What Hyperscale Cares About

Presenter:

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FMS the Future of Memory and Storage

Agenda

- Hyperscale SSD Market Challenges
- Meta SSD Form Factor and Power Requirements
- OCP Datacenter NVMe SSD Spec Evolution
- Qualification Challenges
- Call to Action

Hyperscale SSD Challenges

- Problem
  - Everyone wants SSDs with firmware customization
  - Everyone wants SSDs now

- Result
  - Customers fight to get who gets SSDs first
  - Engineering resources face challenges in adapting to shifting priorities
  - Quality is compromised due to resource constraints, time limitations, and difficulty in maintaining focus
  - Schedule push outs due to lack of resources

Meta SSD Form Factor and Power Requirements

SSD Form Factor/ Capacity Requirements		Support Required		Default Power State
Form Factor	Capacity (TB)	2024	2025	Watts
9.5mm E1.S	1	Yes	Yes	8.5
9.5mm and 25mm E1.S	2	Yes	Yes	10 (9.5m) 12 (25mm)
25mm E1.S	4	Yes	Yes	14
25mm E1.S	8	Yes	Yes	16
25mm E1.S	16	Yes	Yes	20
25mm E1.S	32	No	***TBD***	20

- E1.S for both data and boot SSDs
- Capacities ranging from 1TB - 16TB, 32TB in discussion
- Meet current OCP Datacenter NVMe SSD Specification
- Power is becoming important as AI workloads demands more power but DC is limited

OCP Datacenter NVMe SSD Spec Evolution

2019

- Start Development of Public SSD Specifation
- Supporters:
  - **Meta**
  - **MSFT**

2020

- OCP NVMe Cloud SSD Spec v1.0
- Supporters:
  - Meta
  - MSFT

2021

- OCP Datacenter NVMe SSD V2.0
- Supporters:
  - Meta
  - MSFT
  - **Dell EMC**
  - **HPE**

2023

- OCP Datacenter NVMe SSD V2.5
- Supporters:
  - Meta
  - MSFT
  - Dell EMC
  - HPE
  - **Google**

2024

- Coming Soon OCP Datacenter NVMe SSD V2.6
- Supporters:
  - Meta
  - MSFT
  - Dell EMC
  - HPE
  - Google

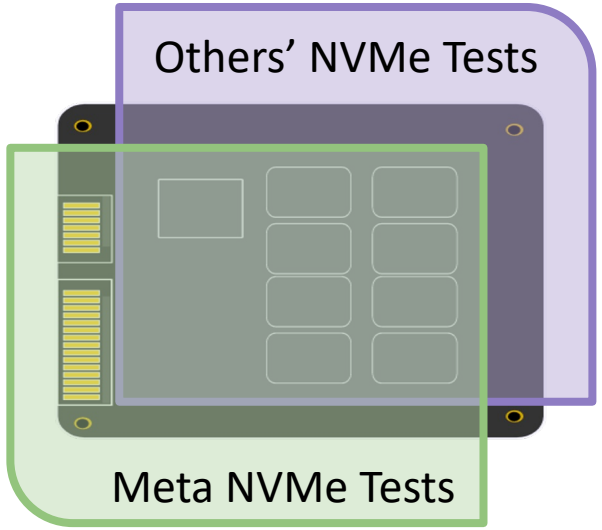
Enables Management At Scale

- Monitoring & Debuggability
  - Health Information Extended Log
  - Latency Monitoring Feature
  - Human Readable Telemetry Feature
- Open-Source Tooling Support
  - OCP NVMe CLI

OCP Datacenter NVMe SSD Enables:
More Features, Better Quality and Faster

Qualification Challenges

Every Hyperscaler uses proprietary tests and tools!



Challenges:

- Resource intensive
- Time consuming, affecting TTM
- Testing coverage gaps
- SSD fixes not shared among Hyperscalers
- Multiple tools per vendor, each with their gaps

The Future Has Arrived…

Meta test framework and storage qualification

Available Now

Meta OCP Framework - https://github.com/opencomputeproject/ocp-diag-autoval

Meta OCP Storage Tests - https://github.com/opencomputeproject/ocp-diag-autoval-ssd

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Call to Action

- OCP DC NVMe SSD specs are collaboration win with V2.5 available today and V2.6 coming soon
- At scale debug is challenging due to inefficient design of debug logs for use at hyperscale environment
- Let's converge on debug-ability initiatives, specifically:
  - Health Information Log
  - Latency Monitoring
  - OCP Debug Log – OCP Datacenter NVMe SSD Spec V2.5
- NVMe-CLI / plugins / OCP - https://github.com/linux-nvme/nvme-cli
- Open Source OCP Compliant Diagnostics will accelerate the SSD qualification process at customers
  - Leveraging OCP Compliant Diagnostics enables engineers to focus on testing and qualification (and not on integration tasks for data collection and reporting)

Win-win solution for suppliers and customers

Thank you!