PHISON
Knows What You Need

PCIe/NVMe Brings Higher Performance to Embedded Applications

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Outline

- Current NVMe/PCIe SSD Trend
- Embedded SSD – Application & Needs
- PCIe SSD vs. SATA SSD Performance
- Summary

Current NVMe/PCIe SSD Trend

- More support of NVMe in major OS

Microsoft

- Top tier OEM, ODM and Semiconductors are driving NVMe

TOSHIBA
Leading Innovation >>>

DELL EMC

nvm EXPRESS®

intel

Embedded SSD – Application & Needs

Applications:
- Factory Automation
- Video Surveillance
- Casino Gaming Machine
- KIOSK
- Infotainment systems
- Thin Client

Needs:
- Customization
- Endurance
- Security
- Performance ★
- Form Factor

Performance References

Latency: A measurement of time needed to process a task from a system's request to completing. (ms)

Throughput: A measurement of the amount of data that can be processed in a given time (MB/s)

IOPS: A measurement of the total number of task being processed every second.

Performance & Application

KIOSK, Digital Signage & Point of Sale machine

–User experience may be affected due to responsiveness

–Require low latency & fast response time

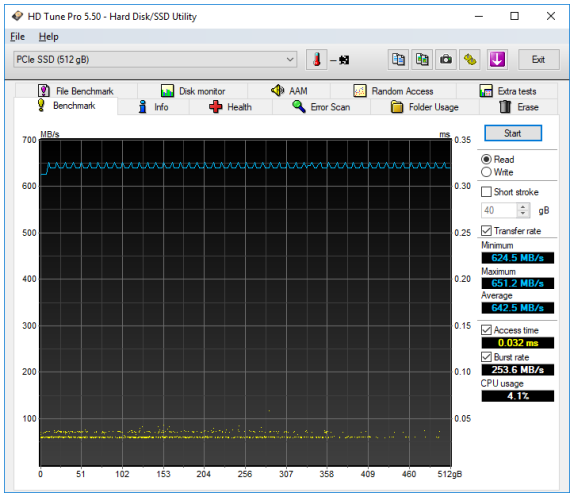
Surveillance Camera, Servers & Thin Client

-Large and long period of data processing

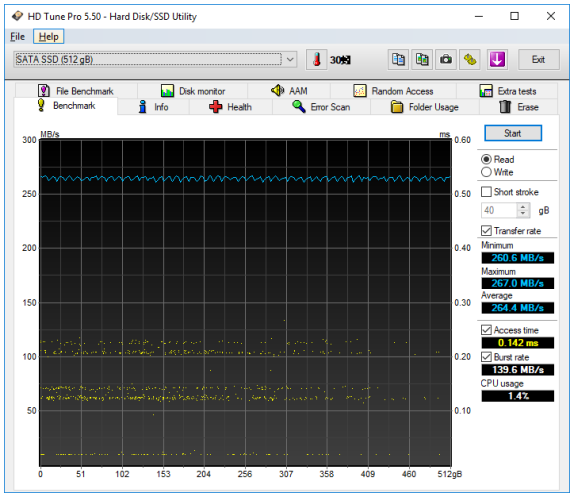
-Require high throughput & IOPS

Latency Performance

PCIe SSD
Average Latency: 32us



SATA SSD
Average Latency: 142us



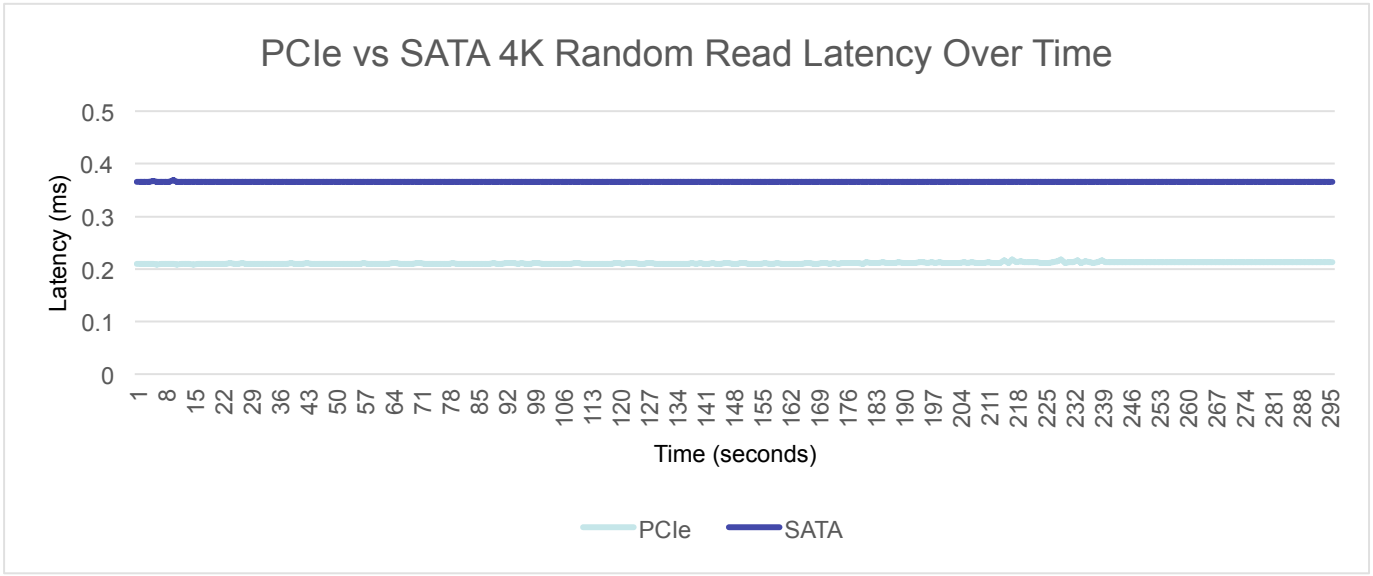
Benchmark tool: HD Tune Pro
Measure average read latency

PCIe SSD:
E8 Gen3x2 + BiCS3

SATA SSD:
S10C 4Ch SSD + BiCS3

PCIe SSD has ~4.4x lower latency than SATA SSD

Latency Performance



Benchmark tool: IOMeter
4K Random Read

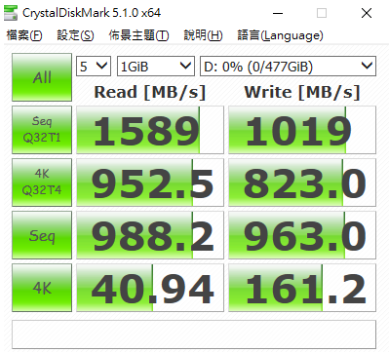
PCIe Avg: 0.211 ms
SATA Avg: 0.364 ms

PCIe SSD has lower latency than SATA SSD

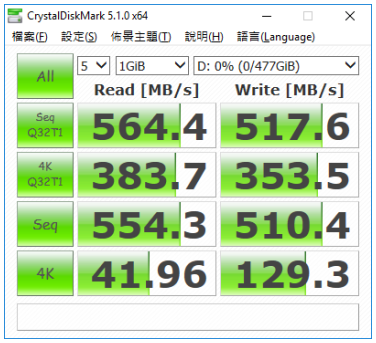
Throughput & IOPS Performance

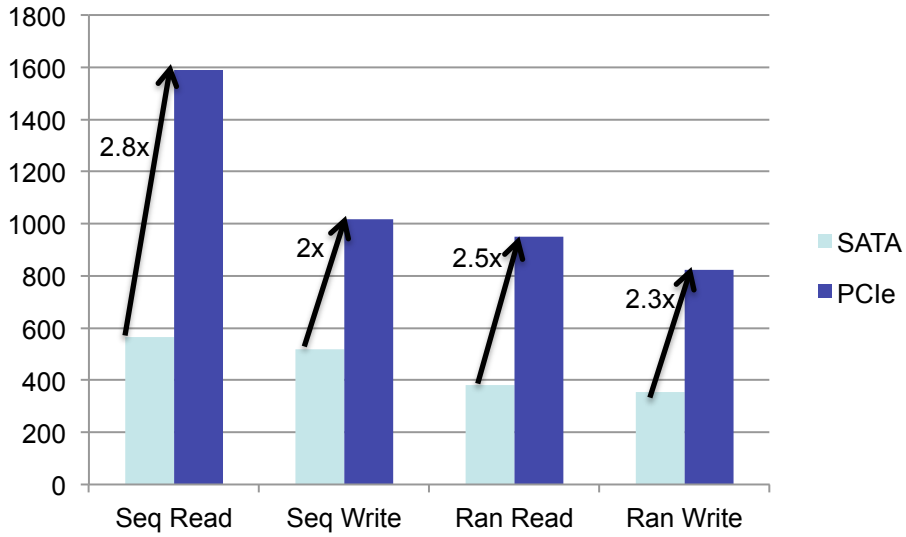
Crystal Disk Mark v5.1.0

PCIe SSD



SATA SSD





PCIe SSD has better throughput/IOPS than SATA SSD

Summary

- Ecosystem is enabling more NVMe supports for major OS & companies
- Latency, throughput & IOPS plays a key role for certain embedded applications
- PCIe SSD provides higher performance compare to SATA SSD

For more information on Phison SSD Controllers, please visit us at

Booth #614

- Automotive
- Digital Signage
- UFS

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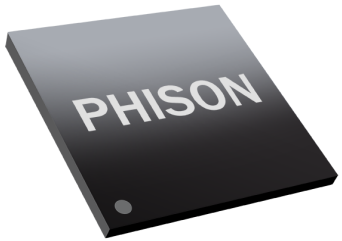

Thank You