Overcome Blast Radius Anxiety–High Capacity NVMe SSDs with Full Performance Drive Failure Protection

Pliops Extreme Data Processor (XDP) and Samsung PM1733 NVMe SSDs

Technical Brief

NO COMPROMISE RAID 5/6 STYLE RELIABILITY: Samsung 15.36 TB NVMe SSDs deployed with Pliops XDP offers full performance Drive Failure Protection (DFP), ultra-fast rebuilds, full capacity use, and extended endurance for longer drive life.

Highlights

There is an immediate need for a new generation of hardware-accelerated data processing and storage management technology to support the current wave of high-capacity NVMe SSDs adoption. The increase in SSD storage capacity means a drive failure can significantly impact system availability, performance, and data protection. Pliops addresses this by eliminating blast radius anxiety. Key features include:

No Compromise Drive Failure Protection (DFP)

Pliops DFP provides no compromise RAID 5/6 style reliability without the performance and capacity penalties of traditional RAID solutions. Pliops DFP with Samsung SSDs enables drive rebuilds at **19.5 min/TB** with minimal performance impact and are **7.7x faster** than HW RAID 5.

Unmatched Performance

Meeting the performance needs of data-intensive workloads is increasingly costly by adding more server and CPU resources. Samsung PM1733 NVMe SSDs paired with Pliops XDP delivers over **2x better** performance for 16K 50/50 workload at 256 Queue Depth, with 96% user data fill.

Breakthrough Capacity Scaling

Pliops XDP increases capacity savings up to **6x** with inline compression while enabling full drive capacity usage. Endurance is enhanced up to **7x** for longer drive life through a dramatic reduction in write, read, and space amplification.

Applications

RDBMS: MySQL, MariaDB, PostgreSQL, and others
NoSQL: MongoDB, Cassandra, Redis, and others
Storage Software: Ceph, Gluster, and others
Analytics: Apache Spark, Kafka, and others

Benefits

- Accelerated performance with ultra-fast rebuilds
- Simple, flexible deployment; no changes required
- Higher data protection and efficiency, at scale
- Single solution across applications and use cases

Samsung | Pliops Solution

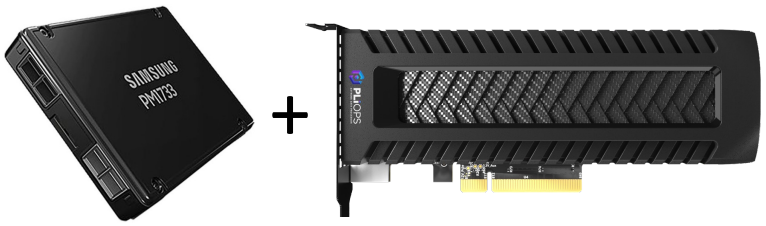
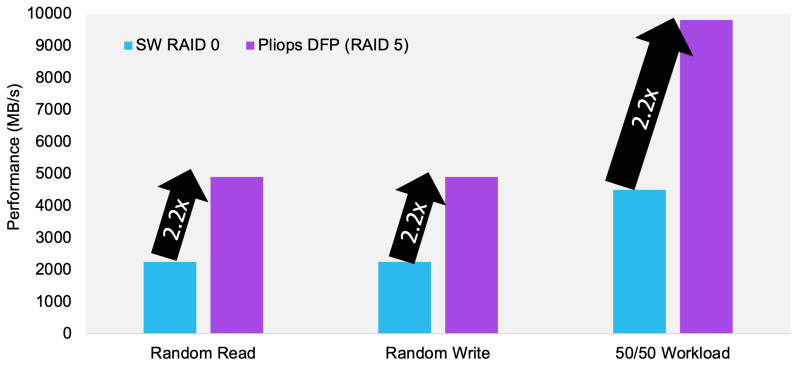


Figure 1. Samsung PM1733 NVMe SSD and Pliops Extreme Data Processor (XDP)

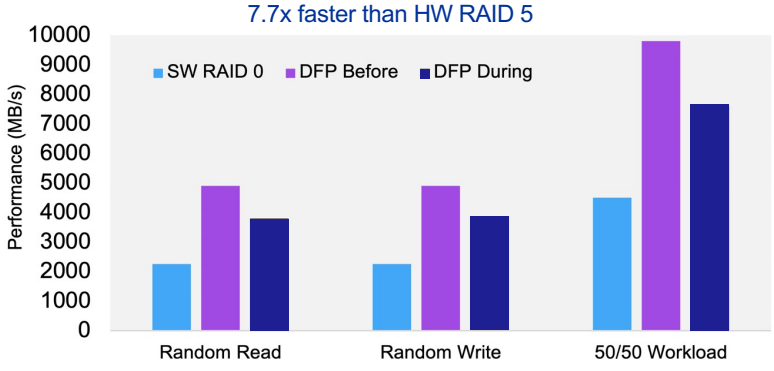
Solution Testing

The following is a sampling of test results comparing the performance of SW RAID 0 against Pliops DFP (RAID 5). Test configuration designed with one Dell PowerEdge R750 server, four Samsung 15.36 TB SSDs and a single Pliops XDP using a Linux® FIO benchmark tool: 16K 50 /50 read/write workload at QD 256 with 96% user data fill.

2.2x Performance Gain with RAID 5 Protection



Pliops DFP Rebuilds Data at 19.5 Minutes/TB with Minimal Performance Impact
7.7x faster than HW RAID 5



PLiOPS EXTREME DATA PROCESSOR