Boost Performance, Increase Availability, and Speed Responsiveness of your SQL Server Environment

Without Breaking the Bank

OVERVIEW
Organizations rely heavily on SQL Server databases to support mission-critical applications. Yet, surveys indicate that 62% of DBAs experience latency of more than 10 milliseconds when writing to disks. Not only does this slowdown impact the user experience, but also has DBAs spending hours tuning the database. Surveys also indicate that 50% of organizations don’t have an adequate business continuity plan.

Many attempt to solve the performance issue by adding flash storage. However, moving the entire database to flash storage significantly increases cost. To save on cost, the DBAs end up with the burden of having to pick and choose the instances that require high-performance. For higher uptime, DBAs utilize Microsoft Cluster for server availability, but clustering alone cannot overcome storage-related downtime.

DataCore’s advanced software-defined storage solution addresses both the latency and uptime challenges of SQL Server environments. It is easy to use, delivers high-performance and offers continuous storage availability. DataCore Parallel I/O and high-speed ‘in-memory’ caching technologies speed up SQL Server I/O response both for reads and more importantly for writes using storage resources already in place. In addition, it improves database availability by preventing storage-related downtime. The rich set of data services developed over 10 generations and thousands of large scale deployments yield more significant cost savings.

THE CHALLENGE
IT organizations must maintain service level agreements (SLAs) by meeting the demands of applications that work on a SQL Server. To meet these requirements they must deliver superior performance and continuous uptime of each SQL Server instance. The primary objective is to improve response times affordably and the biggest bottleneck is the time it takes to post (write) transactions and complete queries. Furthermore, agile development, CRM, BI, or IOT are increasingly dynamic - requiring faster adaptability to performance, provisioning, and high availability challenges than device level provisioning, analytics and management can provide.

To meet the performance needs, organizations often choose between tuning the database or making expensive storage changes. Tuning requires DBAs to modify queries and / or to change scripts in the development environment and then test for performance and stability before making changes to production. However, most companies don’t have the time or skillset to do such tuning.

Storage changes could lead to either adding flash to the existing storage or rolling in enterprise all-flash storage arrays. Nevertheless, deploying flash to existing storage still requires intimate knowledge of the impacted files. If budgets dictate only using a limited amount of flash, then the whole database will not be in solid state storage. Hence, DBAs must spend numerous hours determining which database files should be placed in the most costly media. If they can afford all-flash storage, then the migration of data and the increase in cost to the storage infrastructure - makes SQL Server projects much more expensive than originally estimated.

Most importantly, flash is a device level optimization and it might be good for reads, but when it comes to writes it is slow. DataCore offers the software necessary to
automatically optimize I/O traffic way before it gets to the storage devices. Its impact is dramatic. Regardless of the back-end mix of flash or disk devices, organizations experience several fold improvements in response times at a fraction of the cost of all-flash arrays³.

For high availability, the majority of organizations use Microsoft SQL Server Standard with Microsoft Failover Cluster. Unfortunately, this solution addresses the server downtime, but not storage outages. Some solve this problem by upgrading to Microsoft SQL Server Enterprise, but that is outside the reach of most organizations, especially when considering the added cost to cover the test/development environments. Disk level or 3rd party host replication offers some safeguards – but doesn’t guarantee against storage downtime or data loss. They need a comprehensive solution that can not only protect them against natural disasters or site failures, but also protect them against storage or datacenter failures.

DBAs have to meet the growing needs of the database and have to create new environments for test/dev. This is something DBAs can handle at the SQL Server level, but IT administrators don’t have the same agility on the storage side – especially when they have to depend on heterogeneous disk arrays. Surveys shows that a majority of enterprises have 2 or more types of storage and 73% have more than 4 types³. Managing heterogeneous storage impacts IT administrator’s agility as they need to manage multiple consoles to take necessary steps to meet SQL server needs.

The challenges associated with meeting SQL Server performance and uptime objectives under tight budget constraints requirements has left IT organizations to either meet SLAs on only select few SQL Server instances, which adds to the complexity, or has them bear the pain of not meeting SLAs at all.

IDEAL SOLUTION
DataCore™ Software-defined Storage (SDS) and Hyper-converged Virtual SAN solutions enable high performance and continuous availability at the lowest TCO. DataCore extends the value of existing storage resources and enables rapid technology adoption, all under comprehensive, infrastructure-wide storage services.

FASTEST I/O RESPONSE
DataCore has been proven to offer the fastest I/O response and the best price-performance for OLTP database workloads representative of SQL Server environments. These claims have been independently verified and can be compared to other alternatives on multiple dimensions.

DataCore SDS and Virtual SAN with DataCore™ Parallel I/O technology increase SQL Server performance by accelerating I/O throughput and response.

DATACORE PARALLEL-I/O: THE NEXT EVOLUTION

FASTEST PERFORMANCE
• Fastest response time in the industry: Utilizing DataCore Parallel I/O Technology, proven by running business-critical database and OLTP workloads using the Storage Performance Council (SPC-1) benchmarks, SANsymphony SDS has been shown to be 3-10x faster any other storage infrastructure product. Data will be made available (reads) and stored (writes) faster, sharply accelerating application response time.
• World leader in price performance: At least 66% better than the next closest competitor, as validated by the SPC-1 benchmark.
• Proven and independently verified: Choosing DataCore helps reduce time and effort to meet your most pressing performance requirements.

DataCore Parallel I/O fully utilizes the power of multi-core servers by overcoming serial I/O processing bottlenecks that are responsible for SQL Server slowdowns. Parallel I/O ensures that I/O-intensive and latency-sensitive SQL Server workloads meet the high performance expectations.
DataCore also adapts to unexpected demand surge by intelligently utilizing high-performance devices where limited space is available. Hardware-independent auto-tiering moves the most performance sensitive data to tier 1 storage while moving the less time sensitive data to lower cost storage. These dynamic optimizations helps you adapt in real-time to the changing workloads of SQL Server applications.

To minimize the impact of business reporting processes on production response, DataCore lets administrator scale nodes and clone (copy) from any storage to any storage. It facilitates a dedicated reporting environment that meets the performance demands of a responsive server without impacting the production performance.

DataCore increases productivity by dramatically reducing the SQL Server query times. It also speeds up jobs and logins. These performance increases do not require investing in expensive hardware, or wasting time and effort fine tuning databases to meet SLAs.

**CONTINUOUS AVAILABILITY**

Although SQL Server administrators utilize Microsoft Failover Cluster for high availability, it alone cannot guarantee storage uptime. High availability for storage is arguably more critical than server availability as 1 in 5 storage failures result in unforeseen outages for entire clusters of servers. DataCore SDS and Virtual SAN enable continuous storage availability, facilitate faster testing of applications and enable more SQL server instances to benefit from uninterrupted access. The combination of DataCore with Microsoft Failover Cluster enables organizations to ensure high-availability for both server and storage across all critical SQL server instances.

With DataCore, organizations can synchronously mirror data between tiers of storage to prevent planned and unplanned storage downtime with zero impact to SQL Server performance. Support for stretch and metro-clusters provide further fault isolation. For additional safeguards against regional disasters, remote asynchronous replication is also available.

**AGILITY**

DataCore simplifies storage management by pooling heterogeneous devices under a central console. It offers rapid provisioning of capacity to the SQL Server Databases – helping eliminate hours or even days of wait time for the DBAs. Furthermore, DataCore pooling provides freedom to substitute storage devices non-disruptively without being tied to any specific storage vendor.

DBAs want to rapidly provision new SQL server instance, but are restricted by the underlying storage. This is due to the planning involved in setting up storage policies, like performance, availability and capacity, before they can provision the instance.

DataCore helps deploy new SQL server instances faster while meeting required performance and availability attributes. With auto-tiering, IT administrators can ensure that each instance is serviced by the most appropriate storage at any given time.

DataCore also improves SQL Server availability during test/dev cycles by enabling rapid clones. These clones can be created on non-production commodity storage, giving SQL Server developers a cost-efficient copy of their own environment, where they can isolate development, testing, patching, training, and quality assurance efforts from the production workloads.

**DATA PROTECTION**

DataCore makes it easy to protect important business data. Its Continuous Data Protection (CDP) technology helps IT organization to roll back to an earlier point-in-time prior to a ransomware, virus attack or other disruptive event where restoring a backup would have caused data loss – helping in significant reduction of Recovery Time Objective (RTO) and Recovery Point Objective (RPO.)

——

“DataCore streamlined the automotive part company’s inventory turn by increasing database performance.”
SUMMARY

In conclusion, DataCore Software-defined Storage and Hyper-converged Virtual SAN solutions empower IT organizations to cost-efficiently accelerate SQL Server performance and attain high levels of availability. Unlike other options, DataCore is proven to have the lowest latency and the best price-performance.

CASE STUDY:
SIGNIFICANTLY INCREASED PERFORMANCE AND AVAILABILITY

A large automotive parts company has been in business for nearly 90 years in the distribution of automotive replacement parts. They are committed to providing just-in-time service to ensure their customers’ success. However, they needed to increase inventory turns and to run daily reports before the start of each business day. This required changing the storage infrastructure of the database environment.

To meet the storage infrastructure needs, they deployed DataCore Software-Defined Storage. Right away they noticed increased performance of their database environment. As a result, they increased productivity because of radically fast inventory reporting that went down from 40 hours to 5 hours; an 800% performance increase.