

Radically Improve Redis Service Offering

DRAM-like Performance at 80% Lower Cost

Background

As data demand continues to grow and immediacy becomes increasingly essential for business operations, Redis has become the most popular in-memory NoSQL database. Due to its sub-millisecond latency and high throughput, Redis enables fast response times for workloads and applications like machine learning, messaging, geospatial data, real-time analytics, gaming leaderboards, and user session caching. However, as scale increases, the infrastructure costs of keeping large amounts of data in memory can become prohibitive.

Given the growing popularity and desire to use Redis for larger datasets, flash technology offers a potentially cost-effective option that is less than 1/20th the cost of DRAM on a per GB basis.

By extending DRAM onto flash memory, organizations can efficiently keep larger data sets in Redis with better economics

The challenge has been that the read/write inefficiencies of SSDs compared to DRAM can result in very low, inconsistent IOPs with high latencies. This also necessitates CPU and performance taxing persistence and snapshot schemes that reduce the value of Redis and limit more broad adoption. Pliops Extreme Data Processor (XDP) eliminates these tradeoffs, enabling high-performing, low-latency Redis deployments utilizing low-cost flash storage.

Key Highlights

With Pliops XDP, SSDs used in a Redis environment creates a business advantage:

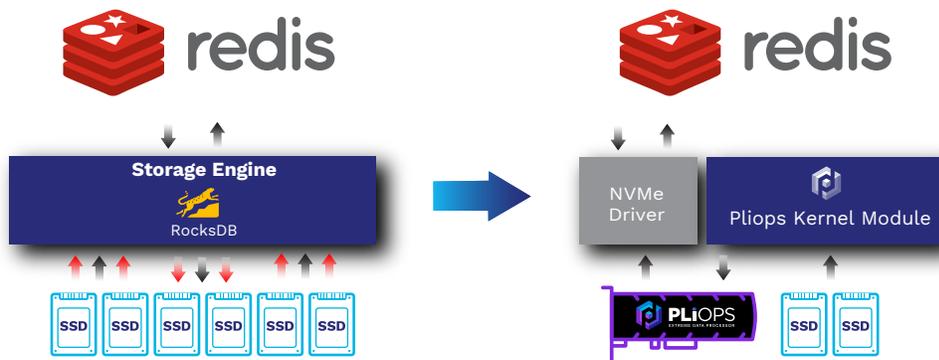
- DRAM-like IOPS with sub-millisecond latencies
- SSD economics offer lower \$/GB
- Strong performance consistency with four nines latency
- Not dependent on workload locality or specific hit ratios

Rethink Your Infrastructure to Accelerate Your Competitive Advantage

Pliops XDP is delivered on an easy-to-deploy, low-profile PCIe card that radically simplifies the way data is processed and SSD storage is managed to exponentially increase performance, reliability, capacity, and efficiency—multiplying the effectiveness of your infrastructure investments.

By **eliminating inconsistencies** that previously posed challenges for SSD usage with Redis, Pliops XDP makes it possible to **take full advantage of flash storage**.

Current software struggles to efficiently store variable-length data inherent in databases to the fixed-length blocks required by SSDs. This not only consumes CPU resources, but also amplifies the reads and writes to SSDs and the storage space required, creating massive inefficiencies that reduce performance and increase costs across the entire data center infrastructure.



Pliops utilizes an optimal approach, natively managing objects of different sizes using techniques not feasible on standard server processors. Through its innovative data structures, Pliops XDP stores data to SSDs at the theoretical limits of read, write and space efficiency, all while using far fewer CPU resources than software-only solutions.

Compelling Performance With Bottom-Line Benefits

By leveraging Pliops XDP with SSDs in Redis deployments, companies can counter the rising cost of infrastructure as data processing needs grow. For example, consider a company that requires 1 million IOPs to access 6TB of Redis data at 1ms average latency.



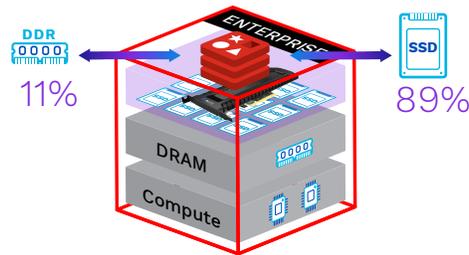
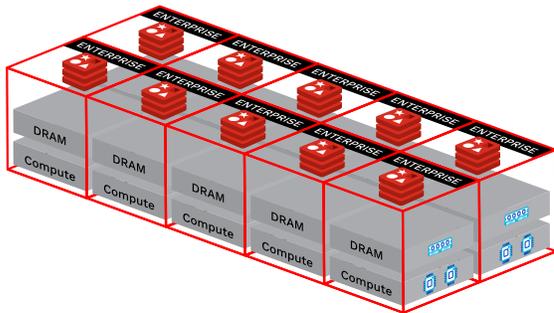
Redis on DRAM

Redis would typically require 10 servers with approximately 635GB of data in each server.

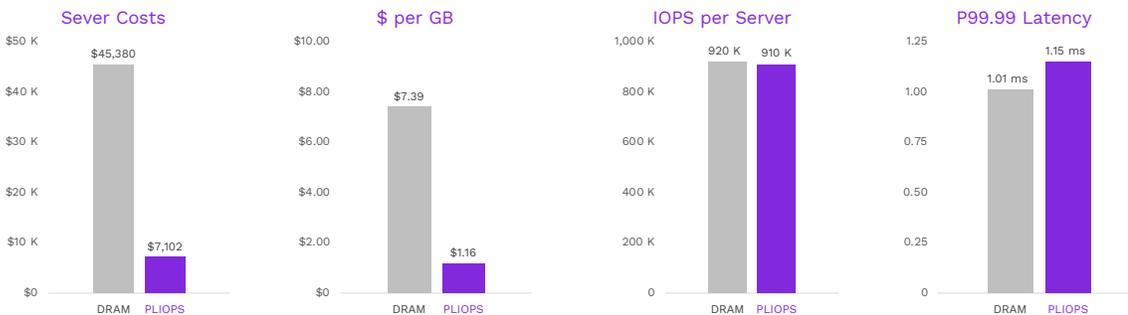


Redis on XDP

By using SSDs with Pliops XDP, they will achieve virtually identical performance with just one server.



Redis on XDP dramatically reduces CapEx and OpEx by minimizing server sprawl, personnel costs, and power and cooling requirements.



84% reduction in costs by utilizing Pliops XDP

Unlike past attempts to use SSDs to reduce DRAM usage for in-memory databases, Pliops XDP does not rely on workload locality or specific hot/cold access patterns to achieve these results. In the specific use case cited above, a uniform access pattern was used with nearly 90% of the IOs delivered by Pliops-accelerated SSDs. This means a Redis service can be confidently deployed on Pliops, knowing that your users will have a uniformly high-performance experience.

Better Business Performance at Significant Savings

For applications which require real-time responsiveness and where machine-learning driven insights are a competitive necessity, Redis delivers meaningful advantages. With Pliops XDP, companies no longer have to choose between performance, cost, reliability and efficiency in their Redis infrastructure.

By offloading inherently inefficient operations to the Pliops XDP, Redis environments can take full advantage of flash's lower cost and inherent persistence while not sacrificing performance and latency requirements. With Pliops, you can deliver the same performance levels as a DRAM-based solution, with 90% fewer servers and 84% lower \$/GB. This makes Redis a compelling and affordable option for more use cases, and a more profitable product line for leading cloud service providers.

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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.**