

DATA IS IN OUR DNA

# Seagate Point of View – Cloud and Data Center Trend

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March 2018

# Safe Harbor Statement

This document contains forward-looking statements within the meaning of Section 27A of the Securities Act of 1933 and Section 21E of the Securities Exchange Act of 1934, each as amended, including, in particular, statements about the Company's plans, strategies and prospects, estimates of industry growth, market demand, and liquidity position for the fiscal quarter ending September 29, 2017 and beyond. These statements identify prospective information and may include words such as "expects," "intends," "plans," "anticipates," "believes," "estimates," "predicts," "projects," "should," "may," "will," or the negative of these words, variations of these words and comparable terminology. These forward-looking statements are based on information available to the Company as of the date of this document and are based on management's current views and assumptions. These forward-looking statements are conditioned upon and also involve a number of known and unknown risks, uncertainties, and other factors that could cause actual results, performance or events to differ materially from those anticipated by these forward-looking statements, including but not limited to, the Company's ability to effectively manage its debt obligations, control its capital expenditures, operating expenses and share repurchases in order to maintain optimal free cash flow and cash position. Such risks, uncertainties, and other factors may be beyond the Company's control and may pose a risk to the Company's operating and financial condition. Such risks and uncertainties include, but are not limited to: items that may be identified during its financial statement closing process that cause adjustments to the estimates included in this document; the uncertainty in global economic conditions; the impact of the variable demand and adverse pricing environment for disk drives; the Company's ability to successfully qualify, manufacture and sell its disk drive products in increasing volumes on a cost-effective basis and with acceptable quality, the impact of competitive product announcements; the Company's ability to achieve projected cost savings in connection with restructuring plans; possible excess industry supply with respect to particular disk drive products; disruptions to its supply chain or production capabilities; unexpected advances in competing technologies or changes in market trends; the development and introduction of products based on new technologies and expansion into new data storage markets; The Company's ability to comply with certain covenants in its credit facilities with respect to financial ratios and financial condition tests; currency fluctuations that may impact the Company's margins and international sales; cyber-attacks or other data breaches that disrupt its operations or results in the dissemination of proprietary or confidential information and cause reputational harm; and fluctuations in interest rates. Information concerning risks, uncertainties and other factors that could cause results to differ materially from the expectations described in this document is contained in the Company's Annual Report on Form 10-K filed with the U.S. Securities and Exchange Commission on August 4, 2017, the "Risk Factors" section of which is incorporated into this document by reference, and other documents filed with or furnished to the Securities and Exchange Commission. These forward-looking statements should not be relied upon as representing the Company's views as of any subsequent date and the Company undertakes no obligation to update forward-looking statements to reflect events or circumstances after the date they were made.



# Market Dynamics



1960

Mainframe  
Centralized



1980

Client-Server  
Distributed



2000

Mobile-Cloud  
Centralized



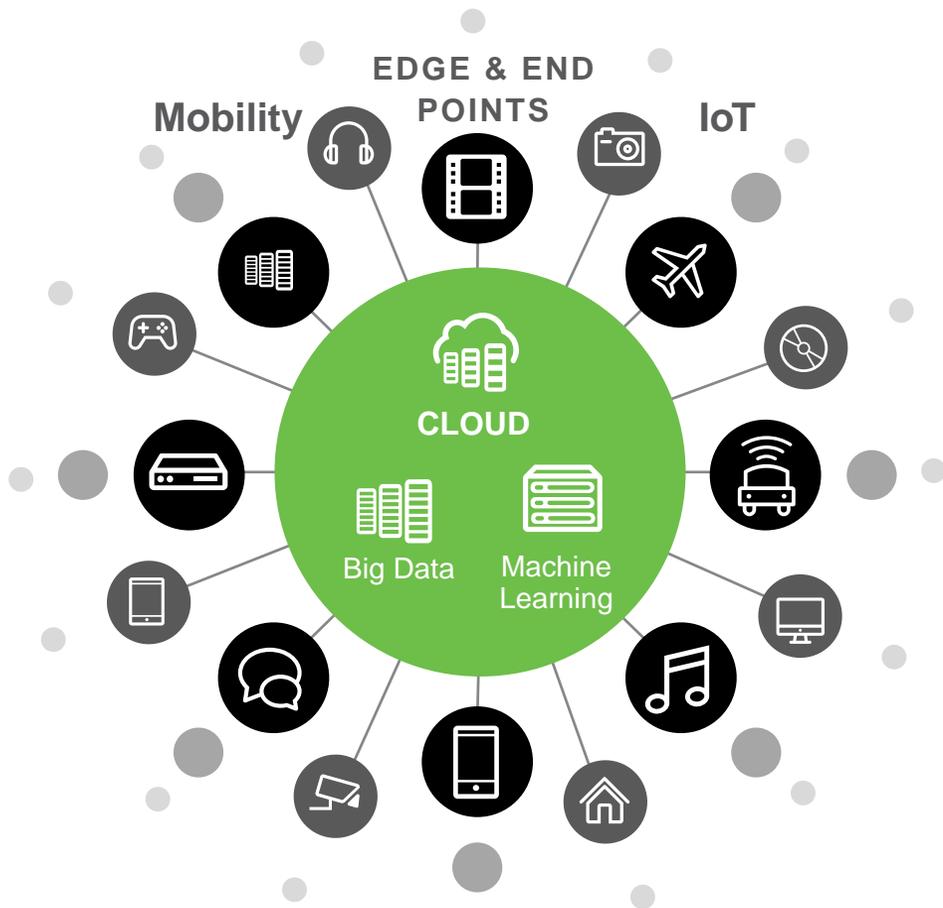
2020

Rise of the Edge  
Distributed

Paradigm shift from **“IT is a cost center”** to **“Data is Value”**



# 3rd & 4th Platform Eco-System Enabling Explosive Data Growth



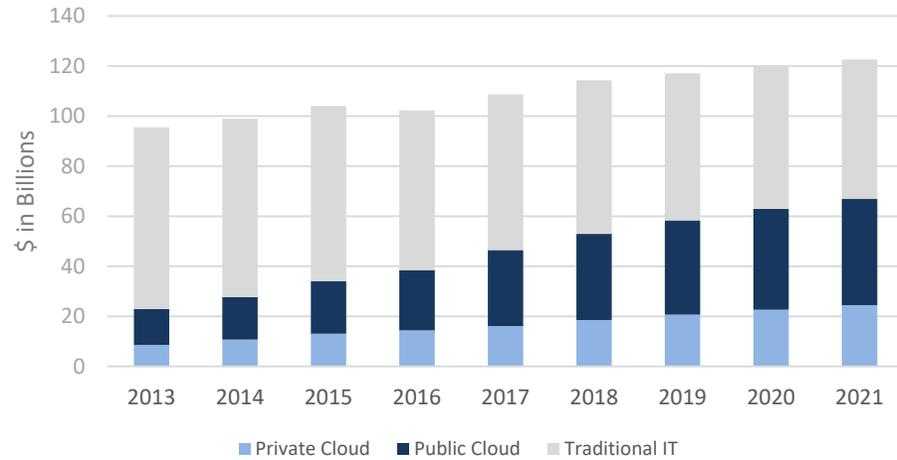
## IDC Five Key Trends

1. The evolution of data from business background to life-critical
2. Embedded systems and IoT
3. Mobile and real-time data
4. Cognitive / AI systems that change the landscape
5. Security as a critical foundation

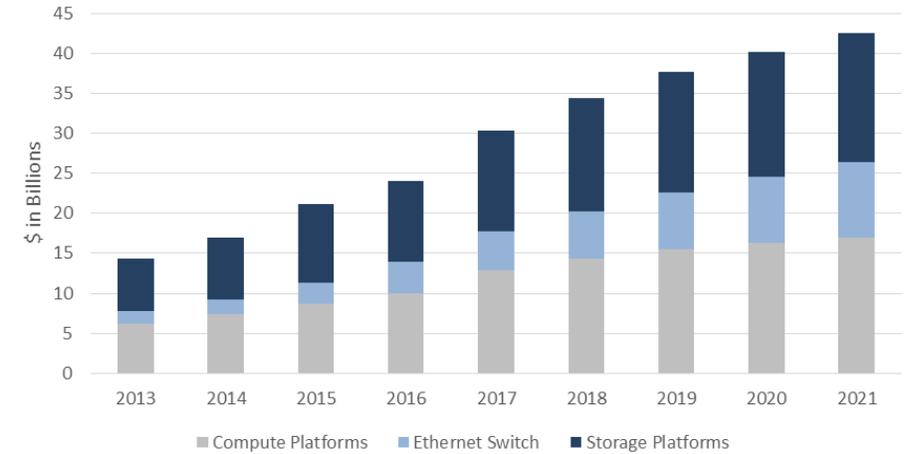
**Data is Value**

# Cloud IT Infrastructure

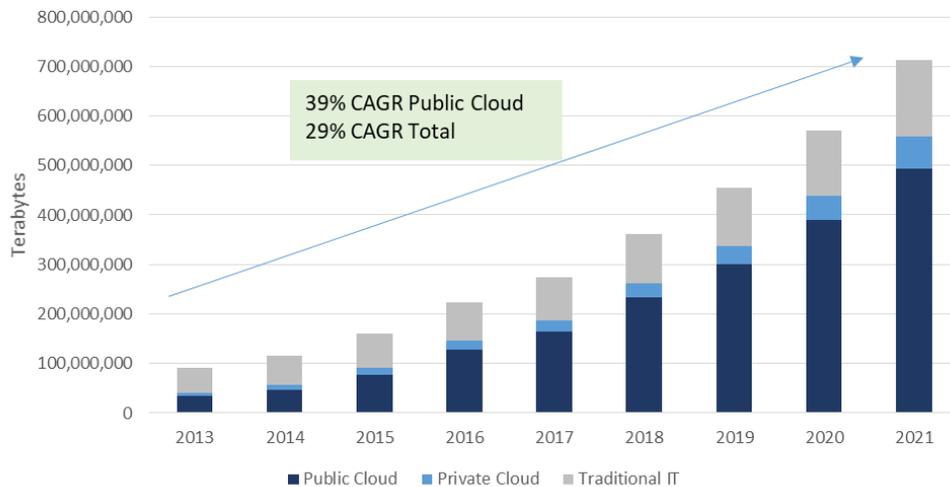
Cloud IT Infrastructure by Deployment Model



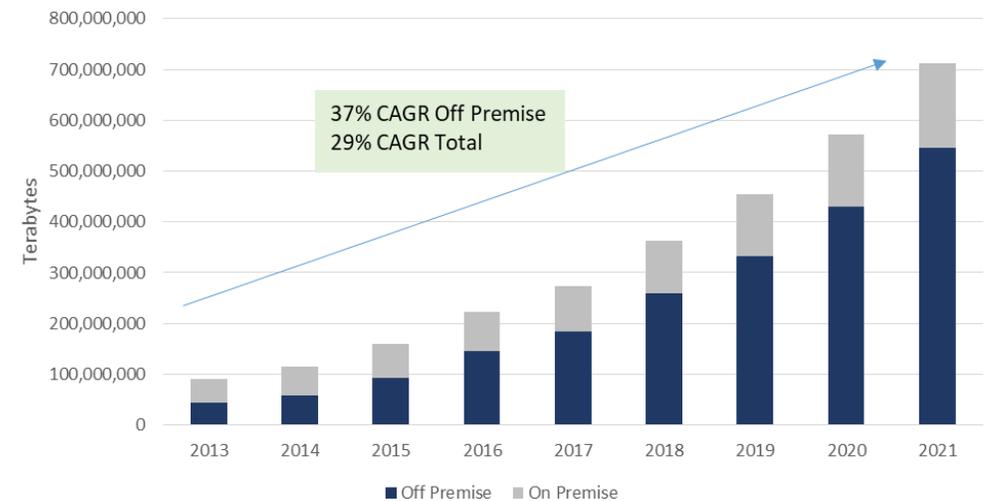
Public Cloud Infrastructure by Technology



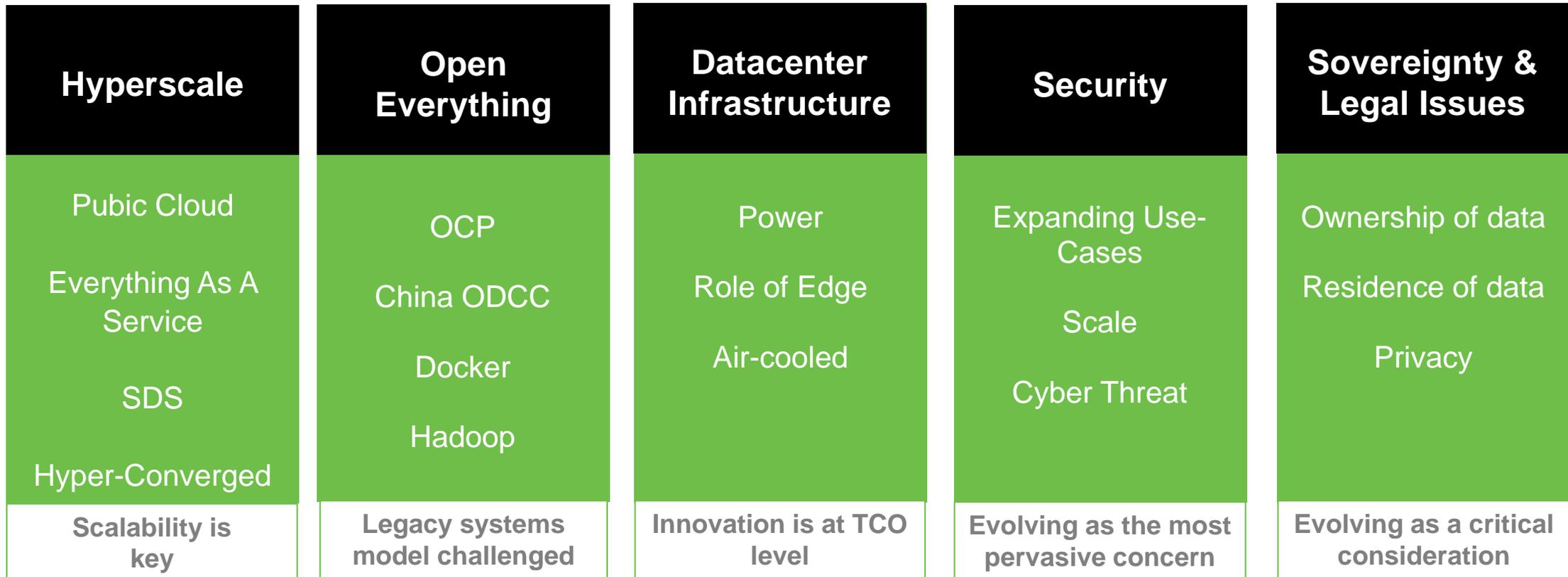
Cloud Infrastructure Capacity by Deployment Model



Cloud Infrastructure Capacity by Location



# Mega Trends in Datacenter



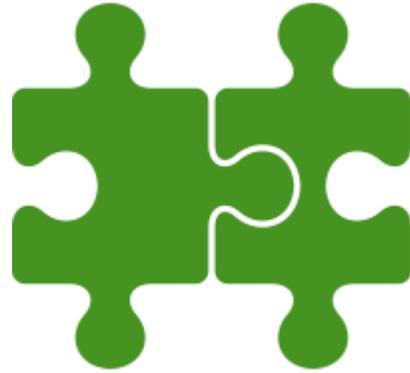
These mega trends continue to evolve IT infrastructure landscape



# Cloud Datacenter Storage Trends



**Data Center operators  
incorporating new business  
models**



**HDD & SSD are  
complementary technologies  
in the Cloud Datacenter**



**HDD market moving from  
Commodity to Technology  
Partnership based (design-in)**

# Seagate Investing in the Future of HDD Technology

## MARKET DYNAMICS



### Growing Exabyte Demand

- Enable Storage Density
- Store Multiple Copies



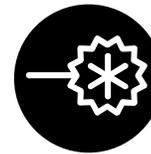
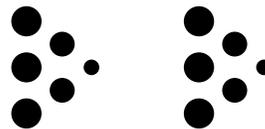
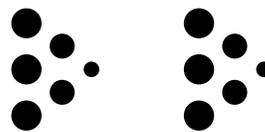
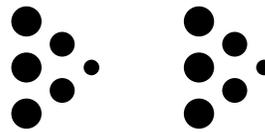
### Maintain SLAs with high Performance

- High Availability
- Low Response Time



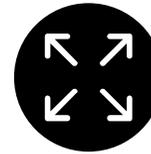
### Reduce TCO

- CAPEX
- OPEX



### Areal Density

- Technology: HAMR
- Focus: 20TB by 2020



### Scale IOPS with Capacity

- Technology: Multi Actuator, Parallelism
- Focus: Random Read IOPS, Latency



### Reduce TCO

- Technology: HE, SMR, RPM
- Focus: Power Consumption, \$ / TB

Future R&D is focused on Scaling Latency Bound IOPS with Capacity



# Seagate has the Industry Leading HDD Portfolio to Serve the Cloud

## NEARLINE

 **1-2TB**

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### Enterprise Capacity (2.5")

- Up to 2TB
- Store large amounts of mainstream data with minimal rack space and power use

 **4-8TB**

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### Enterprise Capacity (3.5")

- Up to 8TB
- Helps on-premise and off-premise data centers meet the demanding growth of unstructured data

 **10TB +**

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### Enterprise Capacity (3.5" Helium)

- High density storage for new Cloud data centers offering the lowest Total Cost of Ownership (TCO)



Trusted. Efficient. Versatile.

# Seagate LASER Focused on Emerging Technologies for Capacity

SMR



2014

Shingled Magnetic Recording

Helium



2015

Sealed Drive Technology

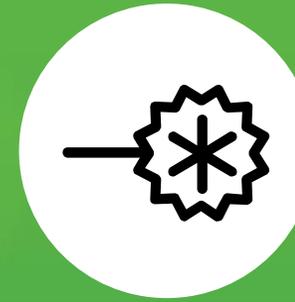
TDMR



2016

2D Magnetic Recording

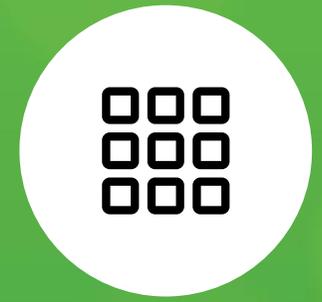
HAMR



2018

Heat Assisted Magnetic Recording

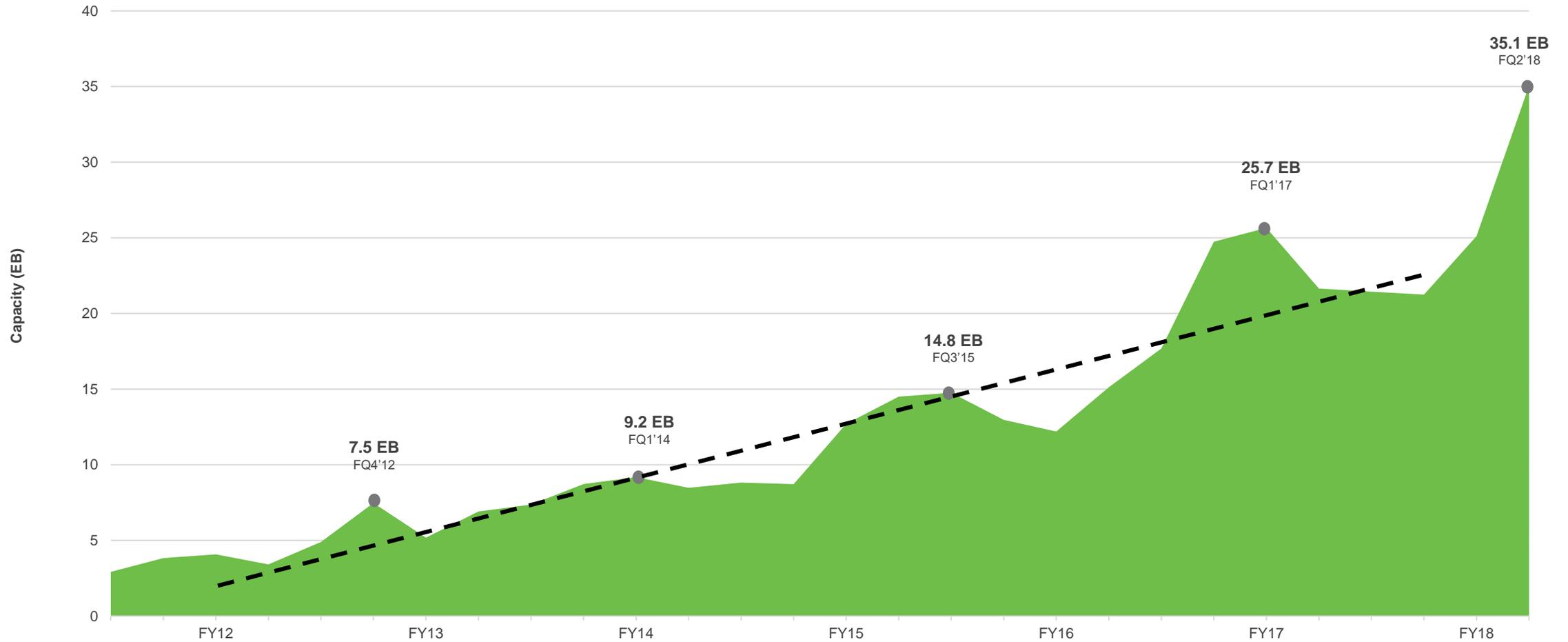
HDMR



2025

Heated Dot Magnetic Recording

# Nearline Demand Trend - Seagate



5 Year CAGR (FY12-17) 35%

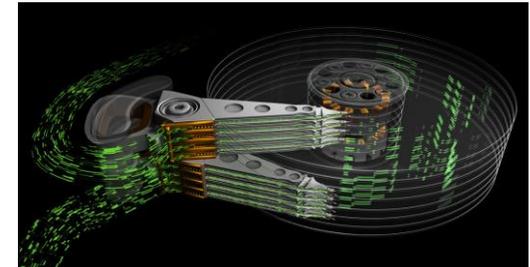


## Collaboration with Top CSPs

“Seagate Hard Drives are about to embark on a new exponential growth in capacity with the introduction of EAMR technologies like **HAMR**,” says Aaron Ogus, Microsoft Azure Storage Architect. “In most datacenter applications the additional capacity gains cannot be effectively utilized without improvements in device IO capacity. The **dual actuator** technology helps unlock additional IOPS and allows cloud providers to make effective use of the new capacity gains.”



**HAMR**



**Dual Actuator**

# Collaboration with Top CSPs

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## Seagate and Tencent

Seagate Technology and Tencent Technology signed a Strategic Partnership Memorandum of Understanding (MOU) for cooperation in the field of information technology.

Tencent will regard Seagate as a key supplier of storage solutions, and Seagate will treat Tencent as a Strategic Partner and set up a special service team for Tencent. Also, both companies will carry out an all-round and in-depth cooperation covering products and technology, and will work together to drive market development activities.

Company press release on Sep. 19, 2017

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## Seagate and Baidu

Announced the signing of a strategic cooperation agreement with Baidu covering the fields of information technology, big data analysis and advanced storage system development and implementation.

The pact renews an existing agreement between the two firms signed in September 2014, under which both parties would regard each other as their preferred strategic partner, investing their respective superior resources, carrying out experiments in products, solutions and services, and jointly getting involved in diverse technological innovation research.

Company press release on Sep. 18, 2017

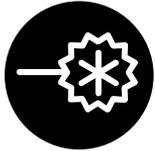
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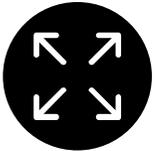
# Seagate Strategy in Cloud



**Lead in Nearline HDD**



**Lead HDD Areal Density innovation to address growing Exabyte demand**



**Innovate to improve HDD performance**



**Deliver Best In Class TCO through product and technology level innovation and collaboration with leading CSPs**



**Leverage systems and SSD business to create efficiencies on storage**