



**SPC BENCHMARK 1™  
EXECUTIVE SUMMARY**

**HUAWEI TECHNOLOGIES CO., LTD.  
HUAWEI OCEANSTOR™ DORADO2100**

**SPC-1 V1.12**

**Submitted for Review: December 29, 2011**

**Submission Identifier: A00112**

**Revised: December 13, 2012**

## EXECUTIVE SUMMARY

### Test Sponsor and Contact Information

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<b>Test Sponsor Primary Contact</b>	Huawei Technologies Co., Ltd. – <a href="http://www.huawei.com/en/">http://www.huawei.com/en/</a> Eric He – <a href="mailto:eric.heji@huawei.com">eric.heji@huawei.com</a> No. 1899, Xiyuan Road Chengdu, 611731 P.R. China Phone: 0086 28 65281999 FAX: 0086 28 64686419
<b>Test Sponsor Alternate Contact</b>	Huawei Technologies Co., Ltd. – <a href="http://www.huawei.com/en/">http://www.huawei.com/en/</a> Jarvis Wang – <a href="mailto:wangyaohui@huawei.com">wangyaohui@huawei.com</a> No. 1899, Xiyuan Road Chengdu, 611731 P.R. China Phone: 86 28 65281956 FAX: 86 28 64696419
<b>Auditor</b>	Storage Performance Council – <a href="http://www.storageperformance.org">http://www.storageperformance.org</a> Walter E. Baker – <a href="mailto:AuditService@StoragePerformance.org">AuditService@StoragePerformance.org</a> 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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<b>SPC-1 Specification revision number</b>	V1.12
<b>SPC-1 Workload Generator revision number</b>	V2.2.0
<b>Date Results were first used publicly</b>	December 29, 2011
<b>Date the FDR was submitted to the SPC</b>	December 29, 2011
<b>Date revised FDR was submitted to the SPC</b> Updated company name, logo and product name to reflect the complete acquisition of Huawei Symantec by Huawei Technologies Co., Ltd. <b>Revision History:</b> January 12, 2012 Corrected Total Price in Audit Certification (page vii of the FDR)	December 13, 2012
<b>Date the Priced Storage Configuration is available for shipment to customers</b>	currently available
<b>Date the TSC completed audit certification</b>	December 28, 2011

### Tested Storage Product (TSP) Description

The Huawei OceanStor™ Dorado2100 (Dorado2100) is an FC-SAN solid state storage product designed for the enterprise-level high-performance storage market. Dorado2100 is designed with an SSD storage system architecture, advanced cache management and I/O scheduling algorithm to present stunning performance. It fits into scenarios such as large database query/retrieval, high-performance computing, and video editing.

## Summary of Results

SPC-1 Reported Data	
Tested Storage Product (TSP) Name: Huawei OceanStor™ Dorado2100	
Metric	Reported Result
SPC-1 IOPS™	100,051.99
SPC-1 Price-Performance	\$0.90/SPC-1 IOPS™
Total ASU Capacity	1,104.947 GB
Data Protection Level	Protected ( <i>Mirroring</i> )
Total TSC Price (including three-year maintenance)	\$90,320.79

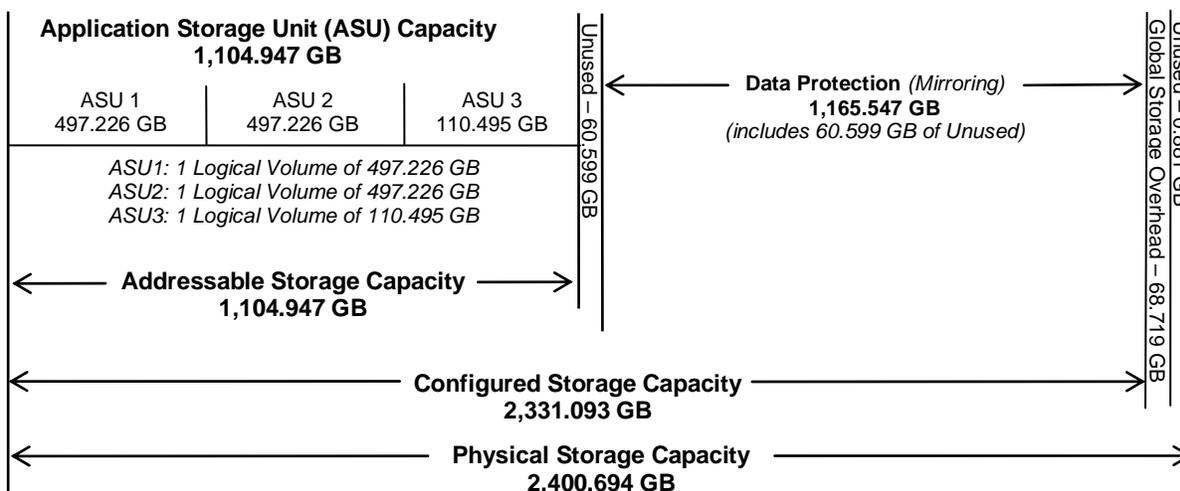
SPC-1 IOPS™ represents the maximum I/O Request Throughput at the 100% load point.

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

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

## Storage Capacities, Relationships, and Utilization

The following diagram and table document the various storage capacities, used in this benchmark, and their relationships, as well as the storage utilization values required to be reported.



<b>SPC-1 Storage Capacity Utilization</b>	
Application Utilization	46.03%
Protected Application Utilization	92.05%
Unused Storage Ratio	5.09%

**Application Utilization:** Total ASU Capacity (*1,104.947 GB*) divided by Physical Storage Capacity (*2,400.694 GB*)

**Protected Application Utilization:** Total ASU Capacity (*1,104.947 GB*) plus total Data Protection Capacity (*1,165.547 GB*) minus unused Data Protection Capacity (*60.599 GB*) divided by Physical Storage Capacity (*2,400.694 GB*)

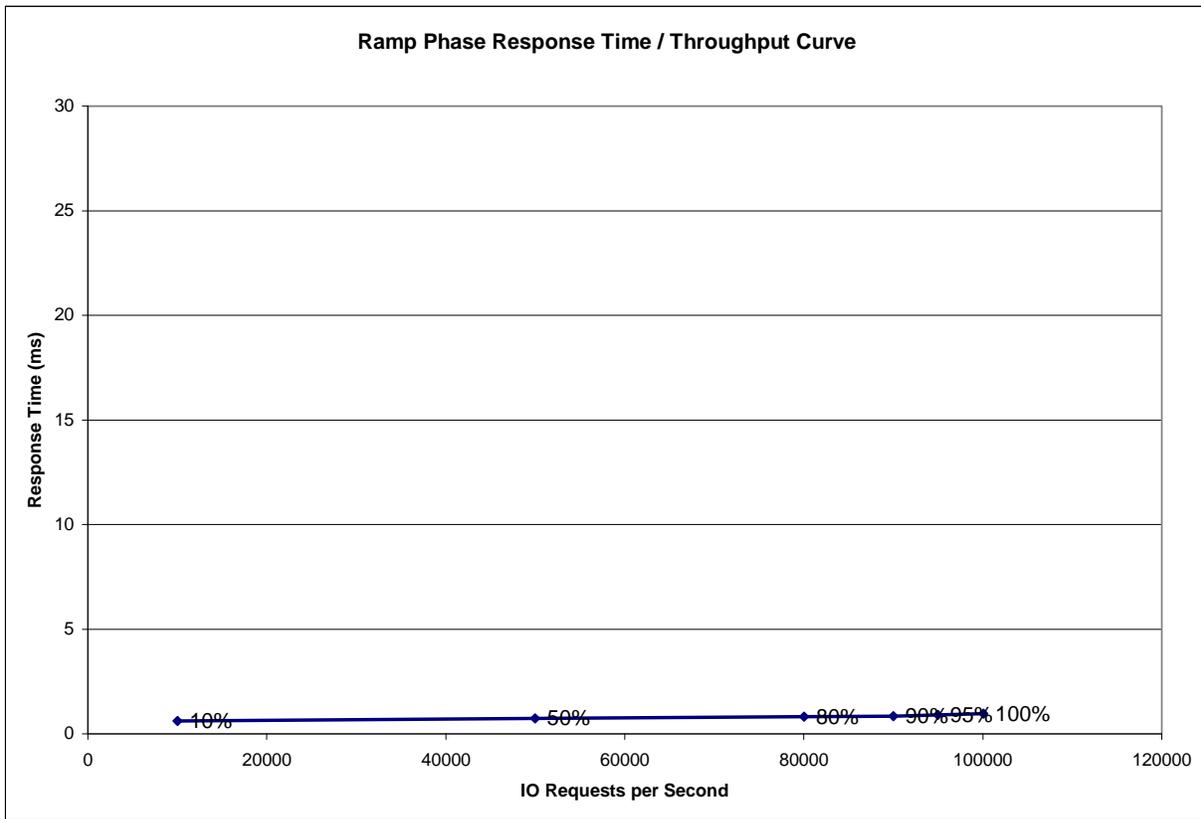
**Unused Storage Ratio:** Total Unused Capacity (*122.079 GB*) divided by Physical Storage Capacity (*2,400.694 GB*) and may not exceed 45%.

Detailed information for the various storage capacities and utilizations is available on pages 19-20 in the Full Disclosure Report.

### 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
<b>I/O Request Throughput</b>	9,995.00	49,988.27	80,024.46	89,996.36	94,984.18	100,051.99
<b>Average Response Time (ms):</b>						
All ASUs	0.61	0.74	0.81	0.85	0.90	0.95
ASU-1	0.56	0.62	0.70	0.74	0.77	0.79
ASU-2	0.75	0.76	0.85	0.89	0.93	0.95
ASU-3	0.64	1.00	1.02	1.05	1.16	1.30
Reads	0.64	0.66	0.79	0.85	0.89	0.92
Writes	0.58	0.80	0.82	0.85	0.91	0.97

## Priced Storage Configuration Pricing

Product:Dorado2100				
Part #	Description	Quantity	Unit Price (USD)	Total Price(USD)
SDO21SLC24T	Dorado2100 High Performance Solid State Storage System-2.4TB(SPE31C0224,AC,24*100GB SLC SSD,8*8G FC Port,Maximum Supporting 16*8G FC Port,with HS HSSD Controller System Software)	1	52028.66	52028.66
14130321	Patch Cord,DLC/PC-DLC/PC,Multimode,2mm Parallel,3m	8	11.00	88.00
SDO21MP	Dorado2100 Multi-path Software	1	0.00	0.00
SDO21ISM	HS Integrated Storage Manager-Device Management License for Dorado2100(V100R003) (ESSENTIAL)	1	7432.56	7432.56
SDO21SSLCPAE	OceanStor HS Storage Array Control System Software-Include PAE License Certificate (ESSENTIAL)	1	14865.12	14865.12
QLE2562-CK	QLogic Dual Port 8Gb Fibre Channel to PCI Express Host Bus	4	1050.00	4200.00
			Total	78614.34
Warranty Uplift	Maintenance Service	Quantity		
TSGSDO21SLC24T	Upgrade from Standard to Gold service package in warranty period (3 years). Gold service package include:7*24 Remote Support. Access to all new software updates. 4 Business Hours Parts Delivery. 4 Business Hours Engineer Onsite.	1	11706.45	11706.45
			Total	90,320.79

The above pricing includes hardware maintenance and software support for three years, 7 days per week, 24 hours per day. The hardware maintenance and software support provides the following:

- Acknowledgement of new and existing problems with four (4) hours.
- Onsite presence of a qualified maintenance engineer or provision of a customer replaceable part within four (4) hours of the above acknowledgement for any hardware failure that results in an inoperative Priced Storage Configuration that can be remedied by the repair or replacement of a Priced Storage Configuration component.

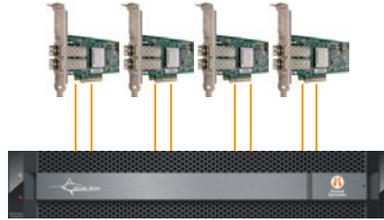
Huawei Technologies Co., Ltd. only sells its products to third-party resellers, who in turn, sell those products to U.S. customers. The above pricing, which also includes the required three-year maintenance and support, was obtained from one of those third-party resellers. See page 66 (“Appendix F: Third-Party Quotation”) of the associated SPC-1 Full Disclosure Report for a copy of the third-party reseller quotation.

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

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

## Priced Storage Configuration Diagram

**4 - Qlogic dual-ported QLE 2562 FC HBAs**  
 8 Fibre Channel Connections



### **Huawei OceanStor™ Dorado2100**

**2 - Active-Active controllers**  
 16 GB per controller (32 GB total)  
 4 - FC 4-port Adapters (8 Gbps)  
 8 – 8 Gbps SFPs  
**24 – 100 GB Solid State Devices (SSDs)**

## Priced Storage Configuration Components

<b>Priced Storage Configuration:</b>
UltraPath for Windows, version 5.2.3790.3959
4 – Qlogic dual-ported QLE2562 FC HBAs
<b>Huawei OceanStor™ Dorado2100</b> <b>2 – Active-Active controllers</b> 16 GB cache per controller (32 total) 4 – FC 4-port 8 Gbps adapters 8 – 8 Gbps SFPs 8 – front-end connections (total and used)
24 – 100 GB Solid State Devices (SSDs)