



What is Phison I/O+ Technology

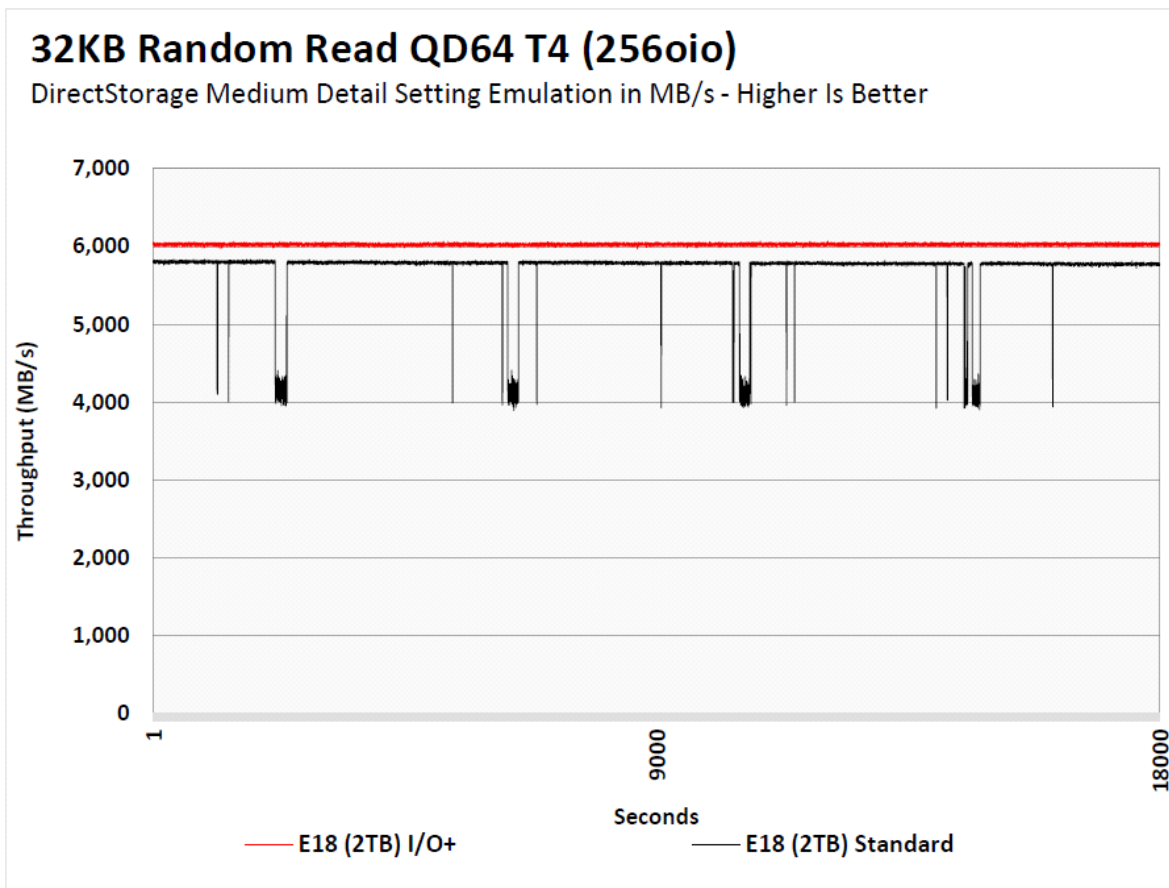
Phison I/O+ Technology is specifically optimized to enhance sustained read workloads that run for hours. The largest gains come on tasks that emphasize medium to large IO blocks (32K to 1MB) without degrading smaller IO block size performance.

I/O+ Technology has already shown to increase these workloads by up to 34%:

- DirectStorage gaming
- Compiling code
- Rendering video special effects that are limited by IO
- Rescaling video for different platforms
- Machine learning
- Disk based crypto mining



During CES 2023, DirectStorage, a new API in Microsoft's DirectX 12 Ultimate, was a hot topic. The DirectStorage workload is constantly fetching textures during gameplay, using the SSD like a cache instead of being limited by the amount of system DRAM. This translates into a sustained random read workload at the drive level during the gaming session with larger block sizes than typical consumer workloads. With Phison I/O+ Technology, games can run for monstrous 12+ hour gaming session with no significant drop in bandwidth.



Let's look at how the SSD achieves this performance improvement:

1. A typical consumer SSD is optimized for bursty IO with long idle periods.
2. A sustained workload puts significant stress on the NAND and leaves no idle time.
3. The SSD is forced to perform maintenance operations mixed with host generated IO, imposing a tax on the SSD performance.
4. Phison uses smart scheduling and adaptive wear algorithms to ensure that this maintenance activity does not interfere with the sustained workload.

Beyond Gaming

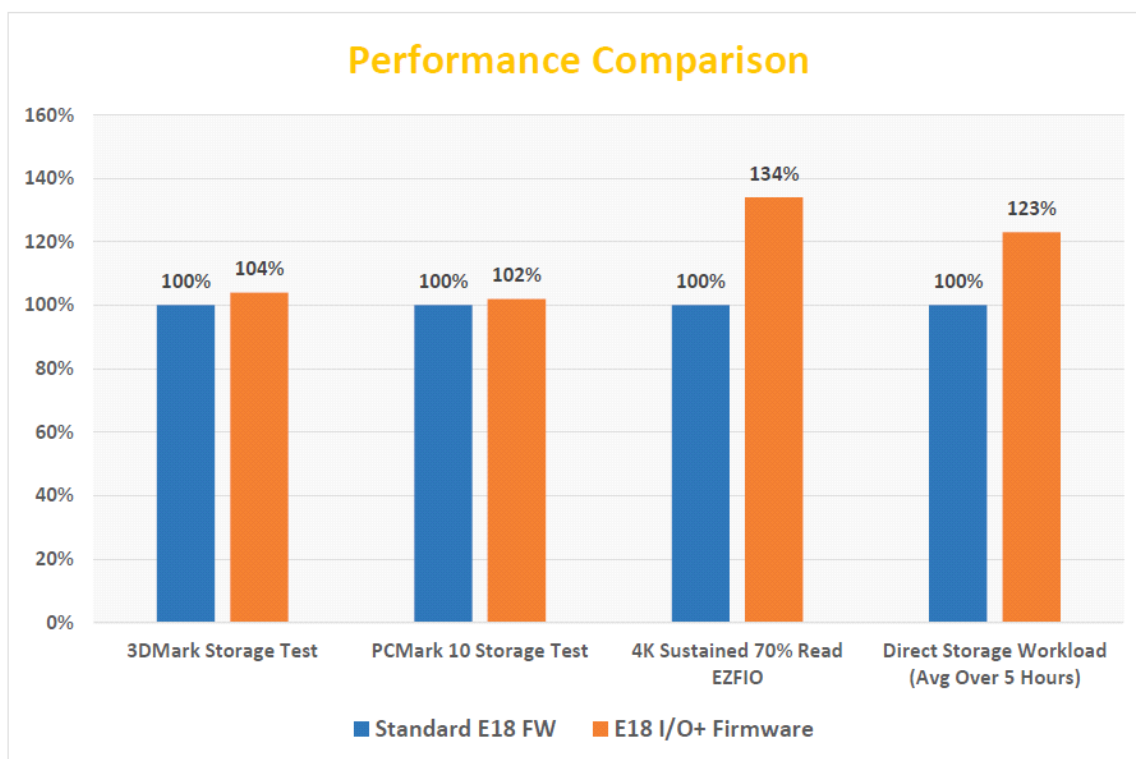
Just like gaming, professional software will benefit from the streaming data model. Applications with high bandwidth demands such as CAD and CAM will likely be the first to transition with other application types to follow. BypassIO is set to evolve over time to include write streams to the NVMe storage device. This opens up other applications to take advantage of the reduced IO stack and filters to increase available bandwidth and further reduce latency.

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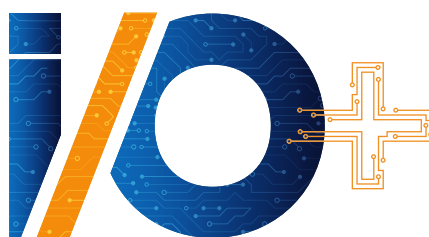
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The standardized tests in the chart above show examples of what to expect with a 2TB PS5018-E18 SSDs. End users will see a small performance increase in existing consumer-level workloads. Next-generation workloads that stream data see the largest performance increase.

Summary Statement

The standard Phison PS5018-E18 already delivers exceptional performance that surpasses Microsoft's recommendations for DirectStorage. I/O+ Technology allows game developers to build higher detail settings into next-generation games that require guaranteed bandwidth. The streaming IO workload model is new to the consumer market. Phison is the first to optimize for streaming IO that will soon become the standard for gaming and prosumer applications.



Technology

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