SPC BENCHMARK 1C™

EXECUTIVE SUMMARY

SEAGATE TECHNOLOGY LLC *(TEST SPONSOR)*

WESTERN DIGITAL WD RE2-GP WD1000FYPS

SPC-1C™ V1.1

Submitted for Review: October 15, 2008
Submission Identifier: C00005

EXECUTIVE SUMMARY

Test Sponsor and Contact Information

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Revision Information and Key Dates

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SPC-1C Specification revision number	V1.1
SPC-1C Workload Generator revision number	V1.0
Date Results were first used publicly	October 15, 2008
Date the FDR was submitted to the SPC	October 15, 2008
Date the TSC is available for shipment to customers	currently available
Date the TSC completed audit certification	October 1, 2008

Tested Storage Product (TSP) Description

As demand for storage continues to expand, the need for more efficient power solutions becomes paramount. WD RE2-GP makes it possible for large scale data centers to increase storage capacity without exceeding available power, and in many cases actually reduce power consumption. WD RE2-GP drives help combat the four major challenges large data installations face—total drive slots, maximum capacity, power allotment, and available operations expense budget—while lowering the overall total cost of ownership.

Summary of Results

SPC-1C Results	
Tested Storage Product: Western Digital WD RE2-GP WD1000FYPS	
Metric	**Reported Result**
SPC-1C IOPS™	170.04
Total ASU Capacity	500.103 GB
Data Protection Level	Unprotected
Total Price – Priced Storage Configuration	$451.73

SPC-1C IOPS™ represents the maximum I/O Request Throughput at the 100% load point.

Total ASU (Application Storage Unit) **Capacity** represents the total storage capacity read and written in the course of executing the SPC-1C benchmark.

A **Data Protection Level** of "Unprotected" makes no claim of data protection in the event of a single point of failure.

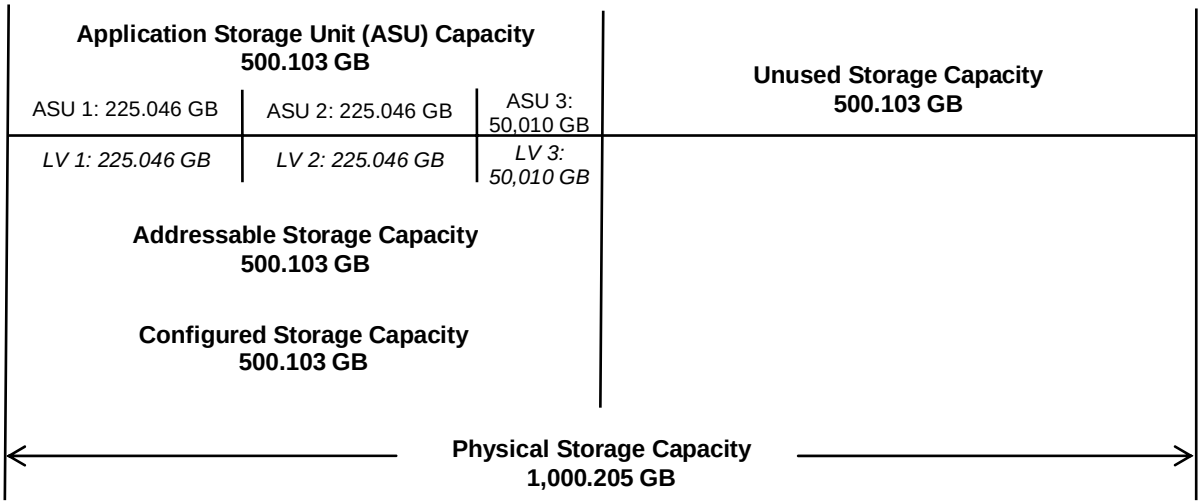
Storage Capacities and Relationships

The Tested Storage Configuration (TSC) must be configured so that there is either no Unused Storage or that the sum of Total ASU Capacity and storage required for data protection equals 50% (+-1 GiB) of the Physical Storage Capacity. This configuration meets the 50% requirement as documented below:

1,000.205 GB *(Physical Storage Capacity)* *** 0.5 = 500.102 GB**

500.103 GB *(Total ASU Capacity)* **+ 0.000 GB** ***(data protection)*** **= 500.103 GB**

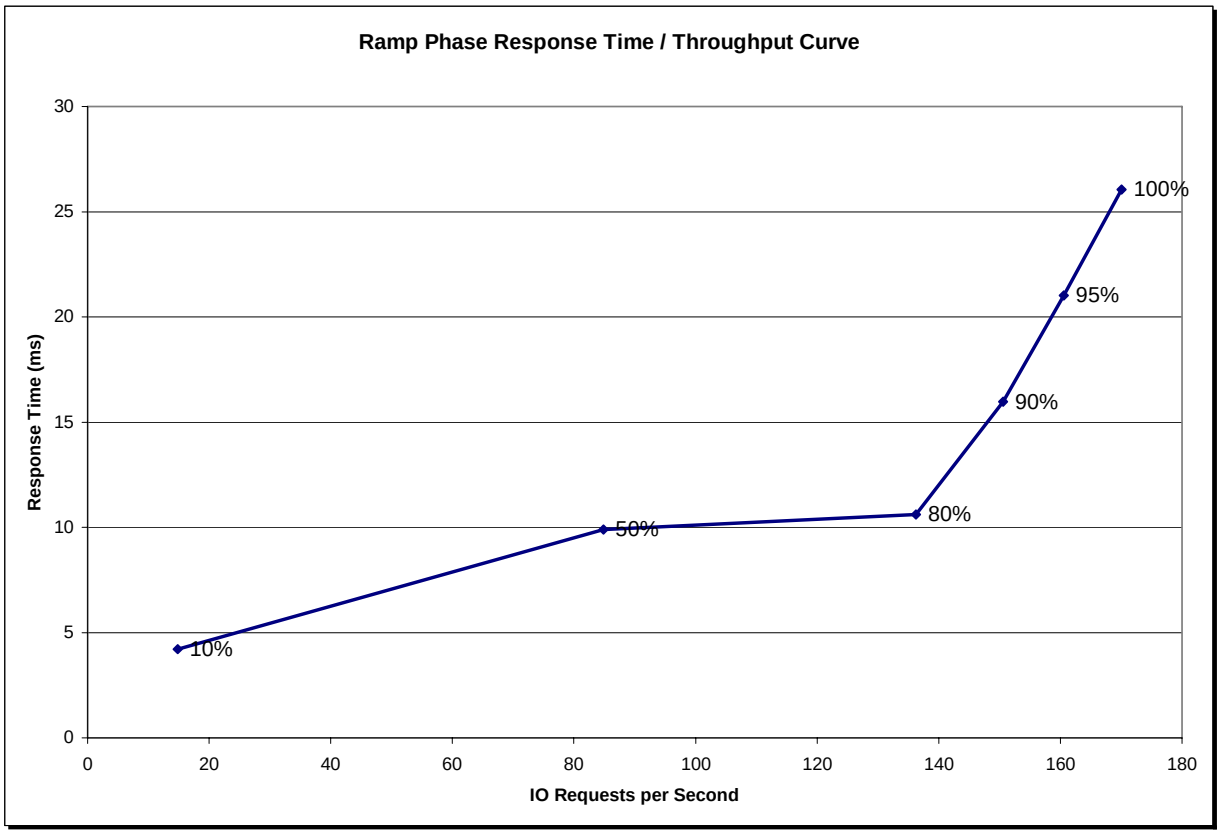
The following diagram documents the various storage capacities, used in this benchmark, and their relationships.



Response Time – Throughput Curve

The Response Time-Throughput Curve illustrates the Average Response Time (milliseconds) and I/O Request Throughput at 100%, 95%, 90%, 80%, 50%, and 10% of the workload level used to generate the SPC-1 IOPS™ metric.

The Average Response Time measured at the any of the above load points cannot exceed 30 milliseconds or the benchmark measurement is invalid.



Response Time – Throughput Data

	10% Load	50% Load	80% Load	90% Load	95% Load	100% Load
I/O Request Throughput	14.83	84.85	136.23	150.58	160.61	170.04
Average Response Time (ms):						
All ASUs	4.22	9.90	10.62	15.97	21.02	26.05
ASU-1	5.86	13.51	14.11	20.16	26.74	32.46
ASU-2	5.11	13.67	15.51	26.43	35.66	45.88
ASU-3	0.42	0.54	1.08	2.27	2.68	3.39
Reads	9.69	24.13	25.42	36.64	48.62	59.92
Writes	0.57	0.49	0.99	2.47	3.24	4.09

Tested Storage Configuration Pricing *(Priced Storage Configuration)*

Description	Part Numbers	Qty	Price	Extended Price
1TB GB SATA 3.5" HDD	WDWD1000FYPS	1	238.65	238.65
SAS HBA	LSI00033-F	1	213.08	213.08
(incl 4 SAS/SATA -1M Cables)				
			Total	$451.73

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

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

Benchmark Configuration/Tested Storage Configuration Diagram

Benchmark Configuration/Tested Storage Configuration Components

Host System:	Tested Storage Configuration (TSC):
HS-1	1 – LSI SAS3041X-R HBA
"White Box" Host System: Supermicro X6DH*-XG2 motherboard 2 – 2.8 GHz Intel® Xeon™ CPUs 16 KB L1 cache per CPU 1024 KB L2 cache per CPU 2 GB main memory	1 – Western Digital WD RE2-GP WD1000FYPS SATA disk drive
	1 – Point-to-point cable connection
Windows 2003 Enterprise Edition	
PCIe	