tegile

Solution Brief

Accelerating SQL Server on Tegile Intelligent Flash Storage Arrays

Microsoft SQL Server

Highlights

- Crush database latency at a lower cost than traditional storage
- Instantly provision volumes tuned for SQL Server with application-aware provisioning
- Thin provision volumes and compress databases in line to significantly reduce your storage footprint
- Create application-consistent snapshots to prevent data loss and ensure recovery
- Quickly recover from a site disaster with remote replication

Accelerate database throughput and response times while reducing your storage footprint

Your business depends on Microsoft SQL Server databases for data warehousing, analytics and online transaction (OLTP) workloads. It's essential that you deliver consistently high levels of performance and availability. But that can be difficult without the right storage infrastructure. As a result, revenue and productivity can suffer.

Tegile offers a comprehensive portfolio of hybrid and all-flash storage solutions that deliver high I/O per second (IOPS) and sustained low latency at a price that fits most budgets. Each array includes a comprehensive set of data protection and management capabilities and can seamlessly support different storage media (high-performance flash, dense flash, and hard disks) under a single storage operating system. Dial up or down the amount of flash storage to meet your performance needs. Get the lightning-fast performance of flash with the economics of disk.

Dramatically Improve Database Response Times

Tegile Intelligent Flash Storage Arrays are able to reduce SQL Server database transaction wait times to sub-milliseconds with IntelliFlash™. Available across the entire line of Tegile storage arrays, IntelliFlash is a flash-optimized software architecture that seamlessly integrates multiple grades of storage media to deliver optimal performance and capacity.

IntelliFlash achieves this by automatically separating metadata from data. The metadata is then organized, aggregated and placed on high-performance, low-latency storage layers (DRAM and flash) for the fastest possible response times. This stands in stark contrast to traditional storage solutions, which intermingle data with metadata into one storage pool.

IntelliFlash also uses intelligent caching algorithms to place the most frequently accessed application data on DRAM and flash. These caching algorithms are optimized for various I/O patterns and seamlessly adapt to differing media latencies across multiple levels of cache.

Additionally, you can supercharge performance of your SQL Server databases by pinning tempdb and log files to an all-flash storage pool.

Reduce Your Storage Footprint

Compress your databases by 2x – 5x and maintain multiple copies of your data without taking up additional storage space.

Inline compression and deduplication capabilities dramatically reduce the overall storage footprint of your SQL Server databases while helping to improve performance. Data blocks are compressed and redundant data blocks are removed before they are written to disk. You can choose the compression rate and turn on/off deduplication at the LUN/file share level or at the project level to strike the perfect balance between speed and capacity.

These data reduction techniques also act as a performance multiplier, freeing up space in the high-performance, low-latency storage layers (DRAM and flash) for faster reads and writes. The deduplication reference table comfortably resides in dedicated SSDs for the fastest possible processing.

And since this all occurs as the data is ingested, it is transparent to the requesting application. Data will appear to the requestor as if it were in its original state (uncompressed and hydrated).

All Flash Arrays

Very High Performance
Low Latency

- Dense all-flash arrays for sustained low latency
- 48TB of all-flash in 2 rack units
- 336TB in 10 rack units
- Sub-millisecond latency

Hybrid Arrays

High Performance
High Capacity

- High performance & high capacity hybrid arrays for most SQL server workloads
- Pin redo logs & temp tables in all flash storage pool
- Run rest of the DB in hybrid storage pool
- Balance of performance, capacity and cost

In-line compression

- Reduce DB Storage consumption by >30%
- Block-level compression
- Performance multiplier
- Turn on/off at LUN/share level

In-line de-duplication

- Reduce space consumption for online backup images by >90%
- Block level de-duplication
- Turn on/off at LUN File-share level
- De-dupe across SSD & HDD

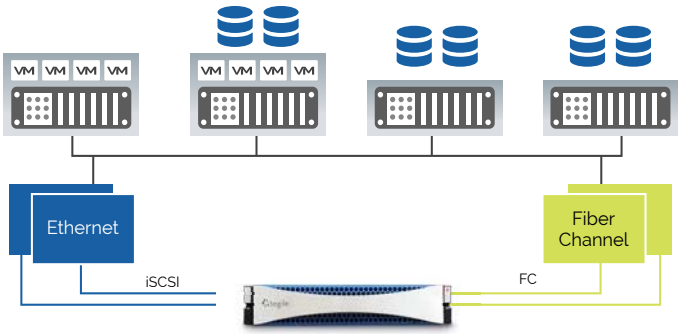
Maximize Storage Efficiency

Increase storage utilization rates by not over-allocating capacity. Thin provisioning on Tegile arrays automatically allocates physical storage as data is being written. Any space that's been allocated but hasn't been consumed remains available for other applications.

Consolidate Workloads with Multi-Protocol Support

IT organizations often deploy multiple storage arrays to fit the protocol needs and workload characteristics of specific databases. Tegile arrays natively support both block and file protocols, enabling you to host SQL Server databases and your other workloads on a single array. Supported file protocols include NFS, CIFS and SMB 3.0. Block protocols include iSCSI and Fibre Channel. All protocols can be used simultaneously over a variety of storage ports.

As you provision storage, you can choose the granularity of the block size and other parameters at the database or individual LUN level. You can also ask the array to do it for you within the user interface. Tegile arrays include application-aware provisioning. Simply select the use-case (database, server virtualization, or VDI), and the array will instantly optimize the volume's configuration (block size, compression algorithm, deduplication settings, etc).



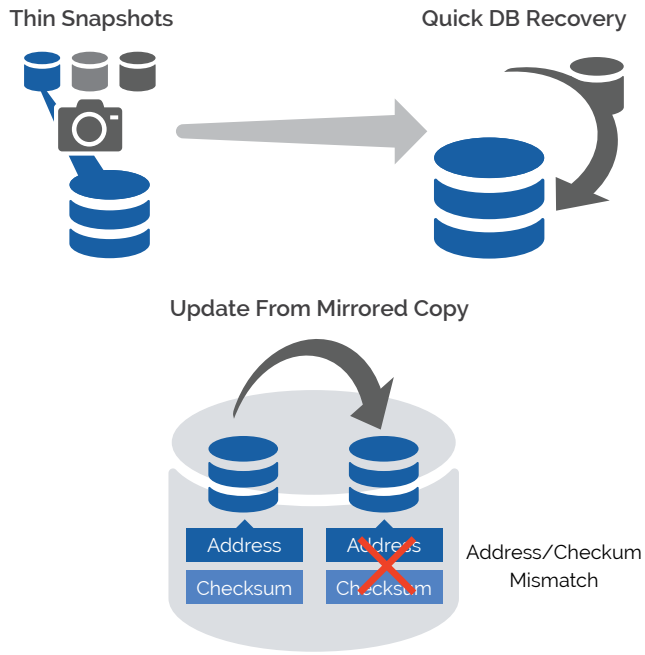
Ensure the Availability and Protection of Your Business-Critical Data

Prevent data loss due to corruption and ensure your data is available 24x7. When deploying SQL Server databases on Tegile arrays, you'll benefit from the resilience, end-to-end data integrity, and high-availability features provided by the IntelliFlash architecture.

With Tegile arrays, there is no single point of failure. All media are dual-ported and accessible through a pair of highly available, redundant controllers. The controllers are configured in an active/active mode and can be configured for simultaneous data access. Capacity expansion, system upgrades, media swaps are performed with zero downtime and minimal performance impact.

To protect against silent data corruption, Tegile arrays perform a checksum process to match data blocks as writes and reads happen and automatically fix corrupt blocks.

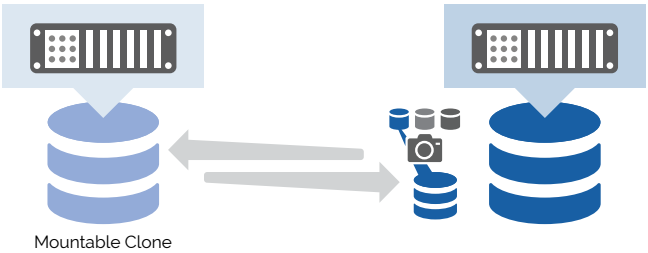
Tegile arrays offers built-in data protection capabilities with a Microsoft VSS (Volume Shadow-copy Services) Provider that ensures point-in-time, application-consistent snapshots for your SQL Server databases. The snapshots are space-efficient and incur no performance overhead. For disaster recovery, you can replicate snapshots to a remote site. Restoring a database is nearly instantaneous from either a local or remote snapshot.



Accelerate Deployment of SQL Server-based Applications

Development, test, and quality assurance (QA) teams often need copies of production databases for a variety of different tasks. And of course doing the work against a live production database is not recommended. In these situations, it's necessary to create clones of the production database. However, that can consume a lot of storage space.

Get new applications into production faster while significantly reducing space requirements. Tegile arrays allow you to create multiple read/write clones of the production databases without taking up additional space or incurring a performance hit. Like Tegile snapshots, these thin clones only consume space for the changed blocks.



Scale Performance and/or Capacity as Needed

As your database storage capacity grows, you can add the most economical type of media while maintaining your performance levels. Add expansion shelves with all flash or a combination of flash and hard disk drives. Competing solutions often require all flash—all the time. Or they simply try to use flash drives in a legacy system built for spinning media.

Getting Started

Tegile arrays are Microsoft certified for Windows Server 2012, Windows Server 2008 R2, SQL Server 2014, and SQL Server 2012. To get you started, Tegile and Microsoft have published a joint Fast Track Reference Architecture that gives you a step-by-step deployment guide for SQL Server. Tegile storage arrays a The validated reference architecture was developed through extensive co-engineering and testing between the two companies so that you reduce your operational risk and get the highest performance in the most cost-effective manner.