure IT infrastructures and environments, and as a result, we expect these products to be ongoing targets of cyber security attacks. Open source code or other third-party software used in these products could also be targeted. Additionally, we use third-party data centers, which may also be subject to hacking or accidental incidents. Although we continually seek to improve our countermeasures to prevent such incidents, we may be unable to anticipate every scenario and it is possible that certain cyber threats or vulnerabilities will be undetected or unmitigated in time to prevent an attack or an accidental incident on us and our customers. Cyber security attacks could require significant expenditures of our capital and diversion of our resources. Additionally, efforts by malicious cyber actors or others could cause interruptions, delays or cessation of our product licensing, or modification of our software, which could cause us to lose existing or potential customers. A successful cyber security attack involving our products and IT infrastructure could also negatively impact the market perception of their effectiveness and adversely affect our reputation, relationship with our customers and our financial results.

Any theft, accidental loss or misuse of confidential, personally identifiable or proprietary information could disrupt our business and result in, among other things, unfavorable publicity, damage to our reputation, loss of our trade secrets and other competitive information, difficulty in marketing our products, allegations by our customers that we have not performed our contractual obligations, litigation by affected parties and possible financial obligations for liabilities and damages related to the theft or misuse of such information, as well as fines and other sanctions resulting from any related breaches of data privacy regulations (such as the General Data Protection Regulation), any of which could have a material adverse effect on our business, profitability and financial condition. Interruptions in our operations and services or disruptions to the functionality provided by our software could adversely impact our revenues or cause customers to cease doing business with us. In addition, our business would be harmed if any of the events of this nature caused our customers and potential customers to believe our services are unreliable. Our operations are dependent upon our ability to protect our technology infrastructure against damage from business continuity events that could have a significant disruptive effect on our operations. Since the techniques used to obtain unauthorized access to systems or to otherwise sabotage them, change frequently and are often not recognized until launched against a target, we may be unable to anticipate these techniques or to implement adequate preventative measures.

Fluctuations in foreign exchange rates could result in losses.

We operate global businesses and our consolidated financial results are reported in U.S. dollars. However, some of the revenue and expenses of our foreign subsidiaries are denominated in local currencies. Fluctuations in foreign exchange rates against the U.S. dollar could result in substantial changes in reported revenues and operating results due to the foreign exchange impact of translating these transactions into U.S. dollars.

In the normal course of business, we employ various hedging strategies to partially mitigate these risks, including the use of derivative instruments. These strategies may not be effective in protecting us against the effects of fluctuations in foreign exchange rates. As a result, fluctuations in foreign exchange rates could result in financial losses.

Risks Related to Our Taxes

Changes in tax legislation or policies could materially impact our financial position and results of operations.

Corporate tax reform, anti-base-erosion rules and tax transparency continue to be high priorities in many jurisdictions. As a result, policies regarding corporate income and other taxes in numerous jurisdictions are under heightened scrutiny and tax reform legislation has been, and will likely continue to be, proposed or enacted in a number of jurisdictions in which we operate.

After enactment of the U.S. Tax Cuts and Jobs Act (the “2017 Tax Reform Act”), most of our income is taxable in the U.S. with a significant portion taxable under the Global Intangible Low-Taxed Income (“GILTI”) regime. Beginning in fiscal year 2027, the deduction allowable under the GILTI regime will decrease from 50% to 37.5%, which will increase the effective tax rate imposed on our income. If the U.S. tax rate increases or the deduction allowable under the GILTI regime is further reduced or eliminated, or additional limitations are put on our ability to deduct interest expense, our provision for income taxes, net income, and cash flows would be adversely impacted.

In addition, many countries are implementing legislation and other guidance to align their international tax rules with the Organisation for Economic Co-operation and Development’s (“OECD”) Base Erosion and Profit Shifting recommendations and action plan that aim to standardize and modernize global corporate tax policy, including changes to cross-border tax, transfer pricing documentation rules, and nexus-based tax incentive practices. The OECD is also continuing discussions surrounding fundamental changes in allocation of profits among tax jurisdictions in which companies do business, as well as the implementation of a global minimum tax (namely the “Pillar One” and “Pillar Two” proposals). As a result of this heightened scrutiny, prior decisions by tax authorities regarding treatments and positions of corporate income taxes could be subject to enforcement activities, and legislative investigation and inquiry, which could also result in changes in tax policies or prior tax rulings. Any such changes may also result in the taxes we previously paid being subject to change. Further, many jurisdictions have passed, and may pass additional legislation, intended to alleviate the economic burdens of COVID-19 and to fund economic recovery and growth, including various temporary tax incentives or relief and restricted tax measures, which could result in future tax increases. We cannot predict the extent to which the COVID-19 pandemic will impact our tax liabilities and are continuing to evaluate the impact of the new legislation to our financial statements.

Any substantial changes in domestic or international corporate tax policies, regulations or guidance, enforcement activities or legislative initiatives may materially adversely affect our business, the amount of taxes we are required to pay and our financial condition and results of operations generally.

If the tax incentives or tax holiday arrangements we have negotiated change or cease to be in effect or applicable for any reason, or if our assumptions and interpretations regarding tax laws and incentives or holiday arrangements prove to be incorrect, our corporate income taxes could significantly increase.

Our operations are currently structured to benefit from the various tax incentives extended to us in various jurisdictions to encourage investment or employment. For example, absent our principal tax incentives from the Singapore Economic Development Board, which is scheduled to expire in 2025, the corporate income tax rate that would apply to our Singapore taxable income would be 17%. We also have a tax holiday on our qualifying income in Malaysia, which is scheduled to expire in fiscal year 2028. Each tax incentive and tax holiday is subject to our compliance with various operating and other conditions and may, in some instances, be amended or terminated prior to their scheduled termination date by the relevant governmental authority. If we cannot, or elect not to, comply with the operating conditions included in any particular tax incentive or tax holiday, we could, in some instances, be required to refund previously realized material tax benefits, or if such tax incentive or tax holiday is terminated prior to its expiration absent a new incentive applying, we will lose the related tax benefits earlier than scheduled. In addition, we may be required, or elect, to modify our operational structure and tax strategy in order to keep an incentive, which could result in a decrease in the benefits of the incentive. Our tax incentives and tax holiday, before taking into consideration U.S. foreign tax credits, decreased the provision for income taxes by approximately $1,156 million in the aggregate and increased diluted net income per share by $2.69 for fiscal year 2021.

Our interpretations and conclusions regarding the tax incentives are not binding on any taxing authority, and if our assumptions about tax and other laws are incorrect or if these tax incentives are substantially modified or rescinded, we could suffer material adverse tax and other financial consequences, which would increase our expenses, reduce our profitability and adversely affect our cash flows.

Our income taxes and overall cash tax costs are affected by a number of factors that could materially, adversely affect financial results.

Significant judgment is required in determining our worldwide income taxes. In the ordinary course of our business, there are many transactions where the ultimate tax determination is uncertain. Additionally, our calculations of income taxes payable currently and on a deferred basis are based on our interpretations of applicable tax laws in the jurisdictions in which we are required to file tax returns. Although we believe our tax estimates are reasonable, there is no assurance that the final determination of our income tax liability will not be materially different than what is reflected in our income tax provisions and accruals.

Our income taxes are subject to volatility and could be adversely affected by numerous factors including:

- reorganization or restructuring of our businesses, tangible and intangible assets, outstanding indebtedness and corporate structure;
- jurisdictional mix of our income and assets;
- changes in the allocation of income and expenses, including adjustments related to changes in our corporate structure, acquisitions or tax law;
- changes in U.S and foreign tax laws and regulations, changes to the taxation of earnings of foreign subsidiaries, taxation of U.S. income generated from foreign sources, the deductibility of expenses attributable to income and foreign tax credit rules;
- tax effects of increases in non-deductible employee compensation; and
- changes in tax accounting rules or principles and in the valuation of deferred tax assets and liabilities.

We have adopted transfer pricing policies that call for the provision of services, the sale of products, the arrangement of financing and the grant of licenses from one affiliate to another at prices that we believe are negotiated on an arm’s length basis. Our taxable income is dependent upon acceptance by local authorities that our operational practices and intercompany transfer pricing are on an arm’s length basis. Due to inconsistencies in application of the arm’s length standard among taxing authorities, as well as lack of comprehensive treaty-based protection, transfer pricing challenges by tax authorities could, if successful, result in adjustments for prior or future years. The effects of any such changes could subject us to higher taxes and our earnings, results of operations and cash flow would be adversely affected.

In addition, we are subject to, and are under, tax audit in various jurisdictions, and such jurisdictions may assess additional income tax against us. Although we believe our tax positions are reasonable, the final determination of tax audits could be materially different from our income tax provisions and accruals. The ultimate result of an audit could have a material adverse effect on our results of operations and cash flows in the period or periods for which that determination is made.

Risks Related to Our Indebtedness

Our substantial indebtedness could adversely affect our financial health and our ability to execute our business strategy.

As of October 31, 2021, the aggregate indebtedness under our senior notes was $41,499 million. We expect to maintain significant levels of indebtedness going forward.

Our substantial indebtedness could have important consequences including:

- increasing our vulnerability to adverse general economic and industry conditions;
- exposing us to interest rate risk due to our variable rate term facilities, which we do not typically hedge against;
- limiting our flexibility in planning for, or reacting to, changes in the economy and the semiconductor industry;
- placing us at a competitive disadvantage compared to our competitors with less indebtedness;
- making it more difficult to borrow additional funds in the future to fund growth, acquisitions, working capital, capital expenditures and other purposes; and
- potentially requiring us to dedicate a substantial portion of our cash flow from operations to payments on our indebtedness, thereby reducing the availability of our cash flow to fund our other business needs.

We receive debt ratings from the major credit rating agencies in the U.S. Factors that may impact our credit ratings include debt levels, planned asset purchases or sales and near-term and long-term production growth opportunities. Liquidity, asset quality, cost structure, reserve mix and commodity pricing levels could also be considered by the rating agencies. While we are focused on maintaining investment grade ratings from these agencies, we may be unable to do so. Any downgrade in our credit rating or the ratings of our indebtedness, or adverse conditions in the debt capital markets, could:

- adversely affect the trading price of, or market for, our debt securities;
- increase interest expense under our term facilities;
- increase the cost of, and adversely affect our ability to refinance, our existing debt; and
- adversely affect our ability to raise additional debt.

The instruments governing our indebtedness impose certain restrictions on our business.

The instruments governing our indebtedness contain certain covenants imposing restrictions on our business. These restrictions may affect our ability to operate our business, to plan for, or react to, changes in the market conditions or our capital needs and may limit our ability to take advantage of potential business opportunities as they arise. The restrictions placed on us include maintenance of an interest coverage ratio and limitations on our ability to incur certain secured debt, enter into certain sale and lease-back transactions and consolidate, merge, sell or otherwise dispose of all or substantially all of our assets. In addition, the instruments contain customary events of default upon the occurrence of which, after any applicable grace period, the indebtedness could be declared immediately due and payable. In such event, we may not have sufficient available cash to repay such debt at the time it becomes due, or be able to refinance such debt on acceptable terms or at all. Any of the foregoing could materially adversely affect our business, financial condition and results of operations.

Servicing our debt requires a significant amount of cash, and we may not have sufficient cash flow from our business to pay our substantial debt.

Our ability to make scheduled payments of the principal of, to pay interest on, and to refinance our debt, depends on our future performance, which is subject to economic, financial, competitive and other factors. Our business may not continue to generate cash flow from operations in the future sufficient to satisfy our obligations under our current indebtedness and any future indebtedness we may incur and to make necessary capital expenditures. If we are unable to generate such cash flow, we may be required to adopt one or more alternatives, such as reducing or delaying investments or capital expenditures, selling assets, refinancing or obtaining additional equity capital on terms that may be onerous or highly dilutive. Our ability to refinance our outstanding indebtedness or future indebtedness will depend on the capital markets and our financial condition at such time. We may not be able to engage in any of these activities or engage in these activities on desirable terms when needed, which could result in a default on our indebtedness.

Risks Related to Owning Our Common Stock

At times, our stock price has been volatile and it may fluctuate substantially in the future, which could result in substantial losses for our investors as well as class action litigation against us and our management which could cause us to incur substantial costs and divert our management's attention and resources.

The trading price of our common stock has, at times, fluctuated significantly and could be subject to wide fluctuations in response to any of the risk factors listed in this "Risk Factors" section, and others, including:

- issuance of new or updated research or other reports by securities analysts;
- fluctuations in the valuation and results of operations of our significant customers as well as companies perceived by investors to be comparable to us;
- announcements of proposed acquisitions by us or our competitors;
- announcements of, or expectations of, additional debt or equity financing transactions;
- stock price and volume fluctuations attributable to inconsistent trading volume levels of our common stock;
- issuance, and subsequent sale, of common stock upon conversion of our 8.00% Mandatory Convertible Preferred Stock, Series A ("Mandatory Convertible Preferred Stock");
- hedging or arbitrage trading activity involving our Mandatory Convertible Preferred Stock or common stock; and
- unsubstantiated news reports or other inaccurate publicity regarding us or our business.

These fluctuations are often unrelated or disproportionate to our operating performance. Broad market and industry fluctuations, as well as general economic, political and market conditions such as recessions, interest rate changes or currency fluctuations, may negatively impact the market price of our common stock. You may not realize any return on your investment in us and may lose some or all of your investment. In the past, companies that have experienced volatility in the market price of their stock have been subject to securities class action litigation. We may be the target of this type of litigation in the future. We are also the subject of a number of lawsuits stemming from our acquisitions. Securities litigation against us, including the lawsuits related to such transactions, could result in substantial costs and divert our management's attention from other business concerns, which could seriously harm our business.

The amount and frequency of our stock repurchases may fluctuate.

The amount, timing and execution of our stock repurchase program may fluctuate based on our priorities for the use of cash for other purposes. These purposes include operational spending, capital spending, acquisitions, repayment of debt and returning cash to our stockholders as dividend payments. Changes in cash flows, tax laws and our stock price could also impact our stock repurchase program. We are not obligated to repurchase any specific amount of shares of common stock, and the stock repurchase program may be suspended or terminated at any time.

A substantial amount of our stock is held by a small number of large investors and significant sales of our common stock by one or more of these holders could cause our stock price to fall.

As of September 30, 2021, we believe 10 of our 20 largest holders of common stock were active institutional investors who held approximately 31% of our outstanding shares of common stock in the aggregate, with Capital World Investors being our largest stockholder with approximately 9% of our outstanding shares of common stock. These investors may sell their shares at any time for a variety of reasons and such sales could depress the market price of our common stock. In addition, any such sales of our common stock by these entities could also impair our ability to raise capital through the sale of additional equity securities.

There can be no assurance that we will continue to declare cash dividends.

Our Board of Directors has adopted a dividend policy pursuant to which we currently pay a cash dividend on our common stock on a quarterly basis. The declaration and payment of any dividend is subject to the approval of our Board of Directors and our dividend may be discontinued or reduced at any time. Because we are a holding company, our ability to pay cash dividends is also limited by restrictions or limitations on our ability to obtain sufficient funds through dividends from subsidiaries. In addition, any payment of dividends on our common stock is subject to and conditioned upon our payment of quarterly dividends on our Mandatory Convertible Preferred Stock. There can be no assurance that we will declare cash dividends in the future in any particular amounts, or at all.

ITEM 1B. UNRESOLVED STAFF COMMENTS

None.

ITEM 2. PROPERTIES

We are headquartered in San Jose, California and our primary warehouse is located in Malaysia. We conduct our administration, manufacturing, research and development, sales and marketing in both owned and leased facilities. We believe that our owned and leased facilities are adequate for our present operations. We do not identify or allocate assets by operating segment.

As of October 31, 2021, our owned and leased facilities in excess of 100,000 square feet consisted of:

(In square feet)	United States	Other Countries	Total
Owned facilities [1]	2,477,165	928,888	3,406,053
Leased facilities [2]	901,198	1,309,369	2,210,567
Total facilities	3,378,363	2,238,257	5,616,620

[1] Includes 318,000 square feet and 153,000 square feet of property owned in Malaysia subject to a 60-year land lease with the state authority expiring in May 2051 and March 2077, respectively, subject to renewal at our option.

[2] Building leases expire on varying dates through February 2046 and generally include renewals at our option.

ITEM 3. LEGAL PROCEEDINGS

The information set forth under Note 14. “Commitments and Contingencies” included in Part II, Item 8. of this Annual Report on Form 10-K, is incorporated herein by reference. For an additional discussion of certain risks associated with legal proceedings, see “Risk Factors” above.

ITEM 4. MINE SAFETY DISCLOSURES

None.

PART II

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

Market Information

Broadcom common stock is listed on The Nasdaq Global Select Market under the symbol “AVGO”.

Holders

As of November 26, 2021, there were 971 holders of record of our common stock. A substantially greater number of stockholders are “street name” or beneficial holders, whose shares are held of record by banks, brokers and other financial institutions.

Issuer Purchases of Equity Securities

During the fiscal quarter ended October 31, 2021, we paid approximately $266 million in employee withholding taxes due upon the vesting of net settled equity awards. We withheld approximately 1 million shares of common stock from employees in connection with such net share settlement at an average price of $505.59 per share. These shares may be deemed to be “issuer purchases” of shares.

In December 2021, our Board of Directors authorized a stock repurchase program to repurchase up to $10 billion of our common stock from time to time on or prior to December 31, 2022. Repurchases under our stock repurchase program may be effected through a variety of methods, including open market or privately negotiated purchases. The timing and amount of shares repurchased will depend on the stock price, business and market conditions, corporate and regulatory requirements, alternative investment opportunities, acquisition opportunities and other factors. We are not obligated to repurchase any specific amount of shares of common stock, and the stock repurchase program may be suspended or terminated at any time.

Stock Performance Graph

The following graph shows a comparison of cumulative total return for our common stock, the Standard & Poor's 500 Stock Index (the “S&P 500 Index”) and the NASDAQ 100 Index for the five fiscal years ended October 31, 2021. The total return graph and table assume that $100 was invested on October 28, 2016 (the last trading day of our fiscal year 2016) in each of Broadcom Inc. common stock, the S&P 500 Index and the NASDAQ 100 Index and assume that all dividends are reinvested. Indexes are calculated on a month-end basis.

The comparisons in the graph below are based on historical data and are not indicative of, or intended to forecast, the possible future performance of our common stock.

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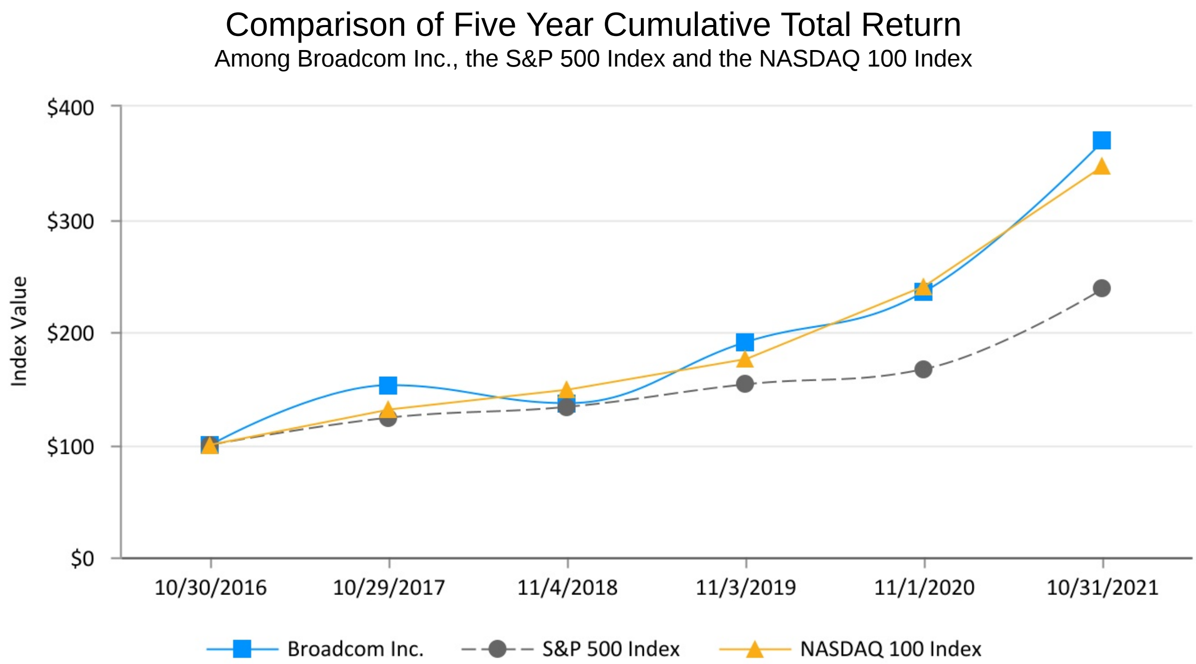

	October 30, 2016	October 29, 2017	November 4, 2018	November 3, 2019	November 1, 2020	October 31, 2021
Broadcom Inc.	$ 100.00	$ 152.15	$ 136.54	$ 190.64	$ 235.49	$ 369.32
S&P 500 Index	$ 100.00	$ 123.88	$ 133.27	$ 153.19	$ 166.44	$ 237.87
NASDAQ 100 Index	$ 100.00	$ 130.81	$ 148.20	$ 175.60	$ 240.06	$ 346.72

The graph and the table above shall not be deemed “filed” with the SEC for the purposes of Section 18 of the Exchange Act or otherwise subject to the liabilities of that section, nor shall it be deemed incorporated by reference in any filing made by us with the SEC, regardless of any general incorporation language in such filing.

ITEM 6. [RESERVED]

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

This Management's Discussion and Analysis of Financial Condition and Results of Operations should be read in conjunction with our consolidated financial statements and notes thereto, which appear elsewhere in this Annual Report on Form 10-K. This discussion may contain forward-looking statements based upon current expectations that involve risks and uncertainties. Our actual results may differ materially from those anticipated in these forward-looking statements as a result of various factors, including those set forth under the caption "Risk Factors" or in other parts of this Annual Report on Form 10-K.

The following section generally discusses our financial condition and results of operations for our fiscal year ended October 31, 2021 ("fiscal year 2021") compared to our fiscal year ended November 1, 2020 ("fiscal year 2020"). A discussion regarding our financial condition and results of operations for fiscal year 2020 compared to our fiscal year ended November 3, 2019 ("fiscal year 2019") can be found in Part II, Item 7 of our Annual Report on Form 10-K for fiscal year 2020, filed with the Securities and Exchange Commission (the "SEC") on December 18, 2020.

Overview

We are a global technology leader that designs, develops and supplies a broad range of semiconductor and infrastructure software solutions. We develop semiconductor devices with a focus on complex digital and mixed signal complementary metal oxide semiconductor based devices and analog III-V based products. We have a history of innovation in the semiconductor industry and offer thousands of products that are used in end products such as enterprise and data center networking, home connectivity, set-top boxes, broadband access, telecommunication equipment, smartphones and base stations, data center servers and storage systems, factory automation, power generation and alternative energy systems, and electronic displays. Our infrastructure software solutions enable customers to plan, develop, automate, manage and secure applications across mainframe, distributed, mobile and cloud platforms. Our portfolio of industry-leading infrastructure and security software is designed to modernize, optimize, and secure the most complex hybrid environments, enabling scalability, agility, automation, insights, resiliency and security. We also offer mission critical fibre channel storage area networking ("FC SAN") products and related software in the form of modules, switches and subsystems incorporating multiple semiconductor products.

We have two reportable segments: semiconductor solutions and infrastructure software, as a result of a change in our organizational structure during fiscal year 2020. Our semiconductor solutions segment includes all of our product lines and intellectual property ("IP") licensing. Our infrastructure software segment includes our mainframe, distributed and cyber security solutions, and our FC SAN business. During fiscal year 2020, we refined our allocation methodology for certain selling, general and administrative expenses to more closely align these costs with the segment benefiting from the shared expenses.

Our strategy is to combine best-of-breed technology leadership in semiconductor and infrastructure software solutions, with unmatched scale, on a common sales and administrative platform to deliver a comprehensive suite of infrastructure technology products to the world's leading business and government customers. We seek to achieve this through responsibly financed acquisitions of category-leading businesses and technologies, as well as investing extensively in research and development, to ensure our products retain their technology leadership. This strategy results in a robust business model designed to drive diversified and sustainable operating and financial results.

The demand for our products has been affected in the past, and is likely to continue to be affected in the future, by various factors, including the following:

- gain or loss of significant customers;
- general economic and market conditions in the industries and markets in which we compete;
- our distributors' product inventory and end customer demand;
- the rate at which our present and future customers and end-users adopt our products and technologies in our target markets, and the rate at which our customers' products that include our technology are accepted in their markets;
- the shift to cloud-based information technology solutions and services, such as hyperscale computing, which may adversely affect the timing and volume of sales of our products for use in traditional enterprise data centers; and
- the timing, rescheduling or cancellation of expected customer orders.

COVID-19 Update

In response to the ongoing COVID-19 pandemic and the various resulting government directives, we have taken extensive measures to protect the health and safety of our employees and contractors at our facilities. We modified our workplace practices globally, which resulted in some of our employees working remotely for an extended period of time and some of whom are still working remotely. While we have implemented personal safety measures at all of our facilities where our employees are working on site, we may need to modify our business practices and policies. We continue to monitor the implications of the COVID-19 pandemic on our business, as well as our customers' and suppliers' businesses.

The demand environment for our semiconductor products was consistent with our expectations for the fourth quarter of fiscal year 2021, with continued demand for products and infrastructure as customers invest in technologies to support remote or hybrid tele-work and learning arising from COVID-19, as well as the transition to office re-openings. While we continue to see robust demand in this area and record profitability driven by the supply imbalance, the macroeconomic environment remains uncertain and it may not be sustainable over the longer term. We continue to experience various constraints in our supply chain due to the pandemic, including with respect to wafers and substrates. While supply lead times have stabilized, we continue to have difficulties in obtaining some necessary components and inputs in a timely manner to meet increased demand. To date, the impact of COVID-19 on the demand environment for our software products has been limited.

We have also taken various actions to de-risk our business in light of the ongoing uncertainty and strengthen our balance sheet, including closely managing working capital and our debt instruments.

Overall, in light of the changing nature and continuing uncertainty around the COVID-19 pandemic, our ability to predict the impact of COVID-19 on our business in future periods remains limited. The effects of the pandemic on our business are unlikely to be fully realized, or reflected in our financial results, until future periods.

Fiscal Year Highlights

Highlights during fiscal year 2021 include the following:

- We generated $13,764 million of cash from operations.
- We paid $6,212 million in cash dividends.

Acquisitions and Divestitures

The discussion and analysis in this section and the accompanying consolidated financial statements include the results of operations of acquired companies commencing on their respective acquisition dates.

Acquisition of Symantec Corporation Enterprise Security Business

On November 4, 2019, we purchased and assumed certain assets and certain liabilities, respectively, of the Symantec Corporation Enterprise Security business (the "Symantec Business") for $10.7 billion in cash. We financed this acquisition with the net proceeds from the borrowings under the November 2019 Term Loans, as defined in Note 10. "Borrowings" included in Part II, Item 8 of this Annual Report on Form 10-K.

Acquisition of CA, Inc.

On November 5, 2018, we acquired CA, Inc. ("CA") for $18.8 billion in aggregate cash purchase consideration and assumed $2.25 billion of outstanding unsecured bonds. We financed the acquisition of CA with $18 billion of term loans, as well as cash on hand of the combined companies. We also assumed all eligible unvested CA equity awards in the transaction. On December 31, 2018, we sold Veracode, Inc., a subsidiary of CA and provider of application security testing solutions, to Thoma Bravo, LLC for cash consideration of $950 million, before working capital adjustments.

Net Revenue

A majority of our net revenue is derived from sales of a broad range of semiconductor devices that are incorporated into electronic products, as well as from modules, switches and subsystems. Net revenue is also generated from the sale of software solutions that enable our customers to plan, develop, automate, manage, and secure applications across mainframe, distributed, mobile, and cloud platforms.

Our overall net revenue, as well as the percentage of total net revenue generated by sales in our semiconductor solutions and infrastructure software segments, have varied from quarter to quarter, due largely to fluctuations in end-market demand, including the effects of seasonality, which are discussed in detail in Part I, Item 1. *Business* under "Seasonality" of this Annual Report on Form 10-K.

Original equipment manufacturers ("OEMs"), or their contract manufacturers, and distributors, typically account for the substantial majority of our semiconductor sales. To serve customers around the world, we have strategically developed relationships with large global electronic component distributors, complemented by a number of regional distributors with customer relationships based on their respective product ranges. We have established strong relationships with leading OEM customers across multiple target markets. Our direct sales force focuses on supporting our large OEM customers and has specialized product and service knowledge that enables us to sell specific offerings at key levels throughout a customer's organization. Certain customers require us to contract with them directly and with specified intermediaries, such as contract manufacturers. Many of our major customer relationships have been in place for many years and are often the result of years of collaborative product development. This has enabled us to build our extensive IP portfolio and develop critical expertise regarding our customers' requirements, including substantial system-level knowledge. This collaboration has provided us with key insights into our customers' businesses and has enabled us to be more efficient and productive and to better serve our target markets and customers. We recognize revenue upon the delivery of our products to the distributors, which can cause our quarterly net revenue to fluctuate significantly. Such revenue is reduced for estimated returns and distributor allowances.

Our software customers generally consist of large enterprises that have computing environments from multiple vendors and are highly complex. We believe our enterprise-wide license model will continue to offer our customers reduced complexity, more flexibility and an easier renewal process that will help drive revenue growth.

Costs and Expenses

Cost of products sold. Cost of products sold consists primarily of the costs for semiconductor wafers and other materials, as well as the costs of assembling and testing those products and materials. Such costs include personnel and overhead related to our manufacturing operations, which include stock-based compensation expense; related occupancy; computer services; equipment costs; manufacturing quality; order fulfillment; warranty adjustments; inventory adjustments, including write-downs for inventory obsolescence; and acquisition costs, which include direct transaction costs and acquisition-related costs.

Although we outsource a significant portion of our manufacturing activities, we do have some proprietary semiconductor fabrication facilities. If we are unable to utilize our owned fabrication facilities at a desired level, the fixed costs associated with these facilities will not be fully absorbed, resulting in higher average unit costs and lower gross margins.

Cost of subscriptions and services. Cost of subscriptions and services consists of personnel, project costs associated with professional services or support of our subscriptions and services revenue, and allocated facilities costs and other corporate expenses. Personnel costs include stock-based compensation expense.

Total cost of revenue also includes amortization of acquisition-related intangible assets and restructuring charges.

Research and development. Research and development expense consists primarily of personnel costs for our engineers engaged in the design and development of our products and technologies, including stock-based compensation expense. These expenses also include project material costs, third-party fees paid to consultants, prototype development expense, allocated facilities costs and other corporate expenses and computer services costs related to supporting computer tools used in the engineering and design process.

Selling, general and administrative. Selling expense consists primarily of compensation and associated costs for sales and marketing personnel, including stock-based compensation expense, sales commissions paid to our independent sales representatives, advertising costs, trade shows, corporate marketing, promotion, travel related to our sales and marketing operations, related occupancy and equipment costs, and other marketing costs. General and administrative expense consists primarily of compensation and associated costs for executive management, finance, human resources and other administrative personnel, including stock-based compensation expense, outside professional fees, allocated facilities costs, acquisition-related costs and other corporate expenses.

Amortization of acquisition-related intangible assets. In connection with our acquisitions, we recognize intangible assets that are being amortized over their estimated useful lives. We also recognize goodwill, which is not amortized, and in-process research and development ("IPR&D"), which is initially capitalized as an indefinite-lived intangible asset, in connection with the acquisitions. Upon completion of each underlying project, IPR&D assets are reclassified as amortizable purchased intangible assets and amortized over their estimated useful lives.

Restructuring, impairment and disposal charges. Restructuring, impairment and disposal charges consist primarily of compensation costs associated with employee exit programs, alignment of our global manufacturing operations, rationalizing product development program costs, facility and lease abandonments, fixed asset impairment, IPR&D impairment, and other exit costs, including curtailment of service or supply agreements.

Interest expense. Interest expense includes coupon interest, commitment fees, accretion of original issue discount, amortization of debt premiums and debt issuance costs, and expenses related to debt modifications or extinguishments.

Other income, net. Other income, net includes interest income, gains or losses on investments, foreign currency remeasurement, and other miscellaneous items.

Provision for (benefit from) income taxes. We have structured our operations to maximize the benefit from tax incentives extended to us in various jurisdictions to encourage investment or employment. Our tax incentives from the Singapore Economic Development Board provide that any qualifying income earned in Singapore is subject to tax incentives or reduced rates of Singapore income tax. Subject to our compliance with the conditions specified in these incentives and legislative developments, these Singapore tax incentives are presently expected to expire in November 2025. The corporate income tax rate in Singapore that would otherwise apply to us would be 17%. We also have a tax holiday on our qualifying income in Malaysia, which is scheduled to expire in fiscal year 2028.

Each tax incentive and tax holiday is also subject to our compliance with various operating and other conditions. If we cannot, or elect not to, comply with any such operating conditions specified, we could, in some instances, be required to refund previously realized material tax benefits, or if such tax incentive or tax holiday is terminated prior to its expiration absent a new incentive applying, we will lose the related tax benefits earlier than scheduled. We may elect to modify our operational structure and tax strategy, which may not be as beneficial to us as the benefits provided under the present tax concession arrangements. Before taking into consideration the effects of the U.S. Tax Cuts and Jobs Act and other indirect tax impacts, the effect of these tax incentives and tax holiday was to decrease the provision for income taxes by approximately $1,156 million for fiscal year 2021 and increase the benefit from income taxes by approximately $833 million for fiscal year 2020.

Our interpretations and conclusions regarding the tax incentives are not binding on any taxing authority, and if our assumptions about tax and other laws are incorrect or if these tax incentives are substantially modified or rescinded, we could suffer material adverse tax and other financial consequences, which would increase our expenses, reduce our profitability and adversely affect our cash flows. In addition, taxable income in any jurisdiction is dependent upon acceptance of our operational practices and intercompany transfer pricing by local tax authorities as being on an arm’s length basis. Due to inconsistencies in application of the arm’s length standard among taxing authorities, as well as lack of adequate treaty-based protection, transfer pricing challenges by tax authorities could, if successful, substantially increase our income tax expense.

Critical Accounting Estimates

The preparation of financial statements in accordance with generally accepted accounting principles in the United States (“GAAP”) requires us to make estimates and assumptions that affect the reported amounts of assets and liabilities and disclosure of contingent assets and liabilities at the date of the financial statements and the reported amounts of revenue and expenses during the reporting period. We base our estimates and assumptions on current facts, historical experience and various other factors that we believe to be reasonable under the circumstances, the results of which form the basis for making judgments about the carrying values of assets and liabilities and the accrual of costs and expenses that are not readily apparent from other sources. Our actual financial results may differ materially and adversely from our estimates. Our critical accounting policies are those that affect our historical financial statements materially and involve difficult, subjective or complex judgments by management. Those policies include revenue recognition, business combinations, valuation of goodwill and long-lived assets, inventory valuation, income taxes, retirement and post-retirement benefit plan assumptions, stock-based compensation and employee bonus programs. See Note 2. “Summary of Significant Accounting Policies” included in Part II, Item 8. of this Annual Report on Form 10-K for further information on our critical accounting policies and estimates.

Revenue recognition. We account for a contract with a customer when both parties have approved the contract and are committed to perform their respective obligations, each party’s rights can be identified, payment terms can be identified, the contract has commercial substance, and it is probable we will collect substantially all of the consideration we are entitled to. Revenue is recognized when, or as, performance obligations are satisfied by transferring control of a promised product or service to a customer. Our products and services can be broadly categorized as sales of products and subscriptions and services.

We recognize products revenue from sales to direct customers and distributors when control transfers to the customer. An allowance for distributor credits covering price adjustments is made based on our estimate of historical experience rates as well as considering economic conditions and contractual terms. To date, actual distributor claims activity has been materially consistent with the provisions we have made based on our historical estimates. However, because of the inherent nature of estimates, there is always a risk that there could be significant differences between actual amounts and our estimates. Different judgments or estimates could result in variances that might be significant to reported operating results. We also record reductions of revenue for rebates in the same period that the related revenue is recorded. We accrue 100% of potential rebates at the time of sale. We reverse the accrual of unclaimed rebate amounts as specific rebate programs contractually end and when we believe unclaimed rebates are no longer subject to payment and will not be paid. Thus, the reversal of unclaimed rebates may have a positive impact on our net revenue and net income in subsequent periods.

Our contracts may contain more than one of our products and services, each of which is separately accounted for as a distinct performance obligation. When available, we use directly observable transactions to determine the standalone selling prices for performance obligations. Our estimates of standalone selling price for each performance obligation require judgment that considers multiple factors, including, but not limited to, historical discounting trends for products and services and pricing practices through different sales channels, gross margin objectives, internal costs, competitor pricing strategies, technology lifecycles and market conditions.

We also estimate the standalone selling price of our material rights. Our estimate of the value of the customer's option to purchase or receive additional products or services at a discounted price includes estimating the incremental discount the customer would obtain when exercising the option and the likelihood that the option would be exercised.

Certain contracts contain a right of return that allows the customer to cancel all or a portion of the product or service and receive a credit. We estimate returns based on historical returns data which is constrained to an amount for which a material revenue reversal is not probable. We do not recognize revenue for products or services that are expected to be returned.

Business combinations. Accounting for business combinations requires management to make significant estimates and assumptions, especially at the acquisition date, for intangible assets, contractual obligations assumed, restructuring liabilities, pre-acquisition contingencies, and contingent consideration, where applicable. Although we believe the assumptions and estimates we have made in the past have been reasonable and appropriate, they are based, in part, on historical experience and information obtained from management of the acquired companies and are inherently uncertain. Critical estimates in valuing certain of the intangible assets we have acquired include, but are not limited to, future expected cash flows from product sales, customer contracts and acquired technologies, revenue growth rate, customer ramp-up period, technology obsolescence rates, expected costs to develop IPR&D into commercially viable products, estimated cash flows from the projects when completed, and discount rates. The discount rates used to discount expected future cash flows to present value are typically derived from a weighted-average cost of capital analysis and adjusted to reflect inherent risks. Unanticipated events and circumstances may occur that could affect either the accuracy or validity of such assumptions, estimates or actual results.

Valuation of goodwill and long-lived assets. We perform an annual impairment review of our goodwill during the fourth fiscal quarter of each year, and more frequently if we believe indicators of impairment exist. The process of evaluating the potential impairment of goodwill is highly subjective and requires significant judgment. To review for impairment, we first assess qualitative factors to determine whether events or circumstances lead to a determination that it is more likely than not that the fair value of any of our reporting units is less than its carrying amount. Our qualitative assessment of the recoverability of goodwill, whether performed annually or based on specific events or circumstances, considers various macroeconomic, industry-specific and company-specific factors. These factors include: (i) severe adverse industry or economic trends; (ii) significant company-specific actions, including exiting an activity in conjunction with restructuring of operations; (iii) current, historical or projected deterioration of our financial performance; or (iv) a sustained decrease in our market capitalization below our net book value. After assessing the totality of events and circumstances, if we determine that it is not more likely than not that the fair value of any of our reporting units is less than its carrying amount, no further assessment is performed. If we determine that it is more likely than not that the fair value of any of our reporting units is less than its carrying amount, we calculate the fair value of that reporting unit and compare the fair value to the reporting unit's net book value.

Determining the fair value of a reporting unit involves the use of significant estimates and assumptions. Our goodwill impairment test uses both the income approach and the market approach to estimate a reporting unit's fair value. The income approach is based on the discounted cash flow method that uses the reporting unit estimates for forecasted future financial performance including revenues, operating expenses, and taxes, as well as working capital and capital asset requirements. These estimates are developed as part of our long-term planning process based on assumed market segment growth rates and our assumed market segment share, estimated costs based on historical data and various internal estimates. Projected cash flows are then discounted to a present value employing a discount rate that properly accounts for the estimated market weighted-average cost of capital, as well as any risk unique to the subject cash flows. The market approach is based on weighting financial multiples of comparable companies and applies a control premium. A reporting unit's carrying value represents the assignment of various assets and liabilities, excluding certain corporate assets and liabilities, such as cash and debt.

We assess the impairment of long-lived assets including purchased IPR&D, property, plant and equipment, and intangible assets, whenever events or changes in circumstances indicate that the carrying value of such assets may not be recoverable. Factors we consider important which could trigger an impairment review include (i) significant under-performance relative to historical or projected future operating results, (ii) significant changes in the manner of our use of the acquired assets or the strategy for our overall business, or (iii) significant negative industry or economic trends. The process of evaluating the potential impairment of long-lived assets under the accounting guidance on property, plant and equipment and other intangible assets is also highly subjective and requires significant judgment. In order to estimate the fair value of long-lived assets, we typically make various assumptions about the future prospects of our business or the part of our business that the long-lived asset relates to. We also consider market factors specific to the business and estimate future cash flows to be generated by the business, which requires significant judgment as it is based on assumptions about market demand for our products over a number of future years. Based on these assumptions and estimates, we determine whether we need to take an impairment charge to reduce the value of the long-lived asset stated on our consolidated balance sheets to reflect its estimated fair value. Assumptions and estimates about future values and remaining useful lives are complex and often subjective. They can be affected by a variety of factors, including external factors, such as the real estate market, industry and economic trends, and internal factors, such as changes in our business strategy and our internal forecasts. Although we believe the assumptions and estimates we have made in the past have been reasonable and appropriate, changes in assumptions and estimates could materially impact our reported financial results.

Inventory valuation. We regularly review inventory quantities on hand and record a provision for excess and obsolete inventory based primarily on our forecast of product demand and production requirements. Demand for our products can fluctuate significantly from period to period. A significant decrease in demand could result in an increase in the amount of excess inventory quantities on hand. In addition, our industry is characterized by rapid technological change, frequent new product development and rapid product obsolescence that could result in an increase in the amount of obsolete inventory quantities on hand. Additionally, our estimates of future product demand may prove to be inaccurate, which may cause us to understate or overstate both the provision required for excess and obsolete inventory and cost of products sold. Therefore, although we make every effort to ensure the accuracy of our forecasts of future product demand, any significant unanticipated changes in demand or technological developments could have a significant impact on the value of our inventory and our results of operations.

Income taxes. Significant management judgment is required in developing our provision for or benefit from income taxes, including the determination of deferred tax assets and liabilities and any valuation allowances that might be required against the deferred tax assets. We have considered projected future taxable income and ongoing prudent and feasible tax planning strategies in assessing the need for valuation allowances. An adjustment to the valuation allowance will either increase or decrease our provision for or benefit from income taxes in the period such determination is made. In evaluating the exposure associated with various tax filing positions, we accrue an income tax liability when such positions do not meet the more likely than not threshold for recognition.

The calculation of our tax liabilities involves dealing with uncertainties in the application of complex tax law and regulations in a multitude of jurisdictions. We recognize potential liabilities for anticipated tax audit issues in the U.S. and other tax jurisdictions based on our estimate of whether, and the extent to which, additional taxes, interest, and penalties will be due. If our estimate of income tax liabilities proves to be less than the actual amount ultimately assessed, a further charge to tax expense would be required. If the payment of these amounts ultimately proves to be unnecessary, the reversal of the accrued liabilities would result in tax benefits being recognized in the period when we determine the liabilities no longer exist.

Retirement and post-retirement benefit plan assumptions. Retirement and post-retirement benefit plan obligations represent liabilities that will ultimately be settled sometime in the future and therefore, are subject to estimation. Pension accounting is intended to reflect the recognition of future retirement and post-retirement benefit plan costs over the employees' average expected future service to us, based on the terms of the plans and investment and funding decisions. To estimate the impact of these future payments and our decisions concerning funding of these obligations, we are required to make assumptions using actuarial concepts within the framework of GAAP. One assumption is the discount rate used to calculate the estimated plan obligations. Other assumptions include the expected long-term return on plan assets, expected future salary increases, the health care cost trend rate, expected future increases to benefit payments, expected retirement dates, employee turnover, retiree mortality rates, and portfolio composition. We evaluate these assumptions at least annually.

For our U.S. and non-U.S. plans, we use October 31, the month end closest to our fiscal year end, as the annual discount rate measurement date to determine the present value of future benefit payments. The U.S. discount rates are based on the results of matching expected plan benefit payments with cash flows from a hypothetical yield curve constructed with high-quality corporate bond yields. The discount rate for non-U.S. plans was based either on published rates for government bonds or use of a hypothetical yield curve constructed with high-quality corporate bond yields, depending on the availability of sufficient quantities of quality corporate bonds. Lower discount rates increase present values of the pension liabilities and subsequent year pension expense; higher discount rates decrease present values of the pension liabilities and subsequent year pension expense.

The U.S. expected rate of return on plan assets is set equal to the discount rate due to the implementation of our fully-matched, liability-driven investment strategy.

Actuarial assumptions are based on our best estimates and judgment. Material changes may occur in retirement benefit costs in the future if these assumptions differ from actual events or experiences. We performed a sensitivity analysis on the discount rate, which is the key assumption in calculating the U.S. pension and post-retirement benefit obligations. Each change of 25 basis points in the discount rate assumption would have had an estimated $36 million impact on the benefit obligations as of the fiscal year 2021 measurement date. Each change of 25 basis points in the discount rate assumption or expected rate of return assumption would not have a material impact on annual net retirement benefit costs for the fiscal year ending October 30, 2022 (“fiscal year 2022”).

Stock-based compensation expense. Stock-based compensation expense consists of expense for restricted stock units ("RSUs") and stock options granted to employees and non-employees or assumed from acquisitions as well as expense associated with Broadcom employee stock purchase plan ("ESPP"). We recognize compensation expense for time-based stock options and ESPP rights based on the estimated grant-date fair value method required under the authoritative guidance using the Black-Scholes valuation model.

Certain equity awards include both time-based and market-based conditions and are accounted for as market-based awards. The fair value of these market-based awards is estimated on the date of grant using a Monte Carlo simulation model.

Employee Bonus Programs. Our employee bonus programs, which are overseen by our Compensation Committee, or our Board, in the case of our Chief Executive Officer, provide for variable compensation based on the attainment of overall corporate annual targets and functional performance metrics. At the end of each fiscal quarter, we monitor and accrue for an estimated, variable, proportional compensation expense based on our actual progress toward the achievement of the annual targets and metrics. The actual achievement of target and metrics at the end of the fiscal year, which is subject to approval by our Compensation Committee, may result in the actual variable compensation amounts being significantly higher or lower than the relevant estimated amounts accrued in earlier quarters, which would result in a corresponding adjustment in the fourth fiscal quarter.

Fiscal Year Presentation

We operate on a 52- or 53-week fiscal year ending on the Sunday closest to October 31 in a 52-week year and the first Sunday in November in a 53-week year. Our fiscal years 2021, 2020 and 2019 consisted of 52 weeks.

The financial statements included in Part II, Item 8. of this Annual Report on Form 10-K are presented in accordance with GAAP and expressed in U.S. dollars.

Results of Operations

Fiscal Year 2021 Compared to Fiscal Year 2020

The following table sets forth our results of operations for the periods presented:

	Fiscal Year Ended			
	October 31, 2021	November 1, 2020	October 31, 2021	November 1, 2020
	(In millions)		(As a percentage of net revenue)	
Statements of Operations Data:				
Net revenue:				
Products	$ 20,886	$ 17,435	76 %	73 %
Subscriptions and services	6,564	6,453	24	27
Total net revenue	27,450	23,888	100	100
Cost of revenue:				
Cost of products sold	6,555	5,892	24	25
Cost of subscriptions and services	607	626	2	2
Amortization of acquisition-related intangible assets	3,427	3,819	13	16
Restructuring charges	17	35	—	—
Total cost of revenue	10,606	10,372	39	43
Gross margin	16,844	13,516	61	57
Research and development	4,854	4,968	18	21
Selling, general and administrative	1,347	1,935	5	8
Amortization of acquisition-related intangible assets	1,976	2,401	7	10
Restructuring, impairment and disposal charges	148	198	—	1
Total operating expenses	8,325	9,502	30	40
Operating income	$ 8,519	$ 4,014	31 %	17 %

Net Revenue

A relatively small number of customers account for a significant portion of our net revenue. Sales of products to distributors accounted for 53% and 42% of our net revenue for fiscal years 2021 and 2020, respectively. Direct sales to WT Microelectronics Co., Ltd., a distributor, accounted for 18% and 13% of our net revenue for fiscal years 2021 and 2020, respectively. We believe aggregate sales to our top five end customers, through all channels, accounted for more than 35% and 30% of our net revenue for fiscal years 2021 and 2020, respectively. We believe aggregate sales to Apple Inc., through all channels, accounted for approximately 20% and 15% of our net revenue for fiscal years 2021 and 2020, respectively. We expect to continue to experience significant customer concentration in future periods. The loss of, or significant decrease in demand from, any of our top five end customers could have a material adverse effect on our business, results of operations and financial condition.

From time to time, some of our key semiconductor customers place large orders or delay orders, causing our quarterly net revenue to fluctuate significantly. This is particularly true of our wireless products as fluctuations may be magnified by the timing of launches, and seasonal variations in sales, of mobile handsets. The ongoing COVID-19 pandemic and related uncertainties and supply imbalance have caused and may continue to cause our net revenue to fluctuate significantly and impact our results of operations, as discussed above. Additionally, export restrictions on one of our larger customers have had, and may continue to have, an adverse impact on our revenue.

Although we recognize revenue for the majority of our products when title and control transfer in Penang, Malaysia, we disclose net revenue by country based primarily on the geographic shipment or delivery location specified by our distributors, OEMs, contract manufacturers, channel partners, or software customers. In each of fiscal years 2021 and 2020, approximately 35% of our net revenue came from shipments or deliveries to China (including Hong Kong). However, the end customers for either our products or for the end products into which our products are incorporated, are frequently located in countries other than China (including Hong Kong). As a result, we believe that a substantially smaller percentage of our net revenue is ultimately dependent on sales of either our product or our customers' product incorporating our product, to end customers located in China (including Hong Kong).

The following tables set forth net revenue by segment for the periods presented:

Net Revenue by Segment	Fiscal Year Ended October 31, 2021	Fiscal Year Ended November 1, 2020	$ Change	% Change
	(In millions, except for percentages)			
Semiconductor solutions	$ 20,383	$ 17,267	$ 3,116	18 %
Infrastructure software	7,067	6,621	446	7 %
Total net revenue	$ 27,450	$ 23,888	$ 3,562	15 %

Net Revenue by Segment	Fiscal Year Ended October 31, 2021	Fiscal Year Ended November 1, 2020
	(As a percentage of net revenue)	
Semiconductor solutions	74 %	72 %
Infrastructure software	26	28
Total net revenue	100 %	100 %

Net revenue from our semiconductor solutions segment increased primarily due to higher demand for our wireless products, as well as the delayed production ramp of a new mobile handset by a major customer in the prior fiscal year, which resulted in lower shipments in fiscal year 2020. Net revenue from our semiconductor solutions segment also increased due to higher demand for our networking and wireless connectivity products. Net revenue from our infrastructure software segment increased primarily due to higher demand for our FC SAN products, mainframe and cyber security solutions.

Gross Margin

Gross margin was $16,844 million, or 61% of net revenue, for fiscal year 2021, compared to $13,516 million, or 57% of net revenue, for fiscal year 2020. The increase was primarily due to lower amortization of acquisition-related intangible assets and favorable margin within our semiconductor solutions segment due to increased demand.

Research and Development Expense

Research and development expense decreased $114 million, or 2%, in fiscal year 2021, compared to the prior fiscal year. The decrease was primarily due to lower stock-based compensation expense reflecting the full vesting of certain equity awards and the effects of forfeitures, partially offset by higher variable employee compensation expense.

Selling, General and Administrative Expense

Selling, general and administrative expense decreased $588 million, or 30%, in fiscal year 2021, compared to the prior fiscal year. The decrease was primarily due to higher acquisition-related costs incurred in the prior fiscal year as a result of our acquisition of the Symantec Business. The decrease was also due to lower compensation expense reflecting the full benefit of the completed Symantec Business integration as well as our strategic workforce alignment. In addition, fiscal year 2020 included non-recurring litigation settlements.

Amortization of Acquisition-Related Intangible Assets

Amortization of acquisition-related intangible assets recognized in operating expenses decreased $425 million, or 18%, in fiscal year 2021, compared to the prior fiscal year. The decrease was primarily due to lower amortization of certain intangible assets from our acquisition of CA.

Restructuring, Impairment and Disposal Charges

Restructuring, impairment and disposal charges recognized in operating expenses decreased $50 million, or 25%, in fiscal year 2021, compared to the prior fiscal year. The decrease was primarily due to higher employee termination costs in the prior fiscal year from cost reduction activities related to our acquisition of the Symantec Business.

Stock-Based Compensation Expense

Total stock-based compensation expense was $1,704 million and $1,976 million for fiscal years 2021 and 2020, respectively. The decrease primarily reflects the full vesting of certain equity awards and the effect of forfeitures.

The following table sets forth the total unrecognized compensation cost related to unvested stock-based awards outstanding and expected to vest as of October 31, 2021, which we expect to recognize over the remaining weighted-average service period of 2.9 years.

Fiscal Year:	Unrecognized Compensation Cost, Net of Expected Forfeitures
	(In millions)
2022	$ 1,289
2023	907
2024	535
2025	210
2026	26
Total	$ 2,967

During the first quarter of fiscal year 2019, our Compensation Committee approved a broad-based program of multi-year equity grants of time- and market-based RSUs (the "Multi-Year Equity Awards") in lieu of our annual employee equity awards historically granted on March 15 of each year. Each Multi-Year Equity Award vests on the same basis as four annual grants made March 15 of each year, beginning in fiscal year 2019, with successive four-year vesting periods. We recognize stock-based compensation expense related to the Multi-Year Equity Awards from the grant date through their respective vesting date, ranging from 4 years to 7 years.

Segment Operating Results

Operating Income by Segment	Fiscal Year Ended October 31, 2021	Fiscal Year Ended November 1, 2020	$ Change	% Change
	(In millions, except for percentages)			
Semiconductor solutions	$ 10,976	$ 8,576	$ 2,400	28 %
Infrastructure software	4,936	4,363	573	13 %
Unallocated expenses	(7,393)	(8,925)	1,532	(17)%
Total operating income	$ 8,519	$ 4,014	$ 4,505	112 %

Operating income from our semiconductor solutions segment increased primarily due to higher demand for our wireless products, as well as the delayed production ramp of a new mobile handset by a major customer in the prior fiscal year, which resulted in lower shipments in fiscal year 2020. Operating income from our semiconductor solutions segment also increased due to higher demand for our networking and wireless connectivity products, as well as higher gross margin. Operating income from our infrastructure software segment increased primarily due to higher demand for our FC SAN products and mainframe solutions.

Unallocated expenses include amortization of acquisition-related intangible assets; stock-based compensation expense; restructuring, impairment and disposal charges; acquisition-related costs; and other costs that are not used in evaluating the results of, or in allocating resources to, our segments. Unallocated expenses decreased 17% in fiscal year 2021, compared to the prior fiscal year, primarily due to lower amortization of acquisition-related intangible assets, acquisition-related costs and stock-based compensation expense.

Non-Operating Income and Expenses

Interest expense. Interest expense was $1,885 million and $1,777 million for fiscal years 2021 and 2020, respectively. The increase was primarily due to higher losses on extinguishment of debt as a result of our fiscal year 2021 debt transactions.

Other income, net. Other income, net, which includes interest income, gains or losses on investments, foreign currency remeasurement and other miscellaneous items, was $131 million and $206 million for fiscal years 2021 and 2020, respectively. The decrease was primarily due to a $116 million non-recurring gain from the lapse of a tax indemnification arrangement included in the prior fiscal year, offset in part by an increase in gains on investments in fiscal year 2021.

Provision for (benefit from) income taxes. The provision for income taxes of $29 million in fiscal year 2021 was primarily due to income from continuing operations, offset in part by excess tax benefits from stock-based awards, a benefit from foreign derived intangible income, and the recognition of gross unrecognized tax benefits as a result of lapses of statutes of limitations and audit settlements.

The benefit from income taxes of $518 million in fiscal year 2020 was primarily due to the jurisdictional mix of income and expense, the recognition of gross uncertain tax benefits as a result of lapses of statutes of limitations, the remeasurement of certain foreign deferred tax assets and liabilities, and excess tax benefit from stock-based awards.

Liquidity and Capital Resources

The following section discusses our principal liquidity and capital resources as well as our primary liquidity requirements and uses of cash. Our cash and cash equivalents are maintained in highly liquid investments with remaining maturities of 90 days or less at the time of purchase. We believe our cash equivalents are liquid and accessible.

Our primary sources of liquidity as of October 31, 2021 consisted of: (i) $12,163 million in cash and cash equivalents, (ii) cash we expect to generate from operations and (iii) available capacity under our $7.5 billion unsecured revolving credit facility (the “Revolving Facility”). In addition, we may also generate cash from the sale of assets and debt or equity financing from time to time.

Our short-term and long-term liquidity requirements primarily arise from: (i) business acquisitions and investments we may make from time to time, (ii) working capital requirements, (iii) research and development and capital expenditure needs, (iv) cash dividend payments (if and when declared by our Board of Directors), (v) interest and principal payments related to our outstanding indebtedness, (vi) share repurchases, and (vii) payment of income taxes. Our ability to fund these requirements will depend, in part, on our future cash flows, which are determined by our future operating performance and, therefore, subject to prevailing global macroeconomic conditions and financial, business and other factors, some of which are beyond our control.

We believe that our cash and cash equivalents on hand, cash flows from operations, and the Revolving Facility will provide sufficient liquidity to operate our business and fund our current and assumed obligations for at least the next 12 months. We expect a slight increase in capital expenditures in fiscal year 2022 as compared to fiscal year 2021. For additional information regarding our cash requirement from contractual obligations, indebtedness and lease obligations, see Note 14. “Commitments and Contingencies”, Note 10. “Borrowings” and Note 6. “Leases” in Part II, Item 8 of this Annual Report on Form 10-K.

From time to time, we engage in discussions with third parties regarding potential acquisitions of, or investments in, businesses, technologies and product lines. Any such transaction, or evaluation of potential transactions, could require significant use of our cash and cash equivalents, or require us to increase our borrowings to fund such transactions. If we do not have sufficient cash to fund our operations or finance growth opportunities, including acquisitions, or unanticipated capital expenditures, our business and financial condition could suffer. In such circumstances, we may seek to obtain new debt or equity financing. However, we cannot assure you that such additional financing will be available on terms acceptable to us or at all. Our ability to service our senior unsecured notes and any other indebtedness we may incur will depend on our ability to generate cash in the future. We may also elect to sell additional debt or equity securities for reasons other than those specified above.

In addition, we may, at any time and from time to time, seek to retire or purchase our outstanding debt through cash tenders and/or exchanges for equity or debt, in open-market purchases, privately negotiated transactions or otherwise. Such tenders, exchanges or purchases, if any, will be upon such terms and at such prices as we may determine, and will depend on prevailing market conditions, our liquidity requirements, contractual restrictions and other factors. The amounts involved may be material.

Working Capital

Working capital increased to $10,305 million at October 31, 2021 from $5,524 million at November 1, 2020. The increase was attributable to the following:

- Cash and cash equivalents increased to $12,163 million at October 31, 2021 from $7,618 million at November 1, 2020, primarily due to $13,764 million in net cash provided by operating activities and $9,904 million in proceeds from long-term borrowings, partially offset by $11,495 million of payments on debt obligations, $6,212 million of dividend payments and $1,299 million in payments of employee withholding taxes related to net share settled equity awards. See the “Cash Flows” section below for further details.

- Current portion of long-term debt decreased to $290 million at October 31, 2021 from $827 million at November 1, 2020, primarily as a result of our fiscal year 2021 debt transactions.

- Inventory increased to $1,297 million at October 31, 2021 from $1,003 million at November 1, 2020, primarily due to the timing of customer product ramps.

These increases in working capital were offset in part by the following:

- Accounts payable increased to $1,086 million at October 31, 2021 from $836 million at November 1, 2020, primarily due to the timing of vendor payments.
- Accounts receivable decreased to $2,071 million at October 31, 2021 from $2,297 million at November 1, 2020, primarily due to revenue linearity and additional receivables sold through factoring arrangements.
- Employee compensation and benefits increased to $1,066 million at October 31, 2021 from $877 million at November 1, 2020, primarily due to higher variable compensation based on current fiscal year performance.

Capital Returns

Cash Dividends Declared and Paid	Fiscal Year Ended October 31, 2021	Fiscal Year Ended November 1, 2020
	(In millions, except per share data)	
Dividends per share to common stockholders	$ 14.40	$ 13.00
Dividends to common stockholders	$ 5,913	$ 5,235
Dividends per share to preferred stockholders	$ 80.00	$ 80.00
Dividends to preferred stockholders	$ 299	$ 299

During fiscal years 2021 and 2020, we paid approximately $1,299 million and $765 million, respectively, in employee withholding taxes due upon the vesting of net settled equity awards. We withheld approximately 3 million shares of common stock from employees in connection with such net share settlements during each of fiscal years 2021 and 2020.

In December 2021, our Board of Directors authorized a stock repurchase program to repurchase up to $10 billion of our common stock from time to time on or prior to December 31, 2022. Repurchases under our stock repurchase program may be effected through a variety of methods, including open market or privately negotiated purchases. The timing and amount of shares repurchased will depend on the stock price, business and market conditions, corporate and regulatory requirements, alternative investment opportunities, acquisition opportunities, and other factors. We are not obligated to repurchase any specific amount of shares of common stock, and the stock repurchase program may be suspended or terminated at any time.

Cash Flows

	Fiscal Year Ended October 31, 2021	Fiscal Year Ended November 1, 2020
	(In millions)	
Net cash provided by operating activities	$ 13,764	$ 12,061
Net cash used in investing activities	(245)	(11,109)
Net cash provided by (used in) financing activities	(8,974)	1,611
Net change in cash and cash equivalents	$ 4,545	$ 2,563

Operating Activities

Cash provided by operating activities consisted of net income adjusted for certain non-cash and other items and changes in assets and liabilities. The $1,703 million increase in cash provided by operations during fiscal year 2021 compared to fiscal year 2020 was due to $3,776 million higher net income, offset by a $1,220 million decrease resulting from changes in operating assets and liabilities, as well as a $853 million decrease in amortization of intangible assets, stock-based compensation, and other adjustments.

Investing Activities

Cash flows from investing activities primarily consisted of cash used for acquisitions, capital expenditures and investments, and proceeds from sales of businesses and assets. The $10,864 million decrease in cash used in investing activities for fiscal year 2021 compared to fiscal year 2020 was primarily related to a $10,864 million decrease in cash paid for acquisitions, partially offset by $173 million less in proceeds received from sales of businesses.

Financing Activities

Cash flows from financing activities primarily consisted of net proceeds and payments related to our long-term borrowings, dividend and distribution payments, stock repurchases and the issuances of stock. The $10,585 million decrease in cash related to financing activities for fiscal year 2021 compared to fiscal year 2020 was primarily due to a $9,294 million decrease in net proceeds from borrowings as a result of debt repayments, and a $678 million increase in dividend payments.

Summarized Obligor Group Financial Information

Pursuant to indentures dated January 19, 2017 and October 17, 2017 (collectively, the “2017 Indentures”), Broadcom Cayman Finance Limited (subsequently merged into Broadcom Technologies Inc. (“BTI”) during fiscal year 2019 with BTI remaining as the surviving entity) and Broadcom Corporation (“BRCM”) (BRCM and BTI collectively, the “2017 Senior Notes Co-Issuers”) issued $13,550 million and $4,000 million aggregate principal amount of notes, respectively (collectively, the “2017 Senior Notes”). Substantially all of the 2017 Senior Notes have been registered with the SEC.

We may redeem all or a portion of our 2017 Senior Notes at any time prior to their maturity, subject to a specified make-whole premium as set forth in the 2017 Indentures. In the event of a change of control triggering event, holders of our 2017 Senior Notes will have the right to require us to purchase for cash, all or a portion of their 2017 Senior Notes at a redemption price of 101% of the aggregate principal amount plus accrued and unpaid interest. The 2017 Indentures also contain covenants that restrict, among other things, the ability of Broadcom and its subsidiaries to incur certain secured debt and to consummate certain sale and leaseback transactions and restrict the ability of Broadcom, BRCM and BTI (collectively,
the “Obligor Group”) to merge, consolidate or sell all or substantially all of their assets.

Broadcom and BTI fully and unconditionally guarantee, jointly and severally, on an unsecured, unsubordinated basis, the 2017 Senior Notes. Because the guarantees are not secured, they are effectively subordinated to any existing and future secured indebtedness of the guarantors to the extent of the value of the collateral securing that indebtedness. The guarantee by Broadcom and BTI will be automatically and unconditionally released upon the sale, exchange, disposition or other transfer of all or substantially all of the assets of such guarantor if any of these events occurs, subject to the terms of the 2017 Indentures. The guarantee by Broadcom (1) will also be automatically and unconditionally released at such time as: (A) the 2017 Senior Notes Co-Issuers, in their sole discretion, determine that such guarantee is no longer required by Rule 3-10(a), as applicable, of Regulation S-X to except the 2017 Senior Notes Co-Issuers’ financial statements from being required to be filed pursuant to Rule 3-10(a) of Regulation S-X or otherwise facilitate a reduction in its financial reporting obligations or (B) either of the 2017 Senior Notes Co-Issuers becomes subject to Section 13 or 15(d) of the Securities Exchange Act of 1934 (“Exchange Act”) and (2) may, at the election of the 2017 Senior Notes Co-Issuers, be unconditionally released at such time as Broadcom is eligible to suspend its reporting obligation under the Exchange Act.

In March 2021, we completed the settlement of our private offers to exchange $5.5 billion of certain of our outstanding notes maturing between 2024 and 2027 (the “Exchange Offer”) for $2,250 million of 3.419% new senior unsecured notes due April 2033 and $3,250 million of 3.469% new senior unsecured notes due April 2034. In connection with the Exchange Offer, BRCM and BTI were automatically and unconditionally released from their guarantees in accordance with the respective indentures governing the January 2021 Senior Notes, the June 2020 Senior Notes, the May 2020 Senior Notes, the April 2020 Senior Notes, and the April 2019 Senior Notes, as defined in Note 10. “Borrowings” included in Part II, Item 8 of this Annual Report on Form 10-K.

The following tables set forth the summarized financial information of the Obligor Group on a combined basis. This summarized financial information excludes any subsidiaries that are not issuers or guarantors (the “Non-Obligor Group”). Intercompany balances and transactions between members of the Obligor Group have been eliminated.

Summarized Balance Sheet Information	October 31, 2021
	(In millions)
ASSETS	
Current assets:	
Amount due from Non-Obligor Group	$ 792
Other current assets	7,418
Total current assets	$ 8,210
Long-term assets:	
Amount due from Non-Obligor Group, long-term	$ 4,620
Goodwill	1,380
Other long-term assets	1,376
Total long-term assets	$ 7,376
LIABILITIES	
Current liabilities:	
Amount due to Non-Obligor Group	$ 7,412
Current portion of long-term debt	264
Other current liabilities	666
Total current liabilities	$ 8,342
Long-term liabilities:	
Amount due to Non-Obligor Group, long-term	$ 7
Long-term debt	38,998
Other long-term liabilities	2,787
Total long-term liabilities	$ 41,792

Summarized Statement of Operations Information	Fiscal Year Ended October 31, 2021
	(In millions)
Intercompany revenue with Non-Obligor Group	$ 1,760
Intercompany gross margin	$ 1,596
Net loss [(a)]	$ (1,262)

(a) In addition to intercompany gross margin, there were $962 million of intercompany transactions included in net loss.

Accounting Changes and Recent Accounting Standards

For a description of accounting changes and recent accounting standards, including the expected dates of adoption and estimated effects, if any, in our consolidated financial statements, see Note 2. “Summary of Significant Accounting Policies” included in Part II, Item 8. of this Annual Report on Form 10-K.

ITEM 7A. QUANTITATIVE AND QUALITATIVE DISCLOSURES ABOUT MARKET RISK

Foreign Currency Exchange Risk

From time to time, we use foreign exchange forward contracts to hedge a portion of our exposures to changes in currency exchange rates, which result from our global operating and financing activities. We do not use derivative financial instruments for trading or speculative purposes. Gains and losses from foreign currency transactions, as well as derivative instruments, were not significant for any period presented in the consolidated financial statements included in this Form 10-K. As of October 31, 2021, we did not have any outstanding foreign exchange forward contracts.

ITEM 8. FINANCIAL STATEMENTS AND SUPPLEMENTARY DATA

BROADCOM INC.
INDEX TO CONSOLIDATED FINANCIAL STATEMENTS

REPORT OF INDEPENDENT REGISTERED PUBLIC ACCOUNTING FIRM

To the Board of Directors and Stockholders of Broadcom Inc.

Opinions on the Financial Statements and Internal Control over Financial Reporting

We have audited the accompanying consolidated balance sheets of Broadcom Inc. and its subsidiaries (the “Company”) as of October 31, 2021 and November 1, 2020, and the related consolidated statements of operations, of comprehensive income, of stockholders’ equity and of cash flows for each of the three years in the period ended October 31, 2021, including the related notes and financial statement schedule listed in the index appearing under Item 15(a)(2) (collectively referred to as the “consolidated financial statements”). We also have audited the Company's internal control over financial reporting as of October 31, 2021, 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 October 31, 2021 and November 1, 2020, and the results of its operations and its cash flows for each of the three years in the period ended October 31, 2021 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 October 31, 2021, based on criteria established in *Internal Control - Integrated Framework* (2013) issued by the COSO.

Change in Accounting Principle

As discussed in Note 6 to the consolidated financial statements, the Company changed the manner in which it accounts for leases in fiscal 2020.

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.

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.

Uncertain Tax Positions (UTPs)

As described in Notes 2 and 12 to the consolidated financial statements, the gross unrecognized tax benefits balance was $5,030 million as of October 31, 2021. As management has disclosed, management evaluates the exposure associated with various tax filing positions and accrues an income tax liability when such positions do not meet the more-likely-than-not threshold for recognition. A tax benefit from an UTP may be recognized when it is more likely than not that the position will be sustained upon examination, including resolution of any related appeals or litigation processes, based on the technical merits.

The principal considerations for our determination that performing procedures relating to the UTPs is a critical audit matter are (i) the significant judgment by management when evaluating the technical merits of these tax positions, (ii) a high degree of auditor judgment, subjectivity, and effort in performing procedures and evaluating the technical merits of the tax positions, 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 identification and recognition of the income tax liability for UTPs, including controls addressing the completeness of the UTPs and the measurement of the income tax liability. These procedures also included, among others, (i) testing management’s process for identifying potential new UTPs, (ii) for a selection of UTPs, evaluating possible outcomes, and (iii) for a selection of UTPs, testing the calculation of the income tax liability by jurisdiction, including management’s assessment of the technical merits of tax positions and estimates of the amount of tax benefit expected to be sustained. Professionals with specialized skill and knowledge were used to assist in (i) the evaluation of the completeness of management’s identification of the UTPs and (ii) for a selection of UTPs, the evaluation of the reasonableness of management’s assessment of whether the tax positions are more-likely-than-not of being sustained, the amount of potential benefit to be realized, and the application of relevant tax laws.

/s/ PricewaterhouseCoopers LLP

San Jose, California
December 17, 2021

We have served as the Company’s auditor since 2006.

BROADCOM INC.
CONSOLIDATED BALANCE SHEETS

	October 31, 2021	November 1, 2020
	(In millions, except par value)	
ASSETS		
Current assets:		
Cash and cash equivalents	$ 12,163	$ 7,618
Trade accounts receivable, net	2,071	2,297
Inventory	1,297	1,003
Other current assets	1,055	977
Total current assets	16,586	11,895
Long-term assets:		
Property, plant and equipment, net	2,348	2,509
Goodwill	43,450	43,447
Intangible assets, net	11,374	16,782
Other long-term assets	1,812	1,300
Total assets	$ 75,570	$ 75,933
LIABILITIES AND EQUITY		
Current liabilities:		
Accounts payable	$ 1,086	$ 836
Employee compensation and benefits	1,066	877
Current portion of long-term debt	290	827
Other current liabilities	3,839	3,831
Total current liabilities	6,281	6,371
Long-term liabilities:		
Long-term debt	39,440	40,235
Other long-term liabilities	4,860	5,426
Total liabilities	50,581	52,032
Commitments and contingencies (Note 14)		
Preferred stock dividend obligation	27	27
Stockholders’ equity:		
Preferred stock, $0.001 par value; 100 shares authorized; 8.00% Mandatory Convertible Preferred Stock, Series A, 4 shares issued and outstanding; aggregate liquidation value of $3,737 and $3,738 as of October 31, 2021 and November 1, 2020, respectively	—	—
Common stock, $0.001 par value; 2,900 shares authorized; 413 and 407 shares issued and outstanding as of October 31, 2021 and November 1, 2020, respectively	—	—
Additional paid-in capital	24,330	23,982
Retained earnings	748	—
Accumulated other comprehensive loss	(116)	(108)
Total stockholders’ equity	24,962	23,874
Total liabilities and equity	$ 75,570	$ 75,933

The accompanying notes are an integral part of these consolidated financial statements.

BROADCOM INC.
CONSOLIDATED STATEMENTS OF OPERATIONS

	Fiscal Year Ended		
	October 31, 2021	November 1, 2020	November 3, 2019
	(In millions, except per share data)		
Net revenue:			
Products	$ 20,886	$ 17,435	$ 18,117
Subscriptions and services	6,564	6,453	4,480
Total net revenue	27,450	23,888	22,597
Cost of revenue:			
Cost of products sold	6,555	5,892	6,208
Cost of subscriptions and services	607	626	515
Amortization of acquisition-related intangible assets	3,427	3,819	3,314
Restructuring charges	17	35	77
Total cost of revenue	10,606	10,372	10,114
Gross margin	16,844	13,516	12,483
Research and development	4,854	4,968	4,696
Selling, general and administrative	1,347	1,935	1,709
Amortization of acquisition-related intangible assets	1,976	2,401	1,898
Restructuring, impairment and disposal charges	148	198	736
Total operating expenses	8,325	9,502	9,039
Operating income	8,519	4,014	3,444
Interest expense	(1,885)	(1,777)	(1,444)
Other income, net	131	206	226
Income from continuing operations before income taxes	6,765	2,443	2,226
Provision for (benefit from) income taxes	29	(518)	(510)
Income from continuing operations	6,736	2,961	2,736
Loss from discontinued operations, net of income taxes	—	(1)	(12)
Net income	6,736	2,960	2,724
Dividends on preferred stock	(299)	(297)	(29)
Net income attributable to common stock	$ 6,437	$ 2,663	$ 2,695
Basic income per share attributable to common stock:			
Income per share from continuing operations	$ 15.70	$ 6.62	$ 6.80
Loss per share from discontinued operations	—	—	(0.03)
Net income per share	$ 15.70	$ 6.62	$ 6.77
Diluted income per share attributable to common stock:			
Income per share from continuing operations	$ 15.00	$ 6.33	$ 6.46
Loss per share from discontinued operations	—	—	(0.03)
Net income per share	$ 15.00	$ 6.33	$ 6.43
Weighted-average shares used in per share calculations:			
Basic	410	402	398
Diluted	429	421	419

The accompanying notes are an integral part of these consolidated financial statements.

BROADCOM INC.
CONSOLIDATED STATEMENTS OF COMPREHENSIVE INCOME

	Fiscal Year Ended		
	October 31, 2021	November 1, 2020	November 3, 2019
		(In millions)	
Net income	$ 6,736	$ 2,960	$ 2,724
Other comprehensive income (loss), net of tax:			
Change in actuarial loss and prior service costs associated with defined benefit pension plans and post-retirement benefit plans	(8)	24	(24)
Other comprehensive income (loss), net of tax	(8)	24	(24)
Comprehensive income	$ 6,728	$ 2,984	$ 2,700

The accompanying notes are an integral part of these consolidated financial statements.

BROADCOM INC.
CONSOLIDATED STATEMENTS OF CASH FLOWS

	Fiscal Year Ended		
	October 31, 2021	November 1, 2020	November 3, 2019
	(In millions)		
Cash flows from operating activities:			
Net income	$ 6,736	$ 2,960	$ 2,724
Adjustments to reconcile net income to net cash provided by operating activities:			
Amortization of intangible and right-of-use assets	5,502	6,335	5,239
Depreciation	539	570	569
Stock-based compensation	1,704	1,976	2,185
Deferred taxes and other non-cash taxes	(809)	(1,142)	(934)
Loss on debt extinguishment	198	169	28
Non-cash restructuring, impairment and disposal charges	38	44	133
Non-cash interest expense	96	108	69
Other	(113)	(52)	(132)
Changes in assets and liabilities, net of acquisitions and disposals:			
Trade accounts receivable, net	210	981	486
Inventory	(294)	(31)	250
Accounts payable	243	(3)	(42)
Employee compensation and benefits	186	217	(294)
Other current assets and current liabilities	(177)	331	(283)
Other long-term assets and long-term liabilities	(295)	(402)	(301)
Net cash provided by operating activities	13,764	12,061	9,697
Cash flows from investing activities:			
Acquisitions of businesses, net of cash acquired	(8)	(10,872)	(16,033)
Proceeds from sales of businesses	45	218	957
Purchases of property, plant and equipment	(443)	(463)	(432)
Proceeds from disposals of property, plant and equipment	4	12	88
Proceeds from sales of investments	169	—	—
Other	(12)	(4)	(2)
Net cash used in investing activities	(245)	(11,109)	(15,422)
Cash flows from financing activities:			
Proceeds from long-term borrowings	9,904	27,802	28,793
Payments on debt obligations	(11,495)	(18,814)	(16,800)
Other borrowings, net	—	(1,285)	1,241
Payment of dividends	(6,212)	(5,534)	(4,235)
Repurchases of common stock - repurchase program	—	—	(5,435)
Shares repurchased for tax withholdings on vesting of equity awards	(1,299)	(765)	(972)
Issuance of preferred stock, net	—	—	3,679
Issuance of common stock	170	276	253
Other	(42)	(69)	(36)
Net cash provided by (used in) financing activities	(8,974)	1,611	6,488
Net change in cash and cash equivalents	4,545	2,563	763
Cash and cash equivalents at beginning of period	7,618	5,055	4,292
Cash and cash equivalents at end of period	$ 12,163	$ 7,618	$ 5,055
Supplemental disclosure of cash flow information:			
Cash paid for interest	$ 1,565	$ 1,408	$ 1,287
Cash paid for income taxes	$ 775	$ 501	$ 741

The accompanying notes are an integral part of these consolidated financial statements.

BROADCOM INC.
CONSOLIDATED STATEMENTS OF STOCKHOLDERS' EQUITY

	8.00% Mandatory Convertible Preferred Stock		Common Stock		Additional Paid-in Capital	Retained Earnings	Accumulated Other Comprehensive Loss	Total Stockholders' Equity
	Shares	Par Value	Shares	Par Value				
					(In millions)			
Balance as of November 4, 2018	—	$ —	408	$ —	$ 23,285	$ 3,487	$ (115)	$ 26,657
Net income	—	—	—	—	—	2,724	—	2,724
Other comprehensive loss	—	—	—	—	—	—	(24)	(24)
Cumulative effect of accounting change	—	—	—	—	—	8	(1)	7
Fair value of partially vested equity awards assumed in connection with the acquisition of CA, Inc.	—	—	—	—	67	—	—	67
Dividends to common stockholders	—	—	—	—	(880)	(3,355)	—	(4,235)
Dividends to preferred stockholders	—	—	—	—	(29)	—	—	(29)
Common stock issued	—	—	15	—	253	—	—	253
Preferred stock issued, net	4	—	—	—	3,679	—	—	3,679
Stock-based compensation	—	—	—	—	2,260	—	—	2,260
Repurchases of common stock	—	—	(21)	—	(2,571)	(2,864)	—	(5,435)
Shares repurchased for tax withholdings on vesting of equity awards	—	—	(4)	—	(983)	—	—	(983)
Balance as of November 3, 2019	4	—	398	—	25,081	—	(140)	24,941
Net income	—	—	—	—	—	2,960	—	2,960
Other comprehensive income	—	—	—	—	—	—	24	24
Cumulative effect of accounting change	—	—	—	—	—	(10)	8	(2)
Fair value of partially vested equity awards assumed in connection with an acquisition	—	—	—	—	1	—	—	1
Dividends to common stockholders	—	—	—	—	(2,582)	(2,653)	—	(5,235)
Dividends to preferred stockholders	—	—	—	—	—	(297)	—	(297)
Common stock issued	—	—	12	—	276	—	—	276
Stock-based compensation	—	—	—	—	1,976	—	—	1,976
Shares repurchased for tax withholdings on vesting of equity awards	—	—	(3)	—	(770)	—	—	(770)
Balance as of November 1, 2020	4	—	407	—	23,982	—	(108)	23,874
Net income	—	—	—	—	—	6,736	—	6,736
Other comprehensive loss	—	—	—	—	—	—	(8)	(8)
Dividends to common stockholders	—	—	—	—	(224)	(5,689)	—	(5,913)
Dividends to preferred stockholders	—	—	—	—	—	(299)	—	(299)
Common stock issued	—	—	9	—	170	—	—	170
Stock-based compensation	—	—	—	—	1,704	—	—	1,704
Shares repurchased for tax withholdings on vesting of equity awards	—	—	(3)	—	(1,302)	—	—	(1,302)
Balance as of October 31, 2021	4	$ —	413	$ —	$ 24,330	$ 748	$ (116)	$ 24,962

The accompanying notes are an integral part of these consolidated financial statements.

BROADCOM INC.
NOTES TO CONSOLIDATED FINANCIAL STATEMENTS

1. Overview and Basis of Presentation

Overview

Broadcom Inc. ("Broadcom"), a Delaware corporation, is a global technology leader that designs, develops and supplies a broad range of semiconductor and infrastructure software solutions. We develop semiconductor devices with a focus on complex digital and mixed signal complementary metal oxide semiconductor based devices and analog III-V based products. We have a history of innovation in the semiconductor industry and offer thousands of products that are used in end products such as enterprise and data center networking, home connectivity, set-top boxes, broadband access, telecommunication equipment, smartphones and base stations, data center servers and storage systems, factory automation, power generation and alternative energy systems, and electronic displays. Our infrastructure software solutions enable customers to plan, develop, automate, manage and secure applications across mainframe, distributed, mobile and cloud platforms. Our portfolio of industry-leading infrastructure and security software is designed to modernize, optimize, and secure the most complex hybrid environments, enabling scalability, agility, automation, insights, resiliency and security. We also offer mission critical fibre channel storage area networking ("FC SAN") products and related software in the form of modules, switches and subsystems incorporating multiple semiconductor products. Unless stated otherwise or the context otherwise requires, references to "Broadcom," "we," "our," and "us" mean Broadcom and its consolidated subsidiaries.

Basis of Presentation

We operate on a 52- or 53-week fiscal year ending on the Sunday closest to October 31 in a 52-week year and the first Sunday in November in a 53-week year. Our fiscal year ended October 31, 2021 ("fiscal year 2021") was a 52-week fiscal year. The first quarter of our fiscal year 2021 ended on January 31, 2021, the second quarter ended on May 2, 2021 and the third quarter ended on August 1, 2021. Our fiscal year ended November 1, 2020 ("fiscal year 2020") and fiscal year ended November 3, 2019 ("fiscal year 2019") were both 52-week fiscal years.

On November 4, 2019, we completed the purchase of certain assets and assumption of certain liabilities of the Symantec Corporation Enterprise Security business (the "Symantec Business"). On November 5, 2018, we acquired CA, Inc. ("CA"). The accompanying consolidated financial statements include the results of operations of the Symantec Business and CA commencing as of their respective acquisition dates. See Note 4. "Acquisitions" for additional information.

Certain reclassifications have been made to the consolidated statement of cash flows for fiscal year 2019. These reclassifications have no impact on previously reported operating, investing or financing cash flows. During the first quarter of fiscal year 2020, we changed our organizational structure, resulting in two reportable segments: semiconductor solutions and infrastructure software. Reclassifications have also been made to segment operating income. Fiscal year 2019 segment results have been recast to conform to the current presentation. See Note 13. "Segment Information" for additional information. These reclassifications have no impact on previously reported consolidated operating income.

The accompanying consolidated financial statements include the accounts of Broadcom and its subsidiaries and have been prepared in accordance with generally accepted accounting principles in the United States ("GAAP"). All intercompany balances and transactions have been eliminated in consolidation.

2. Summary of Significant Accounting Policies

Foreign currency remeasurement. We operate in a U.S. dollar functional currency environment. Foreign currency assets and liabilities for monetary accounts are remeasured into U.S. dollars at current exchange rates. Non-monetary items such as inventory and property, plant and equipment, are measured and recorded at historical exchange rates. The effects of foreign currency remeasurement were not material for any period presented.

Use of estimates. The preparation of financial statements in conformity with GAAP requires management to make estimates and assumptions that affect the reported amounts of assets and liabilities and disclosure of contingent assets and liabilities at the date of the financial statements and the reported amounts of revenues and expenses during the reporting period. The inputs into certain of these estimates and assumptions include the consideration of the economic impact of the COVID-19 pandemic. Actual results could differ materially from these estimates, and such differences could affect the results of operations reported in future periods. As the impact of the COVID-19 pandemic continues to develop, many of these estimates could require increased judgment and carry a higher degree of variability and volatility, and may change materially in future periods.

Cash and cash equivalents. We consider all highly liquid investment securities with original maturities of three months or less at the date of purchase to be cash equivalents. We determine the appropriate classification of our cash and cash equivalents at the time of purchase.

Trade accounts receivable, net. Trade accounts receivable are recognized at the invoiced amount and do not bear interest. Accounts receivable are reduced by an allowance for doubtful accounts, which is our best estimate of the expected credit losses in our existing accounts receivable. We determine the allowance based on historical experience, current economic conditions and certain forward-looking information, among other factors. Allowances for doubtful accounts were not material as of October 31, 2021 or November 1, 2020. Accounts receivable are also recognized net of sales returns and distributor credit allowances. These amounts are recognized when it is both probable and estimable that discounts will be granted or products will be returned. Allowances for sales returns and distributor credit allowances as of October 31, 2021 and November 1, 2020 were $129 million and $174 million, respectively.

Concentrations of credit risk and significant customers. Our cash, cash equivalents and accounts receivable are potentially subject to concentration of credit risk. Cash and cash equivalents may be redeemable upon demand and are maintained with financial institutions that management believes are of high credit quality and therefore bear minimal credit risk. We seek to mitigate our credit risks by spreading such risks across multiple counterparties and monitoring the risk profile of these counterparties. Our accounts receivable are derived from revenue earned from customers located both within and outside the U.S. We mitigate collection risks from our customers by performing regular credit evaluations of our customers' financial conditions, and require collateral, such as letters of credit and bank guarantees, in certain circumstances.

Concentration of other risks. We operate in markets that are highly competitive and rapidly changing. Significant technological changes, shifting customer needs, the emergence of competitive products with new capabilities, general economic conditions worldwide, the ability to safeguard patents and other intellectual property ("IP") in a rapidly evolving market and reliance on assembly and test subcontractors, third-party wafer fabricators and independent distributors and other factors could affect our financial results.

Inventory. We value our inventory at the lower of actual cost or net realizable value of the inventory, with cost being determined under the first-in, first-out method. We record a provision for excess and obsolete inventory based primarily on our forecast of product demand and production requirements. The excess and obsolete balance determined by this analysis becomes the basis for our excess and obsolete inventory charge and the written-down value of the inventory becomes its new cost basis.

Retirement benefits. For defined benefit pension plans, we consider various factors in determining our respective benefit obligations and net periodic benefit (income) cost, including the number of employees that we expect to receive benefits, their salary levels and years of service, the expected return on plan assets, the discount rate, the timing of the payment of benefits, and other actuarial assumptions. If the actual results and events of the retirement benefit plans differ from our current assumptions, the benefit obligations may be over- or under-valued.

Post-retirement benefit plan assets and obligations are estimates of benefits that we expect to pay to eligible retirees. We consider various factors in determining the value of our post-retirement benefit plan assets and obligations, including the number of employees that we expect to receive benefits and other actuarial assumptions.

The key benefit plan assumptions are the discount rate and the expected rate of return on plan assets. The U.S. discount rates are based on the results of matching expected plan benefit payments with cash flows from a hypothetical yield curve constructed with high-quality corporate bond yields. The U.S. expected rate of return on plan assets is set equal to the discount rate due to the implementation of our fully-matched, liability-driven investment strategy. For the non-U.S. plans, we set assumptions specific to each country. We have elected to measure defined benefit pension plan and post-retirement benefit plan assets and liabilities as of October 31, which is the month end that is closest to our fiscal year end.

Derivative instruments. We use derivative financial instruments, primarily foreign exchange forward contracts, to manage exposure to foreign exchange risk. Our forward contracts generally mature within three months. We do not use derivative financial instruments for speculative or trading purposes.

Outstanding derivatives are recognized as either assets or liabilities at their fair values based on Level 2 inputs as defined in the fair value hierarchy. The accounting for gains and losses resulting from changes in fair value depends on the use of the derivative and its hedging designation. For derivative instruments designated as fair value hedges, the changes in fair value are recognized in other income, net in the periods of change, and are offset by the changes in fair value of the hedged items. For derivative instruments designated as cash flow hedges, the changes in fair value of the effective portion are initially recognized in other comprehensive income (loss), net of tax in the period of change, and are subsequently reclassified and recognized in the same line item as the hedged item when either the hedged transactions affect earnings or it becomes probable that the hedged transactions will not occur. The changes in the fair value of the ineffective portion of the derivative instruments are recognized in other income, net in the period of change, which have not been material to date. For derivative instruments not designated as hedges, the changes in fair value are recognized in other income, net in the period of change. We did not have any outstanding derivative instruments as of October 31, 2021 or November 1, 2020.

Property, plant and equipment. Property, plant and equipment are stated at cost less accumulated depreciation and amortization. Additions, improvements and major renewals are capitalized, and maintenance, repairs and minor renewals are expensed as incurred. Assets are held in construction in progress until placed in service, upon which date, we begin to depreciate these assets. When assets are retired or disposed of, the assets and related accumulated depreciation and amortization are removed from our property, plant and equipment balances and the resulting gain or loss is reflected in the consolidated statements of operations. Buildings and leasehold improvements are generally depreciated over 15 to 40 years, or over the lease period, whichever is shorter, and machinery and equipment are generally depreciated over 3 to 10 years. We use the straight-line method of depreciation for all property, plant and equipment.

Leases. We determine if an arrangement is a lease, or contains a lease, at the inception of the arrangement and evaluate whether the lease is an operating lease or a finance lease at the commencement date. We recognize right-of-use (“ROU”) assets and lease liabilities for operating and finance leases with terms greater than 12 months, and account for the lease and non-lease components as a single component. ROU assets represent our right to use an asset for the lease term, while lease liabilities represent our obligation to make lease payments. Operating and finance lease ROU assets and liabilities are recognized based on the present value of lease payments over the lease term at the lease commencement date. We use the implicit interest rate or, if not readily determinable, our incremental borrowing rate as of the lease commencement date to determine the present value of lease payments. The incremental borrowing rate is based on our unsecured borrowing rate, adjusted for the effects of collateral. Operating and finance lease ROU assets are recognized net of any lease prepayments and incentives. Lease terms may include options to extend or terminate the lease when it is reasonably certain that we will exercise that option. Operating lease expense is recognized on a straight-line basis over the lease term. Finance lease expense is recognized based on the effective-interest method over the lease term.

Fair value measurement. Fair value is defined as the price that would be received upon sale of an asset or paid to transfer a liability in an orderly transaction between market participants at the measurement date. A three level hierarchy is applied to prioritize the inputs to valuation techniques used to measure fair value. The hierarchy gives the highest priority to unadjusted quoted prices in active markets for identical assets or liabilities (Level 1 measurements) and the lowest priority to unobservable inputs (Level 3 measurements).

The three levels of the fair value hierarchy under the guidance for fair value measurements are described below:

Level 1 — Level 1 inputs are quoted prices (unadjusted) in active markets for identical assets or liabilities that the reporting entity has the ability to access at the measurement date. Our Level 1 assets include cash equivalents, banker's acceptances, trading securities investments and investment funds. We measure trading securities investments and investment funds at quoted market prices as they are traded in active markets with sufficient volume and frequency of transactions.

Level 2 — Level 2 inputs are inputs other than quoted prices included within Level 1 that are observable for the asset or liability, either directly or indirectly. If the asset or liability has a specified contractual term, a Level 2 input must be observable for substantially the full term of the asset or liability.

Level 3 — Level 3 inputs are unobservable inputs for the asset or liability in which there is little, if any, market activity for the asset or liability at the measurement date. Level 3 assets and liabilities include investment in equity securities without readily determinable fair values, goodwill, intangible assets, and property, plant and equipment, which are measured at fair value using a discounted cash flow approach when they are impaired. Quantitative information for Level 3 assets and liabilities reviewed at each reporting period includes indicators of significant deterioration in the earnings performance, credit rating, asset quality, business prospects of the investee, and financial indicators of the investee's ability to continue as a going concern.

Business combinations. We account for business combinations under the acquisition method of accounting, which requires us to recognize separately from goodwill the assets acquired and the liabilities assumed at their acquisition date fair values. While we use our best estimates and assumptions to accurately value assets acquired and liabilities assumed at the acquisition date as well as contingent consideration, where applicable, our estimates are inherently uncertain and subject to refinement. As a result, during the measurement period, which may be up to one year from the acquisition date, we record adjustments to the assets acquired and liabilities assumed with the corresponding offset to goodwill. Upon the conclusion of the measurement period or final determination of the values of assets acquired or liabilities assumed, whichever comes first, any subsequent adjustments are recognized in our consolidated statements of operations. Accounting for business combinations requires our management to make significant estimates and assumptions, especially at the acquisition date including our estimates for intangible assets, contractual obligations assumed, restructuring liabilities, pre-acquisition contingencies, and contingent consideration, where applicable. Although we believe the assumptions and estimates we have made in the past have been reasonable and appropriate, they are based, in part, on historical experience and information obtained from the management of the acquired companies and are inherently uncertain. Critical estimates in valuing certain acquired intangible assets under the income approach include growth in future expected cash flows from product sales, customer contracts and acquired technologies, revenue growth rate, customer ramp-up period, technology obsolescence rates, expected costs to develop in-process research and development (“IPR&D”) into commercially viable products, estimated cash flows from the projects when completed and discount rates. Unanticipated events and circumstances may occur that may affect the accuracy or validity of such assumptions, estimates or actual results.

Goodwill. Goodwill represents the excess of purchase price and related costs over the value assigned to the net tangible and identifiable intangible assets of businesses acquired. Goodwill is not amortized but is reviewed annually (or more frequently if impairment indicators arise) for impairment. To review for impairment we first assess qualitative factors to determine whether events or circumstances lead to a determination that it is more likely than not that the fair value of any of our reporting units is less than its carrying amount. Our qualitative assessment of the recoverability of goodwill, whether performed annually or based on specific events or circumstances, considers various macroeconomic, industry-specific and company-specific factors. Those factors include: (i) severe adverse industry or economic trends; (ii) significant company-specific actions, including exiting an activity in conjunction with restructuring of operations; (iii) current, historical or projected deterioration of our financial performance; or (iv) a sustained decrease in our market capitalization below our net book value. After assessing the totality of events and circumstances, if we determine that it is not more likely than not that the fair value of any of our reporting units is less than its carrying amount, no further assessment is performed. If we determine that it is more likely than not that the fair value of any of our reporting units is less than its carrying amount, we calculate the fair value of that reporting unit and compare the fair value to the reporting unit’s net book value. If the fair value of the reporting unit is greater than its net book value, there is no impairment. Otherwise, we calculate the implied fair value of goodwill by deducting the fair value of all tangible and intangible assets, excluding goodwill, of the reporting unit from the fair value of the reporting unit. The implied fair value of goodwill is compared to the carrying value of goodwill. If the implied fair value of goodwill is less than the carrying value of goodwill, an impairment loss is recognized equal to the difference. Determining the fair value of a reporting unit involves the use of significant estimates and assumptions.

Long-lived assets. Purchased finite-lived intangible assets are carried at cost less accumulated amortization. Amortization is recognized over the periods during which the intangible assets are expected to contribute to our cash flows. Purchased IPR&D projects are capitalized at fair value as an indefinite-lived intangible asset and assessed for impairment thereafter. Upon completion of each underlying project, IPR&D assets are reclassified as amortizable purchased intangible assets and amortized over their estimated useful lives. If an IPR&D project is abandoned, we recognize the carrying value of the related intangible asset in our consolidated statements of operations in the period it is abandoned. On a quarterly basis, we monitor factors and changes in circumstances that could indicate carrying amounts of long-lived assets, including purchased intangible assets and property, plant and equipment, may not be recoverable. Factors we consider important which could trigger an impairment review include (i) significant under-performance relative to historical or projected future operating results, (ii) significant changes in the manner of our use of the acquired assets or the strategy for our overall business, and (iii) significant negative industry or economic trends. An impairment loss must be measured if the sum of the expected future cash flows (undiscounted and before interest) from the use and eventual disposition of the asset (or asset group) is less than the net book value of the asset (or asset group). The amount of the impairment loss will generally be measured as the difference between the net book value of the asset (or asset group) and the estimated fair value.

Warranty. We accrue for the estimated costs of product warranties at the time revenue is recognized. Product warranty costs are estimated based upon our historical experience and specific identification of the product requirements, which may fluctuate based on product mix. Additionally, we accrue for warranty costs associated with occasional or unanticipated product quality issues if a loss is probable and can be reasonably estimated.

Revenue recognition. We account for a contract with a customer when both parties have approved the contract and are committed to perform their respective obligations, each party's rights can be identified, payment terms can be identified, the contract has commercial substance, and it is probable we will collect substantially all of the consideration we are entitled to. Revenue is recognized when, or as, performance obligations are satisfied by transferring control of a promised product or service to a customer.

Nature of Products and Services

Our products and services can be broadly categorized as sales of products and subscriptions and services. The following is a description of the principal activities from which we generate revenue.

Products. We recognize revenue from sales to direct customers and distributors when control transfers to the customer. Rebates and incentives offered to distributors, which are earned when sales to end customers are completed, are estimated at the point of revenue recognition. We have elected to exclude from the transaction price any taxes collected from a customer and to account for shipping and handling activities performed after a customer obtains control of the product as activities to fulfill the promise to transfer the product. From time to time, certain customers agree to pay us secure supply fees in exchange for prioritized fulfillment of product orders. Such fees are included in the transaction price of the product orders and are recognized as revenue in the period that control over the products is transferred to the customer.

Subscriptions and services. Our subscriptions and services revenue consists of sales and royalties from software arrangements, support services, professional services, transfer of IP, and non-recurring engineering ("NRE") arrangements.

Revenue from software arrangements primarily consists of fees, which may be paid either at contract inception or in installments over the contract term, that provide customers with a right to use the software, access general support and maintenance, and utilize our professional services.

Our software licenses have standalone functionality from which customers derive benefit, and the customer obtains control of the software when it is delivered or made available for download. We believe that for the majority of software arrangements, customers derive significant benefit from the ongoing support we provide. The majority of our subscriptions and services arrangements permit our customers to unilaterally terminate or cancel these arrangements at any time at the customer's convenience, referred to as termination for convenience provisions, without substantive termination penalty and receive a pro-rata refund of any prepaid fees. Accordingly, we account for arrangements with these termination for convenience provisions as a series of daily contracts, resulting in ratable revenue recognition of software revenue over the contractual period.

Support services consist primarily of telephone support and the provision of unspecified updates and upgrades on a when-and-if-available basis. Support services represent stand-ready obligations for which revenue is recognized ratably over the term of the arrangement.

Professional services consist of implementation, consulting, customer education and customer training services. The obligation to provide professional services is generally satisfied over time, with the customer simultaneously receiving and consuming the benefits as we satisfy our performance obligations.

Rights to our IP are either sold or licensed to a customer. IP revenue recognition is dependent on the nature and terms of each agreement. We recognize IP revenue upon delivery of the IP if there are no substantive future obligations to perform under the arrangement. Sales-based or usage-based royalties from the license of IP are recognized at the later of the period the sales or usages occur or the satisfaction of the performance obligation to which some or all of the sales-based or usage-based royalties have been allocated.

There are two main categories of NRE contracts that we enter into with our customers: (a) NRE contracts in which we develop a custom chip and (b) NRE contracts in which we accelerate our development of a new chip upon the customer's request. The majority of our NRE contract revenues meet the over time criteria. As such, revenue is recognized over the development period with the measure of progress using the input method based on costs incurred to total cost ("cost-to-cost") as the services are provided. For NRE contracts that do not meet the over time criteria, revenue is recognized at a point in time when the NRE services are complete.

Material rights. Contracts with customers may also include material rights that are also performance obligations. These include the right to renew or receive products or services at a discounted price in the future. Revenue allocated to material rights is recognized when the customer exercises the right or the right expires.

Arrangements with Multiple Performance Obligations

Our contracts may contain more than one of the products and services listed above, each of which is separately accounted for as a distinct performance obligation.

Allocation of consideration. We allocate total contract consideration to each distinct performance obligation in a bundled arrangement on a relative standalone selling price basis. The standalone selling price reflects the price we would charge for a specific product or service if it were sold separately in similar circumstances and to similar customers.

Standalone selling price. When available, we use directly observable transactions to determine the standalone selling prices for performance obligations. Our estimates of standalone selling price for each performance obligation require judgment that considers multiple factors, including, but not limited to, historical discounting trends for products and services and pricing practices through different sales channels, gross margin objectives, internal costs, competitor pricing strategies, technology lifecycles and market conditions.

We separately determine the standalone selling prices by product or service type. Additionally, we segment the standalone selling prices for products where the pricing strategies differ, and where there are differences in customers and circumstances that warrant segmentation.

We also estimate the standalone selling price of our material rights. Lastly, we estimate the value of the customer's option to purchase or receive additional products or services at a discounted price by estimating the incremental discount the customer would obtain when exercising the option and the likelihood that the option would be exercised.

Other Policies and Judgments

Contract modifications. We may modify contracts to offer customers additional products or services. Each of the additional products and services is generally considered distinct from those products or services transferred to the customer before the modification. We evaluate whether the contract price for the additional products and services reflects the standalone selling price as adjusted for facts and circumstances applicable to that contract. In these cases, we account for the additional products or services as a separate contract. In other cases where the pricing in the modification does not reflect the standalone selling price as adjusted for facts and circumstances applicable to that contract, we account for the additional products or services as part of the existing contract on a prospective basis, on a cumulative catch-up basis, or a combination of both based on the nature of the modification. In instances where the pricing in the modification offers the customer a credit for a prior arrangement, we adjust our variable consideration reserves for returns and other concessions.

Right of return. Certain contracts contain a right of return that allows the customer to cancel all or a portion of the product or service and receive a credit. We estimate returns based on historical returns data which is constrained to an amount for which a material revenue reversal is not probable. We do not recognize revenue for products or services that are expected to be returned.

Practical expedient elected. We do not disclose the value of unsatisfied performance obligations for (i) contracts with an original expected length of one year or less and (ii) contracts for which we recognize revenue at the amount to which we have the right to invoice for services performed. For contracts that were modified before the beginning of the earliest reporting period presented, we have not retrospectively restated the contract for those modifications. We have disclosed the aggregate effect of all modifications when identifying the satisfied and unsatisfied performance obligations for purposes of determining the transaction price and allocating the transaction price at transition.

Research and development. Research and development expense consists primarily of personnel costs for our engineers and third parties engaged in the design and development of our products, software and technologies, including salary, bonus and stock-based compensation expense, project material costs, services and depreciation. Such costs are charged to research and development expense as they are incurred.

Stock-based compensation expense. We recognize compensation expense for time-based restricted stock units ("RSUs") using the straight-line amortization method based on the fair value of RSUs on the date of grant. The fair value of RSUs is the closing market price of Broadcom common stock on the date of grant, reduced by the present value of dividends expected to be paid on Broadcom common stock prior to vesting. We recognize compensation expense for time-based stock options and employee stock purchase plan rights under the Broadcom Inc. Employee Stock Purchase Plan, as amended ("ESPP") based on the estimated grant-date fair value determined using the Black-Scholes valuation model with a straight-line amortization method.

Certain equity awards include both service and market conditions. The fair value of market-based awards is estimated on the date of grant using the Monte Carlo simulation technique. Compensation expense for market-based awards is amortized based upon a graded vesting method over the service period.

We estimate forfeitures expected to occur and recognize stock-based compensation expense for such awards expected to vest. Changes in the estimated forfeiture rates can have a significant effect on stock-based compensation expense since the effect of adjusting the rate is recognized in the period the forfeiture estimate is changed.

Shipping and handling costs. Our shipping and handling costs charged to customers are included in net revenue and the associated expense is included in cost of revenue for all periods presented.

Litigation and settlement cost. We are involved in legal actions and other matters arising in our recent business acquisitions and in the normal course of business. We recognize an estimated loss contingency when the outcome is probable prior to issuance of the consolidated financial statements and we are able to reasonably estimate the amount or range of any possible loss.

Income taxes. We account for income taxes under the asset and liability method, which requires the recognition of deferred tax assets and liabilities for the expected future tax consequences of events that have been included in the consolidated financial statements. Under this method, deferred tax assets and liabilities are determined based on the differences between the consolidated financial statements and tax basis of assets and liabilities using enacted tax rates in effect for the year in which the differences are expected to reverse. The effect of a change in tax rates on deferred tax assets and liabilities is recognized in income in the period that includes the enactment date.

We recognize net deferred tax assets to the extent we believe these assets will more likely than not be realized. In making such determination, we consider all available positive and negative evidence, including scheduled reversals of deferred tax liabilities, projected future taxable income, tax planning strategies and recent financial operations. If we determine that we are able to realize our deferred income tax assets in the future in excess of their net carrying values, we adjust the valuation allowance and reduce the provision for income taxes or increase the benefit from income taxes. Likewise, if we determine that we are not able to realize all or part of our net deferred tax assets, we increase the provision for income taxes or decrease the benefit from income taxes in the period such determination is made.

We account for uncertainty in income taxes in accordance with the applicable accounting guidance on income taxes. This guidance provides that a tax benefit from an uncertain tax position may be recognized when it is more likely than not that the position will be sustained upon examination, including resolutions of any related appeals or litigation processes, based on the technical merits.

Net income per share. Basic net income per share is computed by dividing net income attributable to common stock by the weighted-average number of shares of common stock outstanding during the period. Diluted net income per share is computed by dividing net income attributable to common stock by the weighted-average number of shares of common stock and potentially dilutive shares of common stock outstanding during the period. Diluted shares outstanding include the dilutive effect of unvested RSUs, in-the-money stock options, and ESPP rights (together referred to as “equity awards”), as well as convertible preferred stock. Potentially dilutive shares whose effect would have been antidilutive are excluded from the computation of diluted net income per share.

The dilutive effect of equity awards is calculated based on the average stock price for each fiscal period, using the treasury stock method. Under the treasury stock method, the amount the employee must pay for exercising stock options and purchasing shares under the ESPP and the amount of compensation cost for future service that we have not yet recognized are collectively assumed to be used to repurchase shares. The dilutive effect of convertible preferred stock is calculated using the if-converted method. The if-converted method assumes that these securities were converted at the beginning of the reporting period to the extent that the effect is dilutive.

Recent Accounting Guidance Not Yet Adopted

In October 2021, the Financial Accounting Standards Boards issued Accounting Standards Update (“ASU”) 2021-08, *Business Combinations (Topic 805): Accounting for Contract Assets and Contract Liabilities from Contracts with Customers*. The new guidance requires contract assets and contract liabilities acquired in a business combination to be recognized and measured by the acquirer on the acquisition date in accordance with Accounting Standards Codification 606, *Revenue from Contracts with Customers*, as if it had originated the contracts. This approach differs from the current requirement to measure contract assets and contract liabilities acquired in a business combination at fair value. The new guidance will be effective for the first quarter of our fiscal year ending October 29, 2023, with early adoption permitted. The adoption impact of the new standard will depend on the magnitude of future acquisitions. The standard will not impact acquired contract assets or liabilities from business combinations occurring prior to the adoption date.

3. Revenue from Contracts with Customers

Disaggregation

We have considered (1) information that is regularly reviewed by our Chief Executive Officer, who has been identified as the chief operating decision maker (the “CODM”) as defined by the authoritative guidance on segment reporting, in evaluating financial performance and (2) disclosures presented outside of our financial statements in our earnings releases and used in investor presentations to disaggregate revenues. The principal category we use to disaggregate revenues is the nature of our products and subscriptions and services, as presented in our consolidated statements of operations. In addition, revenues by reportable segment are presented in Note 13. “Segment Information”.

The following tables present revenue disaggregated by type of revenue and by region for the periods presented:

	Fiscal Year 2021			
	Americas	Asia Pacific	Europe, the Middle East and Africa	Total
	(In millions)			
Products	$ 1,809	$ 17,258	$ 1,819	$ 20,886
Subscriptions and services[a]	4,290	720	1,554	6,564
Total	$ 6,099	$ 17,978	$ 3,373	$ 27,450

	Fiscal Year 2020			
	Americas	Asia Pacific	Europe, the Middle East and Africa	Total
	(In millions)			
Products	$ 1,775	$ 14,442	$ 1,218	$ 17,435
Subscriptions and services[a]	4,059	881	1,513	6,453
Total	$ 5,834	$ 15,323	$ 2,731	$ 23,888

	Fiscal Year 2019			
	Americas	Asia Pacific	Europe, the Middle East and Africa	Total
	(In millions)			
Products	$ 2,023	$ 14,857	$ 1,237	$ 18,117
Subscriptions and services[a]	3,126	374	980	4,480
Total	$ 5,149	$ 15,231	$ 2,217	$ 22,597

(a) Subscriptions and services predominantly includes software licenses with termination for convenience clauses.

Although we recognize revenue for the majority of our products when title and control transfer in Penang, Malaysia, we disclose net revenue by region based primarily on the geographic shipment location or delivery location specified by our distributors, original equipment manufacturer (“OEM”) customers, contract manufacturers, channel partners, or software customers.

Contract Balances

Contract assets and contract liabilities balances were as follows:

	Contract Assets	Contract Liabilities
	(In millions)	
Balance as of November 1, 2020	$ 158	$ 3,443
Balance as of October 31, 2021	$ 126	$ 3,185

Changes in our contract assets and contract liabilities primarily result from the timing difference between our performance and the customer's payment. We fulfill our obligations under a contract with a customer by transferring products and services in exchange for consideration from the customer. We recognize a contract asset when we transfer products or services to a customer and the right to consideration is conditional on something other than the passage of time. Accounts receivable are recorded when the customer has been billed or the right to consideration is unconditional. We recognize contract liabilities when we have received consideration or an amount of consideration is due from the customer and we have a future obligation to transfer products or services. Contract liabilities include amounts billed or collected and advanced payments on contracts or arrangements which may include termination for convenience provisions. The amount of revenue recognized during fiscal year 2021 that was included in the contract liabilities balance as of November 1, 2020 was $2,617 million. The amount of revenue recognized during fiscal year 2020 that was included in the contract liabilities balance as of November 3, 2019 was $1,450 million.

Remaining Performance Obligations

Revenue allocated to remaining performance obligations represents the transaction price allocated to unsatisfied or partially unsatisfied performance obligations. Remaining performance obligations include unearned revenue and amounts that will be invoiced and recognized as revenue in future periods, but do not include contracts for software, subscriptions or services where the customer is not committed. The customer is not considered committed when termination for convenience without payment of a substantive penalty exists, either contractually or through customary business practice. The majority of our customer software contracts include termination for convenience clauses without a substantive penalty and are not considered committed. Additionally, as a practical expedient, we have not included contracts that have an original duration of one year or less, nor have we included contracts with sales-based or usage-based royalties promised in exchange for a license of IP.

Certain multi-year customer contracts in our semiconductor solutions segment contain firmly committed amounts and the remaining performance obligations under these contracts as of October 31, 2021 were approximately $13.6 billion. We expect approximately 31% of this amount to be recognized as revenue over the next 12 months. Although the majority of our software contracts are not deemed to be committed, our customers generally do not exercise their termination for convenience rights. In addition, the majority of our contracts for products, subscriptions and services have a duration of one year or less. Accordingly, our remaining performance obligations disclosed above are not indicative of revenue for future periods.

4. Acquisitions

Acquisition of the Symantec Corporation Enterprise Security Business

On November 4, 2019 (the "Symantec Acquisition Date"), we completed the purchase of the Symantec Business, which was an established leader in cyber security, for $10.7 billion in cash. We acquired the Symantec Business to expand our footprint of mission critical infrastructure software with our existing customer base. The Symantec Business includes a deep and broad mix of products, services and solutions, unifying cloud and on-premises security to provide advanced threat protection and information protection across endpoints, network, email and cloud applications. We financed this acquisition with the net proceeds from borrowings under the November 2019 Term Loans, as defined in Note 10. "Borrowings".

The following table presents our allocation of the total purchase price:

	Fair Value (In millions)
Current assets	$ 273
Goodwill	6,638
Intangible assets	5,411
Other long-term assets	92
Total assets acquired	12,414
Current liabilities	(1,127)
Other long-term liabilities	(587)
Total liabilities assumed	(1,714)
Fair value of net assets acquired	$ 10,700

Goodwill is primarily attributable to the assembled workforce and anticipated synergies and economies of scale expected from the integration of the Symantec Business. The synergies include certain cost savings, operating efficiencies, and other strategic benefits projected to be achieved resulting from the acquisition of the Symantec Business. Substantially all goodwill is deductible for tax purposes.

Current assets and current liabilities included amounts held-for-sale related to the acquired Symantec Cyber Security Services ("CSS") business. The CSS business was not aligned with our acquisition-date strategic objectives and was sold on April 30, 2020. We do not have any material continuing involvement with this business and have presented its results in discontinued operations.

Our results of continuing operations for fiscal year 2020 included $1,610 million of net revenue attributable to the Symantec Business. It was impracticable to determine the effect on net income attributable to the Symantec Business as we had integrated the Symantec Business into our ongoing operations during the year. The results of operations of the Symantec Business were included in our infrastructure software segment. Transaction costs related to the acquisition of the Symantec Business of $110 million were included in selling, general and administrative expense for fiscal year 2020.

Intangible Assets

	Fair Value (In millions)	Weighted-Average Amortization Periods (In years)
Developed technology	$ 2,900	5
Customer contracts and related relationships	2,410	5
Trade name	90	6
Order backlog	11	3
Total identified finite-lived intangible assets	$ 5,411	

Developed technology relates to products used for cyber security solutions, including data loss prevention, endpoint protection, and web, email and cloud security solutions. We valued the developed technology using the multi-period excess earnings method under the income approach. This method reflects the present value of the projected cash flows that are expected to be generated by the developed technology less charges representing the contribution of other assets to those cash flows. The economic useful life was determined based on the technology cycle related to each developed technology, as well as the cash flows over the forecast period.

Customer contracts and related relationships represent the fair value of future projected revenue that will be derived from sales of products to existing customers of the Symantec Business. Customer contracts and related relationships were valued using the with-and-without-method under the income approach. In the with-and-without method, the fair value was measured by the difference between the present values of the cash flows with and without the existing customers in place over the period of time necessary to reacquire the customers. The economic useful life was determined by evaluating many factors, including the useful life of other intangible assets, the length of time remaining on the acquired contracts and the historical customer turnover rates.

Trade name relates to the “Symantec” trade name. The fair value was determined by applying the relief-from-royalty method under the income approach. This method is based on the application of a royalty rate to forecasted revenue under the trade name. The economic useful life was determined based on the expected life of the trade name and the cash flows anticipated over the forecast period.

Order backlog represents business under existing contractual obligations. The fair value of backlog was determined using the multi-period excess earnings method under the income approach based on expected operating cash flows from future contractual revenue. The economic useful life was determined based on the expected life of the backlog and the cash flows over the forecast period.

We believe the amounts of purchased intangible assets recorded above represent the fair values of, and approximate the amounts a market participant would pay for, these intangible assets as of the Symantec Acquisition Date.

Unaudited Pro Forma Information

The following unaudited pro forma financial information presents combined results of operations for the periods presented, as if we had completed the acquisition of the Symantec Business as of the beginning of fiscal year 2019. The unaudited pro forma information includes adjustments to amortization and depreciation for intangible assets and property, plant and equipment acquired, adjustments to interest expense for the additional indebtedness incurred to complete the acquisition, restructuring charges related to the acquisition and transaction costs. For the fiscal year 2019, non-recurring pro forma adjustments directly attributable to the acquisition of the Symantec Business included transaction costs of $136 million. The unaudited pro forma information presented below is for informational purposes only and is not necessarily indicative of our consolidated results of operations of the combined business had the acquisition actually occurred at the beginning of fiscal year 2019 or of the results of our future operations of the combined business.

	Fiscal Year	
	2020	2019
	(In millions)	
Pro forma net revenue	$ 23,264	$ 24,227
Pro forma net income attributable to common stock	$ 2,368	$ 1,265

Other Acquisitions

During fiscal year 2020, we also completed three other acquisitions qualifying as business combinations for total consideration of $201 million, of which $109 million was allocated to goodwill and $46 million was allocated to intangible assets.

Acquisition of CA, Inc.

On November 5, 2018 (the “CA Acquisition Date”), we completed our acquisition of CA (the “CA Merger”), which was a leading provider of information technology (“IT”) management software and solutions. We acquired CA to enhance our infrastructure software capabilities. We financed the CA Merger with the net proceeds from $18 billion of term loans, as well as with cash on hand of the combined companies.

Purpose Consideration

		(In millions)
Cash paid for outstanding CA common stock	$	18,402
Cash paid by Broadcom to retire CA's term loan		274
Cash paid for vested CA equity awards		101
Fair value of partially vested assumed equity awards		67
Total purchase consideration		18,844
Less: cash acquired		(2,750)
Total purchase consideration, net of cash acquired	$	16,094

All vested in-the-money CA stock options, after giving effect to any acceleration, and all outstanding deferred stock units were cashed out upon the completion of the CA Merger. We assumed all unvested CA equity awards held by continuing employees. The portion of the fair value of partially vested equity awards associated with prior service of CA employees represents a component of the total consideration as presented above and was valued based on our share price as of the CA Acquisition Date.

The following table presents our allocation of the total purchase price, net of cash acquired:

		Fair Value (In millions)
Current assets	$	1,665
Goodwill		9,796
Intangible assets		12,045
Other long-term assets		240
Total assets acquired		23,746
Current liabilities		(1,966)
Long-term debt		(2,255)
Other long-term liabilities		(3,431)
Total liabilities assumed		(7,652)
Fair value of net assets acquired	$	16,094

Goodwill is primarily attributable to the assembled workforce and anticipated synergies and economies of scale expected from the integration of the CA business. The synergies include certain cost savings, operating efficiencies, and other strategic benefits projected to be achieved as a result of the CA Merger. Goodwill is not deductible for tax purposes.

Current assets included assets held-for-sale related to CA's Veracode business, which was not aligned with our strategic objectives. On December 31, 2018, we sold this business to Thoma Bravo, LLC for cash consideration of $950 million, before working capital adjustments. We do not have any material continuing involvement with this business and have presented its results in discontinued operations. Current assets also included $80 million of real properties held-for-sale. During fiscal year 2019, we sold a portion of these real properties for $62 million and recognized a loss of $8 million.

Our results of continuing operations for fiscal year 2019 included $3,377 million of net revenue attributable to CA. It was impracticable to determine the effect on net income attributable to CA as we had integrated a substantial portion of CA into our ongoing operations during the year. The results of operations of CA were included in our infrastructure software segment. Transaction costs related to the CA Merger of $73 million were included in selling, general and administrative expense for fiscal year 2019.

Intangible Assets

	Fair Value	Weighted-Average Amortization Periods
	(In millions)	(In years)
Developed technology	$ 4,957	6
Customer contracts and related relationships	4,190	6
Order backlog	2,569	3
Trade name and other	137	5
Total identified finite-lived intangible assets	11,853	
IPR&D	192	N/A
Total identified intangible assets	$ 12,045	

Developed technology relates to products used for mission critical business tools for processes and applications, as well as products used for cloud-based planning, development, management and security tools. We valued the developed technology using the multi-period excess earnings method under the income approach. This method reflects the present value of the projected cash flows that are expected to be generated by the developed technology less charges representing the contribution of other assets to those cash flows. The economic useful life was determined based on the technology cycle related to each developed technology, as well as the cash flows over the forecast period.

Customer contracts and related relationships represent the fair value of future projected revenue that will be derived from sales of products to existing customers of CA. Customer contracts and related relationships were valued using the with-and-without-method under the income approach. In the with-and-without method, the fair value was measured by the difference between the present values of the cash flows with and without the existing customers in place over the period of time necessary to reacquire the customers. The economic useful life was determined by evaluating many factors, including the useful life of other intangible assets, the length of time remaining on the acquired contracts and the historical customer turnover rates.

Order backlog represents business under existing contractual obligations. The fair value of backlog was determined using the multi-period excess earnings method under the income approach based on expected operating cash flows from future contractual revenue. The economic useful life was determined based on the expected life of the backlog and the cash flows over the forecast period.

Trade name relates to the “CA” trade name. The fair value was determined by applying the relief-from-royalty method under the income approach. This method is based on the application of a royalty rate to forecasted revenue under the trade name. The economic useful life was determined based on the expected life of the trade name and the cash flows anticipated over the forecast period.

The fair value of IPR&D was determined using the multi-period excess earnings method under the income approach. This method reflects the present value of the projected cash flows that are expected to be generated by the IPR&D, less charges representing the contribution of other assets to those cash flows.

We believe the amounts of purchased intangible assets recorded above represent the fair values of, and approximate the amounts a market participant would pay for, these intangible assets as of the CA Acquisition Date.

The following table summarizes the details of IPR&D by category as of the CA Acquisition Date:

Description	IPR&D	Percentage of Completion	Estimated Cost to Complete	Expected Completion Date (By Fiscal Year)
		(Dollars in millions)		
Mainframe	$ 178	67 %	$ 138	2019
Enterprise Solutions	$ 14	63 %	$ 12	2019

Discount rates of 12% and 14% were applied to the projected cash flows to reflect the risk related to these mainframe and enterprise solutions IPR&D projects, respectively.

During fiscal year 2020, these IPR&D projects were completed and placed in service.

Unaudited Pro Forma Information

The following unaudited pro forma financial information presents combined results of operations for fiscal year 2019, as if CA had been acquired as of the beginning of our fiscal year ended November 4, 2018 ("fiscal year 2018"). The unaudited pro forma information includes adjustments to amortization and depreciation for intangible assets and property, plant and equipment acquired, adjustments to stock-based compensation expense, interest expense for the additional indebtedness incurred to complete the acquisition, restructuring charges related to the acquisition and transaction costs. The unaudited pro forma information presented below is for informational purposes only and is not necessarily indicative of our consolidated results of operations of the combined business had the acquisition actually occurred at the beginning of fiscal year 2018 or of the results of our future operations of the combined business.

	Fiscal Year 2019
	(In millions)
Pro forma net revenue	$ 21,697
Pro forma net income attributable to common stock	$ 2,535

5. Supplemental Financial Information

Cash Equivalents

Cash equivalents included $4,668 million and $2,471 million of time deposits and $1,607 million and $790 million of money-market funds as of October 31, 2021 and November 1, 2020, respectively. For time deposits, carrying value approximates fair value due to the short-term nature of the instruments. The fair value of money-market funds, which was consistent with their carrying value, was determined using unadjusted prices in active, accessible markets for identical assets, and as such, they were classified as Level 1 assets in the fair value hierarchy.

Accounts Receivable Factoring

We sell certain of our trade accounts receivable on a non-recourse basis to third-party financial institutions pursuant to factoring arrangements. We account for these transactions as sales of receivables and present cash proceeds as cash provided by operating activities in the consolidated statements of cash flows. Total trade accounts receivable sold under the factoring arrangements were $4,027 million, $3,723 million and $1,151 million during fiscal years 2021, 2020 and 2019, respectively. Factoring fees for the sales of receivables were recorded in other income, net and were not material for any of the periods presented.

Inventory

	October 31, 2021	November 1, 2020
	(In millions)	
Finished goods	$ 423	$ 323
Work-in-process	680	558
Raw materials	194	122
Total inventory	$ 1,297	$ 1,003

Property, Plant and Equipment, Net

	October 31, 2021	November 1, 2020
	(In millions)	
Land	$ 195	$ 194
Construction in progress	38	113
Buildings and leasehold improvements	1,150	1,133
Machinery and equipment	4,161	3,891
Total property, plant and equipment	5,544	5,331
Accumulated depreciation and amortization	(3,196)	(2,822)
Total property, plant and equipment, net	$ 2,348	$ 2,509

Depreciation expense was $539 million, $570 million and $569 million for fiscal years 2021, 2020, and 2019, respectively.

Other Current Assets

	October 31, 2021	November 1, 2020
	(In millions)	
Prepaid expenses	$ 539	$ 387
Other (miscellaneous)	516	590
Total other current assets	$ 1,055	$ 977

Other Current Liabilities

	October 31, 2021	November 1, 2020
	(In millions)	
Contract liabilities	$ 2,619	$ 2,620
Tax liabilities	541	440
Other (miscellaneous)	679	771
Total other current liabilities	$ 3,839	$ 3,831

Other Long-Term Liabilities

	October 31, 2021	November 1, 2020
	(In millions)	
Unrecognized tax benefits, interest and penalties	$ 3,407	$ 3,185
Contract liabilities	566	823
Other (miscellaneous)	887	1,418
Total other long-term liabilities	$ 4,860	$ 5,426

Other Income, Net

	Fiscal Year		
	2021	2020	2019
	(In millions)		
Gains on investments	$ 99	$ 31	$ 145
Other income	26	56	18
Interest income	16	53	98
Other expense	(10)	(50)	(35)
Gain from lapse of indemnification	—	116	—
Other income, net	$ 131	$ 206	$ 226

Other income includes dividends, gains on sales of businesses and other miscellaneous items.

6. Leases

At the beginning of fiscal year 2020, we adopted ASU 2016-02, *Leases* (“Topic 842”) using the optional adoption method, whereby no adjustment to the financial statements of comparative periods was required. We have operating and finance leases for our facilities, data centers and certain equipment. Operating lease expense was $102 million, $106 million and $244 million for fiscal years 2021, 2020 and 2019, respectively. Finance lease expense was $16 million and $14 million for fiscal years 2021 and 2020, respectively.

Other information related to leases was as follows:

	Fiscal Year 2021	Fiscal Year 2020
	(In millions)	
Cash paid for operating leases included in operating cash flows	$ 140	$ 125
ROU assets obtained in exchange for operating lease liabilities	$ 92	$ 682
ROU assets obtained in exchange for finance lease liabilities	$ 15	$ 74

	October 31, 2021	November 1, 2020
Weighted-average remaining lease term – operating leases (In years)	10	10
Weighted-average remaining lease term – finance leases (In years)	3	4
Weighted-average discount rate – operating leases	3.78 %	3.80 %
Weighted-average discount rate – finance leases	3.11 %	3.33 %

Supplemental balance sheet information related to leases was as follows:

	Classification on the Consolidated Balance Sheets	October 31, 2021	November 1, 2020
		(In millions)	
ROU assets - operating leases	Other long-term assets	$ 588	$ 589
ROU assets - finance leases	Property, plant and equipment, net	$ 55	$ 62
Short-term lease liabilities - operating leases	Other current liabilities	$ 83	$ 100
Long-term lease liabilities - operating leases	Other long-term liabilities	$ 460	$ 527
Short-term lease liabilities - finance leases	Current portion of long-term debt	$ 26	$ 20
Long-term lease liabilities - finance leases	Long-term debt	$ 39	$ 48

Future minimum lease payments under non-cancelable leases as of October 31, 2021 were as follows:

	October 31, 2021	
	Operating Leases	Finance Leases
	(In millions)	
2022	$ 101	$ 28
2023	86	18
2024	67	18
2025	57	2
2026	46	2
Thereafter	311	—
Total undiscounted liabilities	668	68
Less: interest	(125)	(3)
Present value of lease liabilities	$ 543	$ 65

7. Goodwill and Intangible Assets

Goodwill

	Semiconductor Solutions	Infrastructure Software	IP Licensing	Total
		(In millions)		
Balance as of November 3, 2019	$ 25,929	$ 10,776	$ 9	$ 36,714
Reallocation due to change in segments	9	—	(9)	—
Acquisitions	35	6,712	—	6,747
Sale of business	(14)	—	—	(14)
Balance as of November 1, 2020	25,959	17,488	—	43,447
Acquisition	—	10	—	10
Sale of business	—	(7)	—	(7)
Balance as of October 31, 2021	$ 25,959	$ 17,491	$ —	$ 43,450

In fiscal year 2020, we reassigned goodwill balances among our reportable segments to reflect changes in our segment structure.

During the fourth quarter of fiscal years 2021, 2020 and 2019, we completed our annual impairment assessments and concluded that goodwill was not impaired in any of these years.

Intangible Assets

	Gross Carrying Amount	Accumulated Amortization	Net Book Value
		(In millions)	
As of October 31, 2021:			
Purchased technology	$ 23,932	$ (17,148)	$ 6,784
Customer contracts and related relationships	8,356	(4,533)	3,823
Order backlog	2,579	(2,352)	227
Trade names	787	(386)	401
Other	239	(127)	112
Intangible assets subject to amortization	35,893	(24,546)	11,347
IPR&D	27	—	27
Total	$ 35,920	$ (24,546)	$ 11,374
As of November 1, 2020:			
Purchased technology	$ 24,119	$ (13,925)	$ 10,194
Customer contracts and related relationships	8,389	(3,179)	5,210
Order backlog	2,579	(1,836)	743
Trade names	797	(322)	475
Other	252	(117)	135
Intangible assets subject to amortization	36,136	(19,379)	16,757
IPR&D	25	—	25
Total	$ 36,161	$ (19,379)	$ 16,782

Based on the amount of intangible assets subject to amortization at October 31, 2021, the expected amortization expense for each of the next five fiscal years and thereafter was as follows:

Fiscal Year:	Expected Amortization Expense
	(In millions)
2022	$ 4,365
2023	3,237
2024	2,367
2025	659
2026	323
Thereafter	396
Total	$ 11,347

The weighted-average amortization periods remaining by intangible asset category were as follows:

Amortizable intangible assets:	October 31, 2021	November 1, 2020
	(In years)	
Purchased technology	4	5
Customer contracts and related relationships	3	4
Order backlog	2	2
Trade names	8	9
Other	9	10

8. Net Income Per Share

	Fiscal Year		
	2021	2020	2019
	(In millions, except per share data)		
Numerator:			
Income from continuing operations	$ 6,736	$ 2,961	$ 2,736
Dividends on preferred stock	(299)	(297)	(29)
Income from continuing operations attributable to common stock	6,437	2,664	2,707
Loss from discontinued operations, net of income taxes, attributable to common stock	—	(1)	(12)
Net income attributable to common stock	$ 6,437	$ 2,663	$ 2,695
Denominator:			
Weighted-average shares outstanding - basic	410	402	398
Dilutive effect of equity awards	19	19	21
Weighted-average shares outstanding - diluted	429	421	419
Basic income per share attributable to common stock:			
Income per share from continuing operations	$ 15.70	$ 6.62	$ 6.80
Loss per share from discontinued operations	—	—	(0.03)
Net income per share	$ 15.70	$ 6.62	$ 6.77
Diluted income per share attributable to common stock:			
Income per share from continuing operations	$ 15.00	$ 6.33	$ 6.46
Loss per share from discontinued operations	—	—	(0.03)
Net income per share	$ 15.00	$ 6.33	$ 6.43

For fiscal years 2021, 2020 and 2019, diluted net income per share excluded the potentially dilutive effect of 12 million, 12 million and 1 million shares of common stock, respectively, issuable upon the conversion of Mandatory Convertible Preferred Stock, as defined in Note 11. “Stockholders’ Equity,” as their effect was antidilutive.

9. Retirement Plans and Post-Retirement Benefits

Pension and Post-Retirement Benefit Plans

Defined Benefit Pension Plans. The U.S. defined benefit pension plans primarily consist of a qualified pension plan. Benefits of the qualified pension plan are provided under an adjusted career-average-pay program, a cash-balance program or a dollar-per-month program. Benefit accruals under this plan were frozen in 2009. Participants in the adjusted career-average-pay program no longer earn service accruals. Participants in the cash-balance program no longer earn service accruals, but continue to earn 4% interest per year on their cash-balance accounts. There are no active participants under the dollar-per-month program. We also have a non-qualified supplemental pension plan in the United States that principally provides benefits based on compensation in excess of amounts that can be considered under the qualified pension plan.

We also have defined benefit pension plans for certain employees in Austria, France, Germany, India, Israel, Italy, Japan and Taiwan. Eligibility is generally determined based on the terms of our plans and local statutory requirements.

Post-Retirement Benefit Plans. Certain of our U.S. employees who meet the retirement eligibility requirements as of their termination dates, may receive post-retirement medical benefits under our retiree medical account program. The majority of the eligible employees receive a medical benefit spending account of $55,000 upon retirement to pay premiums for medical coverage through the maximum age of 75 as a retiree.

Our group life insurance plan offers post-retirement life insurance coverage for certain U.S. employees.

Net Periodic Benefit (Income) Cost

	Pension Benefits			Post-Retirement Benefits		
	Fiscal Year			Fiscal Year		
	2021	2020	2019	2021	2020	2019
	(In millions)					
Service cost	$ 11	$ 12	$ 10	$ —	$ —	$ —
Interest cost	39	45	58	3	3	3
Expected return on plan assets	(40)	(46)	(59)	(3)	(3)	(3)
Other	1	(3)	1	1	1	(1)
Net periodic benefit (income) cost	$ 11	$ 8	$ 10	$ 1	$ 1	$ (1)
Net actuarial (gain) loss	$ 8	$ (28)	$ 13	$ 3	$ —	$ 11

The components of net periodic benefit (income) cost other than the service cost are included in other income, net. Service cost is recognized in operating expenses.

Funded Status

	Pension Benefits		Post-Retirement Benefits	
	October 31, 2021	November 1, 2020	October 31, 2021	November 1, 2020
	(In millions)			
Change in plan assets:				
Fair value of plan assets — beginning of period	$ 1,593	$ 1,539	$ 88	$ 85
Actual return on plan assets	20	129	(2)	5
Employer contributions	9	13	1	1
Payments from plan assets	(102)	(96)	(3)	(3)
Foreign currency impact	1	8	—	—
Fair value of plan assets — end of period	1,521	1,593	84	88
Change in benefit obligations:				
Benefit obligations — beginning of period	1,588	1,553	95	93
Service cost	11	12	—	—
Interest cost	39	45	3	3
Actuarial (gain) loss	(11)	61	(2)	2
Benefit payments	(102)	(96)	(3)	(3)
Curtailments	(1)	(6)	—	—
Benefit obligations assumed in an acquisition	—	10	—	—
Foreign currency impact	2	9	—	—
Benefit obligations — end of period	1,526	1,588	93	95
Overfunded (underfunded) status of benefit obligations [a]	$ (5)	$ 5	$ (9)	$ (7)
Actuarial losses and prior service costs recognized in accumulated other comprehensive loss, net of taxes	$ (100)	$ (94)	$ (16)	$ (14)

(a) Substantially all amounts recognized in the consolidated balance sheets were recorded in other long-term assets and other long-term liabilities for all periods presented.

Plans with benefit obligations in excess of plan assets:

	Pension Benefits		Post-Retirement Benefits	
	October 31, 2021	November 1, 2020	October 31, 2021	November 1, 2020
	(In millions)			
Projected benefit obligations	$ 83	$ 82	$ —	$ —
Accumulated benefit obligations	$ 65	$ 68	$ 13	$ 15
Fair value of plan assets	$ 13	$ 11	$ —	$ —

Plans with benefit obligations less than plan assets:

	Pension Benefits		Post-Retirement Benefits	
	October 31, 2021	November 1, 2020	October 31, 2021	November 1, 2020
	(In millions)			
Projected benefit obligations	$ 1,443	$ 1,506	$ —	$ —
Accumulated benefit obligations	$ 1,442	$ 1,505	$ 80	$ 80
Fair value of plan assets	$ 1,508	$ 1,582	$ 84	$ 88

The fair value of pension plan assets as of October 31, 2021 and November 1, 2020 included $174 million and $160 million, respectively, of assets for our non-U.S. pension plans.

The projected benefit obligations as of October 31, 2021 and November 1, 2020 included $217 million and $206 million, respectively, of obligations related to our non-U.S. pension plans. The accumulated benefit obligations as of October 31, 2021 and November 1, 2020 included $199 million and $190 million, respectively, of obligations related to our non-U.S. pension plans.

Expected Future Benefit Payments

Fiscal Years:	Pension Benefits	Post-Retirement Benefits
	(In millions)	
2022	$ 94	$ 8
2023	$ 94	$ 4
2024	$ 94	$ 4
2025	$ 94	$ 4
2026	$ 93	$ 4
2027-2031	$ 447	$ 23

Defined Benefit Pension Plan Investment Policy

Plan assets of the funded defined benefit pension plans are generally invested in funds held by third-party fund managers. Our benefit plan investment committee has set the investment strategy to fully match the liability. We direct the overall portfolio allocation and use a third-party investment consultant that has the discretion to structure portfolios and select the investment managers within those allocation parameters. Multiple investment managers are utilized, including both active and passive management approaches. The plan assets are invested using the liability-driven investment strategy intended to minimize market and interest rate risks, and those assets are periodically rebalanced toward asset allocation targets.

Substantially all of the plan assets are for the U.S. qualified pension plan. The target asset allocation for this plan reflects a risk/return profile that we believe is appropriate relative to the liability structure and return goals for the plan. We periodically review the allocation of plan assets relative to alternative allocation models to evaluate the need for adjustments based on forecasted liabilities and plan liquidity needs. For both fiscal years 2021 and 2020, 100% of the U.S. qualified pension plan assets were allocated to fixed income, in line with the target allocation. The fixed income allocation is primarily directed toward long-term core bond investments, with smaller allocations to Treasury Inflation-Protected Securities and high-yield bonds.

Fair Value Measurement of Defined Benefit Pension Plan Assets

	October 31, 2021		
	Fair Value Measurements at Reporting Date Using		
	Level 1	Level 2	Total
	(In millions)		
Cash equivalents	$ 24 (a)	$ —	$ 24
Equity securities:			
Non-U.S. equity securities	28 (b)	—	28
Fixed-income securities:			
U.S. treasuries	—	186 (c)	186
Corporate bonds	—	1,222 (c)	1,222
Municipal bonds	—	24 (c)	24
Government bonds	—	34 (c)	34
Asset-backed securities	—	3 (c)	3
Total plan assets	$ 52	$ 1,469	$ 1,521

	November 1, 2020		
	Fair Value Measurements at Reporting Date Using		
	Level 1	Level 2	Total
	(In millions)		
Cash equivalents	$ 42 (a)	$ —	$ 42
Equity securities:			
Non-U.S. equity securities	26 (b)	—	26
Fixed-income securities:			
U.S. treasuries	—	158 (c)	158
Corporate bonds	—	1,307 (c)	1,307
Municipal bonds	—	22 (c)	22
Government bonds	—	36 (c)	36
Asset-backed securities	—	2 (c)	2
Total plan assets	$ 68	$ 1,525	$ 1,593

(a) Cash equivalents primarily included short-term investment funds which consisted of short-term money market instruments that were valued based on quoted prices in active markets.

(b) These equity securities were valued based on quoted prices in active markets.

(c) These amounts consisted of investments that were traded less frequently than Level 1 securities and were valued using inputs that included quoted prices for similar assets in active markets and inputs other than quoted prices that were observable for the assets, such as interest rates, yield curves, prepayment speeds, collateral performance, broker/dealer quotes and indices that were observable at commonly quoted intervals.

Post-Retirement Benefit Plan Investment Policy

Our overall investment strategy for the group life insurance plan is to allocate assets in a manner that seeks to both maximize the safety of promised benefits and minimize the cost of funding those benefits. The target asset allocation for plan assets reflects a risk/return profile that we believe is appropriate relative to the liability structure and return goals for the plan. We periodically review the allocation of plan assets relative to alternative allocation models to evaluate the need for adjustments based on forecasted liabilities and plan liquidity needs. We set the overall portfolio allocation and use an investment manager that directs the investment of funds consistent with that allocation. The investment manager invests the plan assets in index funds that it manages. For both fiscal years 2021 and 2020, 100% of plan assets were allocated to commingled funds that invested in fixed income, in line with the target allocation. The fair value of the commingled funds are measured using net asset value per share as a practical expedient.

Assumptions

The assumptions used to determine the benefit obligations and net periodic benefit (income) cost from our defined benefit pension plans and post-retirement benefit plans are presented in the tables below. The expected long-term return on assets shown in the tables below represents an estimate of long-term returns on investment portfolios primarily consisting of combinations of debt, equity and other investments, depending on the plan. The long-term rates of return are then weighted based on the asset classes (both historical and forecasted) in which we expect the pension and post-retirement funds to be invested. Discount rates reflect the current rate at which defined benefit pension and post-retirement benefit obligations could be settled based on the measurement dates of the plans, which is October 31, the month end closest to our fiscal year end. The range of assumptions that are used for defined benefit pension plans reflects the different economic environments within various countries.

	Assumptions for Benefit Obligations as of		Assumptions for Net Periodic Benefit (Income) Cost Fiscal Year		
	October 31, 2021	November 1, 2020	2021	2020	2019
Defined benefit pension plans:					
Discount rate	0.75%-6.50%	0.61%-6.54%	0.61%-6.54%	0.47%-7.00%	0.50%-8.00%
Average increase in compensation levels	2.00%-10.00%	2.00%-10.00%	2.00%-10.00%	2.00%-10.00%	1.80%-10.00%
Expected long-term return on assets	N/A	N/A	1.00%-8.00%	1.50%-7.80%	1.50%-7.75%

	Assumptions for Benefit Obligations as of		Assumptions for Net Periodic Benefit (Income) Cost Fiscal Year		
	October 31, 2021	November 1, 2020	2021	2020	2019
Post-retirement benefit plans:					
Discount rate	2.30%-2.90%	2.10%-2.90%	2.10%-2.90%	2.80%-3.20%	4.12%-4.60%
Average increase in compensation levels	3.00%	3.00%	3.00%	3.00%	3.00%
Expected long-term return on assets	N/A	N/A	2.90%	3.20%	4.80%

	Assumed Health Care Cost Trend Rate Used to Measure the Expected Cost of Benefits as of	
	October 31, 2021	November 1, 2020
Health care cost trend rate assumed for next year	6.75%	7.25%
Rate to which the health care cost trend rate is assumed to decline (ultimate health care cost trend rate)	4.50%	4.50%
Year that the rate reaches the ultimate health care cost trend rate	2029	2029

Defined Contribution Plans

Our eligible U.S. employees participate in a company-sponsored 401(k) plan. Under the plan, we match employees contributions dollar for dollar up to 6% of their eligible earnings. All matching contributions vest immediately. During fiscal years 2021, 2020 and 2019, we made contributions of $94 million, $99 million and $89 million, respectively, to the 401(k) plan.

In addition, other eligible employees outside of the U.S. receive retirement benefits under various defined contribution retirement plans.

10. Borrowings

	Effective Interest Rate	October 31, 2021	November 1, 2020
		(In millions, except percentages)	
September 2021 Senior Notes - fixed rate			
3.137% notes due November 2035	4.23 %	$ 3,250	$ —
3.187% notes due November 2036	4.79 %	2,750	—
		6,000	—
March 2021 Senior Notes - fixed rate			
3.419% notes due April 2033	4.66 %	2,250	—
3.469% notes due April 2034	4.63 %	3,250	—
		5,500	—
January 2021 Senior Notes - fixed rate			
1.950% notes due February 2028	2.10 %	750	—
2.450% notes due February 2031	2.56 %	2,750	—
2.600% notes due February 2033	2.70 %	1,750	—
3.500% notes due February 2041	3.60 %	3,000	—
3.750% notes due February 2051	3.84 %	1,750	—
		10,000	—
June 2020 Senior Notes - fixed rate			
3.459% notes due September 2026	4.19 %	752	1,695
4.110% notes due September 2028	5.02 %	1,965	2,222
		2,717	3,917
May 2020 Senior Notes - fixed rate			
2.250% notes due November 2023	2.40 %	105	1,000
3.150% notes due November 2025	3.29 %	900	2,250
4.150% notes due November 2030	4.27 %	2,679	2,750
4.300% notes due November 2032	4.39 %	2,000	2,000
		5,684	8,000
April 2020 Senior Notes - fixed rate			
4.700% notes due April 2025	4.88 %	1,020	2,250
5.000% notes due April 2030	5.18 %	1,086	2,250
		2,106	4,500
November 2019 Term Loans - floating rate			
LIBOR plus 1.125% term loan due November 2022	1.54 %	—	1,819
LIBOR plus 1.250% term loan due November 2024	1.56 %	—	4,069
		—	5,888
April 2019 Senior Notes - fixed rate			
3.125% notes due April 2021	3.61 %	—	525
3.125% notes due October 2022	3.53 %	—	693
3.625% notes due October 2024	3.98 %	622	1,044
4.250% notes due April 2026	4.54 %	944	2,500
4.750% notes due April 2029	4.95 %	1,958	3,000
		3,524	7,762
2017 Senior Notes - fixed rate			
2.200% notes due January 2021	2.41 %	—	282
3.000% notes due January 2022	3.21 %	255	842

	Effective Interest Rate	October 31, 2021	November 1, 2020
	(In millions, except percentages)		
2.650% notes due January 2023	2.78 %	260	1,000
3.625% notes due January 2024	3.74 %	829	1,352
3.125% notes due January 2025	3.23 %	495	1,000
3.875% notes due January 2027	4.02 %	2,922	4,800
3.500% notes due January 2028	3.60 %	777	1,250
		5,538	10,526
Assumed CA Senior Notes - fixed rate			
3.600% notes due August 2022	4.07 %	—	283
4.500% notes due August 2023	4.10 %	143	250
4.700% notes due March 2027	5.15 %	265	350
		408	883
Other borrowings			
2.500% - 4.500% senior notes due August 2022 - August 2034	2.59% - 4.55%	22	22
Total principal amount outstanding		41,499	41,498
Less: Unamortized discount and issuance costs		(1,834)	(504)
Total debt		$ 39,665	$ 40,994

As of October 31, 2021 and November 1, 2020, short-term finance lease liabilities of $26 million and $20 million, respectively, were included in the current portion of long-term debt and long-term finance lease liabilities of $39 million and $48 million, respectively, were included in long-term debt.

September 2021 Senior Notes

In September 2021, we completed our private offers to exchange $6.0 billion of certain of our outstanding notes maturing between 2025 and 2030 (the “September 2021 Exchange Offer”) for $3,250 million of 3.137% new senior unsecured notes due November 2035 and $2,750 million of 3.187% new senior unsecured notes due November 2036 (collectively, the “September 2021 Senior Notes”). As a result of the September 2021 Exchange Offer, we paid premiums of $762 million, which were included in unamortized discount and issuance costs. We may redeem or purchase, in whole or in part, any of the September 2021 Senior Notes prior to their respective maturities, subject to a specified make-whole premium determined in accordance with the indenture governing the September 2021 Senior Notes, plus accrued and unpaid interest. In the event of a change in control, note holders will have the right to require us to repurchase their notes at a price equal to 101% of the principal amount of such notes, plus accrued and unpaid interest. As of October 31, 2021, the September 2021 Senior Notes were recorded as long-term debt, net of discount and issuance costs, which are amortized to interest expense over the respective terms of these borrowings.

March 2021 Senior Notes

In March 2021, we completed our private offers to exchange $5.5 billion of certain of our outstanding notes maturing between 2024 and 2027 (the “March 2021 Exchange Offer”) for $2,250 million of 3.419% new senior unsecured notes due April 2033 and $3,250 million of 3.469% new senior unsecured notes due April 2034 (collectively, the “March 2021 Senior Notes”). As a result of the March 2021 Exchange Offer, we paid premiums of $581 million, which were included in unamortized discount and issuance costs. We may redeem or purchase, in whole or in part, any of the March 2021 Senior Notes prior to their respective maturities, subject to a specified make-whole premium determined in accordance with the indenture governing the March 2021 Senior Notes, plus accrued and unpaid interest. In the event of a change in control, note holders will have the right to require us to repurchase their notes at a price equal to 101% of the principal amount of such notes, plus accrued and unpaid interest. As of October 31, 2021, the March 2021 Senior Notes were recorded as long-term debt, net of discount and issuance costs, which are amortized to interest expense over the respective terms of these borrowings.

In connection with the March 2021 Exchange Offer, Broadcom Corporation ("BRCM") and Broadcom Technologies Inc. ("BTI") were automatically and unconditionally released from their guarantees in accordance with the respective indentures governing the January 2021 Senior Notes, June 2020 Senior Notes, May 2020 Senior Notes, April 2020 Senior Notes, and April 2019 Senior Notes, as defined below respectively.

January 2021 Senior Notes

In January 2021, we issued $10 billion of senior unsecured notes (the "January 2021 Senior Notes"). We may redeem or purchase, in whole or in part, any of the January 2021 Senior Notes prior to their respective maturities, subject to a specified make-whole premium determined in accordance with the indenture governing the January 2021 Senior Notes, plus accrued and unpaid interest. In the event of a change in control, note holders will have the right to require us to repurchase their notes at a price equal to 101% of the principal amount of such notes, plus accrued and unpaid interest. As of October 31, 2021, the January 2021 Senior Notes were recorded as long-term debt, net of discount and issuance costs, which are amortized to interest expense over the respective terms of these borrowings.

Using the net proceeds from the January 2021 Senior Notes, we repaid the outstanding balance of $5,888 million of our unsecured term A-3 facility and unsecured term A-5 facility under the credit agreement entered into on November 4, 2019 (the "November 2019 Credit Agreement"), repurchased $3,830 million of certain of our outstanding notes maturing between 2021 and 2023 through a cash tender offer and redemption, and repaid $282 million of our 2.200% notes upon maturity in January 2021. As a result of these repayments and repurchases, we incurred premiums of $151 million and wrote off $47 million of unamortized discount and issuance costs, both of which were included in interest expense.

January 2021 Credit Agreement

In January 2021, we entered into a credit agreement (the "January 2021 Credit Agreement"), which provides for a five-year $7.5 billion unsecured revolving credit facility (the "Revolving Facility"), of which $500 million is available for the issuance of multi-currency letters of credit. The issuance of letters of credit and certain other instruments would reduce the aggregate amount otherwise available under the Revolving Facility for revolving loans. Subject to the terms of the January 2021 Credit Agreement, we are permitted to borrow, repay and reborrow revolving loans at any time prior to the earlier of (a) January 19, 2026 and (b) the date of termination in whole of the revolving lenders' commitments under the January 2021 Credit Agreement. In connection with the January 2021 Credit Agreement, we terminated the credit agreement entered into on May 7, 2019 (the "May 2019 Credit Agreement"), which provided for a five-year $5 billion unsecured revolving credit facility, and the November 2019 Credit Agreement. As of October 31, 2021, we had no borrowings outstanding under the Revolving Facility.

June 2020 Senior Notes

In June 2020, we completed our private offers to exchange $3,742 million of certain series of our outstanding notes maturing between 2021 and 2024, for $1,695 million of new senior notes due 2026 and $2,222 million of new senior notes due 2028 (collectively, the "June 2020 Senior Notes"). As a result of this exchange, we paid premiums of $177 million, which were included in unamortized discount and issuance costs. We may redeem or purchase, in whole or in part, any of the June 2020 Senior Notes prior to their respective maturities, subject to a specified make-whole premium determined in accordance with the indenture governing the June 2020 Senior Notes, plus accrued and unpaid interest. In the event of a change in control, note holders will have the right to require us to repurchase their notes at a price equal to 101% of the principal amount of such notes plus accrued and unpaid interest. The June 2020 Senior Notes are recorded as long-term debt, net of discount and issuance costs, which are amortized to interest expense over the respective terms of these borrowings.

May 2020 Senior Notes

In May 2020, we issued $8 billion of senior unsecured notes (the "May 2020 Senior Notes"). We may redeem or purchase, in whole or in part, any of the May 2020 Senior Notes prior to their respective maturities, subject to a specified make-whole premium determined in accordance with the indenture governing the May 2020 Senior Notes, plus accrued and unpaid interest. In the event of a change in control, note holders will have the right to require us to repurchase their notes at a price equal to 101% of the principal amount of such notes plus accrued and unpaid interest. The May 2020 Senior Notes are recorded as long-term debt, net of discount and issuance costs, which are amortized to interest expense over the respective terms of these borrowings.

The net proceeds from this issuance, together with the remaining net proceeds from the issuance of the April 2020 Senior Notes, as defined below, were used to repay an aggregate of $5,424 million of term loans outstanding under the November 2019 Credit Agreement, consisting of repayments of $2,712 million of each of our unsecured term A-3 and A-5 facilities and $3 billion of borrowings outstanding under the unsecured revolving credit facility provided by the May 2019 Credit Agreement.

April 2020 Senior Notes

In April 2020, we issued $4.5 billion of senior unsecured notes (the “April 2020 Senior Notes”). We may redeem or purchase, in whole or in part, any of the April 2020 Senior Notes prior to their respective maturities, subject to a specified make-whole premium determined in accordance with the indenture governing the April 2020 Senior Notes, plus accrued and unpaid interest. In the event of a change in control, note holders will have the right to require us to repurchase their notes at a price equal to 101% of the principal amount of such notes plus accrued and unpaid interest. The April 2020 Senior Notes are recorded as long-term debt, net of discount and issuance costs, which are amortized to interest expense over the respective terms of these borrowings.

Pursuant to a cash tender offer that we completed in April 2020, we repurchased $2,361 million of our 3.000% notes due January 2022, $1,274 million of our 3.125% notes due April 2021 and $351 million of our 2.200% notes due January 2021 with the net proceeds from the April 2020 Senior Notes. As a result of these repurchases, we incurred premiums of $78 million and wrote off $15 million of unamortized discount and issuance costs, both of which were included in interest expense.

November 2019 Term Loans

On November 4, 2019, in connection with the acquisition of the Symantec Business, we entered into the November 2019 Credit Agreement, which provides for a $7,750 million unsecured term A-3 facility and a $7,750 million unsecured term A-5 facility (collectively, the “November 2019 Term Loans”). We used net proceeds from the November 2019 Term Loans to fund the $10.7 billion Symantec Business acquisition and to repay $750 million principal amount of 5.375% notes due December 2019 and $2,750 million principal amount of 2.375% notes due January 2020, on their respective maturity dates. During fiscal year 2020, we repaid an aggregate of $9,612 million of our November 2019 Term Loans, consisting of repayments of $5,931 million and $3,681 million of our unsecured term A-3 and A-5 facilities, respectively, and wrote off $60 million of unamortized discount and issuance costs. During fiscal year 2021, we repaid the remaining outstanding balance of the November 2019 Term Loans using the proceeds from the January 2021 Senior Notes.

April 2019 Senior Notes

In April 2019, we issued $11 billion of senior unsecured notes (the “April 2019 Senior Notes”). We may redeem or purchase, in whole or in part, any of the April 2019 Senior Notes prior to their respective maturities, subject to a make-whole premium determined in accordance with the indenture governing the April 2019 Senior Notes, plus accrued and unpaid interest. The April 2019 Senior Notes are recorded as long-term debt, net of discount and issuance costs, which are amortized to interest expense over the respective terms of these borrowings.

Registered Exchange Offer

In connection with the issuance of the June 2020 Senior Notes, the May 2020 Senior Notes, the April 2020 Senior Notes (collectively, the “2020 Senior Notes”) and the April 2019 Senior Notes, we entered into registration rights agreements, pursuant to which we were obligated to use commercially reasonable efforts to file with the Securities and Exchange Commission (the “SEC”), and cause to be declared effective, a registration statement with respect to an offer to exchange (the “Registered Exchange Offer”) each series of the 2020 Senior Notes and the April 2019 Senior Notes for notes that are registered with the SEC (the “Registered Notes”), with substantially identical terms. We completed the Registered Exchange Offer on August 10, 2020. Substantially all of our 2020 Senior Notes and April 2019 Senior Notes were tendered and exchanged for the corresponding Registered Notes in the Registered Exchange Offer.

Commercial Paper

In February 2019, we established a commercial paper program pursuant to which we may issue unsecured commercial paper notes (“Commercial Paper”) in principal amount of up to $2 billion outstanding at any time with maturities of up to 397 days from the date of issue. Commercial Paper is sold under customary terms in the commercial paper market and may be issued at a discount from par or, alternatively, may be sold at par and bear interest at rates dictated by market conditions at the time of their issuance. The discount associated with the Commercial Paper is amortized to interest expense over its term. Outstanding Commercial Paper reduces the amount that would otherwise be available to borrow for general corporate purposes under the Revolving Facility. As our commercial paper program is supported by the Revolving Facility, we have the ability and intent to continuously refinance Commercial Paper. As of October 31, 2021 and November 1, 2020, we had no Commercial Paper outstanding.

2017 Senior Notes

During the fiscal year ended October 29, 2017, Broadcom Cayman Finance Limited, which subsequently merged into BTI during fiscal year 2019 with BTI remaining as the surviving entity, and BRCM issued $17,550 million of senior unsecured notes (the “2017 Senior Notes”). Our 2017 Senior Notes are fully and unconditionally guaranteed, jointly and severally, on an unsecured, unsubordinated basis by Broadcom and BTI. We may redeem or purchase, in whole or in part, any of the 2017

Senior Notes prior to their respective maturities, subject to a make-whole premium determined in accordance with the indenture governing the 2017 Senior Notes, plus accrued and unpaid interest. In the event of a change in control, note holders will have the right to require us to repurchase their notes at a price equal to 101% of the principal amount of such notes plus accrued and unpaid interest.

During the fiscal year ended November 4, 2018, substantially all of the 2017 Senior Notes were tendered and exchanged for notes registered with the SEC, with substantially identical terms.

Assumed CA Senior Notes

In connection with our acquisition of CA during fiscal year 2019, we assumed $2.25 billion CA's outstanding senior unsecured notes (the "Assumed CA Senior Notes"). CA remains the sole obligor under the Assumed CA Senior Notes. We may redeem all or a portion of the Assumed CA Senior Notes at any time, subject to a specified make-whole premium as set forth with the indenture governing the Assumed CA Senior Notes. In the event of a change in control, note holders will have the right to require us to repurchase their notes at a price equal to 101% of the principal amount of such notes plus accrued and unpaid interest.

Fair Value of Debt

As of October 31, 2021, the estimated aggregate fair value of our debt was $43,392 million. The fair value of our senior notes was determined using quoted prices from less active markets. All of our debt obligations are categorized as Level 2 instruments.

Future Principal Payments of Debt

The future scheduled principal payments of debt as of October 31, 2021 were as follows:

Fiscal Year:	**Future Scheduled Principal Payments**	
	(In millions)	
2022	$	264
2023		403
2024		1,563
2025		1,515
2026		2,596
Thereafter		35,158
Total	$	41,499

As of October 31, 2021 and November 1, 2020, we accrued interest payable of $282 million and $304 million, respectively, and were in compliance with all debt covenants.

11. Stockholders' Equity

Mandatory Convertible Preferred Stock Offering

On September 30, 2019, we completed an offering of approximately 4 million shares of 8.00% Mandatory Convertible Preferred Stock, Series A, $0.001 par value per share ("Mandatory Convertible Preferred Stock"), which generated net proceeds of approximately $3,679 million.

The holders of Mandatory Convertible Preferred Stock are entitled to receive, when, as and if declared by our Board of Directors, or an authorized committee thereof, out of funds legally available for payment, cumulative dividends at the annual rate of 8.00% of the liquidation preference of $1,000 per share (equivalent to $80 annually per share), payable in cash or, subject to certain limitations, by delivery of shares of our common stock or any combination of cash and shares of our common stock, at our election; provided, however, that any undeclared and unpaid dividends will continue to accumulate.

Subject to limited exceptions, no dividends may be declared or paid on shares of our common stock, unless all accumulated dividends have been paid or set aside for payment on all outstanding shares of our Mandatory Convertible Preferred Stock for all past completed dividend periods. In the event of our voluntary or involuntary liquidation, dissolution or winding-up, no distribution of our assets may be made to holders of our common stock until we have paid to holders of our Mandatory Convertible Preferred Stock a liquidation preference equal to $1,000 per share plus accumulated and unpaid dividends.

On September 30, 2022, unless earlier converted, each outstanding share of Mandatory Convertible Preferred Stock will automatically convert into shares of our common stock at a rate between the then minimum and maximum conversion rates. At any time prior to September 30, 2022, holders may elect to convert each share of Mandatory Convertible Preferred Stock into shares of our common stock at the then minimum conversion rate. The conversion rates are subject to anti-dilution adjustments. As of October 31, 2021, the minimum conversion rate was 3.0822 and the maximum conversion rate was 3.6025.

We recognized $27 million of accrued preferred stock dividends at each of October 31, 2021 and November 1, 2020, which were presented as temporary equity in our consolidated balance sheets.

Cash Dividends Declared and Paid

	Fiscal Year		
	2021	**2020**	**2019**
	(In millions, except per share data)		
Dividends per share to common stockholders	$ 14.40	$ 13.00	$ 10.60
Dividends to common stockholders	$ 5,913	$ 5,235	$ 4,235
Dividends per share to preferred stockholders	$ 80.00	$ 80.00	$ —
Dividends to preferred stockholders	$ 299	$ 299	$ —

Stock Repurchase Program

Pursuant to an $18 billion stock repurchase program previously authorized by our Board of Directors, we repurchased and retired approximately 21 million shares of our common stock for $5,435 million during fiscal year 2019. This authorization ended on November 3, 2019.

In December 2021, our Board of Directors authorized a stock repurchase program to repurchase up to $10 billion of our common stock from time to time on or prior to December 31, 2022. Repurchases under our stock repurchase program may be effected through a variety of methods, including open market or privately negotiated purchases. The timing and amount of shares repurchased will depend on the stock price, business and market conditions, corporate and regulatory requirements, alternative investment opportunities, acquisition opportunities, and other factors. We are not obligated to repurchase any specific amount of shares of common stock, and the stock repurchase program may be suspended or terminated at any time.

Equity Incentive Award Plan

2012 Plan

In connection with the acquisition of BRCM, we assumed the BRCM 2012 Stock Incentive Plan (the “Original 2012 Plan”) and outstanding unvested RSUs originally granted by BRCM under the Original 2012 Plan that were held by continuing employees. During the second quarter of fiscal year 2021, our stockholders approved the amendment and restatement of the Original 2012 Plan, now called Broadcom Inc. 2012 Stock Incentive Plan (the “Amended 2012 Plan”). Under the Amended 2012 Plan, we may grant to employees stock options and stock appreciation rights with an exercise price that is no less than the fair market value on the date of grant, restricted stock awards and RSUs. No participant may be granted such awards for more than an aggregate of 4 million shares in any fiscal year. Equity awards granted under the Amended 2012 Plan generally vest over four years. The Amended 2012 Plan reduced the number of shares available for new equity award grants to 20 million shares and removed the annual share replenishment provision provided under the Original 2012 Plan. We will make no further equity award grants under our LSI Corporation 2003 Equity Incentive Plan, which we assumed in connection with the acquisition of LSI Corporation. As of October 31, 2021, 21 million shares remained available for issuance under the Amended 2012 Plan.

We may grant market-based RSUs with both a service condition and a market condition as part of our equity compensation programs. The market-based RSUs generally vest over four years, subject to satisfaction of market conditions. During fiscal years 2021, 2020 and 2019, we granted market-based RSUs under which grantees may receive the number of shares ranging from 0% to 300% of the original grant at vesting based upon the total stockholder return (“TSR”) on our common stock on an absolute basis and as compared to the TSR of an index group of companies.

Amendment to the RSU Vesting Schedule

During fiscal year 2019, the Compensation Committee of our Board of Directors approved an amendment to the vesting of time-based RSUs (other than those assumed in an acquisition), held by approximately 16,500 employees below the vice president level, from an annual vesting cycle to a quarterly vesting cycle.

Employee Stock Purchase Plan

The ESPP provides eligible employees with the opportunity to acquire an ownership interest in us through periodic payroll deductions, based on a 6-month look-back period, at a price equal to the lesser of 85% of the fair market value of our common stock at either the beginning or the end of the relevant offering period. The ESPP is structured as a qualified employee stock purchase plan under Section 423 of the Internal Revenue Code of 1986. However, the ESPP is not intended to be a qualified pension, profit sharing or stock bonus plan under Section 401(a) of the Internal Revenue Code of 1986 and is not subject to the provisions of the Employee Retirement Income Security Act of 1974.

Stock-Based Compensation Expense

	Fiscal Year		
	2021	2020	2019
		(In millions)	
Cost of products sold	$ 78	$ 109	$ 120
Cost of subscriptions and services	65	50	43
Research and development	1,199	1,419	1,532
Selling, general and administrative	362	398	490
Total stock-based compensation expense [(a)]	$ 1,704	$ 1,976	$ 2,185
Estimated income tax benefits for stock-based compensation	$ 283	$ 345	$ 400
Excess income tax benefits for stock-based awards exercised or released	$ 310	$ 147	$ 232

(a) Fiscal year 2019 stock-based compensation expense does not include $75 million restructuring charges for accelerated vesting of assumed equity awards held by employees terminated in connection with the CA Merger.

We have assumed an annualized forfeiture rate for RSUs of 5%. We will recognize additional expense if actual forfeitures are lower than we estimated, and will recognize a benefit if actual forfeitures are higher than we estimated.

During the first quarter of fiscal year 2019, the Compensation Committee of our Board of Directors approved a broad-based program of multi-year equity grants of time- and market-based RSUs (the "Multi-Year Equity Awards") in lieu of our annual employee equity awards historically granted on March 15 of each year. Each Multi-Year Equity Award vests on the same basis as four annual grants made March 15 of each year, beginning in fiscal year 2019, with successive four-year vesting periods. Stock-based compensation expense related to the Multi-Year Equity Awards was $816 million, $902 million and $890 million for fiscal years 2021, 2020 and 2019, respectively.

In connection with the amendment to the vesting of certain time-based RSUs from an annual cycle to a quarterly cycle, we recognized approximately $140 million in incremental compensation cost during fiscal year 2019.

As of October 31, 2021, the total unrecognized compensation cost related to unvested stock-based awards was $2,967 million, which is expected to be recognized over the remaining weighted-average service period of 2.9 years.

The following table summarizes the weighted-average assumptions utilized to calculate the fair value of market-based awards granted in the periods presented:

	Fiscal Year		
	2021	2020	2019
Risk-free interest rate	0.3 %	1.2 %	2.7 %
Dividend yield	3.0 %	4.7 %	4.4 %
Volatility	39.0 %	31.2 %	33.0 %
Expected term (in years)	3.4	4.0	4.0

The risk-free interest rate was derived from the average U.S. Treasury Strips rate, which approximated the rate in effect appropriate for the term at the time of grant.

The dividend yield was based on the historical and expected dividend payouts as of the respective award grant dates.

The volatility was based on our own historical stock price volatility over the period commensurate with the expected life of the awards and the implied volatility of a 180-day call option on our own common stock measured at a specific date.

The expected term was commensurate with the awards' contractual terms.

Restricted Stock Unit Awards

A summary of time- and market-based RSU activity is as follows:

	Number of RSUs Outstanding	Weighted-Average Grant Date Fair Value Per Share
	(In millions, except per share data)	
Balance as of November 4, 2018	18	$ 195.50
Assumed in CA Merger	1	$ 206.14
Granted	33	$ 183.64
Vested	(10)	$ 192.28
Forfeited	(2)	$ 182.80
Balance as of November 3, 2019	40	$ 188.52
Granted	3	$ 252.36
Vested	(8)	$ 210.84
Forfeited	(3)	$ 198.17
Balance as of November 1, 2020	32	$ 188.35
Granted	2	$ 408.69
Vested	(8)	$ 214.15
Forfeited	(3)	$ 189.84
Balance as of October 31, 2021	23	$ 200.38

The aggregate fair value of time- and market-based RSUs that vested in fiscal years 2021, 2020 and 2019 was $3,715 million, $2,254 million and $2,958 million, respectively, which represented the market value of our common stock on the date that the RSUs vested. The number of RSUs vested included shares of common stock that we withheld for settlement of employees' tax obligations due upon the vesting of RSUs.

Stock Option Awards

As of October 31, 2021, our stock options outstanding were not material. The aggregate intrinsic value of stock options exercised in fiscal years 2021, 2020 and 2019 was $339 million, $917 million and $761 million, respectively.

12. Income Taxes

Components of Income from Continuing Operations Before Income Taxes

The following table presents the components of income from continuing operations before income taxes for financial reporting purposes:

	Fiscal Year		
	2021	2020	2019
		(In millions)	
Domestic loss	$ (3,103)	$ (4,221)	$ (4,116)
Foreign income	9,868	6,664	6,342
Income from continuing operations before income taxes	$ 6,765	$ 2,443	$ 2,226

Components of Provision for (Benefit from) Income Taxes

The provision for income taxes in fiscal year 2021 was primarily due to higher income from continuing operations, offset in part by excess tax benefits from stock-based awards, a benefit from foreign derived intangible income, and the recognition of gross unrecognized tax benefits as a result of lapses of statutes of limitations and audit settlements.

The benefit from income taxes in fiscal year 2020 was primarily due to jurisdictional mix of income and expense, the recognition of gross uncertain tax benefits as a result of lapses of statutes of limitations, the remeasurement of certain foreign deferred tax assets and liabilities, and excess tax benefits from stock-based awards.

The benefit from income taxes in the fiscal year 2019 was primarily due to excess tax benefits from stock-based awards, the recognition of gross unrecognized tax benefits as a result of audit settlements and lapses of statutes of limitations net of increases in balances related to tax positions taken during the year, deferred tax remeasurement in state and foreign jurisdictions, internal reorganizations, and the partial release of our valuation allowance as a result of the CA Merger, partly offset by a change in estimate of our fiscal year 2018 provision resulting from regulations issued related to the U.S. Tax Cuts and Jobs Act (“2017 Tax Reform Act”).

We have obtained several tax incentives from the Singapore Economic Development Board which provide that qualifying income earned in Singapore is subject to tax incentives or reduced rates of Singapore income tax. Each tax incentive is separate and distinct from the others and may be granted, withheld, extended, modified, truncated, complied with, or terminated independently without any effect on the other incentives. Subject to our compliance with the conditions specified in these incentives and legislative developments, the Singapore tax incentive is scheduled to expire in November 2025.

We have also obtained a tax holiday on our qualifying income in Malaysia, which is scheduled to expire in fiscal year 2028. The tax holiday that we negotiated in Malaysia is also subject to our compliance with various operating and other conditions. If we cannot, or elect not to, comply with any such conditions specified, we will lose the related tax benefits and we could be required to refund previously realized material tax benefits.

Before taking into consideration the effects of the 2017 Tax Reform Act and other indirect tax impacts, the effect of these tax incentives and tax holiday was to decrease the provision for income taxes by approximately $1,156 million for fiscal year 2021 and increase the benefit from income taxes by approximately $833 million and $923 million for fiscal years 2020 and 2019, respectively.

Significant components of provision for (benefit from) income taxes are as follows:

	Fiscal Year		
	2021	2020	2019
		(In millions)	
Current tax expense (benefit from):			
Federal	$ 446	$ 7	$ (49)
State	46	51	(16)
Foreign	534	506	342
	1,026	564	277
Deferred tax expense (benefit from):			
Federal	(876)	(627)	(497)
State	(114)	(161)	(113)
Foreign	(7)	(294)	(177)
	(997)	(1,082)	(787)
Total provision for (benefit from) income taxes	$ 29	$ (518)	$ (510)

Rate Reconciliation

	Fiscal Year		
	2021	2020	2019
Statutory tax rate	21.0 %	21.0 %	21.0 %
State, net of federal benefit	(0.8)	(3.6)	(4.6)
Foreign income taxed at different rates	(22.8)	(48.6)	(52.5)
Deemed inclusion of foreign earnings	12.7	23.3	25.9
Foreign-derived intangible income deduction	(3.1)	(1.5)	—
Deferred taxes on unremitted foreign earnings	(0.7)	(1.1)	1.9
Excess tax benefits from stock-based compensation	(4.6)	(6.0)	(10.4)
Research and development credit	(2.3)	(4.3)	(7.6)
Other, net	1.0	(0.4)	(1.7)
2017 Tax Reform Act	—	—	5.1
Effective tax rate on income before income taxes	0.4 %	(21.2)%	(22.9)%

Summary of Deferred Income Taxes

	October 31, 2021	November 1, 2020
	(In millions)	
Deferred income tax assets:		
Net operating loss, credit and other carryforwards	$ 1,774	$ 1,773
Deferred revenue	1,332	529
Employee stock awards	192	273
Other deferred income tax assets	446	449
Gross deferred income tax assets	3,744	3,024
Less: valuation allowance	(1,782)	(1,707)
Deferred income tax assets	1,962	1,317
Deferred income tax liabilities:		
Depreciation and amortization	847	1,477
Unamortized discount and issuance costs	374	57
Foreign earnings not indefinitely reinvested	73	112
Deferred income tax liabilities	1,294	1,646
Net deferred income tax assets (liabilities)	$ 668	$ (329)

Deferred income taxes reflect the net effects of temporary differences between the carrying amounts of assets and liabilities for financial reporting purposes and their basis for income tax purposes and the tax effects of net operating losses and tax credit carryforwards. The increase in net deferred income tax assets was primarily a result of an increase in deferred revenue and amortization of acquisition-related intangible assets, offset in part by unamortized discount and issuance costs included in the consolidated statement of operations.

In connection with the acquisition of the Symantec Business in November 2019, we established $28 million of net deferred tax assets primarily as a result of the difference in book basis and tax basis related to acquired assets. In connection with the CA Merger in November 2018, we established $2,434 million of net deferred tax liabilities on the excess of the book basis over the tax basis of acquired identified intangible assets and investments in certain foreign subsidiaries that had not been indefinitely reinvested, partially offset by acquired tax attributes.

We continue to indefinitely reinvest $2,291 million of certain accumulated foreign earnings. The unrecognized deferred income tax liability related to these earnings is estimated to be $241 million. All other current and future earnings of all our foreign subsidiaries are not considered permanently reinvested.

The increase in the valuation allowance to $1,782 million in fiscal year 2021 from $1,707 million in fiscal year 2020 was primarily due to state and foreign deferred tax assets arising from credits and net operating loss carryforwards not expected to be realized.

As of October 31, 2021, we had U.S. federal net operating loss carryforwards of $51 million, U.S. state net operating loss carryforwards of $2,610 million and foreign net operating loss carryforwards of $782 million, all of which expire in various years beginning fiscal year 2022. We also had $83 million, $1,896 million and $43 million of U.S. federal, state, and foreign research and development tax credits, respectively. U.S. federal, state and foreign research and development credits, if not utilized, begin to expire in fiscal years 2022, 2022 and 2023, respectively.

Utilization of our net operating loss and tax credit carryforwards may be subject to substantial annual limitations due to the ownership change limitations provided by the Internal Revenue Code and similar state provisions. Such annual limitations could result in the expiration of the net operating loss and tax credit carryforwards before their utilization. The events that may cause ownership changes include, but are not limited to, a cumulative stock ownership change of greater than 50% over a three year period.

Uncertain Tax Positions

Gross unrecognized tax benefits increased by $282 million during fiscal year 2021, resulting in gross unrecognized tax benefits of $5,030 million as of October 31, 2021. Gross unrecognized tax benefits increased by $326 million during fiscal year 2020, resulting in gross unrecognized tax benefits of $4,748 million as of November 1, 2020. Gross unrecognized tax benefits increased by $392 million during fiscal year 2019, resulting in gross unrecognized tax benefits of $4,422 million as of November 3, 2019.

We recognize interest and penalties related to unrecognized tax benefits within the provision for (benefit from) income taxes. Accrued interest and penalties were included within other long-term liabilities. During fiscal years 2021 and 2020, we recognized interest and penalties of $46 million and $37 million, respectively, within the provision for (benefit from) income taxes. There was no amount recognized during fiscal year 2019. As of October 31, 2021 and November 1, 2020, the combined amount of cumulative accrued interest and penalties was approximately $386 million and $340 million, respectively.

The following table reconciles the beginning and ending balance of gross unrecognized tax benefits:

	Fiscal Year		
	2021	2020	2019
	(In millions)		
Beginning balance	$ 4,748	$ 4,422	$ 4,030
Lapses of statutes of limitations	(58)	(95)	(36)
Increases in balances related to tax positions taken during prior periods (including those related to acquisitions made during the year)	41	98	467
Decreases in balances related to tax positions taken during prior periods	—	(14)	(270)
Increases in balances related to tax positions taken during current period	337	379	460
Decreases in balances related to settlements with taxing authorities	(38)	(42)	(229)
Ending balance	$ 5,030	$ 4,748	$ 4,422

A portion of our unrecognized tax benefits will affect our effective tax rate if they are recognized upon favorable resolution of the uncertain tax positions. As of October 31, 2021 and November 1, 2020, approximately $5,416 million and $5,088 million of the unrecognized tax benefits and accrued interest and penalties would affect our effective tax rate, respectively.

We are subject to U.S. income tax examination for fiscal years 2015 and later. Certain of our acquired companies are subject to tax examinations in major jurisdictions outside of the U.S. for fiscal years 2008 and later. It is possible that our existing unrecognized tax benefits may change up to $289 million as a result of lapses of the statute of limitations for certain audit periods and/or audit examinations expected to be completed within the next 12 months.

13. Segment Information

Reportable Segments

During the first quarter of fiscal year 2020, we updated our organizational structure resulting in two reportable segments: semiconductor solutions and infrastructure software. Each segment represents a component for which separate financial information is available that is utilized on a regular basis by the CODM in determining how to allocate resources and evaluate performance. The reportable segments are determined based on several factors including, but not limited to, customer base, homogeneity of products, technology, delivery channels and similar economic characteristics.

Semiconductor solutions. We provide semiconductor solutions for managing the movement of data in data center, telecom, enterprise and embedded networking applications. We provide a broad variety of radio frequency semiconductor devices, wireless connectivity solutions and custom touch controllers for mobile applications. We also provide semiconductor solutions for enabling the set-top box and broadband access markets and for enabling secure movement of digital data to and from host machines, such as servers, personal computers and storage systems, to the underlying storage devices, such as hard disk drives and solid state drives. We also provide a broad variety of products for the general industrial and automotive markets. Our semiconductor solutions segment also includes our IP licensing.

Infrastructure software. We provide a portfolio of software solutions that enables customers to plan, develop, automate, manage and secure applications across mainframe, distributed, mobile and cloud platforms. Our portfolio of industry-leading infrastructure and security software is designed to modernize, optimize, and secure the most complex hybrid environments, enabling scalability, agility, automation, insights, resiliency and security. We also offer mission critical FC SAN products and related software.

Our CODM assesses the performance of each segment and allocates resources to each segment based on net revenue and operating results and does not evaluate each segment using discrete asset information. Operating results by segment include items that are directly attributable to each segment and also include shared expenses such as global operations, including manufacturing support, logistics and quality control, expenses associated with selling, general and administrative activities, facilities and IT expenses. Shared expenses are primarily allocated based on revenue and headcount.

During the fourth quarter of our fiscal year 2020, we refined our allocation methodology for certain selling, general and administrative expenses to more closely align these costs with the segment benefiting from the shared expenses. Prior period segment results have been recast to conform to the current presentation.

Unallocated Expenses

Unallocated expenses include amortization of acquisition-related intangible assets, stock-based compensation expense, restructuring, impairment and disposal charges, acquisition-related costs, charges related to inventory step-up to fair value, and other costs, which are not used in evaluating the results of, or in allocating resources to, our segments. Acquisition-related costs include transaction costs and any costs directly related to the acquisition and integration of acquired businesses.

Depreciation expense directly attributable to each reportable segment is included in operating results for each segment. However, the CODM does not evaluate depreciation expense by operating segment and, therefore, it is not separately presented. There was no inter-segment revenue for any of the periods presented. The accounting policies of the segments are the same as those described in the summary of significant accounting policies.

	Fiscal Year		
	2021	**2020**	**2019**
		(In millions)	
Net revenue:			
Semiconductor solutions	$ 20,383	$ 17,267	$ 17,441
Infrastructure software	7,067	6,621	5,156
Total net revenue	$ 27,450	$ 23,888	$ 22,597
Operating income:			
Semiconductor solutions	$ 10,976	$ 8,576	$ 8,538
Infrastructure software	4,936	4,363	3,391
Unallocated expenses	(7,393)	(8,925)	(8,485)
Total operating income	$ 8,519	$ 4,014	$ 3,444

Geographic Information

Net revenue by country is based primarily on the geographic shipment or delivery location as specified by the distributors, OEMs, contract manufacturers, channel partners, or software customers who purchased our products or services. For the majority of our products, title and control transfer to our customers in Penang, Malaysia. The products are then transported to the customer specific locations. Net revenue from the United States for fiscal years 2021, 2020 and 2019 was $5,285 million, $4,778 million and $4,235 million, respectively. Net revenue from China (including Hong Kong) for fiscal years 2021, 2020 and 2019 was $9,752 million, $7,808 million and $8,056 million, respectively. Net revenue from Singapore for fiscal years 2021 and 2019 was $2,754 million and $2,507 million, respectively (the amount was less than 10% for fiscal year 2020). Net revenue from other foreign countries for fiscal years 2021, 2020 and 2019 was $9,659 million, $11,302 million and $7,799 million, respectively. These geographic delivery locations are not necessarily indicative of the geographic location of our end customers or the country in which our end customers sell devices containing our products. For example, we believe a substantial portion of our products shipped or delivered to China (including Hong Kong) is included in devices sold by our end customers in the United States and Europe.

Long-lived assets include property, plant and equipment and are based on the physical location of the assets.

	October 31, 2021	November 1, 2020
	(In millions)	
Long-lived assets:		
United States	$ 1,540	$ 1,659
Taiwan	313	285
Other	495	565
Total long-lived assets	$ 2,348	$ 2,509

Significant Customer Information

We sell our products through our direct sales force and a select network of distributors and channel partners globally. No customer accounted for more than 10% of our net accounts receivable balance as of October 31, 2021 or November 1, 2020. During fiscal years 2021, 2020 and 2019, one customer accounted for 18%, 13% and 17% of our net revenue, respectively. Revenue from this customer was included in our semiconductor solutions segment.

14. Commitments and Contingencies

Commitments

The following table summarizes contractual obligations and commitments as of October 31, 2021:

Fiscal Year:	Purchase Commitments	Other Contractual Commitments
	(In millions)	
2022	$ 1,286	$ 738
2023	82	178
2024	—	119
2025	—	25
2026	—	48
Thereafter	—	1
Total	$ 1,368	$ 1,109

Purchase Commitments. Represents unconditional purchase obligations that include agreements to purchase goods or services, primarily inventory, that are enforceable and legally binding on us and that specify all significant terms, including fixed or minimum quantities to be purchased, fixed, minimum or variable price provisions, and the approximate timing of the transaction. Purchase obligations exclude agreements that are cancelable without penalty.

Other Contractual Commitments. Represents amounts payable pursuant to agreements related to IT, human resources, and other service agreements.

Due to the inherent uncertainty with respect to the timing of future cash outflows associated with our unrecognized tax benefits at October 31, 2021, we are unable to reliably estimate the timing of cash settlement with the respective taxing authorities. Therefore, $3,407 million of unrecognized tax benefits and accrued interest and penalties classified within other long-term liabilities on our consolidated balance sheet as of October 31, 2021 have been excluded from the table above.

Contingencies

From time to time, we are involved in litigation that we believe is of the type common to companies engaged in our lines of business, including commercial disputes, employment issues, tax disputes and disputes involving claims by third parties that our activities infringe their patent, copyright, trademark or other IP rights, as well as regulatory investigations or inquiries. Legal proceedings and regulatory investigations or inquiries are often complex, may require the expenditure of significant funds and other resources, and the outcome of such proceedings is inherently uncertain, with material adverse outcomes possible. IP property claims generally involve the demand by a third-party that we cease the manufacture, use or sale of the allegedly infringing products, processes or technologies and/or pay substantial damages or royalties for past, present and future use of the allegedly infringing IP. Claims that our products or processes infringe or misappropriate any third-party IP rights (including claims arising through our contractual indemnification of our customers) often involve highly complex, technical issues, the outcome of which is inherently uncertain. Moreover, from time to time, we pursue litigation to assert our IP rights. Regardless of the merit or resolution of any such litigation, complex IP litigation is generally costly and diverts the efforts and attention of our management and technical personnel.

Lawsuits Relating to California Institute of Technology

California Institute of Technology ("Caltech") filed a complaint against Broadcom and Apple Inc. on May 26, 2016 in the United States District Court for the Central District of California (the “U.S. Central District Court”), and an amended complaint adding Cypress Semiconductor Corporation as a defendant on August 15, 2016. The amended complaint alleged that chips that support certain error correction codes as specified in IEEE Standards 802.11n and 802.11ac willfully infringed four patents related to error correction coding: U.S. Patent Nos. 7,116,710; 7,421,032; 7,916,781; and 8,284,833 (“’833 patent”). Prior to trial, Caltech dismissed its claims against Cypress and withdrew its infringement allegations as to ‘833 patent. The complaint sought a preliminary and permanent injunction, damages, pre- and post-judgment interest, as well as attorneys’ fees, costs, and expenses. The trial was held in January 2020, and on January 29, 2020, the jury issued its verdict finding infringement and awarding Caltech past damages of $270.2 million from Broadcom and $837.8 million from Apple, for which Apple is seeking indemnification from Broadcom. On August 3, 2020, the U.S. Central District Court issued its judgment, awarding Caltech past damages in the amounts awarded by the jury, as well as pre- and post-judgment interest. Additionally, the U.S. Central District Court awarded Caltech an unspecified amount of ongoing royalties to be determined after the anticipated appeals process is resolved. Neither the jury nor the U.S. Central District Court found willful infringement, which if it had, could have resulted in enhanced damages up to three times the amount awarded. Broadcom and Apple have appealed to the United States Court of Appeals for the Federal Circuit (the “Federal Circuit Court”) and oral arguments were heard on September 1, 2021. We are unable to predict the date on which the Federal Circuit Court will issue its decision.

We believe that the evidence and the law do not support the U.S. Central District Court’s findings of infringement or the award of damages, including ongoing royalties, and do not believe a material loss is probable at this time. We believe that there are strong grounds for appeal, and we intend to vigorously challenge the U.S. Central District Court’s judgment and rulings. As a result, we have not recorded a reserve with respect to this litigation, in accordance with the applicable accounting standards. We believe the low end of the possible range of loss is zero, but we cannot reasonably estimate the ultimate outcome, as a number of factors (including the appeal by Broadcom and Apple) could significantly change the assessment of damages.

Other Matters

In addition to the matters discussed above, we are currently engaged in a number of legal actions in the ordinary course of our business.

Contingency Assessment

We do not believe, based on currently available facts and circumstances, that the final outcome of any pending legal proceedings or ongoing regulatory investigations, taken individually or as a whole, will have a material adverse effect on our consolidated financial statements. However, lawsuits may involve complex questions of fact and law and may require the expenditure of significant funds and other resources to defend. The results of litigation or regulatory investigations are inherently uncertain, and material adverse outcomes are possible. From time to time, we may enter into confidential discussions regarding the potential settlement of such lawsuits. Any settlement of pending litigation could require us to incur substantial costs and other ongoing expenses, such as future royalty payments in the case of an IP dispute.

During the periods presented, no material amounts have been accrued or disclosed in the accompanying consolidated financial statements with respect to loss contingencies associated with any other legal proceedings or regulatory investigations, as potential losses for such matters are not considered probable and ranges of losses are not reasonably estimable. These matters are subject to many uncertainties and the ultimate outcomes are not predictable. There can be no assurances that the actual amounts required to satisfy any liabilities arising from the matters described above will not have a material adverse effect on our consolidated financial statements.

Other Indemnifications

As is customary in our industry and as provided for in local law in the U.S. and other jurisdictions, many of our standard contracts provide remedies to our customers and others with whom we enter into contracts, such as defense, settlement, or payment of judgment for IP claims related to the use of our products. From time to time, we indemnify customers, as well as our suppliers, contractors, lessors, lessees, companies that purchase our businesses or assets and others with whom we enter into contracts, against combinations of loss, expense, or liability arising from various triggering events related to the sale and the use of our products, the use of their goods and services, the use of facilities and state of our owned facilities, the state of the assets and businesses that we sell and other matters covered by such contracts, usually up to a specified maximum amount. In addition, from time to time we also provide protection to these parties against claims related to undiscovered liabilities, additional product liabilities or environmental obligations. In our experience, claims made under such indemnifications are rare and the associated estimated fair value of the liability is not material.

15. Restructuring, Impairment and Disposal Charges

Restructuring Charges

The following is a summary of significant restructuring expense recognized primarily in operating expenses:

- During fiscal year 2021, we initiated cost reduction activities associated with plans to align our workforce with strategic business activities and to improve efficiencies in our operations. As a result, we recognized $149 million of restructuring expense primarily related to employee termination costs during fiscal year 2021. We have substantially completed these restructuring activities.
- Restructuring expense during fiscal year 2020 was primarily related to employee termination and other cost reduction activities related to the acquisition of the Symantec Business of $174 million and the CA Merger of $28 million. We have substantially completed the restructuring activities related to the acquisition of the Symantec Business and the CA Merger.

The following table summarizes the significant activities within, and components of, the restructuring liabilities:

	Employee Termination Costs	Other Exit Costs[(a)]	Total
		(In millions)	
Balance as of November 4, 2018	$ 16	$ 6	$ 22
Liabilities assumed from CA	29	38	67
Restructuring charges	586	160	746
Utilization	(562)	(165)	(727)
Balance as of November 3, 2019	69	39	108
Restructuring charges[(b)]	186	47	233
Utilization	(221)	(50)	(271)
Effect of adoption of Topic 842[(c)]	—	(36)	(36)
Balance as of November 1, 2020	34	—	34
Restructuring charges	100	13	113
Utilization	(130)	(13)	(143)
Balance as of October 31, 2021[(d)]	$ 4	$ —	$ 4

(a) Included $30 million and $134 million of restructuring expense related to the write-down of certain lease-related ROU assets and other lease-related charges during fiscal years 2020 and 2019, respectively.

(b) Included $19 million of restructuring expense related to discontinued operations recognized during fiscal year 2020, which was included in loss from discontinued operations.

(c) Upon adoption of Topic 842, certain restructuring lease liabilities were required to be recognized as a reduction to the corresponding ROU assets.

(d) The majority of the employee termination costs balance is expected to be paid within the next six months.

Restructuring, impairment and disposal charges in our consolidated statement of operations for the fiscal year ended October 31, 2021 included $36 million for the write-down of certain lease-related ROU assets and other lease-related charges. As of October 31, 2021, short-term and long-term lease liabilities included $52 million of liabilities related to restructuring activities.

Impairment and Disposal Charges

During fiscal years 2021 and 2020, impairment and disposal charges of $16 million and $19 million, respectively, primarily related to leasehold improvements. During fiscal year 2019, impairment and disposal charges of $67 million primarily related to property, plant and equipment.

16. Subsequent Events

Preferred Stock Cash Dividends Declared

On December 7, 2021, our Board of Directors declared a quarterly cash dividend of $20.00 per share on our Mandatory Convertible Preferred Stock, payable on December 31, 2021 to stockholders of record on December 15, 2021.

Common Stock Cash Dividends Declared

On December 7, 2021, our Board of Directors declared a quarterly cash dividend of $4.10 per share on our common stock, payable on December 31, 2021 to stockholders of record on December 22, 2021.

Schedule II — Valuation and Qualifying Accounts

	Balance at Beginning of Period	Additions to Allowances	Charges Utilized/ Write-offs	Balance at End of Period
		(In millions)		
Accounts receivable allowances:				
Distributor credit allowances [1]				
Fiscal year ended October 31, 2021	$ 149	$ 756	$ (777)	$ 128
Fiscal year ended November 1, 2020	$ 153	$ 696	$ (700)	$ 149
Fiscal year ended November 3, 2019	$ 151	$ 705	$ (703)	$ 153
Other accounts receivable allowances [2]				
Fiscal year ended October 31, 2021	$ 28	$ 14	$ (40)	$ 2
Fiscal year ended November 1, 2020	$ 38	$ 84	$ (94)	$ 28
Fiscal year ended November 3, 2019	$ 12	$ 99	$ (73)	$ 38
Income tax valuation allowances:				
Fiscal year ended October 31, 2021	$ 1,707	$ 121	$ (46)	$ 1,782
Fiscal year ended November 1, 2020	$ 1,563	$ 149	$ (5)	$ 1,707
Fiscal year ended November 3, 2019	$ 1,347	$ 284	$ (68)	$ 1,563

(1) Distributor credit allowances relate to price adjustments and other allowances.

(2) Other accounts receivable allowances primarily include sales returns and allowance for doubtful accounts.

ITEM 9. CHANGES IN AND DISAGREEMENTS WITH ACCOUNTANTS ON ACCOUNTING AND FINANCIAL DISCLOSURE

Not applicable.

ITEM 9A. CONTROLS AND PROCEDURES

Evaluation of Disclosure Controls and Procedures

Our management, with the participation of our Chief Executive Officer ("CEO") and Chief Financial Officer ("CFO"), evaluated the effectiveness of our disclosure controls and procedures as of October 31, 2021. The term "disclosure controls and procedures," as defined in Rules 13a-15(e) and 15d-15(e) under the Exchange Act, means controls and other procedures of a company that are designed to ensure that information required to be disclosed by a company in the reports that it files or submits under the Exchange Act is recorded, processed, summarized and reported within the time periods specified in the SEC's rules and forms. Disclosure controls and procedures include, without limitation, controls and procedures designed to ensure that information required to be disclosed by a company in the reports that it files or submits under the Exchange Act is accumulated and communicated to our management, including its principal executive and principal financial officers, as appropriate to allow timely decisions regarding required disclosure. Management recognizes that any controls and procedures, no matter how well designed and operated, can provide only reasonable assurance of achieving their objectives and management necessarily applies its judgment in evaluating the cost-benefit relationship of possible controls and procedures. Based on the evaluation of our disclosure controls and procedures as of October 31, 2021, our CEO and CFO concluded that, as of such date, our disclosure controls and procedures were effective at the reasonable assurance level.

Management's Report on Internal Control Over Financial Reporting

Our management is responsible for establishing and maintaining adequate internal control over financial reporting. Internal control over financial reporting is defined in Rules 13a-15(f) and 15d-15(f) promulgated under the Exchange Act as a process designed by, or under the supervision of, our principal executive and principal financial officers and effected by the Board, management and other personnel, to provide reasonable assurance regarding the reliability of financial reporting and the preparation of financial statements for external purposes in accordance with GAAP and 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;
- provide reasonable assurance that transactions are recorded as necessary to permit preparation of financial statements in accordance with GAAP, and that receipts and expenditures of us are being made only in accordance with authorizations of management and directors; and
- provide reasonable assurance regarding prevention or timely detection of unauthorized acquisition, use or disposition of our 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. 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.

Our management assessed the effectiveness of our internal control over financial reporting as of October 31, 2021. In making this assessment, our management used the criteria set forth by the Committee of Sponsoring Organizations of the Treadway Commission in *Internal Control-Integrated Framework* (2013). Based on this assessment, our management concluded that, as of October 31, 2021, our internal control over financial reporting is effective based on those criteria.

The effectiveness of our internal control over financial reporting, as of October 31, 2021 has been audited by PricewaterhouseCoopers LLP, an independent registered public accounting firm, as stated in their report which is included in Part II, Item 8. of this Annual Report on Form 10-K.

Changes in Internal Control over Financial Reporting

No change in our internal control over financial reporting (as defined in Rules 13a-15(f) and 15d-15(f) under the Exchange Act) occurred during the fourth quarter ended October 31, 2021 that has materially affected, or is reasonably likely to materially affect, our internal control over financial reporting. Although we have modified our workplace practices globally due to the COVID-19 pandemic, resulting in some of our employees working remotely, this has not meaningfully affected our internal controls over financial reporting. We are continually monitoring and assessing the COVID-19 situation on our internal controls to minimize the impact on their design and operating effectiveness.

ITEM 9B. OTHER INFORMATION

None.

ITEM 9C. DISCLOSURE REGARDING FOREIGN JURISDICTIONS THAT PREVENT INSPECTIONS

Not applicable.

PART III

ITEM 10. DIRECTORS, EXECUTIVE OFFICERS AND CORPORATE GOVERNANCE

The information required by Item 10 is incorporated herein by reference from sections entitled “Proposal 1 — Election of Directors” and “Corporate Governance” in our definitive Proxy Statement for our 2022 Annual Meeting of Stockholders. Our executive officers are listed at the end of Item 1 of this Annual Report on Form 10-K.

ITEM 11. EXECUTIVE COMPENSATION

The information required by Item 11 is incorporated herein by reference from sections entitled “Director Compensation”, “Compensation Discussion and Analysis”, “Executive Compensation”, “Compensation Committee Report” and “Corporate Governance — Compensation Committee Interlocks and Insider Participation" in our definitive Proxy Statement for our 2022 Annual Meeting of Stockholders.

ITEM 12. SECURITY OWNERSHIP OF CERTAIN BENEFICIAL OWNERS AND MANAGEMENT AND RELATED STOCKHOLDER MATTERS

The information required by Item 12 is incorporated herein by reference from sections entitled “Stockholder Information — Security Ownership of Certain Beneficial Owners, Directors and Executive Officers” and “Equity Compensation Plan Information” in our definitive Proxy Statement for our 2022 Annual Meeting of Stockholders.

ITEM 13. CERTAIN RELATIONSHIPS AND RELATED TRANSACTIONS, AND DIRECTOR INDEPENDENCE

The information required by Item 13 is incorporated herein by reference from sections entitled “Corporate Governance” and “Certain Relationships and Related Party Transactions” in our definitive Proxy Statement for our 2022 Annual Meeting of Stockholders.

ITEM 14. PRINCIPAL ACCOUNTANT FEES AND SERVICES

The information required by Item 14 is incorporated herein by reference from the section entitled “Proposal 2 — Ratification of Appointment of Our Independent Registered Public Accounting Firm” in our definitive Proxy Statement for our 2022 Annual Meeting of Stockholders.

PART IV

ITEM 15. EXHIBITS AND FINANCIAL STATEMENT SCHEDULES

(a) The following are filed as part of this Annual Report on Form 10-K:

1. Financial Statements

The following consolidated financial statements are included in Item 8 of this Annual Report on Form 10-K:

2. Financial Statement Schedules

The financial statement schedule of the Registrant and its subsidiaries for fiscal years 2021, 2020 and 2019 required by Item 15(a) (Schedule II, Valuation and Qualifying Accounts) is included in Item 8 of this Annual Report on Form 10-K:

Schedules not filed have been omitted because they are not applicable, are not required or the information required to be set forth therein is included in the financial statements or notes thereto.

3. Exhibits

The documents set forth below are filed herewith or incorporated by reference to the location indicated.

Exhibit No.	Description	Incorporated by Referenced Herein		Filed Herewith
		Form	Filing Date	
2.1#	Agreement and Plan of Merger, dated as of July 11, 2018, by and among Broadcom, Inc., Collie Acquisition Corp. and CA, Inc.	Broadcom Inc. Current Report on Form 8-K (Commission File No. 001-38449)	July 12, 2018	
2.2#	Asset Purchase Agreement, dated as of August 8, 2019, by and between Broadcom Inc. and Symantec Corporation.	Broadcom Inc. Current Report on Form 8-K (Commission File No. 001-38449)	August 9, 2019	
2.3#	APA Letter Agreement, dated as of October 1, 2020, by and between Broadcom Inc. and NortonLifeLock Inc.	Broadcom Inc. Annual Report on Form 10-K (Commission File No. 001-38449)	December 18, 2020	
3.1	Amended and Restated Certificate of Incorporation.	Broadcom Inc. Current Report on Form 8-K12B (Commission File No. 001-38449)	April 4, 2018	
3.2	Certificate of Designation of the 8.00% Mandatory Convertible Preferred Stock, Series A.	Broadcom Inc. Current Report on Form 8-K (Commission File No. 001-38449)	September 30, 2019	
3.3	Amended and Restated Bylaws.	Broadcom Inc. Current Report on Form 8-K12B (Commission File No. 001-38449)	April 4, 2018	
4.1	Form of Common Stock Certificate.	Broadcom Inc. Quarterly Report on Form 10-Q (Commission File No. 001-38449)	June 14, 2018	

Exhibit No.	Description	Incorporated by Referenced Herein Form	Filing Date	Filed Herewith
4.2	Form of Certificate of the 8.00% Mandatory Convertible Preferred Stock, Series A (included in Exhibit 3.2).	Broadcom Inc. Current Report on Form 8-K (Commission File No. 001-38449)	September 30, 2019	
4.3	Description of Common Stock.	Broadcom Inc. Annual Report on Form 10-K (Commission File No. 001-38449)	December 20, 2019	
4.4	Description of 8.00% Mandatory Convertible Preferred Stock, Series A.	Broadcom Inc. Annual Report on Form 10-K (Commission File No. 001-38449)	December 20, 2019	
4.5	Indenture, dated as of January 19, 2017, by and among the Broadcom Corporation and Broadcom Cayman Finance Limited ("Co-Issuers"), the guarantors and Wilmington Trust, National Association, as trustee.	Broadcom Limited Current Report on Form 8-K (Commission File No. 001-37690)	January 20, 2017	
4.6	Supplement Indenture to the January 2017 Indenture, dated as of April 9, 2018.	Broadcom Inc. Current Report on Form 8-K (Commission File No. 001-34889)	April 9, 2018	
4.7	Second Supplement Indenture to the January 2017 Indenture, dated as of January 25, 2019.	Broadcom Inc. Current Report on Form 8-K (Commission File No. 001-38449)	January 25, 2019	
4.8	Form of 2.375% Senior Note due 2020 (included in Exhibit 4.5).	Broadcom Limited Current Report on Form 8-K (Commission File No. 001-37690)	January 20, 2017	
4.9	Form of 3.000% Senior Note due 2022 (included in Exhibit 4.5).	Broadcom Limited Current Report on Form 8-K (Commission File No. 001-37690)	January 20, 2017	
4.10	Form of 3.625% Senior Note due 2024 (included in Exhibit 4.5).	Broadcom Limited Current Report on Form 8-K (Commission File No. 001-37690)	January 20, 2017	
4.11	Form of 3.875% Senior Note due 2027 (included in Exhibit 4.5).	Broadcom Limited Current Report on Form 8-K (Commission File No. 001-37690)	January 20, 2017	
4.12	Indenture, dated as of October 17, 2017, by and among the Co-Issuers, the guarantors and Wilmington Trust, National Association, as trustee.	Broadcom Limited Current Report on Form 8-K (Commission File No. 001-37690)	October 17, 2017	
4.13	Supplement Indenture to October 2017 Indenture, dated as of April 9, 2018.	Broadcom Inc. Current Report on Form 8-K (Commission File No. 001-38449)	April 9, 2018	
4.14	Second Supplement Indenture to October 2017 Indenture, dated as of January 25, 2019.	Broadcom Inc. Current Report on Form 8-K (Commission File No. 001-38449)	January 25, 2019	
4.15	Form of 2.200% Senior Note due 2021 (included in Exhibit 4.12).	Broadcom Limited Current Report on Form 8-K (Commission File No. 001-37690)	October 17, 2017	
4.16	Form of 2.650% Senior Note due 2023 (included in Exhibit 4.12).	Broadcom Limited Current Report on Form 8-K (Commission File No. 001-37690)	October 17, 2017	
4.17	Form of 3.125% Senior Note due 2025 (included in Exhibit 4.12).	Broadcom Limited Current Report on Form 8-K (Commission File No. 001-37690)	October 17, 2017	
4.18	Form of 3.500% Senior Note due 2028 (included in Exhibit 4.12).	Broadcom Limited Current Report on Form 8-K (Commission File No. 001-37690)	October 17, 2017	

Exhibit No.	Description	Incorporated by Referenced Herein Form	Filing Date	Filed Herewith
4.19	Indenture, dated as of April 5, 2019, by and among the Company, as Issuer, Broadcom Technologies Inc., Broadcom Corporation and Broadcom Cayman Finance Limited (the "2019 Guarantors"), and Wilmington Trust, National Association, as trustee.	Broadcom Inc. Current Report on Form 8-K (Commission File No. 001-38449)	April 5, 2019	
4.20	Form of 3.125% Senior Note due 2021 (included in Exhibit 4.19).	Broadcom Inc. Current Report on Form 8-K (Commission File No. 001-38449)	April 5, 2019	
4.21	Form of 3.125% Senior Note due 2022 (included in Exhibit 4.19).	Broadcom Inc. Current Report on Form 8-K (Commission File No. 001-38449)	April 5, 2019	
4.22	Form of 3.625% Senior Note due 2024 (included in Exhibit 4.19).	Broadcom Inc. Current Report on Form 8-K (Commission File No. 001-38449)	April 5, 2019	
4.23	Form of 4.250% Senior Note due 2026 (included in Exhibit 4.19).	Broadcom Inc. Current Report on Form 8-K (Commission File No. 001-38449)	April 5, 2019	
4.24	Form of 4.750% Senior Note due 2029 (included in Exhibit 4.19).	Broadcom Inc. Current Report on Form 8-K (Commission File No. 001-38449)	April 5, 2019	
4.25	Registration Rights Agreement, dated as of April 5, 2019, by and among the Company, the 2019 Guarantors and Merrill Lynch, Pierce, Fenner & Smith Incorporated and J.P. Morgan Securities LLC, as representatives of the several initial purchasers of the April 2019 Notes.	Broadcom Inc. Current Report on Form 8-K (Commission File No. 001-38449)	April 5, 2019	
4.26	Indenture, dated as of April 9, 2020, by and among the Company, as Issuer, Broadcom Technologies Inc. and Broadcom Corporation (the "2020 Guarantors"), and Wilmington Trust, National Association, as trustee.	Broadcom Inc. Current Report on Form 8-K (Commission File No. 001-38449)	April 9, 2020	
4.27	Form of 4.700% Senior Notes due 2025 (included in Exhibit 4.26).	Broadcom Inc. Current Report on Form 8-K (Commission File No. 001-38449)	April 9, 2020	
4.28	Form of 5.000% Senior Notes due 2030 (included in Exhibit 4.26).	Broadcom Inc. Current Report on Form 8-K (Commission File No. 001-38449)	April 9, 2020	
4.29	Registration Rights Agreement, dated as of April 9, 2020, by and among the Company, the 2020 Guarantors and J.P. Morgan Securities LLC, as representative of the several initial purchasers of the April 2020 Senior Notes.	Broadcom Inc. Current Report on Form 8-K (Commission File No. 001-38449)	April 9, 2020	
4.30	Indenture, dated as of May 8, 2020, by and among the Company, as Issuer, the 2020 Guarantors, and Wilmington Trust, National Association, as trustee.	Broadcom Inc. Current Report on Form 8-K (Commission File No. 001-38449)	May 8, 2020	
4.31	Form of 2.250% Senior Notes due 2023 (included in Exhibit 4.30).	Broadcom Inc. Current Report on Form 8-K (Commission File No. 001-38449)	May 8, 2020	
4.32	Form of 3.150% Senior Notes due 2025 (included in Exhibit 4.30).	Broadcom Inc. Current Report on Form 8-K (Commission File No. 001-38449)	May 8, 2020	
4.33	Form of 4.150% Senior Notes due 2030 (included in Exhibit 4.30).	Broadcom Inc. Current Report on Form 8-K (Commission File No. 001-38449)	May 8, 2020	

Exhibit No.	Description	Incorporated by Referenced Herein — Form	Filing Date	Filed Herewith
4.34	Form of 4.300% Senior Notes due 2032 (included in Exhibit 4.30).	Broadcom Inc. Current Report on Form 8-K (Commission File No. 001-38449)	May 8, 2020	
4.35	Registration Rights Agreement, dated as of May 8, 2020, by and among the Company, the 2020 Guarantors and Citigroup Global Markets Inc., HSBC Securities (USA) Inc., J.P. Morgan Securities LLC and Wells Fargo Securities, LLC, as representatives of the several initial purchasers of the May 2020 Senior Notes.	Broadcom Inc. Current Report on Form 8-K (Commission File No. 001-38449)	May 8, 2020	
4.36	Indenture, dated as of May 21, 2020, by and among the Company, the 2020 Guarantors and Wilmington Trust, National Association, as trustee.	Broadcom Inc. Current Report on Form 8-K (Commission File No. 001-38449)	May 21, 2020	
4.37	Form of 3.459% Senior Notes due 2026 (included in Exhibit 4.36).	Broadcom Inc. Current Report on Form 8-K (Commission File No. 001-38449)	May 21, 2020	
4.38	Form of 4.110% Senior Notes due 2028 (included in Exhibit 4.36).	Broadcom Inc. Current Report on Form 8-K (Commission File No. 001-38449)	May 21, 2020	
4.39	Registration Rights Agreement, dated as of May 21, 2020, by and among the Company, the 2020 Guarantors and Barclays Capital Inc. and Credit Suisse Securities (USA) LLC, as dealer-managers in connection with the 2020 Exchange Offers.	Broadcom Inc. Current Report on Form 8-K (Commission File No. 001-38449)	May 21, 2020	
4.40	Indenture, dated as of January 19, 2021, by and among the Company, the 2020 Guarantors and Wilmington Trust, National Association, as Trustee.	Broadcom Inc. Current Report on Form 8-K (Commission File No. 001-38449)	January 19, 2021	
4.41	Form of 1.950% Senior Notes due 2028 (included in Exhibit 4.40).	Broadcom Inc. Current Report on Form 8-K (Commission File No. 001-38449)	January 19, 2021	
4.42	Form of 2.450% Senior Notes due 2031 (included in Exhibit 4.40).	Broadcom Inc. Current Report on Form 8-K (Commission File No. 001-38449)	January 19, 2021	
4.43	Form of 2.600% Senior Notes due 2033 (included in Exhibit 4.40).	Broadcom Inc. Current Report on Form 8-K (Commission File No. 001-38449)	January 19, 2021	
4.44	Form of 3.500% Senior Notes due 2041 (included in Exhibit 4.40).	Broadcom Inc. Current Report on Form 8-K (Commission File No. 001-38449)	January 19, 2021	
4.45	Form of 3.750% Senior Notes due 2051 (included in Exhibit 4.40).	Broadcom Inc. Current Report on Form 8-K (Commission File No. 001-38449)	January 19, 2021	
4.46	Registration Rights Agreement, dated as of January 19, 2021, by and among the Company, the 2020 Guarantors and Morgan Stanley & Co. LLC, BNP Paribas Securities Corp., RBC Capital Markets, LLC, SMBC Nikko Securities America, Inc., and Truist Securities, Inc., as representatives of the several initial purchasers of the January 2021 Senior Notes.	Broadcom Inc. Current Report on Form 8-K (Commission File No. 001-38449)	January 19, 2021	
4.47	Indenture, dated as of March 31, 2021, by and between the Company and Wilmington Trust, National Association, as Trustee.	Broadcom Inc. Current Report on Form 8-K (Commission File No. 001-38449)	March 31, 2021	
4.48	Form of 3.419% Senior Notes due 2033 (included in Exhibit 4.47)	Broadcom Inc. Current Report on Form 8-K (Commission File No. 001-38449)	March 31, 2021	

Exhibit No.	Description	Incorporated by Referenced Herein		Filed Herewith
		Form	Filing Date	
4.49	Form of 3.469% Senior Notes due 2034 (included in Exhibit 4.47)	Broadcom Inc. Current Report on Form 8-K (Commission File No. 001-38449)	March 31, 2021	
4.50	Registration Rights Agreement, dated as of March 31, 2021, by and among the Company and BofA Securities, Inc. and HSBC Securities (USA) Inc., as dealer-managers in connection with the March 2021 Senior Notes.	Broadcom Inc. Current Report on Form 8-K (Commission File No. 001-38449)	March 31, 2021	
4.51	Indenture, dated as of September 30, 2021, by and between the Company and Wilmington Trust, National Association, as Trustee.	Broadcom Inc. Current Report on Form 8-K (Commission File No. 001-38449)	September 30, 2021	
4.52	Form of 3.137% Senior Notes due 2035 (included in Exhibit 4.51).	Broadcom Inc. Current Report on Form 8-K (Commission File No. 001-38449)	September 30, 2021	
4.53	Form of 3.187% Senior Notes due 2036 (included in Exhibit 4.51).	Broadcom Inc. Current Report on Form 8-K (Commission File No. 001-38449)	September 30, 2021	
4.54	Registration Rights Agreement, dated as of September 30, 2021, by and among the Company and BNP Paribas Securities Corp., J.P. Morgan Securities LLC and TD Securities (USA) LLC, as dealer-managers in connection with the 2021 Exchange Offers.	Broadcom Inc. Current Report on Form 8-K (Commission File No. 001-38449)	September 30, 2021	
10.1	Form of Indemnification and Advancement Agreement (effective April 4, 2018).	Broadcom Inc. Current Report on Form 8-K12B (Commission File No. 001-38449)	April 4, 2018	
10.2	Credit Agreement, dated as of May 7, 2019, among Broadcom Inc., the lenders and other parties party thereto, and Bank of America, N.A., as Administrative Agent.	Broadcom Inc. Current Report on Form 8-K (Commission File No. 001-38449)	May 7, 2019	
10.3	Credit Agreement, dated as of November 4, 2019, among Broadcom Inc., the lenders and other parties party thereto, and Bank of America, N.A., as Administrative Agent.	Broadcom Inc. Current Report on Form 8-K (Commission File No. 001-38449)	November 4, 2019	
10.4	Credit Agreement, dated as of January 19, 2021, among the Company, the lenders and other parties party thereto, and Bank of America, N.A., as Administrative Agent.	Broadcom Inc. Current Report on Form 8-K (Commission File No. 001-38449)	January 19, 2021	
10.5	Lease Agreement dated August 10, 2017 between Five Point Office Venture I, LLC and Broadcom Corporation.	Broadcom Limited Annual Report on Form 10-K (Commission File No. 001-37690)	December 21, 2017	
10.6	First Amendment to Lease Agreement by and between Five Point Office Venture 1, LLC and Broadcom Corporation.	Broadcom Inc. Annual Report on Form 10-K (Commission File No. 001-38449)	December 18, 2020	
10.7*	Settlement and Patent License and Non-Assert Agreement by and between Qualcomm Incorporated and Broadcom Corporation.	Broadcom Corporation Current Report on Form 8-K/A (Commission File No. 000-23993)	July 23, 2009	
10.8+	Avago Technologies Limited 2009 Equity Incentive Award Plan.	Amendment No. 5 to Avago Technologies Limited Registration Statement on Form S-1 (Commission File No. 333-153127)	July 27, 2009	
10.9+	Broadcom Inc. Employee Stock Purchase Plan (as amended and restated on April 1, 2019).	Broadcom Inc. Definitive Proxy Statement on Schedule 14A (Commission File No. 001-38449)	February 19, 2019	

Exhibit No.	Description	Incorporated by Referenced Herein		Filed Herewith
		Form	Filing Date	
10.10+	LSI Corporation 2003 Equity Incentive Plan, as amended.	Avago Technologies Limited Registration Statement on Form S-8 (Commission File No. 333-195741)	May 6, 2014	
10.11+	Amendment to the LSI Corporation 2003 Equity Incentive Plan (effective February 1, 2016).	Broadcom Limited Annual Report on Form 10-K (Commission File No. 001-37690)	December 23, 2016	
10.12+	Amendment to the LSI Corporation 2003 Equity Incentive Plan (effective April 4, 2018).	Broadcom Inc. Current Report on Form 8-K12B (Commission File No. 001-38449)	April 4, 2018	
10.13+	Broadcom Inc. 2012 Stock Incentive Plan (as amended and restated on April 5, 2021).	Broadcom Inc. Quarterly Report on Form 10-Q (Commission File No. 001-38449)	June 11, 2021	
10.14+	Form of Annual Bonus Plan for Executive Employees.	Broadcom Limited Annual Report on Form 10-K (Commission File No. 001-37690)	December 23, 2016	
10.15+	Form of Option Agreement under Avago Technologies Limited 2009 Equity Incentive Plan.	Amendment No. 5 to Avago Technologies Limited Registration Statement on Form S-1 (Commission File No. 333-153127)	July 27, 2009	
10.16+	Form of Restricted Stock Unit Agreement (Sell to Cover) Under Avago Technologies Limited 2009 Equity Incentive Award Plan (effective February 1, 2016).	Broadcom Limited Quarterly Report on Form 10-Q (Commission File No. 001-37690)	March 10, 2016	
10.17+	Form of Restricted Stock Unit Agreement (Sell to Cover) Under Avago Technologies Limited 2009 Equity Incentive Award Plan (effective December 5, 2017).	Broadcom Limited Annual Report on Form 10-K (Commission File No. 001-37690)	December 21, 2017	
10.18+	Form of Agreement for Multi-Year Equity Award of Restricted Stock Unit Award under the Avago Technologies Limited 2009 Equity Incentive Award Plan).	Broadcom Inc. Current Report on Form 8-K (Commission File No. 001-38449)	December 6, 2018	
10.19+	Form of Performance Stock Unit Agreement (Relative TSR) under Avago Technologies Limited 2009 Equity Incentive Award Plan.	Broadcom Limited Quarterly Report on Form 10-Q (Commission File No. 001-37690)	March 9, 2017	
10.20+	Form of Performance Share Unit Agreement (Relative TSR) under Avago Technologies Limited 2009 Equity Incentive Plan (effective March 13, 2018).	Broadcom Limited Quarterly Report on Form 10-Q (Commission File No. 001-37690)	March 15, 2018	
10.21+	Form of Agreement for Multi-Year Equity Award of Performance Stock Units under the Avago Technologies Limited 2009 Equity Incentive Award Plan).	Broadcom Inc. Current Report on Form 8-K (Commission File No. 001-38449)	December 6, 2018	
10.22+	Form of Restricted Stock Unit Award Agreement under LSI Corporation 2003 Equity Incentive Plan, as amended (effective December 8, 2020).	Broadcom Inc. Annual Report on Form 10-K (Commission File No. 001-38449)	December 18, 2020	
10.23+	Form of Performance Stock Unit Agreement (Relative TSR) under LSI Corporation 2003 Equity Incentive Plan, as amended (effective December 8, 2020).	Broadcom Inc. Annual Report on Form 10-K (Commission File No. 001-38449)	December 18, 2020	
10.24+	Form of Restricted Stock Unit Award Agreement under Broadcom Corporation 2012 Stock Incentive Plan (effective February 1, 2016).	Broadcom Limited Quarterly Report on Form 10-Q (Commission File No. 001-37690)	March 10, 2016	
10.25+	Form of Restricted Stock Unit Award Agreement under Broadcom Corporation 2012 Stock Incentive Plan (effective December 5, 2017).	Broadcom Limited Annual Report on Form 10-K (Commission File No. 001-37690)	December 21, 2017	

Exhibit No.	Description	Incorporated by Referenced Herein		Filed Herewith
		Form	Filing Date	
10.26+	Form of Restricted Stock Unit Award Agreement under Broadcom Inc. 2012 Stock Incentive Plan (effective April 5, 2021).	Broadcom Inc. Quarterly Report on Form 10-Q (Commission File No. 001-38449)	June 11, 2021	
10.27+	Form of Performance Stock Unit Agreement (Relative TSR) under Broadcom Corporation 2012 Stock Incentive Plan.	Broadcom Limited Quarterly Report on Form 10-Q (Commission File No. 001-37690)	March 9, 2017	
10.28+	Form of Performance Share Unit Agreement (Relative TSR) under Broadcom Corporation 2012 Stock Incentive Plan (effective March 15, 2018).	Broadcom Limited Quarterly Report on Form 10-Q (Commission File No. 001-37690)	March 15, 2018	
10.29+	Form of Performance Stock Unit Award Agreement under the Broadcom Inc. 2012 Stock Incentive Plan (effective April 5, 2021).	Broadcom Inc. Quarterly Report on Form 10-Q (Commission File No. 001-38449)	June 11, 2021	
10.30+	Performance Stock Unit Award Agreement, dated June 15, 2017, between Broadcom Limited and Hock E. Tan.	Broadcom Limited Current Report on Form 8-K (Commission File No. 001-37690)	June 19, 2017	
10.31+	Performance Stock Unit Award Agreement, dated April 5, 2021, between Broadcom Inc. and Hock E. Tan.	Broadcom Inc. Quarterly Report on Form 10-Q (Commission File No. 001-38449)	June 11, 2021	
10.32+	Policy on Acceleration of Executive Staff Equity Awards in the Event of Permanent Disability (as amended June 2, 2021).	Broadcom Inc. Current Report on Form 8-K (Commission File No. 001-38449)	June 3, 2021	
10.33+	Policy on Acceleration of Equity Awards in the Event of Death (as amended June 2, 2021).	Broadcom Inc. Current Report on Form 8-K (Commission File No. 001-38449)	June 3, 2021	
10.34+	Amended and Restated Severance Benefits Agreement, dated December 10, 2020, between Broadcom Inc. and Hock E. Tan.	Broadcom Inc. Current Report on Form 8-K (Commission File No. 001-38449)	December 10, 2020	
10.35+	Amended and Restated Severance Benefits Agreement, dated December 10, 2020, between Broadcom Inc. and Thomas H. Krause, Jr.	Broadcom Inc. Current Report on Form 8-K (Commission File No. 001-38449)	December 10, 2020	
10.36+	Amended and Restated Severance Benefits Agreement, dated December 10, 2020, between Broadcom Inc. and Charlie B. Kawwas.	Broadcom Inc. Current Report on Form 8-K (Commission File No. 001-38449)	December 10, 2020	
10.37+	Severance Benefits Agreement, dated September 26, 2017, between Broadcom Limited and Mark Brazeal.	Broadcom Inc. Quarterly Report on Form 10-Q (Commission File No. 001-38449)	June 16, 2018	
10.38+	Severance Benefits Agreement, dated December 10, 2020, between Broadcom Inc. and Kirsten M. Spears.	Broadcom Inc. Current Report on Form 8-K (Commission File No. 001-38449)	December 10, 2020	
10.39+	Letter Agreement dated December 8, 2020, between Broadcom Inc. and Kirsten M. Spears.	Broadcom Inc. Current Report on Form 8-K (Commission File No. 001-38449)	December 10, 2020	
21.1	List of Subsidiaries.			X
23.1	Consent of PricewaterhouseCoopers LLP, independent registered public accounting firm.			X
24.1	Power of Attorney (see signature page to this Form 10-K).			X
31.1	Certification of Principal Executive Officer of Broadcom Inc. Pursuant to Rule 13a-14 of the Securities Exchange Act of 1934, As Adopted Pursuant to Section 302 of the Sarbanes-Oxley Act of 2002.			X

Exhibit No.	Description	Incorporated by Referenced Herein		Filed Herewith
		Form	Filing Date	
31.2	Certification of Principal Financial Officer of Broadcom Inc. Pursuant to Rule 13a-14 of the Securities Exchange Act of 1934, As Adopted Pursuant to Section 302 of the Sarbanes-Oxley Act of 2002.			X
32.1	Certification of Principal Executive Officer of Broadcom Inc. Pursuant to 18 U.S.C. Section 1350, As Adopted Pursuant to Section 906 of the Sarbanes-Oxley Act of 2002.			X
32.2	Certification of Principal Financial Officer of Broadcom Inc. Pursuant to 18 U.S.C. Section 1350, As Adopted Pursuant to Section 906 of the Sarbanes-Oxley Act of 2002.			X
101.INS	XBRL Instance Document - the instance document does not appear in the Interactive Data File because its XBRL tags are embedded within the Inline XBRL document.			X
101.SCH	XBRL Schema Document			X
101.CAL	XBRL Calculation Linkbase Document			X
101.DEF	XBRL Definition Linkbase Document			X
101.LAB	XBRL Labels Linkbase Document			X
101.PRE	XBRL Presentation Linkbase Document			X
104	Cover Page Interactive Data File - the cover page interactive data file does not appear in the Interactive Data File because its XBRL tags are embedded within the Inline XBRL document.			X

Notes:

+ Indicates a management contract or compensatory plan or arrangement.

Schedules have been omitted pursuant to Item 601(b)(2) of Regulation S-K. Broadcom Inc. hereby undertakes to furnish supplementally copies of any omitted schedules upon request by the SEC.

* Certain information omitted pursuant to a request for confidential treatment filed with the SEC.

ITEM 16. FORM 10-K SUMMARY

None.

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.

BROADCOM INC.

By: **/s/ Hock E. Tan**
Name: **Hock E. Tan**
Title: **President and Chief Executive Officer**

Date: December 17, 2021

POWER OF ATTORNEY

Each person whose individual signature appears below hereby authorizes and appoints Hock E. Tan, Kirsten M. Spears and Mark D. Brazeal, and each of them, with full power of substitution and resubstitution and full power to act without the other, as his or her true and lawful attorney-in-fact and agent to act in his or her name, place and stead and to execute in the name and on behalf of each person, individually and in each capacity stated below, and to file any and all amendments to this Annual Report on Form 10-K, 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, 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 thereof.

Pursuant to the requirements of the Securities Exchange Act of 1934, this Annual Report on Form 10-K has been signed by the following persons on behalf of the Registrant in the capacities indicated and on the dates indicated.

Signature	Title	Date
/s/ Hock E. Tan **Hock E. Tan**	President and Chief Executive Officer and Director (Principal Executive Officer)	December 17, 2021
/s/ Kirsten M. Spears **Kirsten M. Spears**	Chief Financial Officer (Principal Financial Officer and Principal Accounting Officer)	December 17, 2021
/s/ Henry Samueli **Henry Samueli**	Chairman of the Board of Directors	December 17, 2021
/s/ Eddy W. Hartenstein **Eddy W. Hartenstein**	Lead Independent Director	December 17, 2021
/s/ Diane M. Bryant **Diane M. Bryant**	Director	December 17, 2021
/s/ Gayla J. Delly **Gayla J. Delly**	Director	December 17, 2021
/s/ Raul F. Fernandez **Raul F. Fernandez**	Director	December 17, 2021
/s/ Check Kian Low **Check Kian Low**	Director	December 17, 2021
/s/ Justine F. Page **Justine F. Page**	Director	December 17, 2021
/s/ Harry L. You **Harry L. You**	Director	December 17, 2021

Broadcom Inc. – List of Significant Subsidiaries

As of October 31, 2021

Name of Subsidiary	Country of Incorporation
Avago Technologies International Sales Pte. Limited	Singapore
Avago Technologies U.S. Inc.	Delaware (U.S.A.)
Avago Technologies Wireless (U.S.A.) Manufacturing LLC	Delaware (U.S.A.)
Broadcom Corporation	California (U.S.A.)
Broadcom Singapore Pte. Ltd.	Singapore
CA, Inc.	Delaware (U.S.A.)
CA Europe Sárl	Switzerland
LSI Corporation	Delaware (U.S.A.)

CONSENT OF INDEPENDENT REGISTERED PUBLIC ACCOUNTING FIRM

We hereby consent to the incorporation by reference in the Registration Statements on Form S-8 (Nos. 333-235753, 333-235663, 333-228175, 333-209331-01, 333-215291-01, and 333-221654-01) and Form S-3 (No. 333-257056) of Broadcom Inc. of our report dated December 17, 2021 relating to the financial statements and financial statement schedule and the effectiveness of internal control over financial reporting, which appears in this Form 10-K.

/s/ PricewaterhouseCoopers LLP
San Jose, California
December 17, 2021

EXHIBIT 31.1

CERTIFICATION OF CHIEF EXECUTIVE OFFICER
PURSUANT TO SECTION 302 OF
THE SARBANES-OXLEY ACT OF 2002

I, Hock E. Tan, certify that:

1. I have reviewed this Annual Report on Form 10-K of Broadcom 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: December 17, 2021

/s/ Hock E. Tan

Hock E. Tan
Chief Executive Officer
(Principal Executive Officer)

EXHIBIT 31.2

CERTIFICATION OF CHIEF FINANCIAL OFFICER
PURSUANT TO SECTION 302 OF
THE SARBANES-OXLEY ACT OF 2002

I, Kirsten M. Spears, certify that:

1. I have reviewed this Annual Report on Form 10-K of Broadcom 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: December 17, 2021

/s/ Kirsten M. Spears

Kirsten M. Spears
Chief Financial Officer
(Principal Financial Officer)

EXHIBIT 32.1

CERTIFICATION OF THE CHIEF EXECUTIVE OFFICER 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 on Form 10-K of Broadcom Inc. (the “Company”) for the fiscal year ended October 31, 2021 as filed with the Securities and Exchange Commission on the date hereof (the “Report”), the undersigned, Hock E. Tan, Chief Executive Officer of the Company, hereby certifies, pursuant to 18 U.S.C. Section 1350, that:

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

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

Date: December 17, 2021	/s/ Hock E. Tan
	Hock E. Tan
	Chief Executive Officer (Principal Executive Officer)

The foregoing certification is being furnished solely pursuant to 18 U.S.C. § 1350 and is not being filed as part of the Report or as a separate disclosure document.

EXHIBIT 32.2

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

In connection with the Annual Report on Form 10-K of Broadcom Inc. (the “Company”) for the fiscal year ended October 31, 2021 as filed with the Securities and Exchange Commission on the date hereof (the “Report”), the undersigned, Kirsten M. Spears, Chief Financial Officer of the Company, hereby certifies, pursuant to 18 U.S.C. Section 1350, that:

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

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

Date: December 17, 2021

/s/ Kirsten M. Spears

Kirsten M. Spears
Chief Financial Officer
(Principal Financial Officer)

The foregoing certification is being furnished solely pursuant to 18 U.S.C. § 1350 and is not being filed as part of the Report or as a separate disclosure document.