PRESENTATION TITLE GOES HERE

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Memory Bus Devices
Competing Technologies for the same Real Estate

JANUARY 28, 2014, SAN JOSE, CA

STORAGE INDUSTRY SUMMIT
The Future of Computing: The Convergence of Memory and Storage through Non-Volatile Memory (NVM)

SNIA Solid State Storage Initiative
DIMM SOCKETS: NO LONGER “1” HORSE RACE

IN THE PAST
The Std DRAM module was the only option
A Typical system ~60% populated
i.e = NON-OPTIMIZED SYSTEMS
MEMORY BUS DEVICE OPTIONS

Memory Innovation – New Alternatives for DIMM Socket Real Estate

TODAY

Many new options:

Find the right tool for the job!

- DRAM Modules
- NVDIMM
- MCS (ULLtraDIMM)
- SATADIMM
- HDIMM (Hybrid DIMM)
- SCM (MRAM, ReRAM etc)
OPTIONS - FLEXIBILITY

4 x CPU socket server
48 x “memory sockets”

Possible config’s
1.5TB DRAM or 96TB* Flash
*Without use of HDD-bay

The NEW Memory / Storage Options for these memory sockets:
Storage Capacity vs. IOPS vs. Latency vs. Increased Endurance vs. $/GB vs…
ENTERPRISE SSD OPTION: SAS / SATADIMM

Features & Benefits:

» SSD in a DIMM form factor – Cost Effective Solution
» Adds high-performance SSD storage into unused DIMM sockets
» Up to 2TB Per DIMM: Same Performance / Capacity / Latency as Std SSD
» DIMM Socket: for Power & Retention ONLY (No I/O via memory channel)

Draws power from any available DDR3/DDR4 socket on the server. No data is transmitted over the DIMM socket.
THE ANSWER – OF COURSE…IS..

Standard Servers become Highly Flexible
There is a Solution for whatever the Application Demands

• Persistent DRAM - NVDIMM
• High Capacity Flash – SAS/SATADIMM
• Lower Latency SSD – ULLtraDIMM
• NAND used as local swap space for DRAM - HDIMM
OPTIONS – FLEXIBILITY – PRO’S & CON’S

- Flash is cheaper than DRAM $/GB
- NVDIMM has 1000x lower latency than Flash
- DRAM has practically infinite endurance

- Hyperscale want “Dense & Cheap” (WORM)
- Financial want low & predictable latency
- Storage wants higher I/O performance & increased data security
- No individual “BEST” choice – There are OPTIONS….
MEMORY BUS DEVICE OPTION....

Further detail from the panelists...

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