HPE Persistent Memory

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What's all the Hoopla About?
Application Access Methods to Persistent Memory

Existing applications unchanged – writes to special volume specified for certain operations

Conventional I/O Access

Filesystem APIs

OS Driver
(Block Device Emulation)

Block I/O

Applications partially changed - source code re-written to use new APIs for specific data

Abstract PM Access

DAX/NVML (Linux)

DAS (Microsoft)

Middleware APIs

Applications source code manipulates data structures directly in Persistent Memory

Native PM Access

Object Stores

New Apps

Data Analytics

Standard Open Interfaces

Indirect I/O Access

Indirect PM Access

Direct PM Access
Not all Persistent Memory is Created Equal

- CPU Cache
- DRAM (Performance Optimized - HPE NVDIMM)
- SSD (Capacity Optimized - HPE 3D XPoint solution)
- 3D XPoint SSD
- HDD

Cost in $/GiBytes

Access latency in ns

Industry Target

“Universal Memory”
HPE Persistent Memory Whiteboard video:  https://www.youtube.com/watch?v=BKA_SOPqHfg
HPE Persistent Memory DLON 2015:  https://www.youtube.com/watch?v=vMrzXOBSeqA
HPE Persistent Memory website:  www.hpe.com/servers/persistentmemory

Until distribution releases are available, use the nvdimm kernel patches from
•  http://linux.hpe.com/nvdimm/
•  HPE Windows 2012 R2 driver in the works

Need answers now:  bret.gibbs@hpe.com