

PCIe[®] NVMe[®] Development Issues

Uma M. Parepalli

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Agenda

- Session Description
- Session Organization
- Individual Presentations
- Q&A at the end of each presentation

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Session Description

- PCIe SSDs offer higher performance than ones based on disk interfaces, since they utilize the high-speed (and widely supported) PCIe bus.
- They have quickly become popular in many enterprise applications, particularly in implementations utilizing the new NVMe standard.
- Of course, all the usual design problems occur ranging from connectors through power management, power consumption, configurability, and hardware/software tradeoffs.
- But with over 100 million enterprise PCIe ports already shipped, this is an approach enterprises find to be both reasonably priced and easily implemented. It can work in both client and data center applications.

Session Organization

- Uma Parepalli, SK hynix memory solutions
 - Session Chair & Organizer
- NVMe Direct Attach Storage Solution
 - Matthew Rackstein, Field Applications Engineer, Magma
- Concurrent Support of NVMe over RDMA Fabrics and Established Networked Block and File Storage
 - Asgeir Eriksson, CTO, Chelsio Communications
- NVMe Enclosure Management and Dual Port Drive
 - Parag Maharana, Architect, Seagate
- Q&A

Session Chair / Organizer

- Uma M. Parepalli is a Firmware Architect at SK Hynix Memory Solutions. He is also SK Hynix's organizational representative for industry standards. Uma has over 25 years of experience and previously worked for EMC, LSI, Dell, Intel, and others in various capacities from Principal Engineer / Architect to Director and VP of Engineering. He is a Computer Engineering graduate of the University of Mysore, India.

Asgeir Eriksson

- **Concurrent Support of NVMe over RDMA Fabrics and Established Networked Block and File Storage**
- **Asgeir Eriksson** is the CTO of Chelsio Communications and an inventor of their protocol offload devices. He has over 30 issued patents. Before Chelsio he worked at Silicon Graphics on cache coherent NUMA machines that included design and formal verification and implementation of hardware coherent I/O devices and their ordering semantics and completion guarantees.
- **Presentation Abstract:** The iSCSI and the FC block storage protocols, and the SMB and NFS file server protocols are deployed on every OS. NVMe over RDMA Fabrics has a new native API, but it is important to preserve the existing product investment in network storage protocols while enabling the adoption of NVMe behind the established Storage protocols and using the native NVMe Over Fabrics API. This session presents the performance of the Chelsio offload adapters that concurrently support high bandwidth and high IOPS offload of iSCSI, iSER, FCoE, SMB and NFS, and at the same time support the high performance native API of NVMe over RDMA Fabrics

Parag Maharana

- **NVMe Enclosure Management and Dual Port Drive**
- Parag Maharana is a Storage Architect in Flash Products Division of Seagate. Parag has 22 years of experience in product development and architecture of Storage Solutions. His main focus areas are NVMe based products and emerging technologies. Previously, he held product development, architect position in LSI MegaRAID, and architected Virtualized RAID products using SR-IOV and MR-IOV. Also, he held development and architect position in AMI and Tata Elxsi. Parag holds a Master degree in Computer Science and Engineering from Jadavpur University, India and currently he has 14 approved patents.