sodacon
— Global 2021 — July 13-14

Persistent Memory:

Storage Architecture and the Future of SNIA Initiatives

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soda foundation

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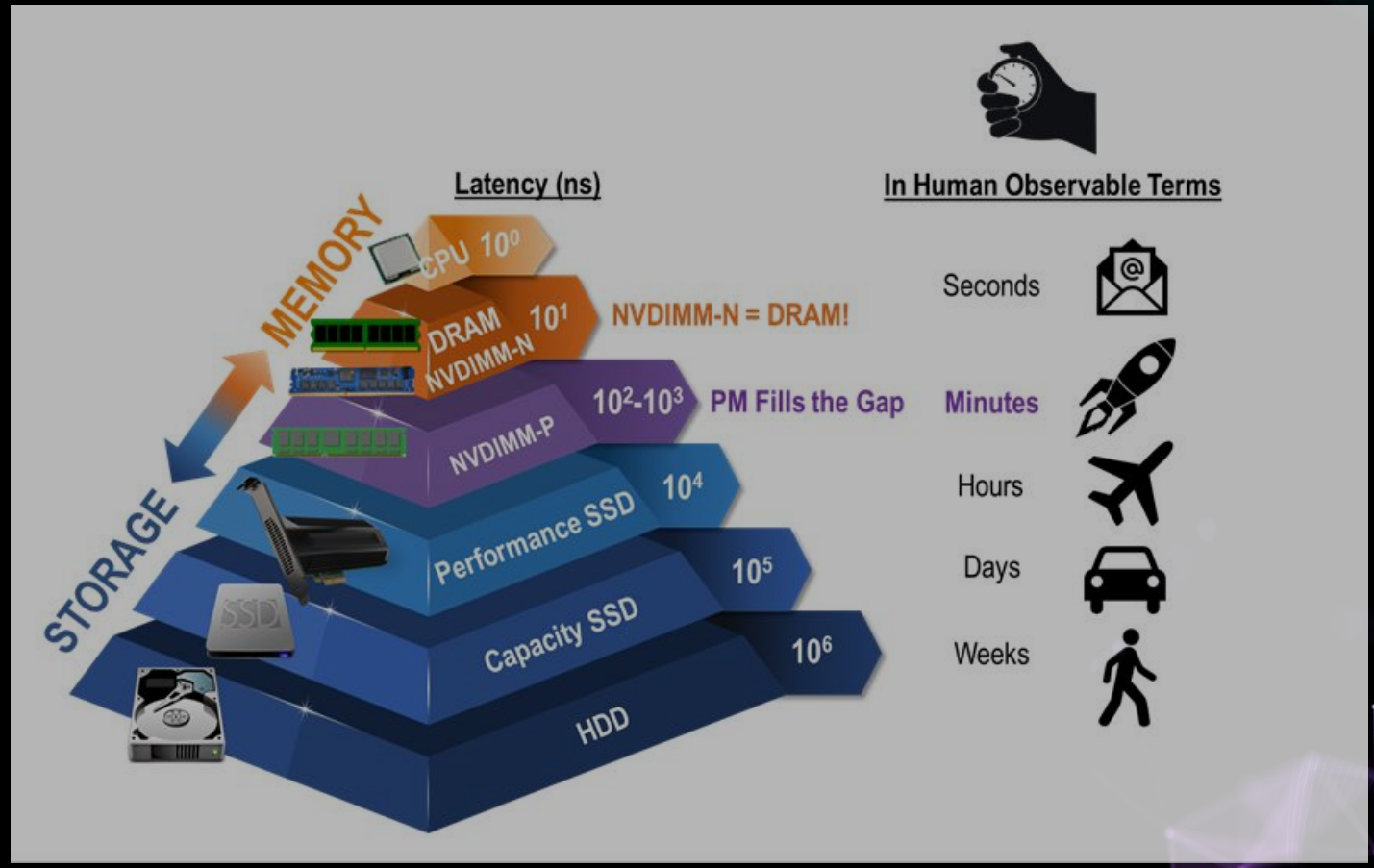
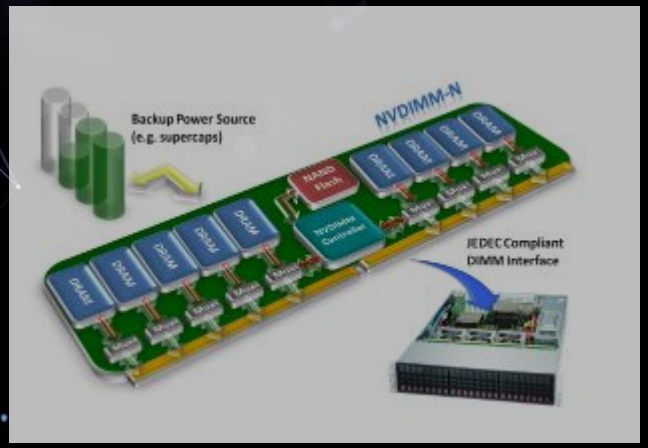
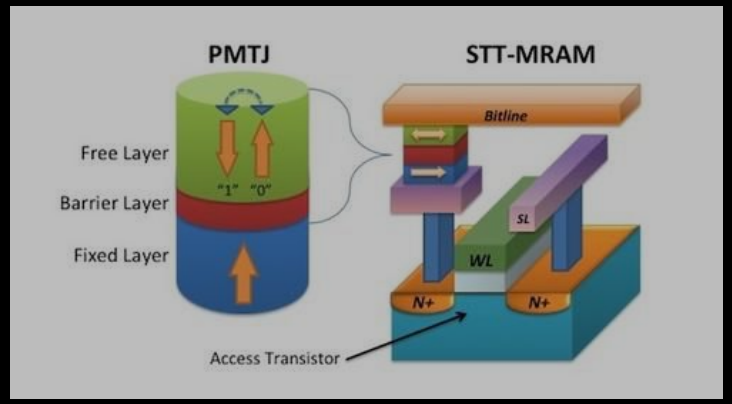
What is Persistent Memory?

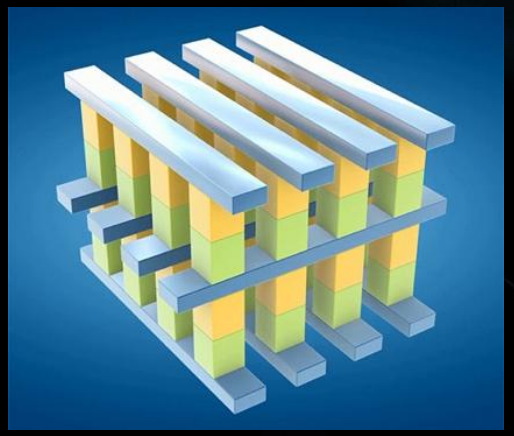
- Persistent Memory is non-volatile, byte addressable, low latency memory with densities greater than or equal to Dynamic Random Access Memory (DRAM).
- It is beneficial because it can dramatically increase system performance and enable a fundamental change in computing architecture.
- Applications, middleware, and operating systems are no longer bound by file system overhead in order to run persistent transactions.



Many Existing and Emerging Memory Types

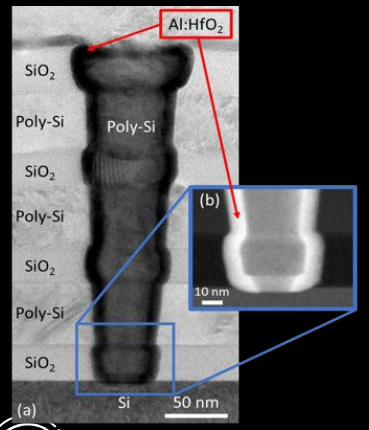


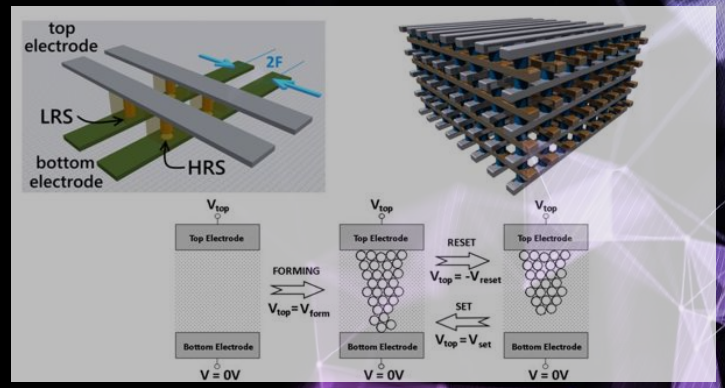




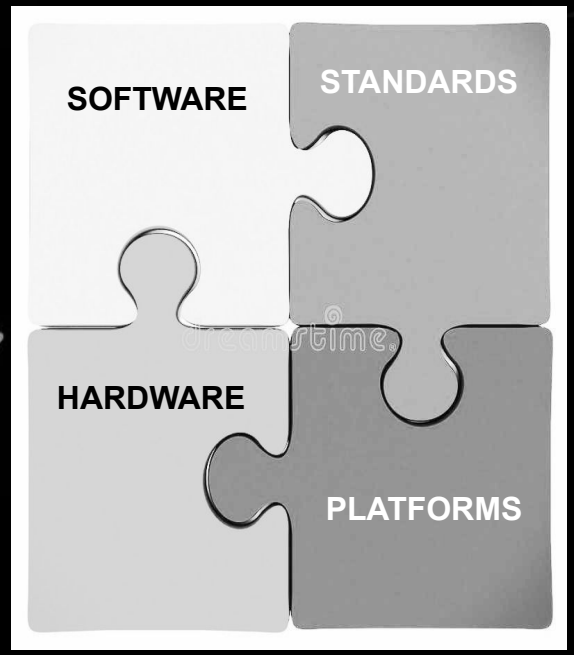
And They Are All Persistent!

Check out the SNIA Video – Annual Update on Persistent Memory





A Fundamental Change Requires an Ecosystem



- Windows Server 2016
- Windows 10 Pro for Workstations
- Linux Kernel 4.2 and later
- VMware, Oracle, SAP HANA early enablement programs

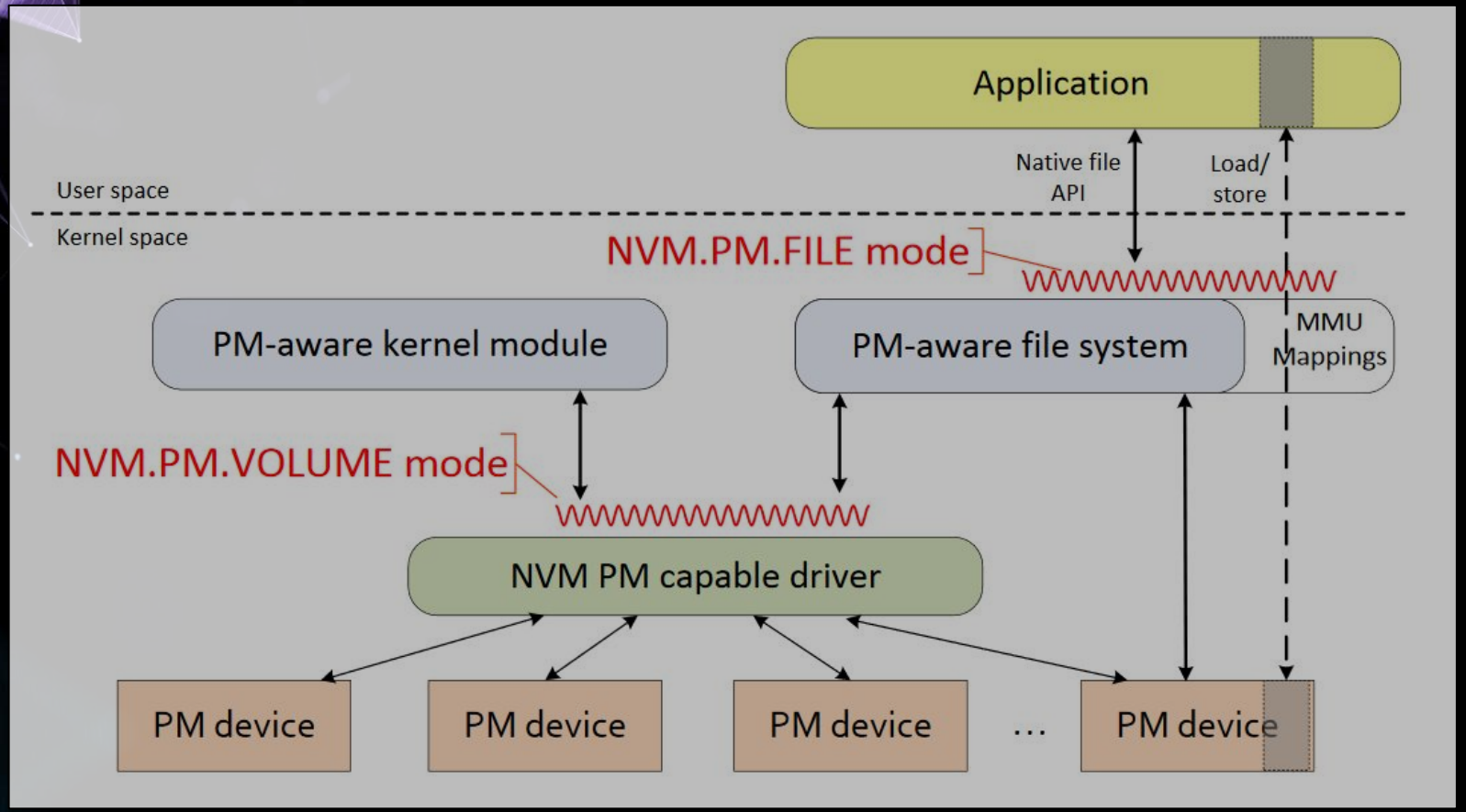
- Multiple vendors shipping NVDIMMs
- SNIA PM and NVDIMM Special Interest Group (formed Jan'14)
- Successful demonstrations of interoperability among vendors

- JEDEC JESD245B.01: Byte Addressable Energy Backed Interface (released Jul'17)
- JEDEC JESD248A: NVDIMM-N Design Standard (released Mar'18)
- JEDEC JESD304-4.01: NVDIMM-P Design Standard (released Jan '21)
- SNIA NVM Programming Model (v1.2 released Jun'17)
- unfit ACPI NVDIMM Firmware Interface Table (v6.2 released May'17)

- All major OEMs shipping platforms with NVDIMM support
- Requires hardware and BIOS mods

SNIA Persistent Memory Programming Technical Work Group

Developing a Persistent Memory Programming Model describing the behavior of a common set of software interfaces that provide access to non-volatile memory (NVM).



https://www.snia.org/tech_activities/standards/curr_standards/npm

Keys to an Industry-Standard Programming Model

- Consistent Windows/Linux architecture model
- Variety of open-source tools and libraries
  - Persistent Memory Development Kit (PMDK): www.pmem.io
  - Direct programming models
  - Multiple open-source file systems
- Our continued promise: Programming/Conversational opportunities
  - Persistent Memory Hackathons, global reach
  - NVDIMM Programming Challenges
  - A new, industry-focused conference (PIRL)

Persistent Memory Hackathon/Workshop

- Advance the cause of the PM/NVDIMM programming
- Programming Challenges
  - Highlight unique characteristics of the different memory
  - New challenge coming this summer/fall 2021
- Multiple discrete hackathon/workshop event for 2021
  - Here: pmworkshop.sniapm.io
  - Select "Request Access": passcode pmdk
  - Coming up: SDC India, SDC US, PIRL, others...
- New capabilities
  - Host your own virtual hackathon
  - Test your PM software in the cloud

pmhackathon@snia.org
github.com/pmemhackathon

More Resources

- Website resources:
  - www.snia.org/pm (Persistent Memory)
  - www.snia.org/pmhackathon (Workshop Page)
  - www.snia.org/computational (Computational Storage)
- Twitter
  - @sniacmsi
  - @sniacomputation
- Blog
  - SNIAComputeMemory&Storage

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So long... and thanks for all the fish.