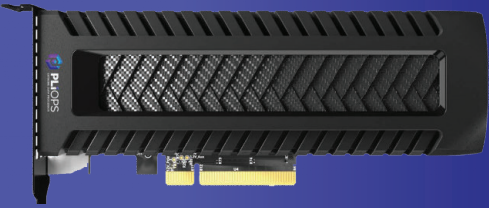


Maximize SSDs with the Pliops Extreme Data Processor (XDP)

Modern server designs are taking advantage of an expanding world of accelerator cards to enable new or enhanced capabilities. While many go straight to GPUs when thinking about acceleration, there's a new breed of processors that are not only addressing performance but also data protection and economics as well. The Pliops Extreme Data Processor (XDP) is one of these accelerators, helping customers take advantage of the unique blend of performance, capacity, and economics thanks to QLC-based enterprise SSDs.



Pliops XDP Advanced Features include:

- Standard block device with high and consistent performance
- No compromise Drive Fail Protection (DFP) protects against multiple single drive failures
- Expands usable capacity with Compression, high drive fill, and minimal DFP overhead
- Virtual Hot Capacity eliminates the need for a dedicated hot spare
- Reduced write amp extends the useful life of TLC and QLC SSDs
- Rapid Recovery by rebuilding only user data to allocated Virtual Hot Capacity
- User configurable rebuild rate to balance performance
- Total data & metadata protection in the event of sudden power down
- Balances over-provisioning and improves performance

Pliops XDP delivers the full potential of flash storage by enabling enterprise and cloud applications to access data up to 1,000 times faster, using just a fraction of traditional computational load and power.

FULL REPORT



Mixed Random 4K 70/30 Throughput (IOPS)

Software RAID0

421,700

Pliops XDP DFP

2,786,400

560.75%
Improvement

Mixed Random 8K 70/30 Throughput (IOPS)

Software RAID0

428,400

Pliops XDP DFP

1,917,500

347.60%
Improvement

Mixed Random 16K 70/30 Throughput (IOPS)

Software RAID0

426,700

Pliops XDP DFP

1,095,600

156.76%
Improvement

With a mixture of random read and write activity together, we worked up through the transfer sizes from 4K to 16K block sizes. Across the board, Pliops XDP had huge gains. In 4K 70/30 it offers a huge 561% gain, measuring 2.8M IOPS to 422K IOPS from SW RAID0. At the 8K blocksize, the gains were just slightly less at 348%, measuring 1.9M IOPS to 428K IOPS in SW RAID0. At the 16K transfer size the gap narrowed, but still had a large 157% improvement over SW RAID0. Here we measured 1.1M IOPS from XDP versus 427K IOPS of SW RAID0.

While the previous workloads focused on random transfers, our final test focuses on sequential large-block transfer speeds. Here Pliops XDP continued to show substantial gains, especially in write performance. Starting with read bandwidth, we measured 48GB/s from XDP compared to 27GB/s from SW RAID0. In write, the XDP had a 184% lead with 6.3GB/s compared to 2.2GB from SW RAID0.

Final Thoughts



Modern enterprise QLC SSDs, like the Solidigm D5-P5316 used in this testing, have the potential to deliver a tremendous blend of performance and capacity. Modern infrastructures, though, require new tools to manage flash. RAID cards of old are cumbersome, while basic software RAID leaves a lot of performance on the table. This reality has opened the door for creative solutions like the Pliops Extreme Data Processor.

Overall, the Pliops card is straightforward to get operational. For as much as we love working with the high-capacity QLC SSDs, it's hard at times to find systems that can properly leverage the media. With the Pliops Extreme Data Processor, the entire math changes when it comes to server performance on a cost-per-terabyte basis. It's easy enough to try yourself as well; contact Pliops.



Pliops sponsors this report. All views and opinions expressed in this report are based on our unbiased view of the product(s) under consideration.

