Growing end-user expectations and traffic place increasing demands on data and application workloads. To keep up, companies need high-performance, low latency response coupled with robust data protection and scalable storage. Many financial, telecommunications, retail and online gaming companies have turned to MariaDB to enable high-traffic websites that can handle massive volumes of data traffic effectively.

However, even with advances in NVMe solid-state drives, computing performance hasn’t kept up. MariaDB instances are being impacted by infrastructure inefficiencies that directly impact performance and scalability. High computational loads and data amplification create storage I/O bottlenecks and consume vital compute and storage resources. To date, companies simply throw money at the problem by adding servers, SSDs, and growing their datacenter footprint, but this approach is not sustainable. The Pliops Extreme Data Processor (XDP) enables greater MariaDB performance by radically simplifying how data is processed and flash storage is managed to increase the effectiveness of your existing infrastructure investments.

Delivering Increased Performance

Optimizing database performance and lowering latencies is key to effective database management. NVMe drives were seen as a way to increase database performance, but inefficiencies in storage and server architectures make it virtually impossible to get the full benefit of NVMe SSD performance. Pliops XDP eliminates these inefficiencies to unleash the full potential of NVMe SSDs. Figure 1 shows Pliops XDP delivering 2.5x higher queries per second and a 83% reduction in four-nines latency versus software RAID 0 with MariaDB.

Key Highlights

Pliops XDP delivers exceptional MariaDB performance and efficiency gains at significant cost savings:

- Up to 2.5x more queries per second to enable faster data processing
- Up to 99% lower latency enables fast and frequent updates
- Up to 6x more usable MariaDB capacity
- Consistent performance even with massive volumes of write traffic
- Drive fail protection with zero trade off in performance keeps data safe
- Simple and fast to deploy in any server with any SSD
- Reduce infrastructure footprint and lower CapEx by more than 50%

Figure 1: Pliops XDP performance
Database Protection and Resiliency

Data protection can also directly impact MariaDB performance. Typically, storage architects and database administrators must make a tradeoff between optimizing for performance using RAID 0 and addressing data protection with a costly secondary environment. Alternately, they accept reduced performance because they prioritize fault tolerance with RAID 10/1.

Pliops XDP eliminates this tradeoff by natively delivering both. Figure 2 shows Pliops architecture delivers drive fail protection (like RAID 5) at 2.5x the performance of RAID 0. In the event of a drive failure, the performance benefit drops to 2x during the storage rebuild phase, but recovers to full performance within two hours. Figure 2 shows that Pliops XDP delivers exceptional performance compared to RAID 0 in normal SSD operations and even during the SSD crash and rebuild phase.

Scalable Capacity and Efficiency

Pliops XDP inline data compression, thin provisioning, and drive fail protection capabilities provide up to 6x more usable MariaDB capacity, all while reducing host CPU loading. With additional storage and compute power, database administrators can consolidate multiple databases without compromising application performance to manage database growth more effectively—resulting in significant savings on infrastructure costs and management overhead.

The excessive read, write, and space amplification of traditional database storage engines negatively impacts SSD performance and endurance. For high performance MariaDB applications, this amplification can range from 5x to 100x, consuming valuable system processor cores and network bandwidth resources. Excessive write amplification substantially reduces the performance and longevity of SSDs and increases storage costs. With Pliops XDP, enterprises can improve infrastructure capacity and more efficiently manage MariaDB instances. This can support scaling users or consolidating databases to reduce infrastructure footprint and lower CapEx by more than 50%. 
Ease of Deployment

Pliops XDP is plug-and-play, delivered on a low-profile PCIe card that works in any server and with any SSD, including TLC, QLC, Optane, and more. Using a standard Linux NVMe and block drivers, Pliops XDP is up and running in minutes to accelerate MariaDB databases and storage-intensive workloads. Flexible deployment models mean Pliops XDP can adapt to any infrastructure by seamlessly integrating with direct-attached SSDs, in a storage server, or NVMe-oF storage systems.

With Pliops XDP, financial, telecommunications, retail, online gaming, and other applications using MariaDB can benefit from performance, data protection, scalability, and ease of deployment enhancements. By making existing infrastructure investments more effective, Pliops XDP can help companies cost-effectively make the most of MariaDB and solve some of today’s greatest operational challenges. Learn more at pliops.com.

Pliops Delivers Breakthrough Levels Of Consistent, Highly Scalable Performance To Address The Realities Of An Increasingly Dynamic, Online World.

About Pliops

Pliops multiplies the effectiveness of organizations’ infrastructure investments by exponentially increasing datacenter performance, reliability, capacity, and efficiency. Founded in 2017 and named as one of the 10 hottest semiconductor startups by CRN in 2020 and 2021. Pliops global investors include NVIDIA, Intel Capital, SoftBank, Western Digital, KDT, and Xilinx. Learn more at www.pliops.com.