

Sharing NVMe Storage over Different Transports

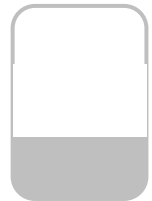
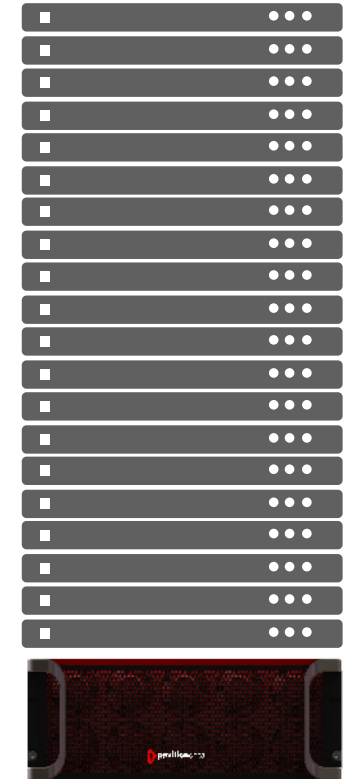
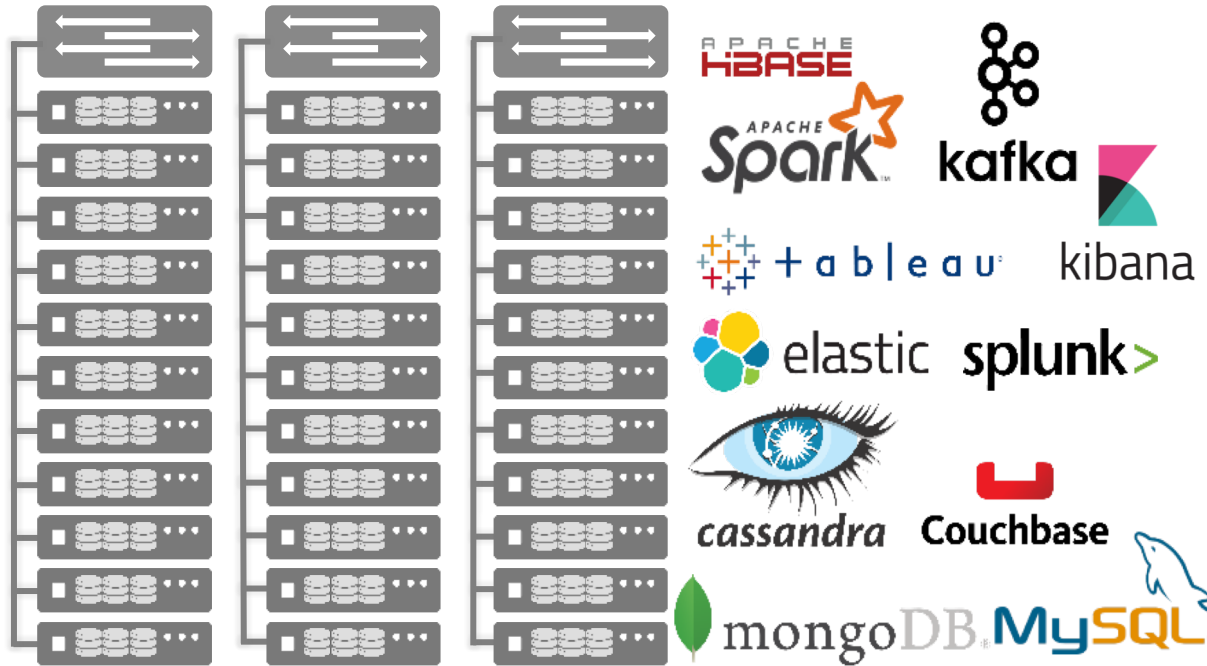
Jeff Sosa

Pavilion Data Systems



Flash Memory Summit

Using NVMeOF to Transform Modern IT



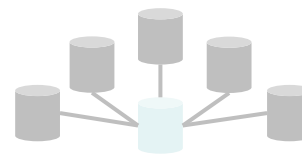
Poor Resource Utilization



Too Many SKUs



Unpredictable Performance



Excessive Data Movement



Security, Backup, Compliance

Shared Accelerated Storage

- ✓ Performance of DAS, with the operational benefits of SAN
- ✓ Full HA, RAID6, no Single Point of Failure
- ✓ Offload Host Processing with Centralized Data Management



Flash Memory Summit

Storage Requirements for Modern Applications

- Low Latency
- Ethernet-Based Protocol
- Performance Density
- Resiliency and HA
- Economics: Media Flexibility and Choice
- Scalable Operations: Agent-less



Flash Memory Summit

Choices for NVMe over Ethernet





Comparing ROCE & TCP Performance

System-Wide 70:30 Mixed 4K IOPS As Clients Are Added

Latency Comparisons



Flash Memory Summit

Customer NVMeOF Evaluation

Large Online Travel Company Operating Private Cloud



Customer Selection Criteria and Considerations

Flash Memory Summit

	ROCE	TCP
Latency of Local SSDs	✓	
Standard / InBox Driver	✓	Coming Soon
No Hops or Direct-Connect	✓	✓
Inter-Rack / Aisle-Scale / DC-wide		✓
Streaming Workloads	✓	✓
Latency-Sensitive Workloads	✓	
CPU Intensive Application	✓	
Compatibility with Existing Servers & NICs		✓
NIC Bonding Required		✓

Pavilion & NVMeOF: Satisfying the Requirements to Transform Modern IT



20 Million IOPS
120 GB/s

PERFORMANCE

Up to 40 x 100GE
Ports

MODULAR

14TB – 1PB

CAPACITY

Up To 20, Active-
active Controllers

RESILIENCY

4 RU

DENSITY

Raid-6,
Snapshots, Thin
Provisioning

DATA MANAGEMENT

NVME OVER
ROCE & TCP

TRANSPORT FLEXIBILITY

X86, 2.5" NVMe
SSD

STANDARD OFF-THE-SHELF
COMPONENTS

Media Choice

DISRUPTIVE ECONOMICS

Thank you!