

Flash Forward with NVRAM/SSD Hybrid Solutions

Jeffery Chang

Technical Product Manager
LITE-ON Storage Business Group

Empowering Today's Cloud

Who is LITE-ON Storage?

Humble Beginnings



80,000+

Lite-On employees
world-wide

US\$7.2B

Lite-On Net
Sales in 2017

50+

Factories worldwide

300+

Worldwide
LITE-ON Locations

*In US\$
Billion*

	2008	2009	2010	2011	2012	2013	2014	2015	2016	2017
Net Sales	7.2	5.3	7.4	7.8	7.3	7.2	7.3	7.0	7.6	7.2

2003 Headquarters
in Neihu, Taiwan



1975 in Chunho

1983 - 1st technology company listed on Taiwan Stock Exchange

Core Competencies in SSD



Mobile



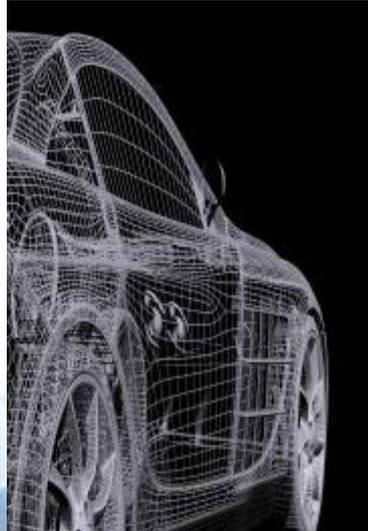
**Industrial
Solutions**



**Client
Solutions**



**Cloud/
Enterprise**



Automotive

Introducing NVRAM SSD Hybrid Solution

Hyperscale Datacenter Pain Points



Looking for the consistently low latency



Utilize module to its fullest potential



Decrease server space footprint

LITE-ON's First NVRAM Hybrid SSD



NVRAM Hybrid



- PCIe Gen 3x4 NVMe M.2 Form Factor
- Super-cap detachable and protects DRAM data
- Power Loss Protection (PLP)
- End-to-End Data Protection

2 Namespaces (Multi-Namespaces)

- 200GB
- 1.5GB NVRAM Exposed

Caching, Indexing, Metadata Storing

Special Boot/Cache Applications

8



Dual Use



Lower TCO



Small Form Factor

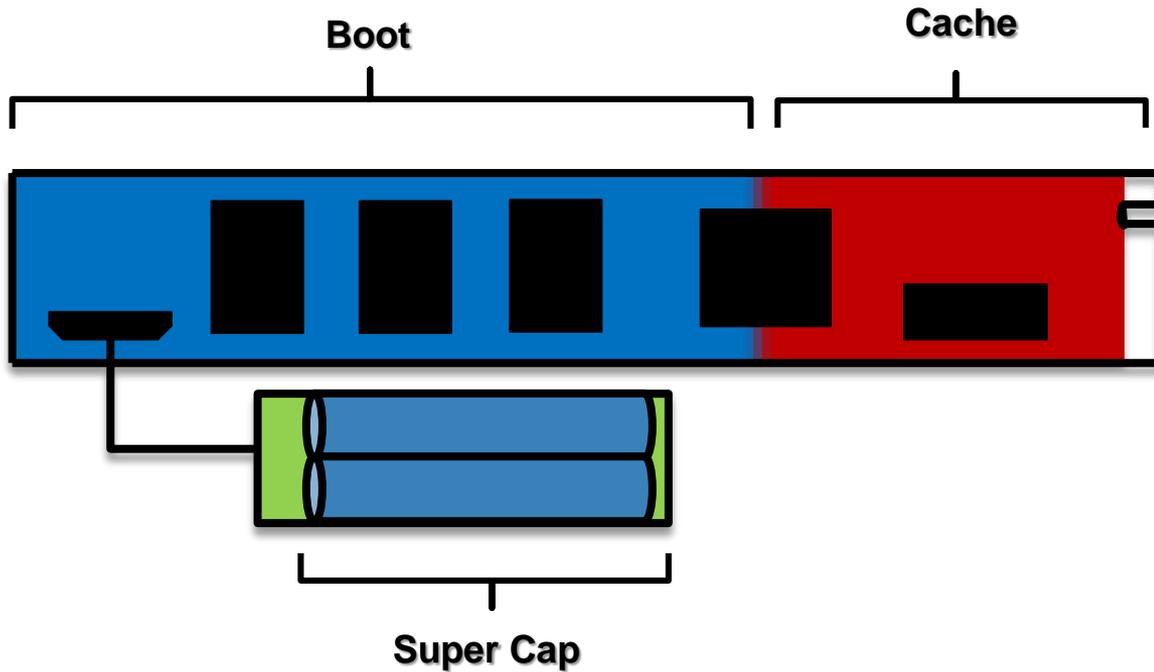
**Boot/Cache Drive
Delivers low
latency**

High Utilization Rate

**Standard Industry Form
Factor**

NVRAM Hybrid SSD – Dual Use

9



Dual Use

Special Boot/Cache Applications

10



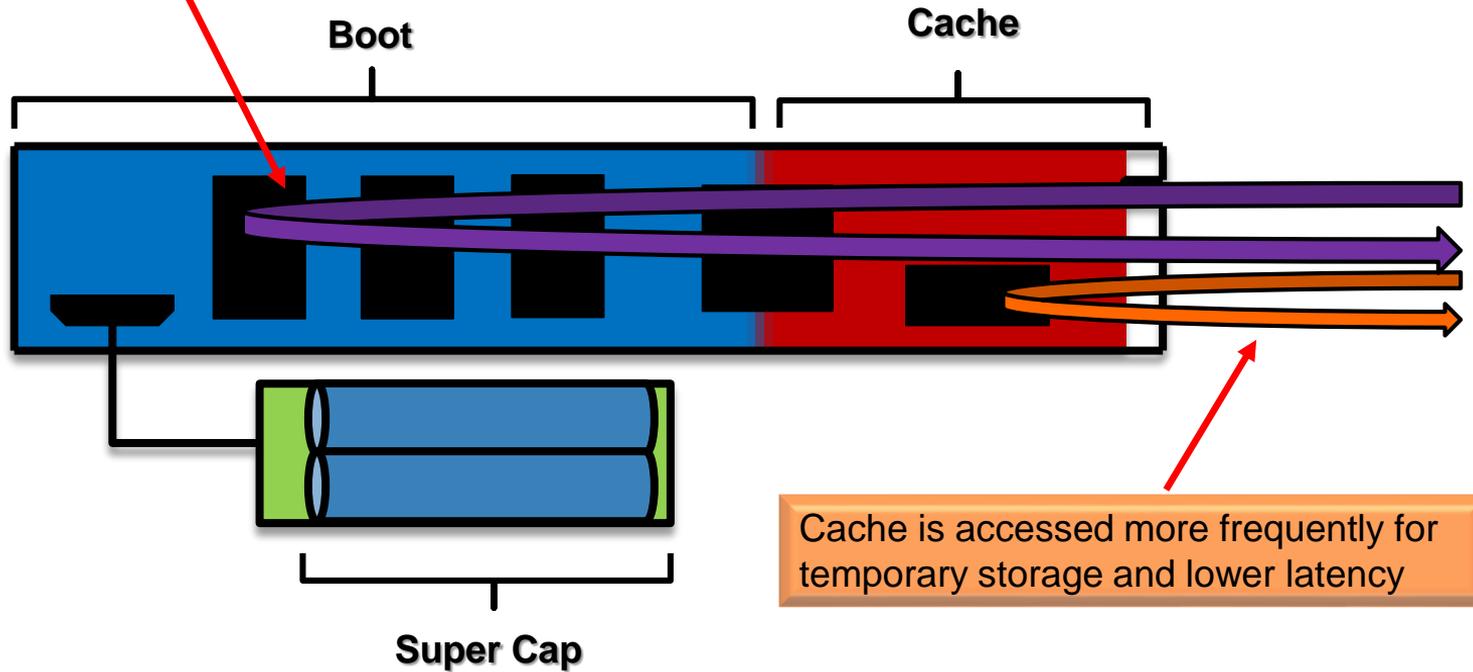
Dual Use

- **Boot Drive**
- **Low Latency Cache as delivered by the NVRAM**
- **Save RAID Configuration**
- **Save Metadata Indexes**

NVRAM Hybrid SSD Lower TCO

11

Boot is accessed less frequently



Cache is accessed more frequently for temporary storage and lower latency



Lower TCO

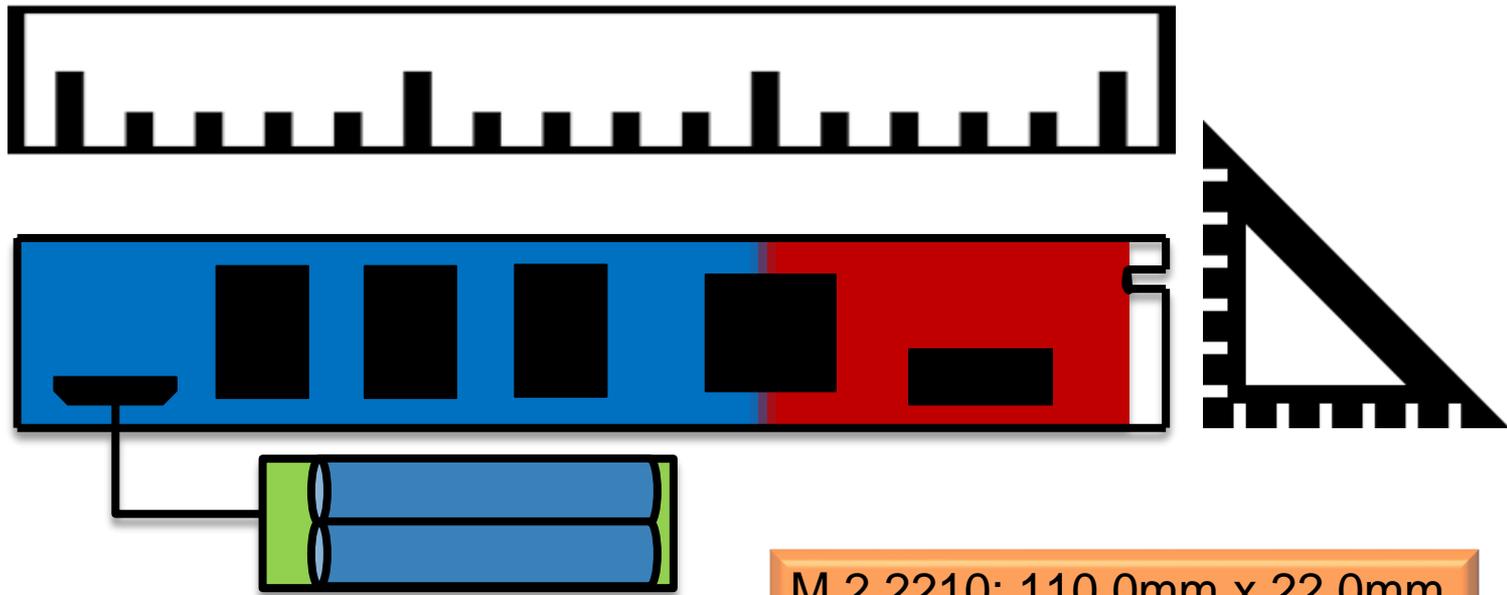
Special Boot/Cache Applications

12



- **Boot/Cache in one single drive**
- **Boot drive is not idle during lifetime**
- **DRAM on SSD is fully utilized**
- **High utilization rate translates to lower TCO.**

NVRAM Hybrid SSD – Small Form Factor




Small Form
Factor

M.2 2210: 110.0mm x 22.0mm
x 5.3mm

Special Boot/Cache Applications

14

- Standardize Form Factor
- M.2 slots are used instead of DIMM slots



Small Form Factor



THANK YOU!

Any questions?

Come by LITE-ON **Booth# A24** for Demos!

- See the live product in hyperscale environments
 - Get a chance to win a special prizes!





What are the 2 Namespace capacities for the LITE-ON NVRAM Hybrid SSD?



Thank you

Contact

Jeffery Chang
Jeffery.JC.Chang@liteon.com

LITE-ON Storage SBG
42000 Christy Street
Fremont, CA 94538

You can find us at
www.liteonssd.com



Linkedin/liteon



Facebook/liteonssds



#LiteOnSSD

