GRIDSTORE

Gridstore 3:
Optimized for SQL Server Environments

Database environments like Microsoft SQL present demanding challenges to storage environments because of the nature of their I/O. Gridstore's scalable storage solution has been optimized for just these demands. Purpose-built for Windows Server Hyper-V, Gridstore works just as well with physical Windows servers or in a mixed physical and virtual environment. Our patented vController™ software is installed on the server and when combined with our performance-optimized storage nodes, provides end-to-end control of the I/O to deliver maximize application performance. With true Quality of Service (TrueQoS™), administrators are able to prioritize essential applications such as SQL databases in order to deliver the highest levels of service at all times while minimizing the impact of low-priority applications.

Benefits

- Achieve 4x performance at half the cost
- Use QoS to prioritize essential applications like Microsoft SQL Server
- Scale from 3 storage nodes to 250 with no downtime
- Gridstore leverages enterprise-class commercial servers as nodes for low-cost, high-reliability and world-wide service

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"ESG LAB HAS CONFIRMED THAT GRIDSTORE 3.0 STORAGE OFFERS PREDICTABLE SCALABILITY WITH LOW RESPONSE TIMES WHILE PROVIDING EXTREMELY SCALABLE CAPACITY...."

– ESG Research Report
ESG Lab Validation Report: Gridstore 3
January 2014

Gridstore performance-optimized nodes are ideal for delivering the IOPS that databases require. Using flash for caching and rotating media for permanent storage, these nodes deliver the optimal price/performance mix the most important SQL databases require to meet user needs. In providing industry-leading linear scalability of IOPS, throughput and capacity — from 12TB to 3PB via 12TB increments — companies can scale as needed with no downtime.

OLTP Workload[1]

	Total Number of Transactions/Sec		
Workload Generators	Gridstore	iSCSI SAN	FC SAN
2	1,278	508	518
4	3,910	997	989

What the numbers mean:

- Performance scaled nearly linearly as the number of workload generators increased from two to four
- Compared to iSCSI and FC disk arrays, Gridstore delivered nearly 4X the performance at just over half the cost of systems with similar capacity
- By implementing a hybrid flash-and-disk solution, Gridstore achieved superior performance while using 75% fewer physical disks

Gridstore leverages high-quality commercial servers that have enterprise-grade quality and on-site service (as little as 4 hour if necessary) for its storage nodes. Furthermore, the virtual disks on our storage appear as local SAS drives, making it easy to manage with standard Microsoft tools.

Industry Validation

Why This Matters, from ESG Lab Validation Report—2014

Storage scalability, resilience, and performance are significant challenges as organizations embrace server virtualization technology in support of an IT-as-a-service, on-demand delivery model. Traditional storage solutions have relied on monolithic architectures requiring exotic custom hardware and over-provisioning to meet these challenges. More recently, vendors have offered scale-out and clustered solutions in an effort to reduce complexity and ease the pain of implementation and management.

Both server and desktop virtualization are top IT priorities for organizations surveyed by ESG[2]. Predictable performance scalability is a critical concern when systems running diverse applications share a storage system. A burst of I/O activity from one user can lead to poor response times and lost productivity for other users. A highly virtualized environment potentially presents one of the most diverse and challenging mixes of application types and I/O access patterns to a storage system.

ESG Lab has confirmed that Gridstore 3.0 storage offers predictable scalability with low response times while providing extremely scalable capacity using large format nearline drives. ESG Lab testing has validated that the efficiency and performance of the Gridstore architecture can be used to support diverse mixed real-world applications in highly virtualized environments with confidence.

1 ESG Research Report, *ESG Lab Validation Report: Gridstore 3*, January 2014
2 ESG Research Report, *2013 IT Spending Intentions Survey*, January 2013

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Leveraging SQL Server 2014 Features for Backup and DR

Enhancements to AlwaysOn Availability Groups

In order to provide disaster recovery as well as read access for local SQL server databases on Microsoft Azure in SQL Server 2014, Microsoft has enhanced AlwaysOn integration with Windows Azure AlwaysOn integration. This new integration feature enables you to create asynchronous availability group replicas in Windows Azure for disaster recovery. In the event of a local database outage, you can run your SQL Server databases from Windows Azure VMs.

SQL Server Managed Backup to Windows Azure

With SQL Server Managed Backup to Windows Azure, you do not have to specify the type or frequency of the backups for a database. Specify the retention period, and SQL Server Managed Backup to Windows Azure determines the type and frequency of backups for a database, then schedules, performs and maintains the backups on Windows Azure Blob storage service. SQL Server Managed Backup to Windows Azure can be configured at the database level or configured with default settings for an instance of SQL Server.

Key Highlights

- **Ensure critical applications run fast with Gridstore Quality of Service (TrueQoS)**
  Gridstore leverages Microsoft Hyper-V QoS to deliver Gridstore end-to-end TrueQoS™ (Quality of Service). Application performance can be prioritized on a per application basis to deliver highest levels of service to the most business critical applications and limits the impact of noisy and low priority applications. Gridstore is unique in the implementation of end-to-end QoS from the vController (server) to the storage nodes which allows more of the network bandwidth and the storage IOPS for important applications.

- **Easy to manage**
  Gridstore vLUNs appear as a local SAS drive to the Windows server, so they can be administered using standard Windows administration tools on a per VM basis and are 100% compatible with Microsoft Clusters. Integration with Microsoft Windows storage functionality provides for a very cost effective full featured storage solution.

- **Start with what you need today and scale over time**
  Starting with a minimum of three nodes, Gridstore's storage solution is fault tolerant and scalable. Add one or more nodes at a time with no additional configuration requirements. The GridScale™ architecture uses direct I/O from storage nodes to the host servers eliminating the bottlenecks that clustering or a backbone impose, while providing massive parallel performance. The more nodes in a configuration, the more network bandwidth, more cache, more processing power and more capacity that ultimately delivers linear performance scalability.

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t US 855.786.7065 US 650.316.5515 UK +44(0)20 3553 3662 e info@gridstore.com www.gridstore.com