Open Source is Changing Entire Industries

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Forward-Looking Statements

During our meeting today we may make forward-looking statements.

Any statement that refers to expectations, projections or other characterizations of future events or circumstances is a forward-looking statement, including those relating to market position, market growth, product sales, industry trends, supply chain, future memory technology, production capacity, production costs, technology transitions and future products. This presentation contains information from third parties, which reflect their projections as of the date of issuance.

Actual results may differ materially from those expressed in these forward-looking statements due to factors detailed under the caption “Risk Factors” and elsewhere in the documents we file from time to time with the SEC, including our annual and quarterly reports.

We undertake no obligation to update these forward-looking statements, which speak only as of the date hereof.
Something About Me

- Responsible for Open Source Strategy at SanDisk
- Have been in the open source technology business for over 15 years
- Worked in areas like Security and System Software at Tripwire, Cranite Systems, Silicon Graphics and Wind River/Intel
- Studied Computer Science, Business and Entrepreneurship

- Passionate about collaborative development, technology communications
  Women in Technology
SanDisk Enables Innovation in Four Mega Markets

Enterprise and Hyperscale Data Centers

Client Computing

Mobile and Connected Devices

Consumer
Topics

△ Why is Open Source Becoming Relevant?

△ Benefits and Why People Use OSS

△ Concerns Around OSS

△ How OSS is changing Storage

△ Conclusions
WHY IS OPEN SOURCE SOFTWARE (OSS) BECOMING RELEVANT?
MEMORABLE LINUX MILESTONES
CELEBRATING 20 YEARS OF LINUX

1991
Linus Torvalds posts famous message - "HELLO EVERYBODY OUT THERE..." - and releases first Linux Code

1992
Linus licenses Linux under the GPL, an important decision that will contribute to its success in the coming years

1993
Slackware becomes first widely adopted distribution

1996
Tech Giants begin announcing platform support for Linux

1998
IBM runs famous Linux ad during the Superbowl

1999
Linus appears on the cover of BusinessWeek with a story that hails Linux as a business success

2003
Red Hat goes public

2005
The Linux Foundation is formed to promote, protect and standardize Linux

2007
Linus is a Fellow

2010
Linux turns 20 and powers the world's supercomputers, stock exchanges, phones, ATMs, healthcare records, smart grids, the list goes on

2011
The Linux-based Android OS outsells all other smartphone OSes in the U.S. and climbs to dominance

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Healthcare

Automotive

Financial Services

Aerospace

Polarsys

Infrastructure

The Apache Foundation

The Linux Foundation

eclipse

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Standard Setting in Open Source

The nature of pan industry collaboration is changing

SW and HW standards are being set through open source usage and adoption
Ecosystem Collaboration in Foundations
Companies are Moving to a Strategic Use of OSS

- Better use of R&D Dollars and TTM
- Leverage Standards
- Balance IP and Open

Moving to Strategic Use of Open Source

![Graph showing strategic use of OSS](Image)

- Average *
- Best in class
- 80% OSS

* Source: Gartner Group
Benefits of OSS

Advantages

- Cost Savings
- Latest Innovation
- Expand Ecosystems
- Interoperability
- Time to Market
Concerns Around Open Source

- Licenses and IP Implications
- Support
- Skills and Competency
- Source of Code
HOW OSS IS CHANGING STORAGE
Storage Just a Few Years Ago

- Infrastructure
- Conservative
- Proprietary
- Highly Engineered
- Hard Drives, Tape and Some Flash
- Little Choice
- Expensive
Datacenter Disruptions Change Storage

- Scale
- Software Defined Everything
- Server to Datacenter OS
- Flash as Primary Storage
- Open Source Software and Hardware in Datacenters and Cloud
A Cross Section of Open Source Projects in Storage

Cassandra

mongoDB

Apache

MySQL®

ceph

GLUSTER COMMUNITY

openstack

redhat

ubuntu®

SUSE®

OPEN COMPUTE PROJECT

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Customers want OSS scalable storage solutions

Current scale-out OSS software are $ inefficient on flash

Performance gap translates into significant $ at datacenter scale

Fragmentation for Application Developers due to wide array of proprietary and in-house solutions

Storage needs to work with OSS to optimize for Scale-out and new architectures

1 Based on internal testing comparing Emperor to Hammer releases using vdbench and fio on a two node cluster (Dell R720 2.8GHz, 2xE5-2680, 64GB DRAM), krbd client systems on Dell R620 (2x E5-2680, 32GB DRAM), 40Gbe interconnect

2 http://www.sandisk.com/assets/docs/sandisk-zetascale-whitepaper.pdf
We need to be a part of the Transformation

“Software is eating the world”
Marc Andreessen, WSJ, 2011

“Open Source Software is the new Pareto Principle for Software Development”
Jim Zemlin, Linux Con 2014

SanDisk as an innovator is a key part of this revolution
THANK YOU