

WESTERN DIGITAL CORP
Form 10-K
August 15, 2014
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UNITED STATES
SECURITIES AND EXCHANGE COMMISSION
Washington, D.C. 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 June 27, 2014

Or

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

For the transition period from _____ to _____
Commission file number 1-8703

WESTERN DIGITAL CORPORATION
(Exact Name of Registrant as Specified in Its Charter)

Delaware 33-0956711
State or Other Jurisdiction of (I.R.S. Employer
Incorporation or Organization Identification No.)

3355 Michelson Drive, Suite 100 92612
Irvine, California (Zip Code)

Registrant's telephone number, including area code: (949) 672-7000

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

Title of each class Name of each exchange on which registered
Common Stock, \$.01 Par Value Per Share The NASDAQ Stock Market LLC
(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

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Indicate by checkmark whether the registrant has submitted electronically and posted on its corporate Web site, if any, every Interactive Data File required to be submitted and posted 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 and post such files). Yes No

Indicate by check mark if disclosure of delinquent filers pursuant to Item 405 of Regulation S-K (§ 229.405 of this chapter) is not contained herein, and will not be contained, to the best of registrant's knowledge, in definitive proxy or information statements incorporated by reference in Part III of this Form 10-K or any amendment to this Form 10-K.

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

Large accelerated filer Accelerated filer

Non-accelerated filer (Do not check if a smaller reporting company) Smaller reporting company

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

The aggregate market value of the registrant's common stock held by non-affiliates of the registrant on December 27, 2013, the last business day of the registrant's most recently completed second fiscal quarter, was approximately \$20 billion, based on the closing sale price as reported on the NASDAQ Global Select Market.

As of the close of business on August 7, 2014, 234,011,170 shares of common stock, par value \$.01 per share, were outstanding.

Documents Incorporated by Reference

Part III incorporates by reference certain information from the registrant's definitive proxy statement (the "Proxy Statement") for the 2014 Annual Meeting of Stockholders, which will be filed with the Securities and Exchange Commission within 120 days after the end of the 2014 fiscal year. Except with respect to information specifically incorporated by reference in this Form 10-K, the Proxy Statement is not deemed to be filed as part hereof.

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Our fiscal year ends on the Friday nearest to June 30 and typically consists of 52 weeks. Approximately every six years, we report a 53-week fiscal year to align our fiscal year with the foregoing policy. Fiscal year 2014, which ended on June 27, 2014, was comprised of 52 weeks. Fiscal years 2013 and 2012, which ended on June 28, 2013 and June 29, 2012, respectively, were each comprised of 52 weeks. Fiscal year 2015 will be comprised of 53 weeks, with the first quarter consisting of 14 weeks and the second, third and fourth quarters consisting of 13 weeks each. Unless otherwise indicated, references herein to specific years and quarters are to our fiscal years and fiscal quarters, and references to financial information are on a consolidated basis. As used herein, the terms “we,” “us,” “our,” the “Company,” “WDC” and “Western Digital” refer to Western Digital Corporation and its subsidiaries, unless, we state, or the context indicates, otherwise.

WDC, a Delaware corporation, is the parent company of our data storage business, which operates under two independent subsidiaries –HGST and WD. Our principal executive offices are located at 3355 Michelson Drive, Suite 100, Irvine, California 92612. Our telephone number is (949) 672-7000 and our Web site is www.westerndigital.com. The information on our Web site is not incorporated in this Annual Report on Form 10-K.

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Forward-Looking Statements

This document contains forward-looking statements within the meaning of the federal securities laws. Any statements that do not relate to historical or current facts or matters are forward-looking statements. You can identify some of the forward-looking statements by the use of forward-looking words, such as “may,” “will,” “could,” “would,” “project,” “believe,” “anticipate,” “expect,” “estimate,” “continue,” “potential,” “plan,” “forecast,” and the like, or the use of future tense. Statements concerning current conditions may also be forward-looking if they imply a continuation of current conditions.

Examples of forward-looking statements include, but are not limited to, statements concerning:

- expectations regarding industry demand and pricing in the September quarter and the ability of the industry to support this demand;
- expectations concerning the anticipated benefits of our acquisitions;
- demand for our products in the various markets and factors contributing to such demand;
- our position in the industry;
- our belief regarding our ability to capitalize on the expansion in, and our expectations regarding the growth and demand of, digital data;
- our plans to continue to develop new products and expand into new storage markets and into emerging economic markets;
- emergence of new storage markets for our products;
- emergence of competing storage technologies;
- our quarterly cash dividend policy;
 - our share repurchase plans;
- our stock price volatility;
- our belief regarding our compliance with environmental laws and regulations;
- expectations regarding our external and internal supply base;
- our belief regarding component availability;
- expectations regarding the outcome of legal proceedings in which we are involved;
- our beliefs regarding tax benefits and the timing of future payments, if any, relating to the unrecognized tax benefits, and the adequacy of our tax provisions;
- contributions to our pension plans in fiscal 2015; and
- our beliefs regarding the sufficiency of our cash and cash equivalents to meet our working capital, capital expenditure and other cash needs.

Forward-looking statements are subject to risks and uncertainties that could cause actual results to differ materially from those expressed in the forward-looking statements. You are urged to carefully review the disclosures we make concerning risks and other factors that may affect our business and operating results, including those made in Part I, Item 1A of this Annual Report on Form 10-K, and any of those made in our other reports filed with the Securities and Exchange Commission (the “SEC”). You are cautioned not to place undue reliance on these forward-looking statements, which speak only as of the date of this document. We do not intend, and undertake no obligation, to publish revised forward-looking statements to reflect events or circumstances after the date of this document or to reflect the occurrence of unanticipated events.

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PART I

Item 1. Business

General

We are a leading developer, manufacturer and provider of data storage solutions that enable consumers, businesses, governments and other organizations to create, manage, experience and preserve digital content. Our product portfolio includes hard disk drives (“HDDs”) and solid-state drives (“SSDs”). HDDs are our principal products and are today’s primary storage medium for digital content, with the use of solid-state storage products growing rapidly. Our products are marketed under the HGST, WD and G-Technology brand names. Over the last 10 years, we have achieved strong financial results, including consistently strong cash flow generation.

We believe we are well positioned to capitalize on important long-term growth trends in the rapidly changing storage industry - the ongoing expansion in digital content and the growth in the amount of that content being stored. These trends are linked directly to consumers’ and commercial enterprises’ increasingly ubiquitous experience with data and the increasing value of that data. The confluence of data growth and the ability to expand the extraction of value from data is driving the need for the long-term retention of as much data as possible for legal and regulatory purposes and for potential future refinements in a wide range of fields. We believe the ways in which people and organizations are creating and using data are changing and that the amount of data considered useful to store is expanding. We also believe we are strongly positioned to play a role in the continuation of these trends as an enabler of the creation and storage of additional data. With a focus on innovation and value creation, our goal is to grow through continued strong execution and with targeted investments in datacenter infrastructure, mobility and the cloud.

Due to regulatory requirements, we operate our global business through two independent subsidiaries - HGST and WD, both long-time innovators in the storage industry. In March 2014, we submitted an application to the Ministry of Commerce of the People’s Republic of China (“MOFCOM”) to lift the condition it imposed on our Company to operate these businesses separately. At this time, we are awaiting MOFCOM’s response to our application.

Our headquarters are located in Irvine, California. WDC was founded in 1970 as a specialized semiconductor manufacturer and since entering the hard drive industry in 1988, its WD subsidiary has been a technology standard-setter in the industry’s highest volume markets. HGST, a provider of high-value storage in enterprise markets, was acquired by WDC in March 2012. HGST was founded in 2003 through the combination of the HDD businesses of International Business Machines Corporation, the inventor of the HDD, and Hitachi, Ltd. (“Hitachi”). As of June 27, 2014, WDC had approximately 9,400 engineers and one of the industry’s largest patent portfolios with more than 7,000 active patents worldwide.

HGST and WD have relationships with the full range of customers currently addressing storage opportunities. These include storage subsystem suppliers, major server original equipment manufacturers (“OEMs”), Internet and social media infrastructure players, and personal computer (“PC”) and Mac™ OEMs. Through HGST and WD, we sell our products to OEMs, distributors, resellers, cloud infrastructure players, and consumers. We have a strong consumer brand heritage with our WD and G-Technology branded products businesses.

The storage market in which we operate is rapidly changing and evolving. To address these dynamics, we regularly review opportunities to apply our knowledge of data storage technology to markets that we do not currently serve or in markets where we seek to broaden our participation and augment our resources and capabilities. We have taken actions to strengthen our enterprise SSD business with the acquisitions of sTec, Inc. (“sTec”), VeloBit, Inc. (“VeloBit”) and Virident Systems, Inc. (“Virident”), and our strategic investments in Skyera, Inc., a provider of enterprise solid-state storage systems, Tegile Systems, Inc., a provider of hybrid storage arrays, and Avere Systems, a supplier of enterprise storage for the hybrid cloud. In making these investments, we seek to develop strategic relationships with technology innovators in the broader storage market to enable our customers to develop highly optimized storage solutions that meet their changing data management needs. We believe we have the technology building blocks to increase our overall market participation and be a full-line data storage solutions supplier. Consistent with our measured and deliberate approach to new market entries in the past, our approach to additional new markets will be

based on a careful assessment of the risks, rewards, requirements and profit potential of such actions.

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Industry

The growth and changes in the global market for digital content storage solutions are being driven by several factors including:

Proliferation of data. The proliferation of consumer electronics, computing devices, social media and cloud-related infrastructure is driving rapid growth in the creation, sharing and retention of high definition video, high resolution images, e-mail and big data files.

Evolution in data access and distribution. Increasing demand for data access and distribution anytime and anywhere, facilitated by rapidly improving network accessibility, big data analytics and higher bandwidth, is powering a dramatic increase in the need for data storage at both the local level and at the off-site, network-accessed or “cloud” levels.

Advancements in storage devices. Technological improvements in the capacity, size, performance, connectivity and power requirements of storage devices continue to meet the demand for higher density and higher performance storage in increasingly diverse applications.

Growth in consumers’ use of mobile computing and storage and use of digital content in the home and small office.

Adoption of tiered storage architectures. With the significant increase in data storage demand, enterprises and cloud infrastructure players have adopted tiered storage architectures to improve storage performance and manage the costs of this growth. Tiered storage architectures optimize data storage to the most appropriate storage device, driving increasing demand for high capacity and high performance HDDs and flash-based solid-state storage.

The development of advanced storage solutions that bypass tiered architectures while delivering the same benefits.

We are a market and customer driven company, focused on growth, innovation and value creation for our customers, employees and shareholders. We develop deep and collaborative relationships with customers aimed at making them more successful, an approach that is being manifested in our role as a trusted advisor and market maker in our served markets. We believe this approach is one of the key factors that will help us continue to achieve strong financial performance. We believe our platform is broad-based and powerful, with growth drivers and unique competitive advantages that will continue to provide us the opportunity to expand our value-creation model within an evolving, changing and growing storage market.

The ability to store large amounts of data is an ongoing enabler of the large amount of digital content being created and utilized. We believe the growth in the number of computing users and connected mobile devices in the world continues unabated, creating more usage and more digital content to be stored. Cloud computing applications are especially noteworthy given that they create multiple copies of photos, videos and other content to ensure efficient distribution and security. We believe unit volumes in the HDD industry were up 3% in fiscal 2014 from fiscal 2013, reflecting strength in gaming and the HDD enterprise markets. In addition, we believe unit volumes in the SSD industry were up 24% in fiscal 2014 from fiscal 2013, reflecting strength in SSD enterprise markets.

Enterprise

Enterprise storage devices consist of performance and capacity HDDs, and SSDs. All of these devices are used in multiple types of enterprise datacenters that provide storage for a range of cloud and corporate applications. Within datacenters, these drives are typically used in servers and storage systems.

Performance applications are essential to the operations of an enterprise and require the greatest capabilities and reliability in HDDs and SSDs. These drives are the most highly engineered product line in the storage industry. The infrastructure to support cloud computing storage is driving the demand for multi-platter high capacity HDDs and enterprise class SSDs in tiered architectures. Cloud computing delivers shared resources, software and information to users on demand on a multitude of devices, such as client PCs, tablets and smart phones. Most cloud computing models consist of services delivered through large datacenters with enterprise-class servers, utilizing tiered architectures to address multiple levels of storage needs. We believe we have established a leading position in supplying advanced multi-platter high capacity HDDs and SSDs to address these needs.

We believe shipments into the enterprise market of the storage industry were up 12% in fiscal 2014 from fiscal 2013. We believe that high capacity HDDs, performance HDDs and SSDs represented 46%, 45% and 9% of the industry unit shipments into enterprise systems in fiscal 2014, respectively. Future growth in the enterprise segment is expected to occur based on public and private cloud-related projects to address the continued growth in data being created and

the demand to store much of that data.

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Client: Desktop and Notebook PCs

Client storage devices consist of internal HDDs and SSDs for desktop and mobile PCs. Desktop PCs are intended for regular use at single locations in homes and businesses, as well as in multi-user educational and government networks. Mobile PCs, primarily notebook computers, are used both in and away from homes and businesses. We believe that the demand for client computer HDDs and SSDs will continue primarily due to demand in emerging countries, corporate and consumer refreshes, the proliferation of digital content and changing requirements for increasing performance and thinner and lighter devices with lower power consumption.

Mobile HDDs for notebook PCs, have traditionally been in a 2.5-inch form factor with a 9.5 mm height. We believe we have led a trend toward thinner, lighter devices with extended battery life and low power consumption with our family of 7 mm height drives and more recently with our 5 mm height drives. Mobile hybrid drives have not yet attracted widespread adoption due to the challenges of managing the overall cost of PC systems, including new features such as touch screens and sleek designs.

We believe the PC market, which includes notebook and desktop PCs and comprises the client market, was down 5% in fiscal 2014 from fiscal 2013 due to the diversification of the digital content storage market. While the PC market remains the storage industry's largest unit volume market, it has been declining in recent years while other markets such as cloud, traditional enterprise, branded products, gaming and other solutions have been expanding. Although still in decline, we saw a reduction in the rate of decline in PCs over the last several quarters of fiscal 2014 and we believe the rate of decline in the PC market has moderated.

We believe industry unit shipments of mobile HDDs into the client space decreased 7% in fiscal 2014 from fiscal 2013, while unit shipments of desktop HDDs increased 2% in fiscal 2014 from fiscal 2013. We believe industry unit shipments of SSDs into client compute systems increased 20% in fiscal 2014 from fiscal 2013, while unit shipments of SSDs in PCs increased 40% in fiscal 2014 from fiscal 2013.

Branded Products

External storage devices supplement the storage space on PC systems for home and small office networks and, through wireless connections, the fastest growing category in this market, provide remote access to personal content. These drives, when directly attached to PCs, are ideally suited to back up the data already stored on PC internal drives because of their portability and security features. The growing availability of wireless connectivity is spurring growth of external networked attached storage solutions such as our family of WD My Cloud™ products. We believe HDD shipments into the external storage market increased 2% in fiscal 2014 from fiscal 2013. Branded products also include media players that connect to a user's television or home theater system and play digital movies, music and photos from an integrated HDD, Universal Serial Bus ("USB") mass storage device or content services accessed over the Internet.

Consumer Electronics

HDDs for consumer electronics ("CE") products are primarily used in digital video recorders ("DVRs"), game consoles and security video recording systems. We believe demand for greater storage capacity in these applications will continue to drive growth for higher capacity HDDs.

DVRs offer greater consumer viewing flexibility and enhanced capabilities such as pausing live television, simplifying the process of recording and cataloging recorded television programs and quickly forwarding or returning to any section of a recorded television program. Game consoles enable users to save games, movies, music, pictures and other user generated content. Security surveillance hard drives provide 24/7 reliability and peace of mind for the installation of home or small to medium sized business ("SMB") security systems. We believe HDD unit shipments into the CE market increased 35% in fiscal 2014 from fiscal 2013. This increase was due in part to a refresh cycle by the world's two largest game console makers, who introduced new models in fiscal 2014, both of which feature HDDs as standard equipment.

Competition

We compete with manufacturers of HDDs for client compute, client non-compute and enterprise applications and manufacturers of SSDs. The HDD market consists of five principal brands: HGST, Samsung, Seagate, Toshiba and WD. In solid-state products, we compete with a wide range of manufacturers, from small startup companies to multinational corporations, including Intel Corporation, Micron Technology, Inc., Samsung Electronics Co. Ltd., SanDisk Corporation, Seagate Technology LLC and Toshiba Corporation.

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The storage industry is increasingly utilizing tiered architectures with HDDs and SSDs to address an expanding set of uses and applications. HDDs are highly substitutable due to industry standards that mandate the technical form, fit and function of HDDs, and we believe there are no substantial barriers for existing HDD competitors to offer competing products. HDD attributes include product quality and reliability, storage capacity, unit price, product performance, production volume capabilities, delivery capability, leadership in time-to-market, time-to-volume and time-to-quality, service and support and ease of doing business. The relative importance of these factors varies by customer, market and use, and we believe that we are generally competitive in all of these factors. Semiconductor media or solid-state technology provides high performance attributes in some enterprise-class applications and client notebook designs and attractive functionality in consumer handheld applications requiring smaller form factors, lower power and less storage capacity, such as smart phones and tablets. With advances in our own solid-state enterprise business, coupled with our actions to strengthen those resources through acquisitions and investments, we believe we are positioned to compete successfully in the enterprise-class solid-state segment of this market. Advances in magnetic, optical or other data storage technologies could also result in competitive products for storing digital content with better performance or lower cost per unit of capacity than our products. We monitor the advantages, disadvantages and advances of the full array of storage technologies on an ongoing basis.

Business Strategy

Our business strategy is to be an industry-leading developer, manufacturer and provider of innovative storage solutions that enable people to create, manage, experience and preserve digital content. We strive to achieve our business strategy through the following elements:

- relentless focus on operational excellence in all aspects of our business;
- providing a full portfolio of compelling, high quality storage products with effective technology deployment, high efficiency, flexibility and speed;
- developing collaborative engineering relationships with customers that create value by solving their data management needs through innovative solutions; and
- strategically aligning our investments in profitable and growing markets such as mobility, solid-state and cloud computing.

We believe our strategy provides the following benefits, which distinguish us in the dynamic and competitive storage industry:

- enables continued diversification of our storage product portfolio and entry into additional growing adjacent markets;
- allows us to achieve consistent financial performance, including strong returns on invested capital and cash generation, thereby enabling efficient allocation of capital to shareholders and strategic investments in innovation; and
- creates compelling value for our customers and makes them more successful, while providing growth opportunities for our suppliers, employees, and shareholders.

Products and Solutions

We offer a broad line of storage products and solutions to meet the evolving storage needs of our end users. Our HGST subsidiary delivers the following: high performance 10,000/15,000 revolutions per minute ("RPM") drives targeting server and storage system OEMs, enterprise capacity drives for bulk storage applications for both hyperscale cloud customers and OEMs, helium sealed 6 terabyte ("TB") products that improve capacity and other dimensions of total cost of ownership, mobile drives for the notebook, PC and gaming markets, and a G-Technology line of branded products for professional audiovisual users. In addition, HGST delivers a line of SSDs for the high end of the performance market that includes 2.5" Serial Attached SCSI (Small Computer System Interface) ("SAS") drives as well as Peripheral Component Interconnect Express ("PCIe") SSDs for the server market and embedded flash solutions. Our WD subsidiary designs, manufactures and provides hard drives for a wide range of digital storage uses, from PCs and data centers to home video recorders and home network storage devices. WD also packages these hard drives into consumer appliances, which offer portable, desktop and personal cloud storage for accessibility from anywhere and sharing functionality, as well as provide media playing devices to simplify enjoyment of personal content on televisions.

Enterprise Storage Solutions. Enterprise storage products consist of HDDs and SSDs for performance enterprise and capacity enterprise markets. Our enterprise storage solutions include performance drives which are optimized for performance applications. Within performance drives, we offer large form factor drives which provide high capacity storage, primarily for data storage systems, and small form factor drives which provide a range of capacity and performance levels primarily for use in enterprise servers, supporting high volume on-line transactions, data analysis and other enterprise applications. Our enterprise storage solutions also include capacity drives which provide enterprise class reliability at the lowest cost per GB and

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are primarily for use in data storage systems, in tiered storage models and where data must be stored reliably for years. Lastly, our enterprise storage solutions include solid-state solutions which feature fast read/write speeds in high capacities.

In fiscal 2014, our HGST subsidiary began shipping a new helium-filled HDD, which is at the forefront of advanced technology for increasing capacity and significantly reducing total cost of ownership for enterprise and cloud customers. This new drive allows HGST to design seven-platter drives in a standard 3.5-inch form factor at a 6TB capacity that delivers superior total cost of ownership at the data center level by allowing significant improvements in capacity, power, cooling and storage density. Our hard drive enterprise unit shipments were 30 million, 28 million and 16 million for 2014, 2013 and 2012, respectively.

Through a joint development agreement with Intel Corporation to make enterprise class SAS drives and the calendar 2013 acquisitions of sTec, Virident and Velobit, our HGST subsidiary has strengthened its position in the fast growing market for enterprise class SSDs. We now offer a broad range of SSDs for the enterprise market based on the SAS, PCIe and Serial Advanced Technology Attachment ("SATA") interfaces.

Client: Desktop and Notebook PCs. Client compute solutions consist of HDDs for desktop and mobile PCs. Our client compute storage solutions include HDDs designed for use in desktop PCs requiring high performance, reliability and capacity with various attributes such as low cost per gigabyte ("GB"), quiet acoustics, low power consumption and protection against shocks. In addition, we provide HDDs designed for use in mobile PCs and requiring high performance, reliability and capacity with various ranges of performance and attributes such as low power consumption for extended battery life and cooler operation, quiet acoustics and protection against shocks.

Our newest HDDs for mobile PCs are low-profile to address the thin and light notebook PC market, and include ultra-slim 2.5-inch HDDs.

We also offer SATA HDDs specifically designed for home and small office network attached storage systems and optimized for energy efficiency and reliability, as well as HDDs designed for advanced single-user computing systems such as professional systems for video editing and CAD/CAM (computer-aided design/computer-aided manufacturing) applications and high-end desktop PC applications including gaming, which require high performance and high reliability. Our hard drive client compute unit shipments were 157 million, 162 million and 150 million for 2014, 2013 and 2012, respectively.

Branded Product Solutions. Our branded product solutions consist of HDDs embedded into WD[®]-, HGST- and G-Technology-branded external storage appliances with capacities ranging from 500 GB to 24 TB and using interfaces such as USB 2.0, USB 3.0, external SATA, FireWire[™], Thunderbolt[™] and Ethernet network connections. Within branded products, we offer HDDs that provide high quality, reliable storage for backup and capacity expansion in both mobile and desktop form factors that are designed to keep digital content secure while providing portable storage for desktops and notebooks. In addition, within branded products we offer solutions for SMBs, by offering complete network storage solutions designed to meet the needs of SMBs by providing centralized storage, backup, data protection and remote file access. We also provide external hard drives that connect to home or office networks, enabling consumers access from anywhere with an Internet connection and from smart phones, tablets and PCs via WD mobile apps and desktop software. These My Cloud[™] solutions offer the same functionality as public cloud storage services, yet offer consumers the peace of mind that ownership brings lower cost and greater capacity. Certain branded product solutions-such as our new My Cloud[™] products include software that assists customers with backup, remote access and management of digital content.

Lastly, our home entertainment solutions include media players which connect to a user's television or home theater system and play digital movies, music and photos from an integrated HDD, network HDDs, any of our WD[®]-branded external HDDs, other USB mass storage devices or content services accessed over the Internet. Our branded product hard drive unit shipments were 25 million, 25 million and 18 million for 2014, 2013 and 2012, respectively.

Consumer Electronics Solutions. CE solutions are used in DVRs, gaming consoles, security surveillance, systems, set top boxes, camcorders, multi-function printers and entertainment and automobile navigation systems. Our CE solutions include HDDs designed and optimized for video streaming and continuous digital video recording. These HDDs deliver quiet operation, low operating temperature, low power consumption, high reliability and optimized streaming capabilities. Our consumer electronics unit shipments were 37 million, 28 million and 17 million for 2014,

2013 and 2012, respectively.

Technology

Hard Disk Drives

HDDs provide non-volatile data storage, which means that the data remains present when power is no longer applied to the device. The primary measures of hard drive performance include:

Acoustics — sound power emitted during hard drive operation, commonly expressed in decibels, and perceived loudness due to sound pressure, commonly expressed in sones;

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Data transfer rate — sustained rate of data transfer to and from the disk, commonly expressed in gigabits per second;

Power consumption — which is the amount of electricity required to operate the drive, measured in watts;

Seek time — time needed to position the heads over a selected track on the disk surface, commonly expressed in milliseconds;

Spindle rotation speed — nominal rotation speed of the disks inside the hard drive, commonly expressed in RPM or latency. Spindle rotation speeds commonly stated as 5,400, 7,200, 10,000 and 15,000 RPM are sometimes approximations; and

Storage capacity — which is the amount of data that can be stored on the hard drive, commonly expressed in GB or TB.

The storage capacity of a hard drive is determined by the number of disks and each disk's areal density (track density multiplied by bit density), which is a measure of the amount of data that can be stored on the recording surface of the disk per unit area. Head and magnetic media technologies are two of the key technology components of hard drives affecting areal density. We develop and manufacture a substantial portion of the heads and magnetic media used in our hard drive products. As areal density increases, achieving a given drive capacity potentially reduces product costs over time through reduced component requirements. We also invest considerable resources in research and development, manufacturing infrastructure and capital equipment of head and magnetic media components in order to secure our competitive position and cost structure.

Industry-standard interfaces allow the drives to communicate with the host system. The primary interface for PCs is SATA and the primary interfaces for enterprise systems are Fibre Channel, SAS, SATA and PCIe.

Solid-State Drives

SSDs use semiconductor, non-volatile media, rather than magnetic media and magnetic heads, to store and allow fast access to data without any moving parts. The cost per bit of solid-state drives is more expensive than hard drives, but the higher input/output ("IO") performance makes solid-state drives an attractive new tier of storage that fits between DRAM memory and hard drives. Solid-state drives are finding growing usage in enterprise storage systems and servers in applications that demand the highest IO performance.

The non-volatile memory in use today for solid-state drives is NAND flash technology. While Single Level Cell Flash provides the highest endurance and performance, the optimal balance of price and performance is usually achieved through the use of Multi-Level Cell Flash. Multiple NAND Flash die are used on a single PCBA and connected in parallel through a controller to the host bus. Various performance classes of solid-state drives are created by varying the number of parallel NAND channels and the speed of controller logic and firmware. The controller contains hardware logic and firmware to buffer the data flow to and from the host, to the NAND Flash, and to manage the reliability and performance of the NAND Flash media.

The typical host interfaces for SSDs include PCIe, SAS and SATA. PCIe products typically offer the highest performance and come on edge cards that plug into the PCIe bus. PCIe defines the hardware and electrical interface but the software protocols are still proprietary today. New standards such as NVMe and SCSI express are emerging to bring more standardized software protocols for communicating with PCIe solid-state drives. SAS and SATA products utilize standardized interfaces similar to hard drives and come in 2.5-inch form factors with differing package heights depending on the application and usage. The typical power consumption for the SAS and SATA interfaces is similar to hard drives, while the power consumption of PCIe form factor devices is typically higher.

Our products generally leverage a common platform for various products within product families, and in some cases across product families, resulting in the commonality of components which reduces our exposure to changes in demand, facilitates inventory management and allows us to achieve lower costs through purchasing economies. This platform strategy also enables our customers to leverage their qualification efforts onto successive product models. For a discussion of associated risks, see Item 1A of this Annual Report on Form 10-K.

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Research and Development

We devote substantial resources to the development of new products and the improvement of existing products. We focus our engineering efforts on coordinating our product design and manufacturing processes to bring our products to market in a cost-effective and timely manner. Research and development expenses totaled \$1.7 billion, \$1.6 billion and \$1.1 billion in 2014, 2013 and 2012, respectively. For a discussion of associated risks, see Item 1A of this Annual Report on Form 10-K.

Patents, Licenses and Proprietary Information

We have more than 7,000 active patents and have many patent applications in process. We believe that although our active patents and patent applications have considerable value, the successful manufacturing and marketing of our products depends primarily upon the technical and managerial competence of our staff. Accordingly, the patents held and applied for do not ensure our future success.

In addition to patent protection of certain intellectual property rights, we consider elements of our product designs and processes to be proprietary and confidential. We believe that our non-patented intellectual property, particularly some of our process technology, is an important factor in our success. We rely upon non-disclosure agreements and contractual provisions and a system of internal safeguards to protect our proprietary information. Despite these safeguards, there is a risk that competitors may obtain and use such information. The laws of foreign jurisdictions in which we conduct business may provide less protection for confidential in