SSD Benchmark Testing Panel

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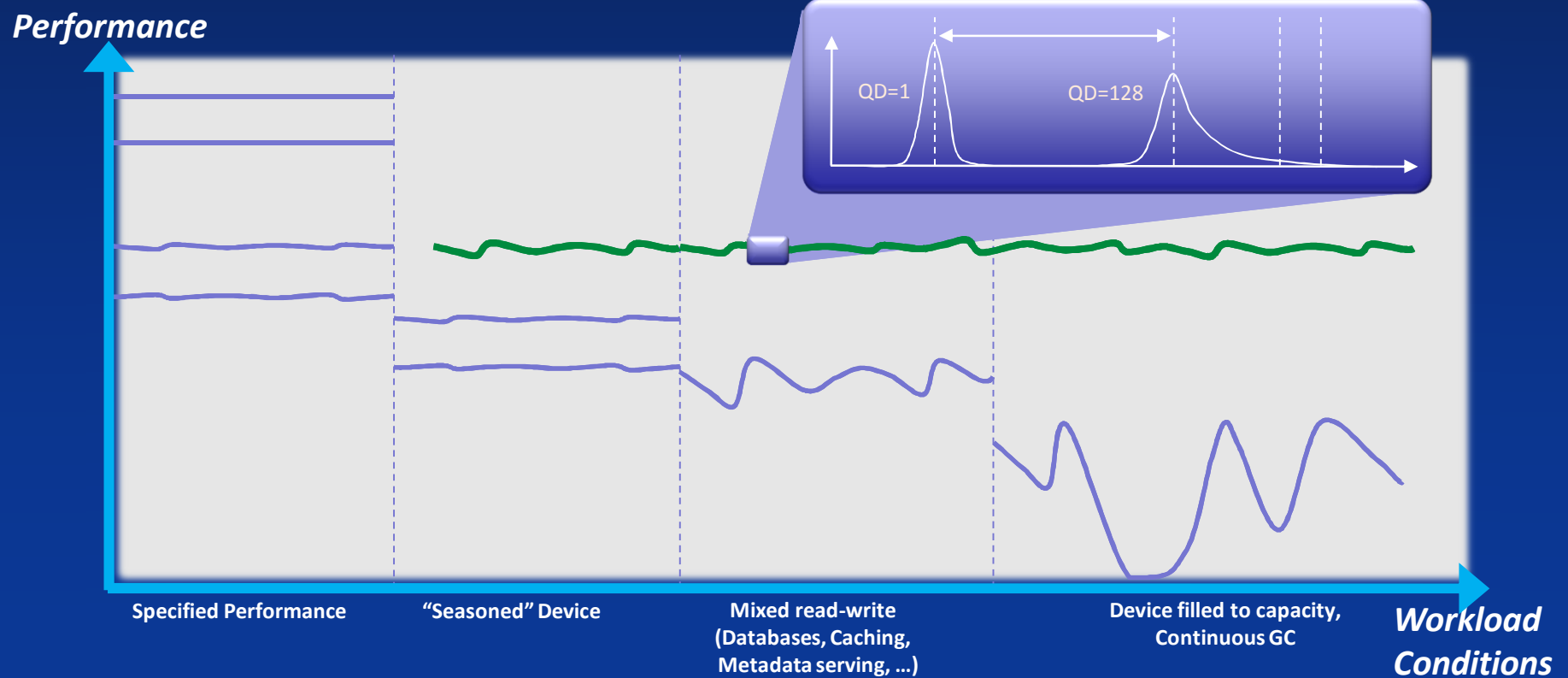
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Performance Characterization Methodology

Focus on sustained performance and application-level metrics

- **Level 1**: Baseline performance
- **Level 2**: Sustained performance and IO-QoS metrics
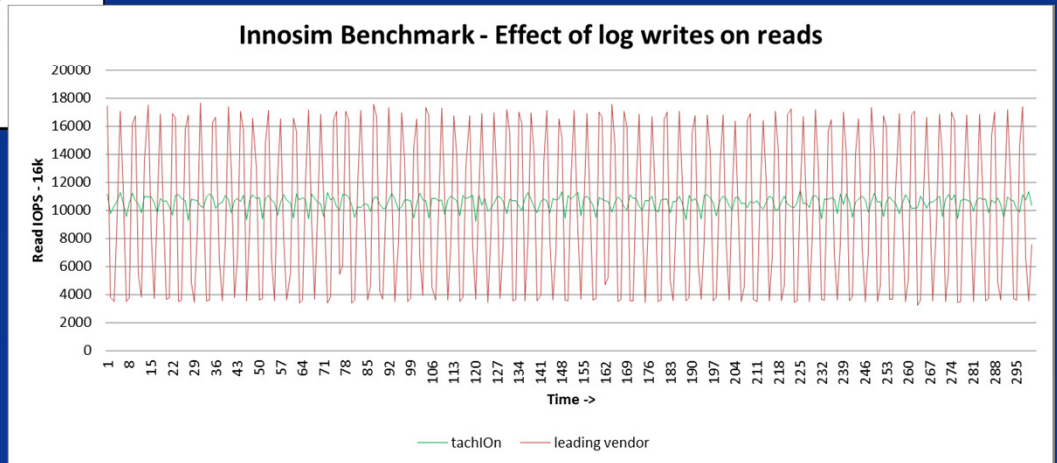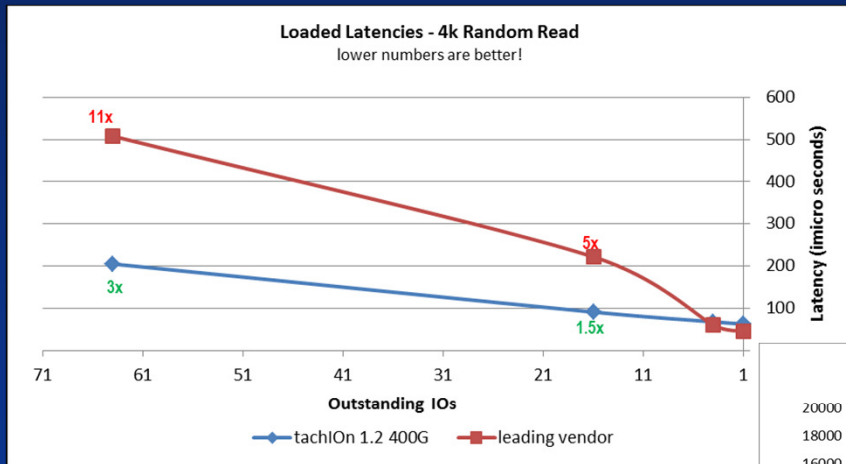- **Level 3**: Application performance and real-world workloads

I/O Quality of Service

Measure of latency in real world scenarios

- Mixed Read/Write workload sustained over time
- Mixed Read/Writes of various block sizes that simulate real workloads

Loaded Latencies - 4k Random Read
lower numbers are better!

Innosim Benchmark - Effect of log writes on reads

Baseline Performance

- Sweep across 10+ parameters (6000+ data points on OS, system, card combo)
  - Operation mix: Reads, Writes, R+W mix; sequential, random; aligned/unaligned
  - Block sizes: 512B – 1M; Threads/Queue-depth: 1-256; File system types: (Linux) ext3, xfs
  - Card configs: Capacity-optimized, Performance-optimized, Balanced; With and without RAID
  - With and without garbage collection, …

- Measurements: Bandwidth, IOPS, Latency, Latency Standard Deviation, System resource overheads

Multiple Random Read (in GC/seasoned)
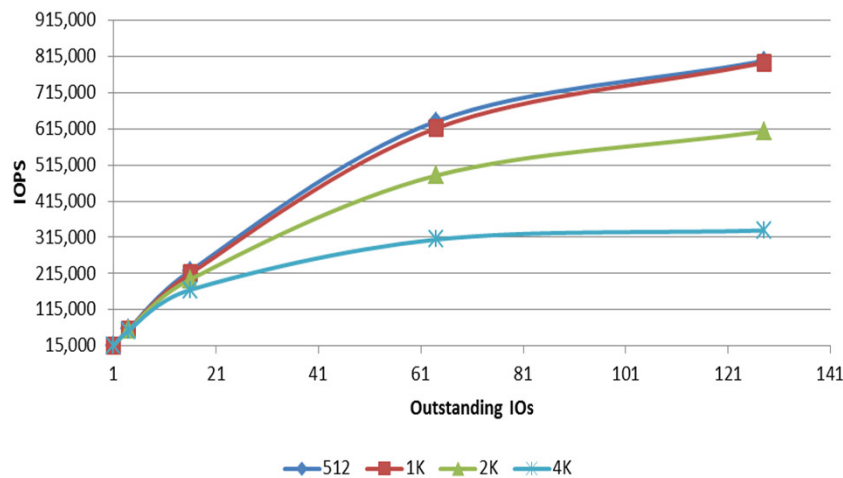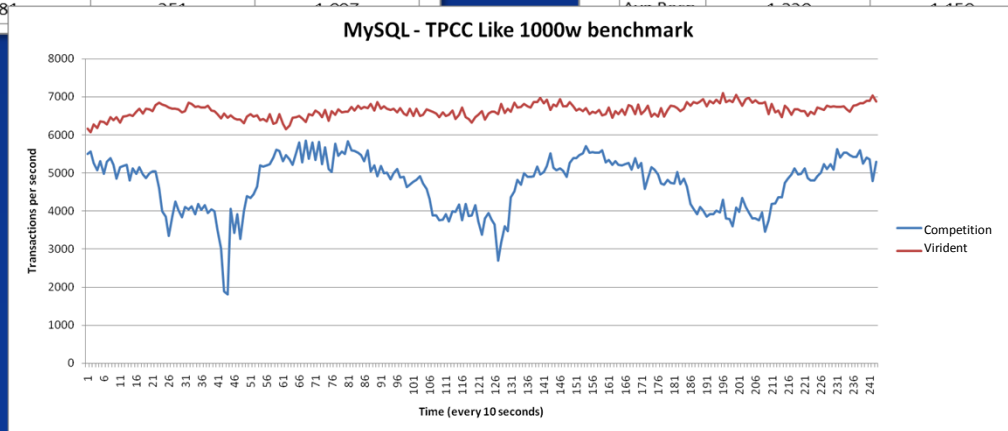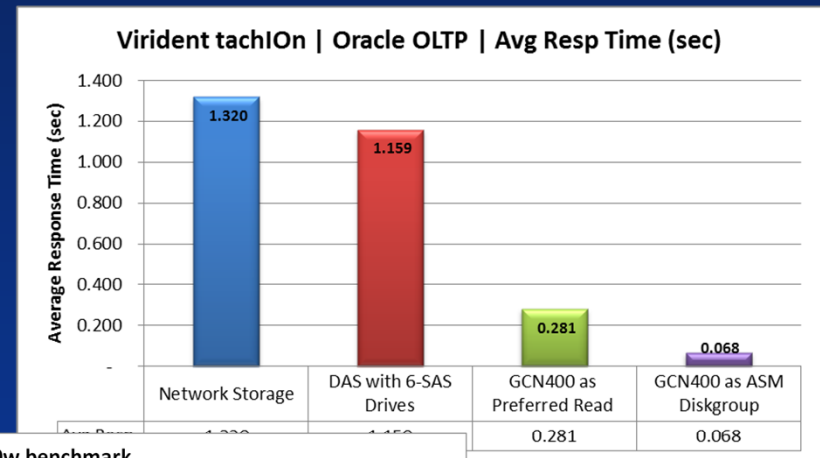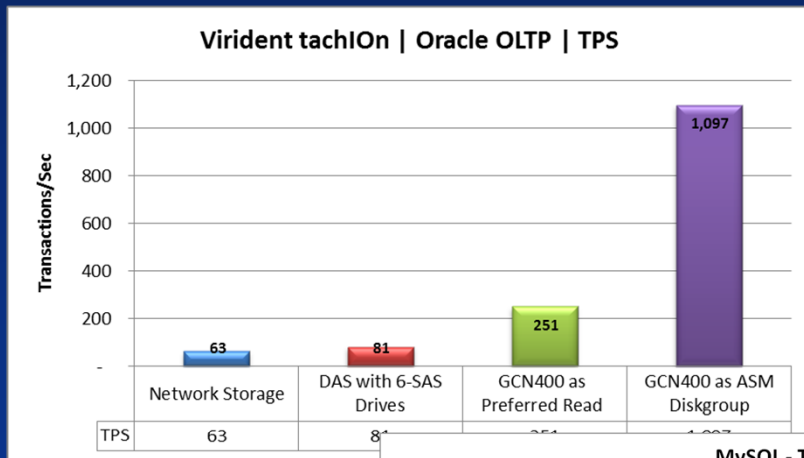

Multiple Sequential Writes (in GC/seasoned)
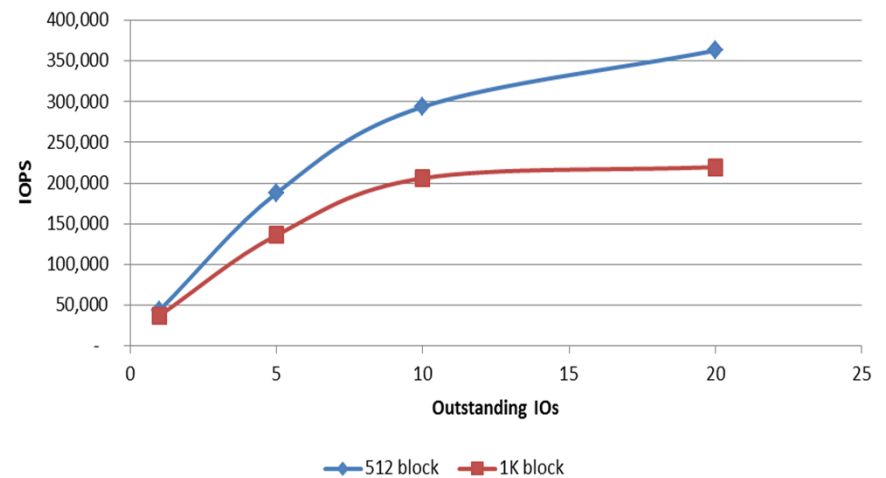
Application Tests With Real-World Workloads…

Measure performance in real life scenario with varying application settings

- Simulated DB workloads: ORION, SysBench, SQLIO, …
- Oracle: Flash cache, Preferred Read, ASM store on TPCC, TPCH, Calling circle etc.
- MySQL: Varying cache sizes, buffered writes vs. direct, OLTP, TPCC

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