SPC BENCHMARK 2™
EXECUTIVE SUMMARY

XIOTECH CORPORATION
XIOTECH EMPRISE™ 5000
(73 GB DISK DRIVES)

SPC-2™ V1.2.1

Submitted for Review: April 8, 2008
Submission Identifier: B00032

EXECUTIVE SUMMARY

Test Sponsor and Contact Information

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Test Sponsor Primary Contact	Xiotech Corporation – http://www.xiotech.com Ken Bates – ken_bates@xiotech.com 2250 Federal Drive, Suite 100 Colorado Springs, CO 80921-3686 Phone: (719) 388-5509 FAX: (719) 388-5300
Test Sponsor Alternate Contact	Xiotech Corporation – http://www.xiotech.com Tim Hershberger – tim_hershberger@xiotech.com 2250 Federal Drive, Suite 100 Colorado Springs, CO 80921-3686 Phone: (719) 388-5470 FAX: (719) 388-5300
Auditor	Storage Performance Council – http://www.storageperformance.org Walter E. Baker – AuditService@StoragePerformance.org 643 Bair Island Road, Suite 103 Redwood City, CA 94063 Phone: (650) 556-9384 FAX: (650) 556-9385

Revision Information and Key Dates

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SPC-2 Specification revision number	V1.2.1
SPC-2 Workload Generator revision number	V1.0
Date Results were first used publicly	April 8, 2008
Date FDR was submitted to the SPC	April 8, 2008
Date the TSC will be available for shipment to customers	June 25, 2008
Date the TSC completed audit certification	April 7, 2008

Tested Storage Product (TSP) Description

Emprise 5000 from Xiotech Corporation is a revolutionary concept in data storage. It is built on a perfectly balanced building block of performance, reliability, and scalability known as Intelligent Storage Element (ISE) technology.

The ISE is a purpose-built storage environment of tightly integrated components, designed to maximize both performance and reliability. Each ISE includes one or two sealed DataPacs (capacity modules) and dual Managed Reliability Controllers, which locally manage cache, data protection processes, and more.

Built on this ISE foundation, Emprise 5000 is a complete, self-enclosed storage solution, which you can configure to meet your specific needs. In just 3U of rack space, you can have up to 16 terabytes of virtualized capacity or a high performance storage powerhouse for your transactional applications.

Emprise 5000 is easy to attach to your network—either directly or via a Fibre Channel switch. And it requires minimal configuration or administration, so it is perfect for departmental or branch office deployment.

SPC-2 Reported Data

SPC-2 Reported Data consists of three groups of information:

- The following SPC-2 Primary Metrics, which characterize the overall benchmark result:
  - SPC-2 MBPS™
  - SPC-2 Price Performance
  - Application Storage Unit (ASU) Capacity

- Supplemental data to the SPC-2 Primary Metrics.
  - Total Price
  - Data Protection Level

- Reported Data for each SPC Test: Large File Processing (LFP), Large Database Query (LDQ), and Video on Demand Delivery (VOD) Test.

| SPC-2 Reported Data				
Xiotech Emprise™ 5000 *(73 GB disk drives)*				
SPC-2 MBPS™	**SPC-2 Price-Performance**	**ASU Capacity (GB)**	**Total Price**	**Data Protection Level**
789.79	$46.21	1,073.742	$36,500	Mirroring
The above SPC-2 MBPS™ value represents the aggregate data rate of all three SPC-2 workloads: Large File Processing (LFP), Large Database Query (LDQ), and Video On Demand (VOD)				
SPC-2 Large File Processing (LFP) Reported Data				
	Data Rate (MB/second)	**Number of Streams**	**Data Rate per Stream**	**Price-Performance**
LFP Composite	766.33			$47.63
Write Only:				
1024 KiB Transfer	630.90	32	19.72	
256 KiB Transfer	624.41	32	19.51	
Read-Write:				
1024 KiB Transfer	926.29	32	28.95	
256 KiB Transfer	860.12	32	26.88	
Read Only:				
1024 KiB Transfer	810.63	32	25.33	
256 KiB Transfer	745.65	32	23.30	
The above SPC-2 Data Rate value for LFP Composite represents the aggregate performance of all three LFP Test Phases: (Write Only, Read-Write, and Read Only).				
SPC-2 Large Database Query (LDQ) Reported Data				
	Data Rate (MB/second)	**Number of Streams**	**Data Rate per Stream**	**Price-Performance**
LDQ Composite	796.94			$45.80
1024 KiB Transfer Size				
4 I/Os Outstanding	819.03	32	25.59	
1 I/O Outstanding	813.65	32	25.43	
64 KiB Transfer Size				
4 I/Os Outstanding	791.69	32	24.74	
1 I/O Outstanding	763.38	32	23.86	
The above SPC-2 Data Rate value for LDQ Composite represents the aggregate performance of the two LDQ Test Phases: (1024 KiB and 64 KiB Transfer Sizes).				
SPC-2 Video On Demand (VOD) Reported Data				
	Data Rate (MB/second)	**Number of Streams**	**Data Rate per Stream**	**Price-Performance**
	806.09	1,025	0.79	$45.28

SPC-2 MBPS™ represents the aggregate data rate, in megabytes per second, of all three SPC-2 workloads: Large File Processing (LFP), Large Database Query (LDQ), and Video on Demand (VOD).

ASU (Application Storage Unit) **Capacity** represents the total storage capacity read and written in the course of executing the SPC-2 benchmark.

A **Data Protection Level** of **Mirroring** configures two or more identical copies of user data.

Storage Capacities and Relationships

The following diagram *(not to scale)* documents the various storage capacities, used in this benchmark, and their relationships.

| Application Storage Unit (ASU) Capacity 1,073.742 GB | ← Data Protection *(Mirroring)* 1,073.742 GB → | Sparing – 575.058 GB | Unused – 94.489 GB | Global Storage Overhead – 103.187 GB |

← **Addressable Storage Capacity** →
1,073.742 GB
(10 Logical Volumes –107.374 GB per volume)

← **Configured Storage Capacity** →
2,817.031 GB

← **Physical Storage Capacity** →
2,920.218 GB
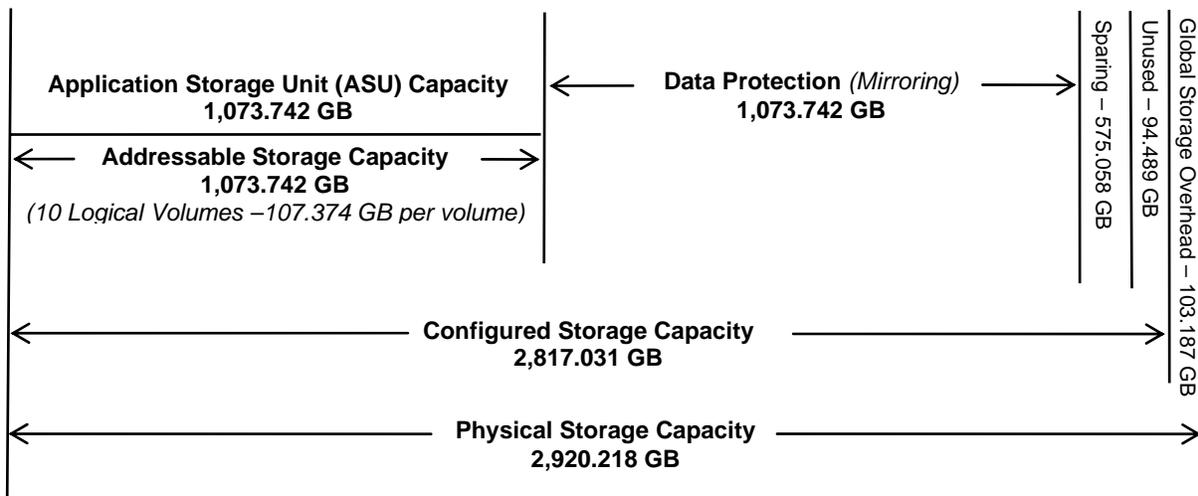
Tested Storage Configuration Pricing *(Priced Storage Configuration)*

P/N	Description	US List	Qty	Extended List	Discount	Total
	Xiotech Emprise High Performance Bundle, including:					
	• 1 800819-000: ISE 1401 array controller					
	• 2 800825-000: 20 DataPac mounted 73 GB 15K FC 2.5″ disk drives					
	• 1 Xiotech MPIO driver for Windows 2003					
	• 1 QLogic QLA2462 4 Gb dual port FC HBA					
	• 2 6.6 foot optical FC cables					
	• Five year 7/24 maintenance coverage with 4-hour response and					
800861-000	resolution.	$60,833	1	$60,833	40%	$36,500

Differences between the Tested Storage Configuration (TSC) and Priced Storage Configuration

There were no differences between the TSC and the Priced Storage Configuration.

Benchmark Configuration/Tested Storage Configuration Diagram

HS-1

Dell PowerEdge 2850

**dual-ported, 4 Gb
Qlogic 2462 HBA**
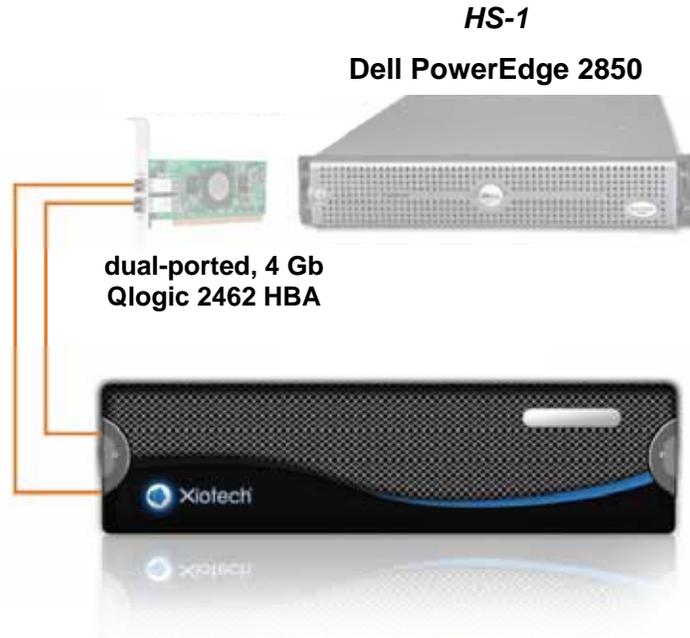
SC-1/SC-2

Xiotech Emprise 5000
(dual-active controllers)

2 – DataPacs each with 20 disk drives
(40 – 73 GB 15K RPM disk drives)

Host System(s) and Tested Storage Configuration Components

Host System:	Tested Storage Configuration (TSC):
HS-1: Dell PowerEdge 2850	1 – dual-ported, 4Gb Qlogic 2462 HBA
2 – 3.6 GHz Xeon CPUs with 2 MB L2 cache per CPU	**SC-1/SC-2: Xiotech Emprise 5000**
2 GB main memory	**2 – dual-active controllers each with:**
Windows Server 2003 Standard Edition with SP2	512 MB cache 1 – 4 Gb Fibre Channel host connections *(2 total, 2 used)*
Xiotech MPIO driver, Build 280	2 – 4 Gb Fibre Channel initiators
PCI-X	*(4 total, 4 used)*
WG	2 – DataPacs each with 20 disk drives
	40 – 73 GB 15K RPM disk drives