(intel)

Boost Storage Performance Using Intel® Optane™ SSDs and Intel® QLC SSDs

Boost storage performance using Intel® Optane™ technology and Intel® QLC SSDs with Intel® Cache Acceleration Software.

Challenge: Applications require fast and responsive storage systems at a low cost

Storage applications are responsible for servicing millions of requests every day. Many enterprise storage solutions are run on hard-disk drive media. In order to meet high-speed application needs, many users have migrated to TLC SSD back-end infrastructures for added performance boosts. For others, a more economical alternative is preferred. In response, Intel introduces a unique solution implementing Intel® SSD D5-P4320 + QLC, Intel® Optane™ SSD DC P4800X, and Intel® Cache Acceleration Software (Intel® CAS) to increase storage application performance in a cost-effective manner.

Solution: Intel® Optane™ Technology and QLC deliver up to 1.9x increase in IOPS[1]

In this reference solution an I/O workload was generated using the FIO tool with a 70:30 read/write ratio, 4KB block size, and random reads/writes. Under this workload, the Intel® Optane™ SSD DC P4800X caching for a back-end Intel® Virtual RAID on CPU (Intel® VROC) RAID5 array of SSD D5-P4320 + QLC yielded a 1.9x increase in IOPS performance along with a 3.1x decrease in average latency relative to a TLC configuration composed of Intel® SSD DC P4510 + TLC in an Intel VROC RAID5 array.[1] Additionally, these improvements were attained at a reduced economic price point.[2] This enables storage solution deployment at lower cost and higher performance with an Intel® Optane™ technology-driven solution.[1]
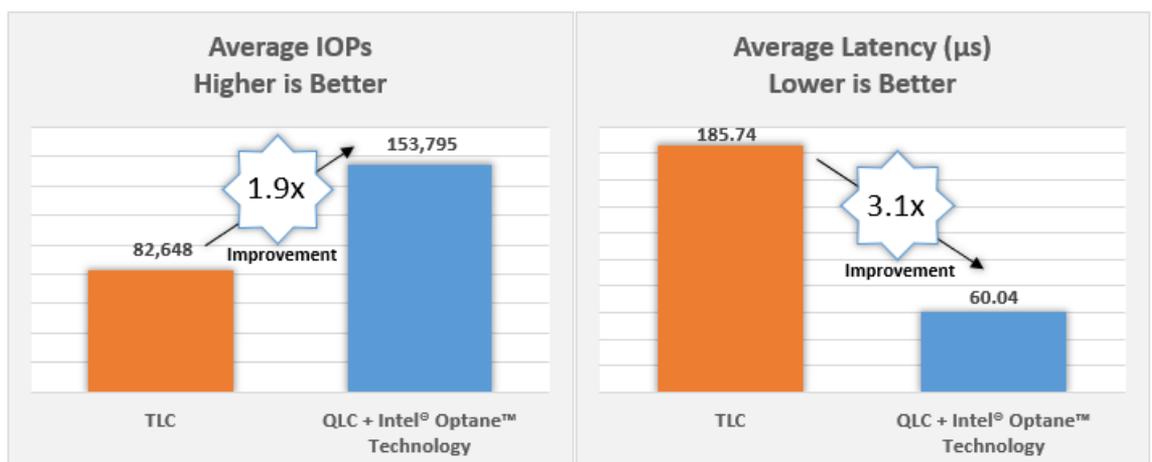

Figure 1: IOPS and latency improvements for Intel® Optane™ Technology + Intel® QLC SSDs vs. TLC

Conclusion

This reference solution utilizing Intel® QLC SSDs, Intel® Optane™ Technology and Intel® CAS allows users to unleash the higher performance and predictable latency of Intel® Optane™ Technology while leveraging the cost-effectiveness of Intel® QLC SSDs.