

## PART I

### Item 1. *Business*

#### Overview

We are a fabless semiconductor provider of high-performance application-specific standard products. Our core strength of expertise is the development of complex System-on-a-Chip (“SoC”) devices, leveraging our technology portfolio of intellectual property in the areas of analog, mixed-signal, digital signal processing, and embedded and standalone integrated circuits. We also develop integrated hardware platforms along with software that incorporates digital computing technologies designed and configured to provide an optimized computing solution. Our broad product portfolio includes devices for storage, networking and connectivity. We were incorporated in Bermuda in January 1995.

Our registered and mailing address is Canon’s Court, 22 Victoria Street, Hamilton HM 12, Bermuda, and our telephone number there is (441) 296-6395. The address of our U.S. operating subsidiary is Marvell Semiconductor, Inc., 5488 Marvell Lane, Santa Clara, California 95054, and our telephone number there is (408) 222-2500. We also have operations in many countries, including China, India, Israel, Japan, Singapore, South Korea, Taiwan and Vietnam. Our fiscal year ends on the Saturday nearest January 31.

#### Available Information

Our website address is located at [www.marvell.com](http://www.marvell.com). The information contained on our website does not form any part of this Annual Report on Form 10-K and is not incorporated by reference herein. We make available free of charge through our website our annual reports on Form 10-K, our quarterly reports on Form 10-Q, our current reports on Form 8-K and amendments to those reports filed or furnished pursuant to Section 13(a) or 15(d) of the Securities Exchange Act of 1934, as amended (the “Exchange Act”), as soon as reasonably practicable after we electronically file this material with, or furnish it to, the U.S. Securities and Exchange Commission (“SEC”).

#### Our Markets and Products

Over the last several years, we have transitioned from a supplier of stand-alone semiconductor components to a supplier of fully integrated platform solutions. Our platform solutions contain multiple intellectual property components in integrated hardware, along with software that incorporates digital, analog and mixed-signal computing and communication technologies, designed and configured to provide an optimized solution. Our solutions have become increasingly integrated, with more and more components resulting in an all-in-one solution for a given customer’s end product. The demand for such highly integrated platform solutions is generally driven by technological changes and anticipation of the future needs of device manufacturers and end users, including enterprises, campus and service provider networks and, to an increasing extent, data center providers.

A device manufacturer may require technologies leveraged from one end market product into products for other end markets, integrating components and technologies traditionally associated with one end market with components and technologies from another end market. The integration of these various technologies onto a single piece of silicon is referred to as SoC.

In addition, software has become increasingly important to our business over the last several years and we believe software will become even more relevant as the market expects hardware and software to be delivered as an integrated solution offering. On-chip software, which acts as the “driver” for the functionality of the chip, has always been a critical part of our business. However, the software and application-level software that we deliver with our products has become significantly more complex as the range of uses and the needs has increased. For example, a solution that we develop for storage or networking can contain software that has a range of functionalities built in. Alternatively, our solution can allow our customers to deploy their operative systems on top of our chip, as well as deploy their application software on top of our SoC.

Our current product offerings are primarily in three broad product groups: storage, networking and connectivity. In storage, we are a market leader in data storage controller solutions spanning consumer, mobile, desktop and enterprise markets. Our storage solutions enable customers to engineer high-volume products for hard disk drives and solid state drives. Our networking products address end markets in cloud, enterprise, small and medium business and service provider networks. Our connectivity products address end markets in consumer, enterprise, desktop, service provider networks and automotive. Our storage, networking and connectivity products power cutting-edge networks and data centers around the world. The networking & connectivity product groups were previously referred to as smart networked devices and solutions.

In connection with the November 2016 announcement of our plan to restructure our operations to refocus our research and development, increase operational efficiency and improve profitability, we also plan to divest certain businesses and we began an active program to locate buyers for several businesses. As of January 28, 2017, two of these businesses were classified as discontinued operations. As required, we retrospectively recast our consolidated statements of operations and balance sheets for all periods presented to reflect these businesses as discontinued operations. Unless noted otherwise, the following discussion refers to our continuing operations. Our net revenue by product group for the last three fiscal years is as follows:

	Year Ended								
	January 28, 2017		January 30, 2016		January 31, 2015				
	(in millions, except for percentages)								
Storage	\$	1,158	50%	\$	1,201	45%	\$	1,745	48%
Networking		590	25%		532	20%		661	18%
Connectivity		318	14%		441	17%		530	15%
Other		252	11%		475	18%		701	19%
Total	\$	2,318		\$	2,649		\$	3,637	

### ***Storage***

#### ***Hard Disk Drive Controllers***

Hard disk drive ("HDD") controllers provide high-performance input/output (I/O) interface control between the HDD and the host system. We support a variety of host system interfaces, including SATA (Serial Advanced Technology Attachment) and SAS (Serial Attached SCSI), which support the complete range of enterprise, desktop and mobile HDDs.

- We are a leading HDD controller supplier and currently supply products to all of the major hard drive manufacturers.
- Our HDD controllers with advanced technology for HDDs provide a technological advantage that enable a higher level of data storage on smaller form factors and higher volumetric densities.
- Our advanced HDD controller SoCs are designed incorporating the latest Marvell IPs using leading advanced semiconductor process nodes.

#### ***Solid-State Drive Controllers***

Our solid-state- drive ("SSD") controller SoCs are targeted at the fast growing market for flash-based storage systems, for the cloud, enterprise, consumer and mobile computing markets. We support a variety of host system interfaces, including SAS, SATA, peripheral component interconnect express ("PCIe"), and non-volatile memory express ("NVMe").

- We are a leading supplier of SSD controllers across a range of customers and market segments.
- Our advanced SSD controller SoCs incorporate the latest Marvell technology using leading advanced process nodes.
- Our SSD controllers are complemented by our fully featured SDK (software development kit) and FTK (Full Turnkey software solutions.)

#### ***HDD Components***

In fiscal 2017, Marvell re-entered the HDD preamps business. We are working with a number of customers in developing and qualifying our components.

#### ***Enterprise Storage Solutions***

We develop software-enabled silicon solutions for enterprise, data centers and cloud computing businesses. The solutions include SATA port multipliers, bridges, SATA, SAS and NVMe redundant array of independent disk controllers and converged storage processors.

### ***Networking***

#### ***Ethernet Solutions***

Ethernet connectivity is pervasive throughout networking infrastructures built for enterprise, small and medium business, home office, service provider and data centers. Our Ethernet solutions address a wide variety of end-customer products for those market spaces, from small, cost-effective appliances to large, high-performance modular solutions.

Our Ethernet products include:

- A broad selection of Ethernet switches with market-optimized innovative features, such as advanced tunneling and routing, high throughput forwarding and packet processing that make networks more effective at delivering content. Our Ethernet switch product portfolio ranges from low-power, five-port switches to highly integrated, multi-terabit Ethernet SoC devices that can be interconnected to form massive network solutions;
- A broad selection of Ethernet physical-layer transceivers for both fiber and copper interconnect with advanced power management, link security and time synchronization features that complement our Ethernet switch and embedded communication processors; and
- A family of single-chip network interface devices offered in ultra-small form factor with low-power consumption and targeted for client-server network interface cards.

#### *Embedded Communication Processors*

Our range of SoC-embedded communication processors provide multi-core ARM processor architecture optimized to consume low power while simultaneously delivering high-performance per watt. They provide a combination of I/O peripherals, including Ethernet, SATA, SAS, PCIe and universal serial bus and are ideally suited for a range of end-customer networking applications, such as home gateways, networked storage, control plane applications, routers, switches and wireless access points and base stations.

#### **Connectivity**

We offer a broad portfolio of connectivity solutions, including Wi-Fi, and Wi-Fi/Bluetooth integrated SOCs. These products are integrated into a wide variety of end devices, such as enterprise access points, home gateways, multimedia devices, gaming, printers, automotive infotainment and telematics units, and smart industrial devices. Our products are well-positioned to deliver low-power and high-performance functionality with cutting-edge technologies, and to lead the fast-paced developments of Wi-Fi 802.11 and Bluetooth standards. Our connectivity product portfolio includes a single stream 1x1, as well as multi-stream 2x2 and 4x4 multiple input multiple output devices. We deliver both the radio control and processing as well as the RF components for a complete customer solution.

#### **Other Products**

##### *Printing Solutions & Custom ASIC*

Our printer SoC products power many of today's laser and ink printers and multi-function peripherals. These SoCs include a family of printer-specific standard products as well as full-custom application-specific integrated circuits.

##### *Communications and Application Processors*

While we exited the mobile market in September 2015, several customers continue to ship our LTE communications processors. Our separate line of application processors is targeted for non-mobile applications and deliver leading-edge performance for today's embedded and Internet of Things solutions.

#### **Financial Information about Segments and Geographic Areas**

We have determined that we operate in one reportable segment: the design, development and sale of integrated circuits. For information regarding our revenue by geographic area, and property and equipment by geographic area, please see "Note 13 — Segment and Geographic Information" in our Notes to the Consolidated Financial Statements set forth in Part II, Item 8 of this Annual Report on Form 10-K. See "Risk Factors" under Item 1A of this Annual Report on Form 10-K for a discussion of the risks associated with our international operations.

#### **Customers, Sales and Marketing**

Our target customers are original equipment manufacturers and original design manufacturers, both of which design and manufacture end market devices. Our sales force is strategically aligned along key customer lines in order to offer fully integrated platforms to our customers. In this way, we believe we can more effectively offer a broader set of content into our key customers' end products, without having multiple product groups separately engage the same customer. We complement and support our direct sales force with manufacturers' representatives for our products in North America, Europe and Asia. In addition, we have distributors who support our sales and marketing activities in the United States, Europe and Asia. We also use third-party logistics providers who maintain warehouses in close proximity to our customers' facilities. We expect that a significant percentage of our sales will continue to come from direct sales to key customers.

We use field application engineers to provide technical support and assistance to existing and potential customers in designing, testing and qualifying systems designs that incorporate our products. Our marketing team works in conjunction with our field sales and application engineering force, and is organized around our product groups.

Historically, a relatively small number of customers have accounted for a significant portion of our net revenue. Net revenue attributable to significant customers whose revenues as a percentage of net revenue was 10% or greater of total net revenues is presented in the following table:

	Year Ended		
	January 28, 2017	January 30, 2016	January 31, 2015
<b>Customer:</b>			
Western Digital*	21%	19%	20%
Toshiba	13%	**%	**%
Seagate	9%	14%	13%
Wintech	10%	**%	11%

\* The percentage of net revenues reported for Western Digital for fiscal year 2017 includes net revenue of HGST and SanDisk that became subsidiaries of Western Digital in late fiscal 2016.

\*\* Less than 10% of net revenue

A significant number of our products are being incorporated into consumer electronics products, including gaming devices and personal computers, which are subject to significant seasonality and fluctuations in demand. Seasonality, including holiday and back to school buying trends, may at times negatively impact our results in the first and fourth quarter, and positively impact our results in the second and third quarter of our fiscal years. In addition, the timing of new product introductions by our customers may cause variations in our quarterly revenues, which may not be indicative of future trends.

#### Inventory and Working Capital

We place firm orders for products with our suppliers generally up to 16 weeks prior to the anticipated delivery date and typically prior to an order for the product. These lead times typically change based on the current capacity at the foundries. We often maintain substantial inventories of our products because the semiconductor industry is characterized by short lead time orders and quick delivery schedules. In addition, increased use of “hubs” managed by third-party logistics providers has resulted in a higher number of inventory locations and higher overall inventory levels.

#### Backlog

We do not believe that backlog is a meaningful or reliable indicator for future demand, due to the following:

- an industry practice that allows customers to cancel or change orders prior to the scheduled shipment dates;
- an increasing portion of our revenue comes from products shipped to customers using third-party logistics providers, or “hubs” wherein the product can be pulled at any time by the customer and is therefore never reflected in backlog; and
- scheduled future shipments include shipments to distributors for which we do not recognize revenue until the products are sold to end customers.

#### Research and Development

We believe that our future success depends on our ability to introduce improvements to our existing products and to develop new products that deliver cost-effective solutions for both existing and new markets. Our research and development efforts are directed largely to the development of high-performance analog, mixed-signal, digital signal processing and embedded microprocessor integrated circuits with the smallest die size and lowest power. We devote a significant portion of our resources to expanding our product portfolio based on a broad intellectual property portfolio with designs that enable high-performance, reliable communications over a variety of physical transmission media. We are also focused on incorporating functions currently provided by stand-alone integrated circuits into our integrated platform solutions to reduce our customers’ overall system costs.

We have assembled a core team of engineers who have experience in the areas of mixed-signal circuit design, digital signal processing, embedded microprocessors, complementary metal oxide semiconductor (“CMOS”) technology and system-level architectures. We have invested and will continue to invest a significant amount of funds for research and development. Our research and development expense was \$0.8 billion, \$1.0 billion and \$1.1 billion in fiscal 2017, 2016 and 2015, respectively. See our discussion of research and development expenses in Item 7, Management’s Discussion and Analysis of Financial Condition and Results of Operations, of this Annual Report on Form 10-K for further information.

#### Manufacturing

### ***Integrated Circuit Fabrication***

The vast majority of our integrated circuits are fabricated using widely available CMOS processes, which provide greater flexibility to engage independent foundries to manufacture integrated circuits at lower costs. By outsourcing manufacturing, we are able to avoid the cost associated with owning and operating our own manufacturing facility. This allows us to focus our efforts on the design and marketing of our products. We currently outsource a large percentage of our integrated circuit manufacturing to Taiwan Semiconductor Manufacturing Company. We also utilize United Microelectronics Corporation, with the remaining manufacturing outsourced to other foundries located primarily in Asia. We work closely with our foundry partners to forecast on a monthly basis our manufacturing capacity requirements. We closely monitor foundry production to ensure consistent overall quality, reliability and yield levels. Our integrated circuits are currently fabricated in several advanced manufacturing processes. Because finer manufacturing processes lead to enhanced performance, smaller silicon chip size and lower power requirements, we continually evaluate the benefits and feasibility of migrating to smaller geometry process technology in order to reduce cost and improve performance.

### ***Assembly and Test***

We outsource all product packaging and testing requirements for our products in production to several assembly and test subcontractors primarily located in China, Korea, Singapore and Taiwan.

### ***Environmental Management***

We believe that our products comply with the current Restriction of Hazardous Substances Directive, the European legislation that restricts the use of a number of substances, including lead, and the Regulation, Evaluation and Authorization of Chemicals SVHC Substances Directive. In addition, each of our manufacturing subcontractors complies with ISO 14001:2004, the international standard related to environmental management. We are also working to establish a “conflict-free” supply chain, including ethical sourcing of certain minerals for our products.

### ***Intellectual Property***

Our future revenue growth and overall success depend in large part on our ability to protect our intellectual property. We rely on a combination of patents, copyrights, trademarks, trade secret laws, contractual provisions, confidentiality agreements and licenses to protect our intellectual property. As of January 28, 2017, we have approximately 8,700 U.S. and foreign patents issued and approximately 2,000 U.S. and foreign patent applications pending on various aspects of our technology. While we believe the duration of our patents generally covers the expected lives of our products, our patents may not collectively or individually cover every feature on innovation in our product. In addition, our efforts may not be sufficient to protect our intellectual property from misappropriation or infringement. See “Risk Factors” under Item 1A of this Annual Report on Form 10-K for a discussion of the risks associated with our patents and intellectual property.

We have expended and will continue to expend considerable resources in establishing a patent position designed to protect our intellectual property. While our ability to compete is enhanced by our ability to protect our intellectual property, we believe that in view of the rapid pace of technological change, the combination of the technical experience and innovative skills of our employees may be as important to our business as the legal protection of our patents and other proprietary information.

From time to time, we may desire or be required to renew or to obtain licenses from third parties in order to further develop and effectively market commercially viable products or in connection with a pending or future claim or action asserted against us. We cannot be sure that any necessary licenses will be available or will be available on commercially reasonable terms.

The integrated circuit industry is characterized by vigorous pursuit and protection of intellectual property rights, which has resulted in significant and often time consuming and expensive litigation. From time to time, we receive, and may continue to receive in the future, notices that claim we have infringed upon, misappropriated or misused the proprietary rights of other parties.

In addition, we have in the past and may in the future be sued by other parties who claim that we have infringed their patents or misappropriated or misused their trade secrets, or who may seek to invalidate one or more of our patents. Although we defend these claims vigorously, it is possible that we will not prevail in pending or future lawsuits. See “Risk Factors” under Item 1A of this Annual Report on Form 10-K and “Note 10 — Commitments and Contingencies” in our Notes to the Consolidated Financial Statements set forth in Part II, Item 8, of this Annual Report on Form 10-K for further discussion of the risks associated with patent litigation matters.

### ***Competition***

The markets for our products, particularly in networking and connectivity, are intensely competitive, and are characterized by rapid technological change, evolving industry standards, frequent new product introductions and pricing

pressures. Competition has intensified as a result of the increasing demand for higher levels of performance and integration and smaller process geometries. We expect competition to intensify as current competitors continue to strengthen the depth and breadth of their product offerings, either through in-house development or by acquiring existing technology. We believe that our ability to compete successfully in the rapidly evolving markets for our products depends on a number of factors, including, but not limited to:

- The performance, features, quality and price of our products;
- The timing and success of new product introductions by us, our customers and our competitors;
- Emergence, rate of adoption and acceptance of new industry standards;
- Our ability to obtain adequate foundry capacity with the appropriate technological capability; and
- The number and nature of our competitors in a given market.

Our major competitors for our products include Broadcom Limited, Cavium, Inc., MediaTek, Inc., QUALCOMM, Inc., Quantenna Communications Inc. and Silicon Motion Technology Corporation. We expect increased competition in the future from emerging or established companies, or alliances among competitors, customers or other third parties, any of which could acquire significant market share. See “Risk Factors” under Item 1A of this Annual Report on Form 10-K for a discussion of competitive risks associated with our business.

Historically, average unit selling prices in the integrated circuit industry in general, and for our products in particular, have decreased over the life of a particular product. We expect that the average unit selling prices of our products will continue to be subject to significant pricing pressures. In order to offset expected declines in the selling prices of our products, we will need to continue to introduce innovative new products and reduce the cost of our products. To accomplish this, we intend to continue to implement design changes that lower the cost of manufacturing, assembly and testing of our products. See “Risk Factors” under Item 1A of this Annual Report on Form 10-K for a discussion of pricing risks.

## **Employees**

As of January 28, 2017, we had a total of 4,617 employees.

## **Item 1A. Risk Factors**

*Investing in our common shares involves a high degree of risk. You should carefully consider the risks and uncertainties described below and all information contained in this report before you decide to purchase our common shares. Many of these risks and uncertainties are beyond our control, including business cycles and seasonal trends of the computing, semiconductor and related industries and end markets. If any of the possible adverse events described below actually occurs, we may be unable to conduct our business as currently planned and our financial condition and operating results could be harmed. In addition, the trading price of our common shares could decline due to the occurrence of any of these risks, and you could lose all or part of your investment.*

### **Factors That May Affect Future Results**

***Our financial condition and results of operations may vary from quarter to quarter, which may cause the price of our common shares to decline.***

Our quarterly results of operations have fluctuated in the past and could do so in the future. Because our results of operations are difficult to predict, you should not rely on quarterly comparisons of our results of operations as an indication of our future performance.

Fluctuations in our results of operations may be due to a number of factors, including, but not limited to, those listed below and those identified throughout this “Risk Factors” section:

- changes in general economic and political conditions and specific conditions in the end markets we address, including the continuing volatility in the technology sector and semiconductor industry;
- the highly competitive nature of the end markets we serve, particularly within the semiconductor industry;
- our dependence on a few customers for a significant portion of our revenue;
- severe financial hardship or bankruptcy of one or more of our major customers;
- our ability to maintain a competitive cost structure for our manufacturing and assembly and test processes and our reliance on third parties to produce our products;
- our ability to successfully restructure our operations within our anticipated timeframe announced in November 2016 and with our anticipated savings;