



Open. Together.



OCP
REGIONAL
SUMMIT

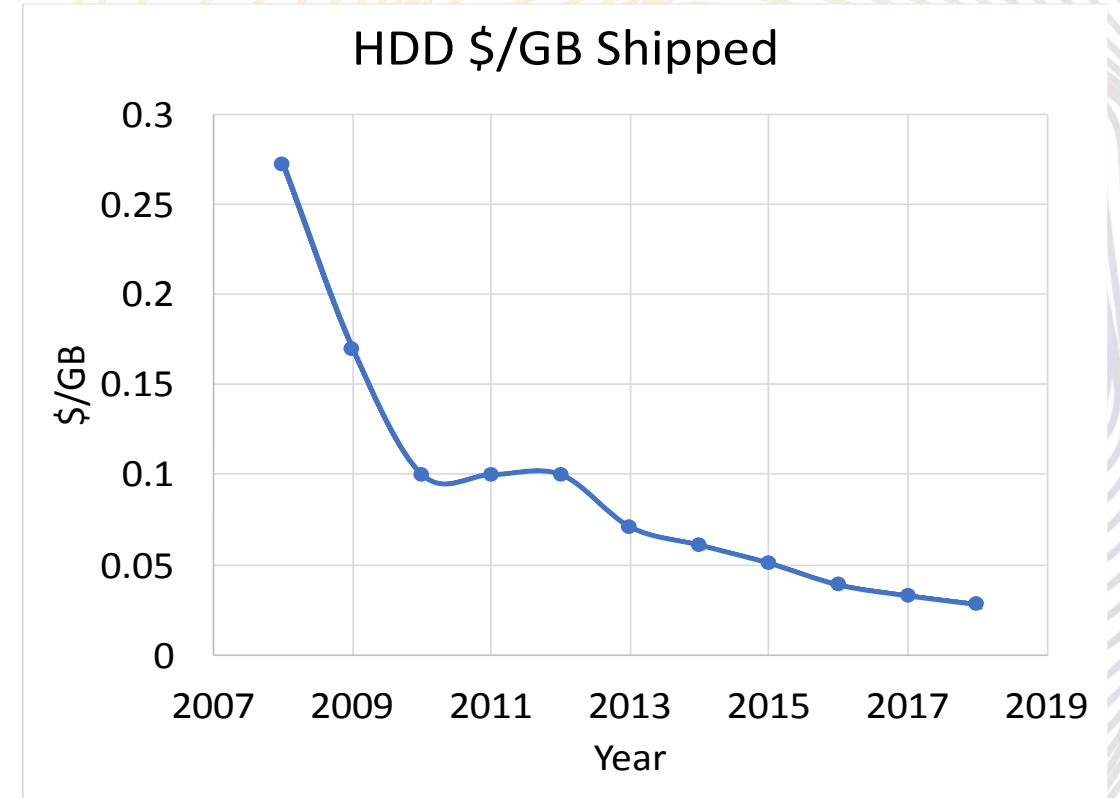
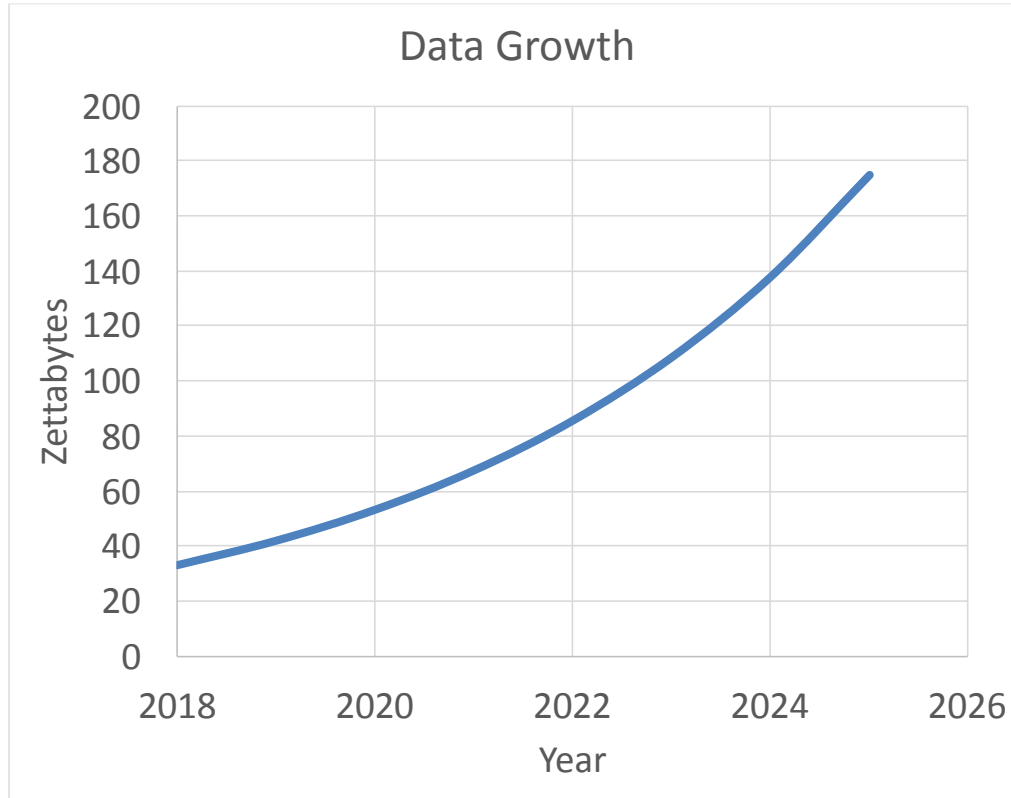
Dr. Mark Lantz

Manager Advanced Tape Technologies, IBM Research-
Zurich



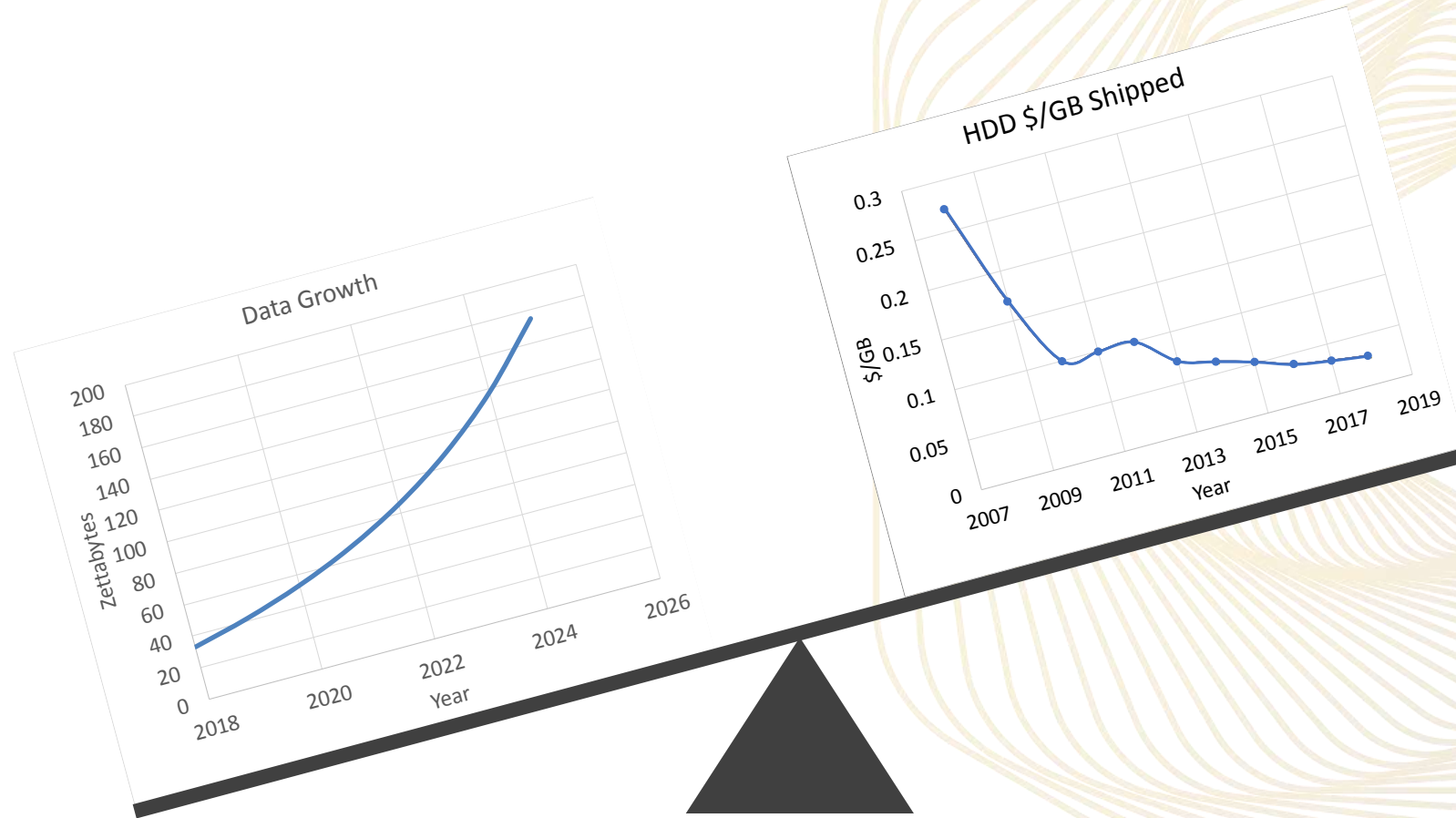
Tape in the Cloud

Why Tape?

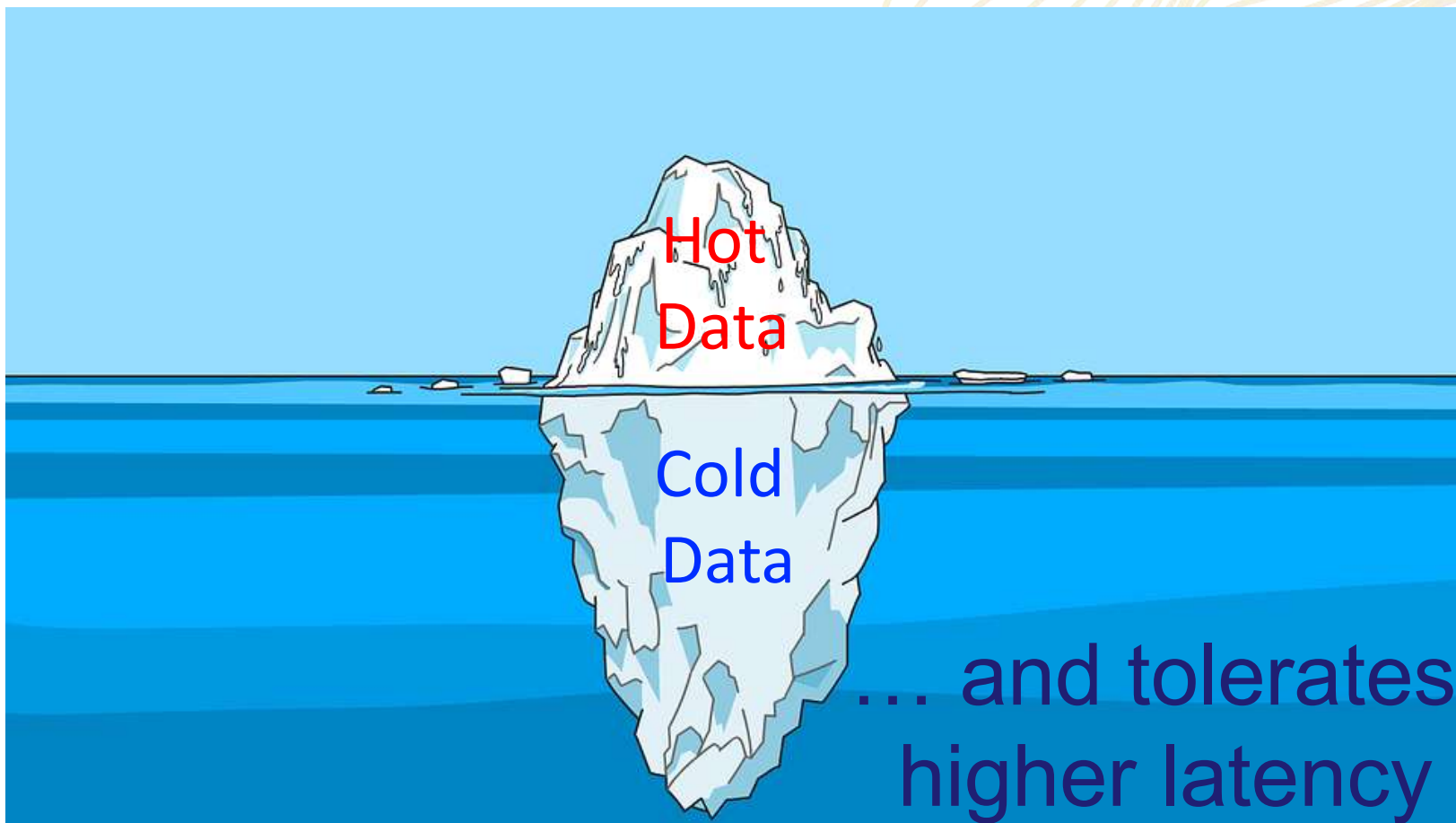


Source: data growth projections from IDC White Paper – #US44413318

The data center is out of balance



A large fraction of data is cold...



Times change!

2006

*"Tape is dead, Disk is Tape,
Flash is Disk, RAM locality
is king"*



2015

*"All cloud vendors will be
using tape and will be using it
at a level never seen before"*



http://research.microsoft.com/en-us/um/people/gray/talks/flash_is_good.ppt

<http://www.infostor.com/disk-arrays/how-do-you-store-a-zettabyte.html>

Why tape is interesting again?

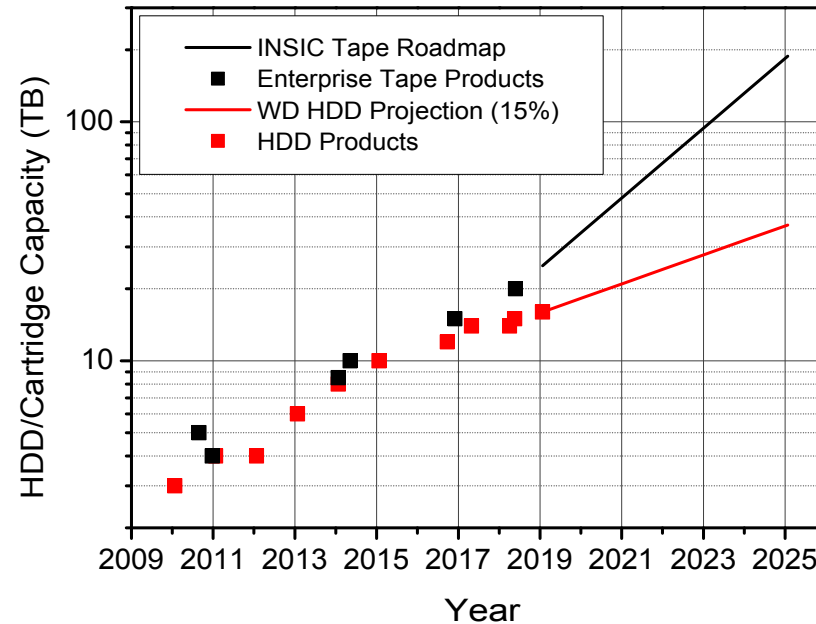
Cost



@ hyperscale

HDD Cost 3.7x Tape
(Ref: MS Azure 2016)

Scaling



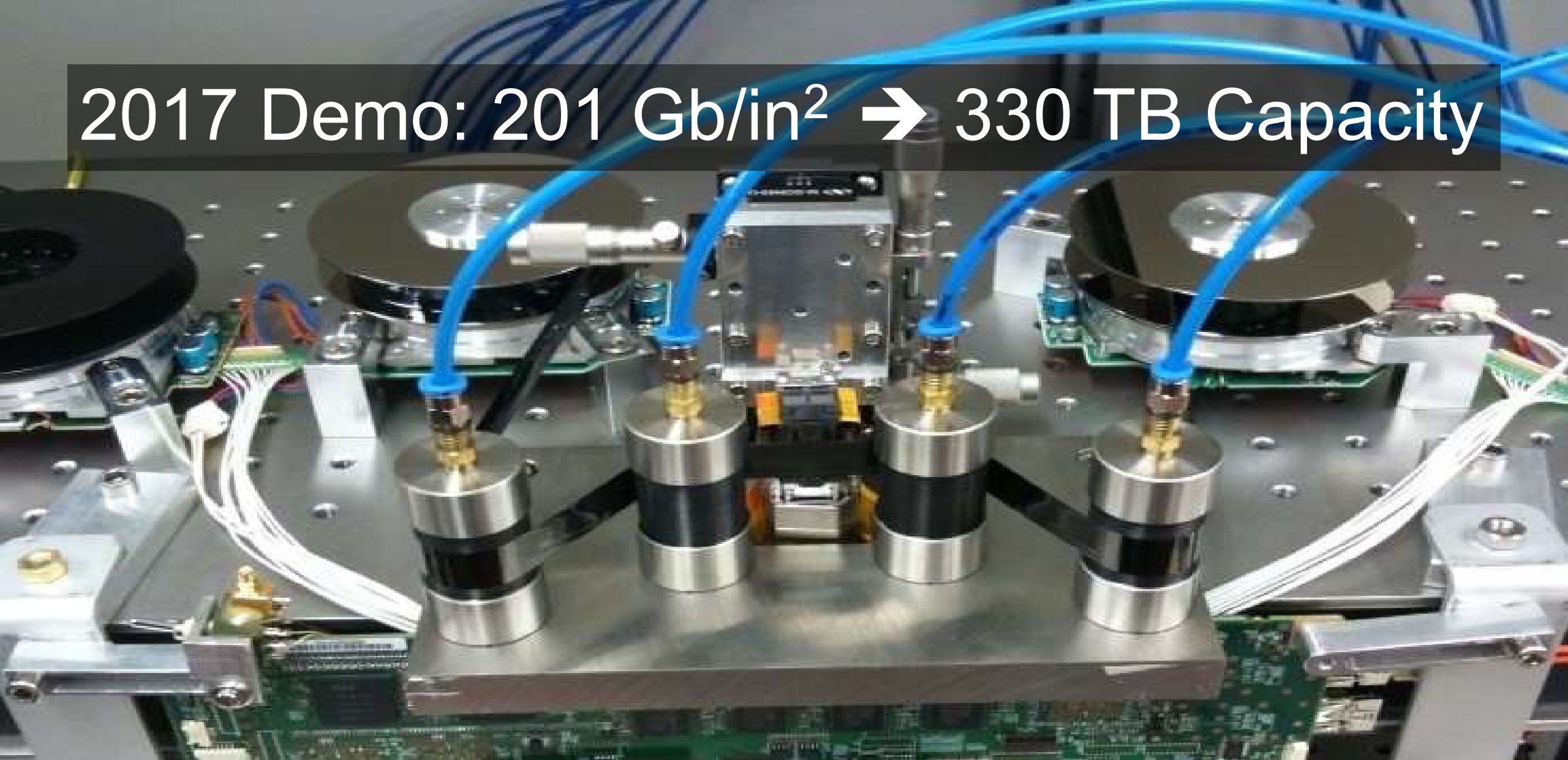
INSIC Tape Capacity
Scaling 40% CAGR to 2029

Security



- Airgap
- Encryption
- Quantum computing safe tape demo

2017 Demo: 201 Gb/in² → 330 TB Capacity



Why isn't tape more widely used?

Perception: tape hard to use



Reality: highly automated

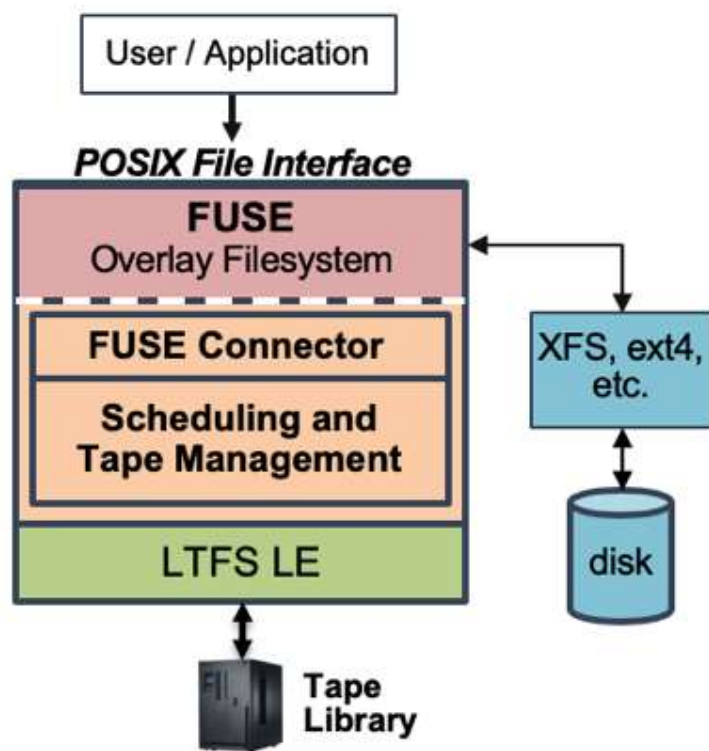


20TB Cartridge
up to 351 PB
per library

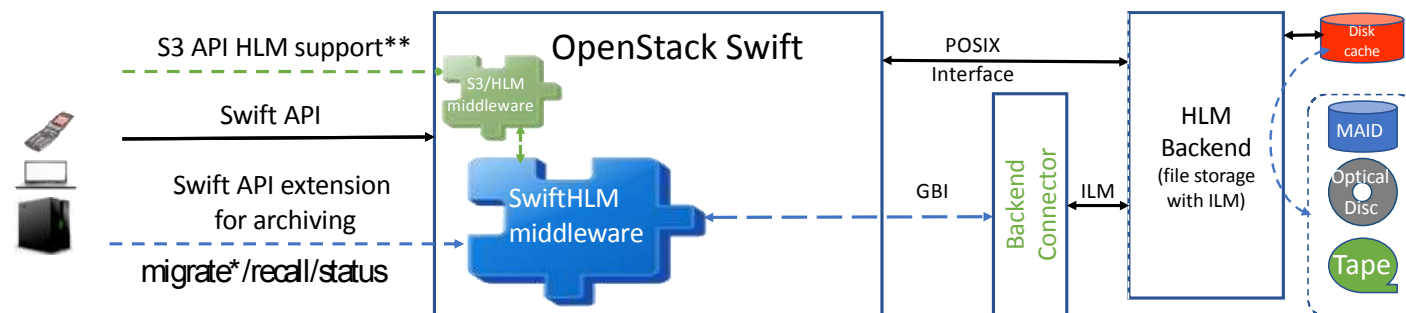


Open Source Software for Tape Integration

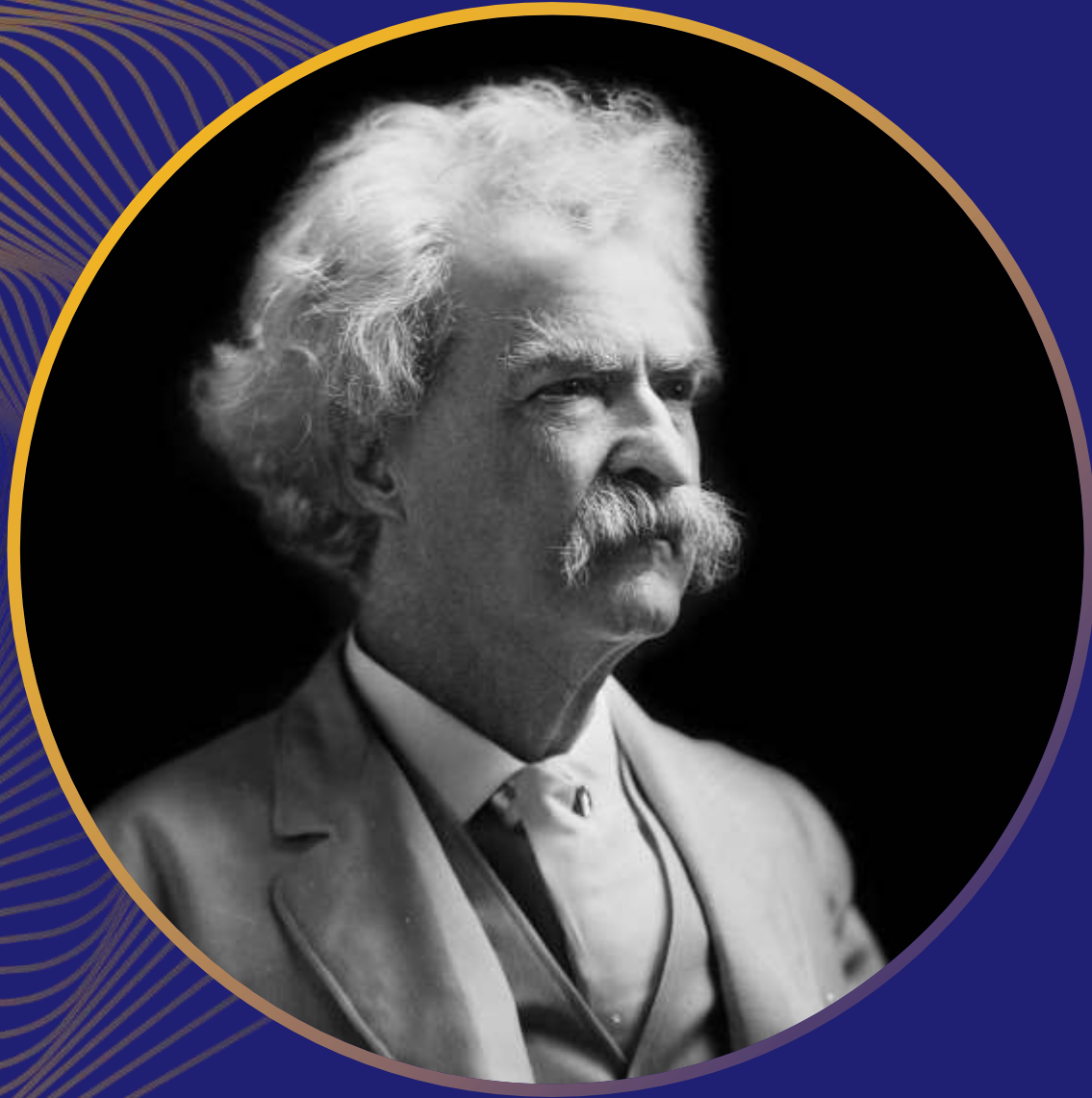
LTFS DM for File Storage



Swift HLM for Object Storage



Poster and Oral Presentation in OCP Symposium



“The reports of
my death have
been greatly
exaggerated.”

-Mark Twain



Open. Together.



OCP
REGIONAL
SUMMIT