DataBase throughput is enhanced with the Tegile Zebi architecture

Metadata Accelerated Storage hybrid array provides premium functionality at low cost per GB

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All solid state arrays, once an expensive oddity, are getting adopted at an ever-increasing rate. But in the race to exploit the speed of NAND flash, important functionality is often ignored when pure speed is not taken into context with cost. DataBase Administrators are under pressure to speed the transaction response time and reduce latencies, but are under pressure to do this without breaking the storage budget. Mixing the right amount of solid state memory, including DRAM and NAND with more economical (on a cost per GB basis) rotating media has many advantages. If the solid state storage is optimized with best practices of data reduction, metadata management, cache techniques and data pinning, hybrid arrays can deliver similar performance to all-solid-state arrays at a small fraction of the cost as measured on a GB or TB basis. Tegile has delivered on the advantages of the hybrid array with its Zebi unified storage arrays.

Performance Storage Basics

The requirements of thin provisioning, deduplication and compression have become standard check-box items in the current generation of enterprise storage systems. But the importance of these features on the performance and ultimate cost of a high performance array is dramatic. Implemented properly, deduplication and compression alone can increase input-output operations per second (IOPS) because less data is involved in the transaction. In a unified storage system, which supports both file and block operations, the placement of meta data, that is the information that describes the data, its owners and its priorities, becomes a major acceleration factor. Tegile has implemented both a read and write cache by enhancing the DRAM memory size with the capacity of the cache allocation on SSD. Unlike a simple write-through read cache where data is always committed to the rotating media before the acknowledgement is sent back to the writer, writes to DRAM are committed to the persistent NAND and then acknowledged, speeding the operation substantially. Since data most recently written is most often read, the availability of recently-written data in the highest speed memory is a performance enhancer. The persistent NAND keeps the data safe even through a system crash. But cache is not the answer to all situations because it is based on history rather than actual. Also, a pure cache can be destroyed by a large sequential write operation which will wipe out the recent data feature with unknown access priority. So for certain data sets, like database logs or even entire priority databases, the ability to ‘Pin’ them into the NAND memory is an important feature. This function allows the DataBase Administrator to tell the Zebi systems which data sets should be held in the NAND memory and not flushed as cached data cools.

High availability and data protection certainty

Tegile has added enterprise-critical features in its entire line of products. It is all well to be the fastest gear in town but if it can’t survive a problem then it is going to be relegated to non-critical applications. Important to Tegile’s value proposition is its ability to deliver features like asynchronous remote replication and hardware optimized for non-stop operation, not to mention the performance numbers to address medium and large-scale database needs. In addition, the delivery of both file and block data from a single system enhances its value and viability into a wide variety of applications, including transaction processing and virtual desktop infrastructure.

What about price performance?

The Zebi systems can support a sustained 200,000 IOPS with an effective price per GB of about $1.00. This represents a new level of price performance for an array with the full set of enterprise features. This assumes a modest 3.5X data reduction from raw capacity to effective capacity.

Our Take:

The Tegile Metadata Accelerated Storage (MASS) architecture in the Zebi hybrid systems represents full-featured enterprise-class storage arrays at a disruptive price performance level. With a full featured software system and unified file and block storage capabilities, we expect Tegile to establish an important market position.
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