SPC BENCHMARK 2™
FULL DISCLOSURE REPORT

HUAWEI TECHNOLOGIES CO., LTD.
HUAWEI OCEANSTOR™ 6800 V3

SPC-2™ V1.5

Submitted for Review: January 25, 2016
Submission Identifier: B00076

First Edition – January 2016

THE INFORMATION CONTAINED IN THIS DOCUMENT IS DISTRIBUTED ON AN AS IS BASIS WITHOUT ANY WARRANTY EITHER EXPRESS OR IMPLIED. The use of this information or the implementation of any of these techniques is the customer's responsibility and depends on the customer's ability to evaluate and integrate them into the customer's operational environment. While each item has been reviewed by Huawei Technologies Co., Ltd. for accuracy in a specific situation, there is no guarantee that the same or similar results will be obtained elsewhere. Customers attempting to adapt these techniques to their own environment do so at their own risk.

This publication was produced in the United States. Huawei Technologies Co., Ltd. may not offer the products, services, or features discussed in this document in other countries, and the information is subject to change with notice. Consult your local Huawei Technologies Co., Ltd. representative for information on products and services available in your area.

© Copyright Huawei Technologies Co., Ltd. 2016. All rights reserved.

Permission is hereby granted to reproduce this document in whole or in part, provided the copyright notice as printed above is set forth in full text on the title page of each item reproduced.

Trademarks

SPC Benchmark 2, SPC-2, SPC-2 MBPS, and SPC-2 Price-Performance are trademarks of the Storage Performance Council. Huawei, the Huawei logo and OceanStor are trademarks or registered trademarks of Huawei Technologies Co., Ltd. in the United States and other countries. All other brands, trademarks, and product names are the property of their respective owners.

Table of Contents

Audit Certification viii
Audit Certification *(cont.)* ix
Letter of Good Faith x
Executive Summary 11
Test Sponsor and Contact Information 11
Revision Information and Key Dates 11
Tested Storage Product (TSP) Description 12
SPC-2 Reported Data 13
SPC-2 Reported Data *(continued)* 14
Storage Capacities, Relationships and Utilization 15
Priced Storage Configuration Pricing 18
Priced Storage Configuration Pricing *(continued)* 19
Differences between the Tested Storage Configuration (TSC) and Priced Storage Configuration 19
Priced Storage Configuration Diagram 20
Priced Storage Configuration Components 21
Configuration Information 22
Benchmark Configuration (BC)/Tested Storage Configuration (TSC) Diagram 22
Storage Network Configuration 22
Host System and Tested Storage Configuration Table 22
Benchmark Configuration/Tested Storage Configuration Diagram 23
Host System and Tested Storage Configuration Components 24
Customer Tunable Parameters and Options 25
Tested Storage Configuration (TSC) Creation and Configuration 25
SPC-2 Workload Generator Storage Configuration 25
ASU Pre-Fill 26
SPC-2 Data Repository 27
SPC-2 Storage Capacities and Relationships 27
SPC-2 Storage Capacities 27
SPC-2 Storage Hierarchy Ratios 28
SPC-2 Storage Capacity Charts 28
Storage Capacity Utilization 30
Logical Volume Capacity and ASU Mapping 31
SPC-2 Benchmark Execution Results 32
SPC-2 Tests, Test Phases, Test Run Sequences, and Test Runs 32

Large File Processing Test 34
SPC-2 Workload Generator Commands and Parameters 34
SPC-2 Test Results File 35
SPC-2 Large File Processing Average Data Rates (MB/s) 35
SPC-2 Large File Processing Average Data Rates Graph 36
SPC-2 Large File Processing Average Data Rate per Stream 37
SPC-2 Large File Processing Average Data Rate per Stream Graph 38
SPC-2 Large File Processing Average Response Time 39
SPC-2 Large File Processing Average Response Time Graph 40
Large File Processing Test – WRITE ONLY Test Phase 41
SPC-2 "Large File Processing/WRITE ONLY/1024 KiB Transfer Size" Test Run Data 42
SPC-2 "Large File Processing/WRITE ONLY/1024 KIB Transfer Size" Graphs 42
Average Data Rate – Complete Test Run 42
Average Data Rate – Measurement Interval (MI) Only 42
Average Data Rate per Stream 42
Average Response Time 42
SPC-2 "Large File Processing/WRITE ONLY/256 KiB Transfer Size" Test Run Data 42
SPC-2 "Large File Processing/WRITE ONLY/256 KiB Transfer Size" Graphs 42
Average Data Rate – Complete Test Run 42
Average Data Rate – Measurement Interval (MI) Only 42
Average Data Rate per Stream 42
Average Response Time 42
Large File Processing Test – READ-WRITE Test Phase 43
SPC-2 "Large File Processing/READ-WRITE/1024 KiB Transfer Size" Test Run Data 44
SPC-2 "Large File Processing/READ-WRITE/1024 KIB Transfer Size" Graphs 44
Average Data Rate – Complete Test Run 44
Average Data Rate – Measurement Interval (MI) Only 44
Average Data Rate per Stream 44
Average Response Time 44
SPC-2 "Large File Processing/READ-WRITE/256 KiB Transfer Size" Test Run Data 44
SPC-2 "Large File Processing/READ-WRITE/256 KiB Transfer Size" Graphs 44
Average Data Rate – Complete Test Run 44
Average Data Rate – Measurement Interval (MI) Only 44
Average Data Rate per Stream 44
Average Response Time 44
Large File Processing Test – READ ONLY Test Phase 45
SPC-2 "Large File Processing/READ ONLY/1024 KiB Transfer Size" Test Run Data 46
SPC-2 "Large File Processing/READ ONLY/1024 KIB Transfer Size" Graphs 46
Average Data Rate – Complete Test Run 46

Average Data Rate – Measurement Interval (MI) Only 46
Average Data Rate per Stream 46
Average Response Time 46
SPC-2 "Large File Processing/READ ONLY/256 KiB Transfer Size" Test Run Data 46
SPC-2 "Large File Processing/READ ONLY/256 KiB Transfer Size" Graphs 46
Average Data Rate – Complete Test Run 46
Average Data Rate – Measurement Interval (MI) Only 46
Average Data Rate per Stream 46
Average Response Time 46
Large Database Query Test 47
SPC-2 Workload Generator Commands and Parameters 47
SPC-2 Test Results File 47
SPC-2 Large Database Query Average Data Rates (MB/s) 48
SPC-2 Large Database Query Average Data Rates Graph 48
SPC-2 Large Database Query Average Data Rate per Stream 49
SPC-2 Large Database Query Average Data Rate per Stream Graph 49
SPC-2 Large Database Query Average Response Time 50
SPC-2 Large Database Query Average Response Time Graph 50
Large Database Query Test – 1024 KIB TRANSFER SIZE Test Phase 51
SPC-2 "Large Database Query/1024 KIB TRANSFER SIZE/4 Outstanding I/Os" Test Run Data 52
SPC-2 "Large Database Query/1024 KIB TRANSFER SIZE/4 Outstanding I/Os" Graphs 52
Average Data Rate – Complete Test Run 52
Average Data Rate – Measurement Interval (MI) Only 52
Average Data Rate per Stream 52
Average Response Time 52
SPC-2 "Large Database Query/1024 KIB TRANSFER SIZE/1 Outstanding I/O" Test Run Data 52
SPC-2 "Large Database Query/1024 KIB TRANSFER SIZE/1 Outstanding I/O" Graphs .. 52
Average Data Rate – Complete Test Run 52
Average Data Rate – Measurement Interval (MI) Only 52
Average Data Rate per Stream 52
Average Response Time 52
Large Database Query Test – 64 KIB TRANSFER SIZE Test Phase 53
SPC-2 "Large Database Query/64 KIB TRANSFER SIZE/4 Outstanding I/Os" Test Run Data 54
SPC-2 "Large Database Query/64 KIB TRANSFER SIZE/4 Outstanding I/Os" Graphs 54
Average Data Rate – Complete Test Run 54
Average Data Rate – Measurement Interval (MI) Only 54
Average Data Rate per Stream 54

Average Response Time 54
SPC-2 "Large Database Query/64 KIB TRANSFER SIZE/1 Outstanding I/O" Test Run Data 54
SPC-2 "Large Database Query/64 KIB TRANSFER SIZE/1 Outstanding I/O" Graphs 54
Average Data Rate – Complete Test Run 54
Average Data Rate – Measurement Interval (MI) Only 54
Average Data Rate per Stream 54
Average Response Time 54
Video on Demand Delivery Test 55
SPC-2 Workload Generator Commands and Parameters 55
SPC-2 Test Results File 56
SPC-2 Video on Demand Delivery Test Run Data 56
Video on Demand Delivery Test – TEST RUN DATA BY INTERVAL 57
SPC-2 Video on Demand Delivery Average Data Rate Graph 58
SPC-2 Video on Demand Delivery Average Data Rate per Stream Graph 58
SPC-2 Video on Demand Delivery Average Response Time Graph 59
SPC-2 Video on Demand Delivery Maximum Response Time Graph 59
Data Persistence Test 60
SPC-2 Workload Generator Commands and Parameters 60
Data Persistence Test Results File 60
Data Persistence Test Results 61
Priced Storage Configuration Availability Date 62
Anomalies or Irregularities 62
Appendix A: SPC-2 Glossary 63
"Decimal" *(powers of ten)* Measurement Units 63
"Binary" *(powers of two)* Measurement Units 63
SPC-2 Data Repository Definitions 63
SPC-2 Data Protection Levels 64
SPC-2 Test Execution Definitions 64
I/O Completion Types 67
SPC-2 Test Run Components 67
Appendix B: Customer Tunable Parameters and Options 68
Appendix C: Tested Storage Configuration (TSC) Creation 69
Step 1: Create Mapping View, LUN Group, Host Group and Host 69
Step 2: Create Disk Domains, Storage Pools, LUNs 71
mklun.sh 71
Appendix D: SPC-2 Workload Generator Storage Commands and Parameter Files 83

ASU Pre-Fill **83**
Common Commands/Parameters – LFP, LDQ, VOD and Persistence Tests **85**
Large File Processing Test (LFP) **97**
Large Database Query (LDQ) **98**
Video on Demand Delivery (VOD) **98**
SPC-2 Persistence Test Run 1 *(write phase)* **99**
SPC-2 Persistence Test Run 2 *(read phase)* **99**
Appendix E: SPC-2 Workload Generator Execution Commands and Parameters **100**
Mauto_test.bat **100**
javaremotestart.bat **102**
Appendix F: Third-Party Quotation **103**
Priced Storage Configuration **103**
Priced Storage Configuration *(continued)* **104**

AUDIT CERTIFICATION

Xu Zhong
Huawei Technologies Co., Ltd.
Huawei Chengdu Base
No. 1899, Xiyuan Avenue
Chengdu, 611731 P.R. China

January 24, 2016

The SPC Benchmark 2™ Reported Data listed below for the **Huawei OceanStor™ 6800 V3** was produced in compliance with the SPC Benchmark 2™ V1.5 Remote Audit requirements.

SPC Benchmark 2™ V1.5 Reported Data	
Tested Storage Product (TSP) Name: Huawei OceanStor™ 6800 V3	
Metric	**Reported Result**
SPC-2 MBPS™	42,801.98
SPC-2 Price-Performance	$16.89/SPC-2 MBPS™
ASU Capacity	343,597.384 GB
Data Protection Level	Protected 2 *(RAID-5)*
Total Price *(including three-year maintenance)*	$722,775.69
Currency Used	U.S. Dollars
Target Country for availability, sales and support	USA

The following SPC Benchmark 2™ Remote Audit requirements were reviewed and found compliant with V1.5 of the SPC Benchmark 2™ specification:

- A Letter of Good Faith, signed by a senior executive.
- The following Data Repository storage items were verified by documentation supplied by Huawei Technologies Co., Ltd.:
  - ✓ Physical Storage Capacity and related requirements.
  - ✓ Configured Storage Capacity and related requirements.
  - ✓ Addressable Storage Capacity and related requirements.
  - ✓ Capacity of each Logical Volume and related requirements.
  - ✓ Capacity of the Application Storage Unit (ASU) and related requirements.
- The total Application Storage Unit (ASU) Capacity was filled with random data prior to the execution of the SPC-2 Tests

Storage Performance Council
643 Bair Island Road, Suite 103
Redwood City, CA 94062
AuditService@StoragePerformance.org
650.556.9384

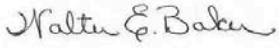
AUDIT CERTIFICATION *(CONT.)*

- An appropriate diagram of the Benchmark Configuration (BC)/Tested Storage Configuration (TSC).
- Documentation supplied by Huawei Technologies Co., Ltd. to verify the components matched the above diagram.
- Listings and commands used to create and configure the Benchmark Configuration/Tested Storage Configuration.
- Documentation that no customer tunable parameter or option was changed from its default value.
- The following Host System items were verified by documentation supplied by Huawei Technologies Co., Ltd.:
  - ✓ Required Host System configuration information.
  - ✓ The TSC boundary within the Host System.
- The following SPC-2 Workload Generator information was verified by documentation supplied by Huawei Technologies Co., Ltd.:
  - ✓ The presence and version number of the Workload Generator on each Host System.
  - ✓ Commands and parameters used to configure the SPC-2 Workload Generator.
- The Test Results Files and resultant Summary Results Files received from Huawei Technologies Co., Ltd. for each of the following were authentic, accurate, and compliant with all of the requirements and constraints of Clauses 6 and 7 of the SPC-2 Benchmark Specification:
  - ✓ Data Persistence Test
  - ✓ Large File Processing Test
  - ✓ Large Database Query Test
  - ✓ Video on Demand Delivery Test
- There were no differences between the Tested Storage Configuration and Priced Storage Configuration.
- The submitted pricing information met all of the requirements and constraints of Clause 9 of the SPC-2 Benchmark Specification.
- The Full Disclosure Report (FDR) met all of the requirements in Clause 10 of the SPC-2 Benchmark Specification.
- This successfully audited SPC measurement is not subject to an SPC Confidential Review.

Audit Notes:

There were no audit notes or exceptions.

Respectfully,



Walter E. Baker
SPC Auditor

Storage Performance Council
643 Bair Island Road, Suite 103
Redwood City, CA 94062
AuditService@StoragePerformance.org
650.556.9384

LETTER OF GOOD FAITH

©Huawei Technologies Co., Ltd.
Huawei Industrial Base, Bantian, Longgang
Shenzhen city
Guangdong province
China
Tel: 0086-755-28780808
http://www.huawei.com/en/

Date: December 16, 2015

From: Huawei Technologies Co., Ltd.

To: Walter E. Baker, SPC Auditor
Gradient Systems, Inc.
643 Bair Island Road. Suite 103
Redwood City, CA 94063-2755

Subject: SPC-2 Letter of Good Faith for the Huawei OceanStor 6800 V3

Huawei Technologies Co., Ltd. is the SPC-2 Test Sponsor for the above listed product. To the best of our knowledge and belief, the required SPC-2 benchmark results and materials we have submitted for that product are complete, accurate, and in full compliance with V1.5 of the SPC-2 benchmark specification.
In addition, we have reported any items in the Benchmark Configuration and execution of the benchmark that affected the reported results even if the items are not explicitly required to be disclosed by the SPC-2 benchmark specification.

Signed: Date: 2015.12.16

Fan Ruiqi
President of Storage Product Line

EXECUTIVE SUMMARY

Test Sponsor and Contact Information

Test Sponsor and Contact Information	
Test Sponsor Primary Contact	Huawei Technologies Co., Ltd. – http://www.huawei.com/en/ Xu Zhong – xuzhong@huawei.com Huawei Chengdu Base No. 1899, Xiyuan Avenue Chengdu, 611731 P.R. China Phone: 86 28 65281927 FAX: 86 28 62282516
Test Sponsor Alternate Contact	Huawei Technologies Co., Ltd. – http://www.huawei.com/en/ Li Huan – tomas.l@huawei.com Huawei Chengdu Base No. 1899, Xiyuan Avenue Chengdu, 611731 P.R. China Phone: 86 28 65281927 FAX: 86 28 62282516
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

Revision Information and Key Dates	
SPC-2 Specification revision number	V1.5
SPC-2 Workload Generator revision number	V1.2
Date Results were first used publicly	January 25, 2016
Date FDR was submitted to the SPC	January 25, 2016
Date the TSC will be available for shipment to customers	currently available
Date the TSC completed audit certification	January 24, 2016

Tested Storage Product (TSP) Description

Huawei OceanStor™ 6800 V3 high-end storage system is the next-generation unified storage product specifically designed for enterprise-class applications. Leveraging a storage operating system, OceanStor OS, built on a cloud-oriented architecture, a powerful new hardware platform, and a suite of intelligent management software, the V3 high-end storage system delivers industry-leading functionality, performance, efficiency, reliability, and ease-of-use. It provides data storage for applications such as large-database Online Transaction Processing (OLTP)/Online Analytical Processing (OLAP), file sharing, and cloud computing, which can be widely applied to industries ranging from government, finance, telecommunications, energy, media and entertainment (M&E). Meanwhile, the V3 high-end storage system can provide a wide range of efficient and flexible backup and disaster recovery solutions to ensure business continuity and data security, delivering excellent storage services.

OceanStor OS, the Huawei OceanStor storage operating system, enables Huawei storage products evolve to the future cloud architecture and deliver the core business platform. It supports all OceanStor Storage arrays, specifically, for managing the underlying infrastructure, the physical space and logical space. OceanStor OS delivers intelligent and convergent services and multiple SLAs to the application scenarios, including SAN and NAS convergence, all-level storage convergence, performance and capacity convergence, primary and backup storage convergence, and heterogeneous storage convergence. OceanStor OS helps customers evolve their traditional storage to cloud services in the future.

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

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).

SPC-2 Price-Performance™ is the ratio of **Total Price** to **SPC-2 MBPS™**.

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

Total Price includes the cost of the Priced Storage Configuration plus three years of hardware maintenance and software support as detailed on page 18.

Data Protection Level of **Protected 2** using ***RAID-5*** by distributing check data corresponding to user data across multiple disks in the form of bit-by-bit parity.

> ***Protected 2:*** *The single point of failure of any* ***component*** *in the configuration will not result in permanent loss of access to or integrity of the SPC-2 Data Repository.*

Currency Used is formal name for the currency used in calculating the **Total Price** and **SPC-2 Price-Performance™**. That currency may be the local currency of the **Target Country** or the currency of a difference country *(non-local currency).*

The **Target Country** is the country in which the Priced Storage Configuration is available for sale and in which the required hardware maintenance and software support is provided either directly from the Test Sponsor or indirectly via a third-party supplier.

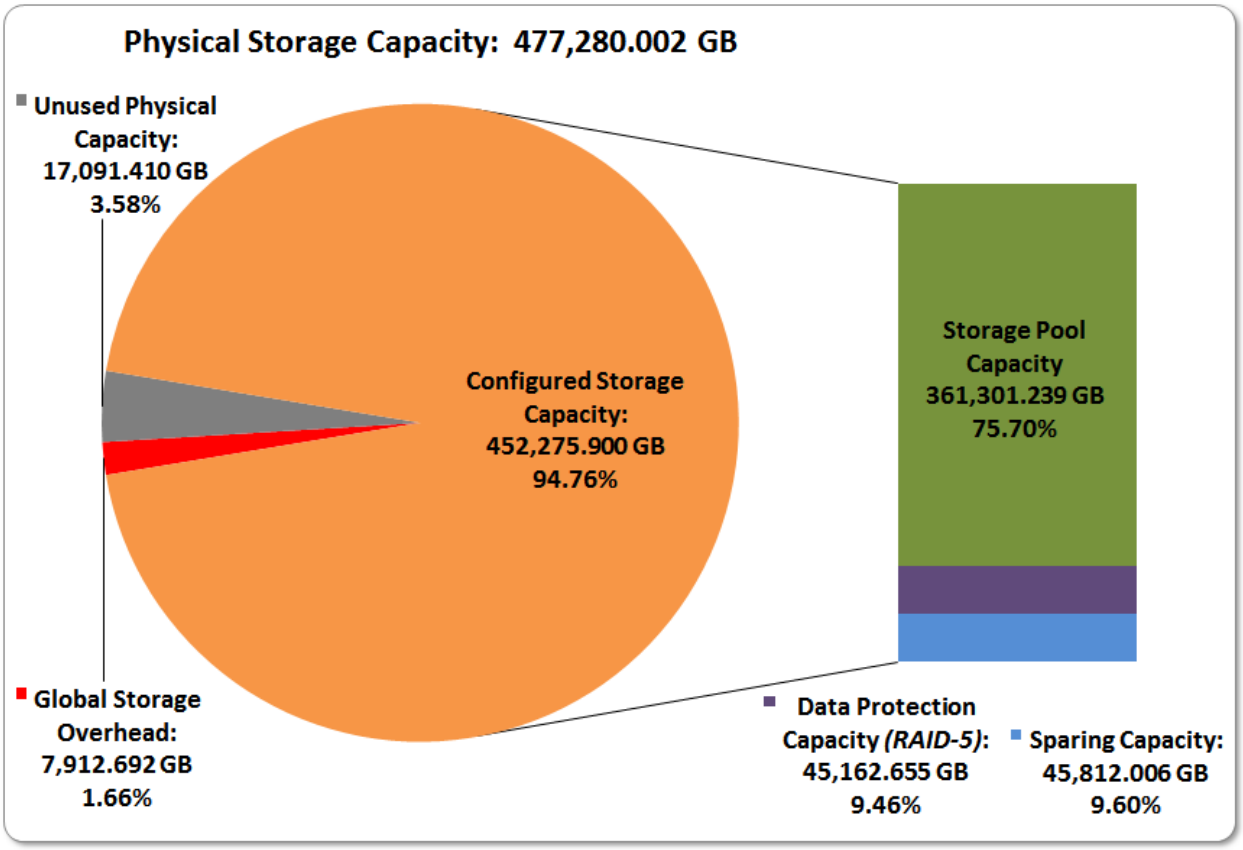
SPC-2 Reported Data *(continued)*

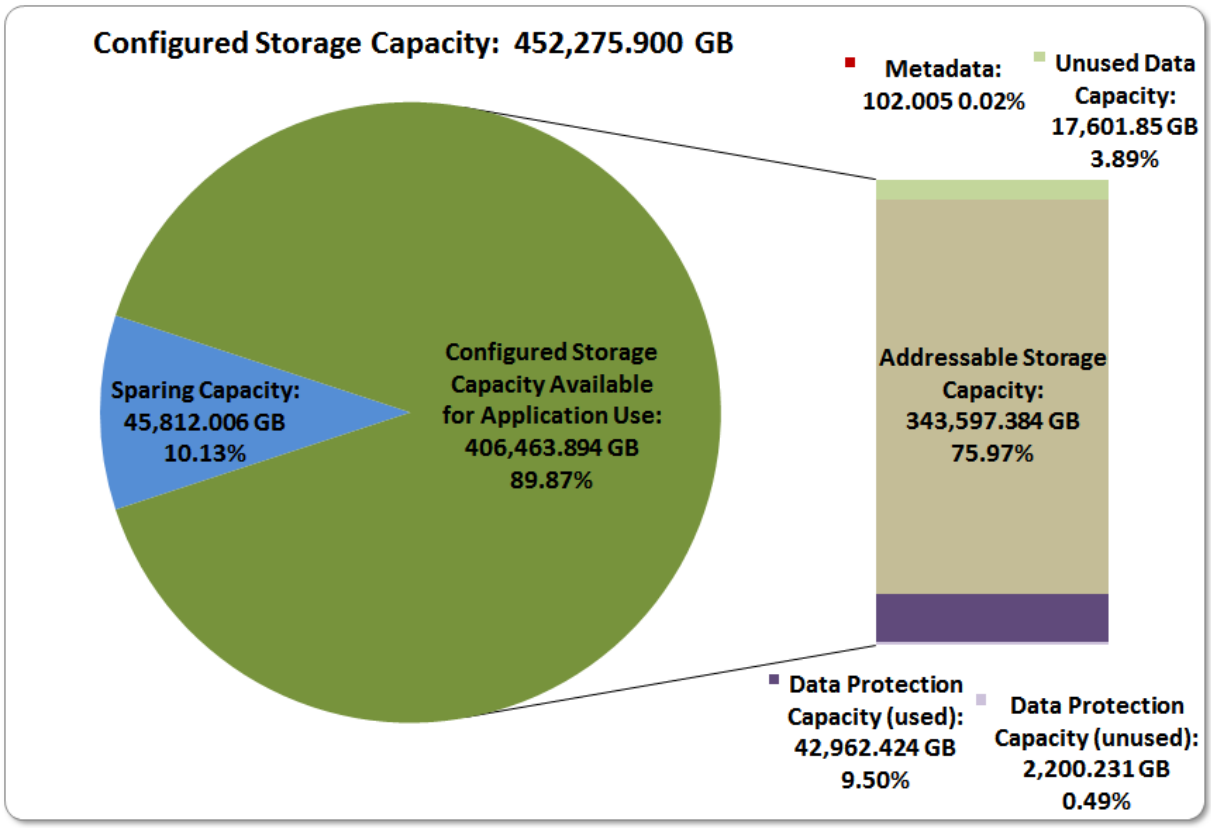
SPC-2 Reported Data				
Huawei OceanStor™ 6800 V3				
SPC-2 MBPS™	**SPC-2 Price-Performance**	**ASU Capacity (GB)**	**Total Price**	**Data Protection Level**
42,801.98	$16.89	343,597.384	$722,775.69	Protected 2 *(RAID-5)*
The above SPC-2 MBPS™ value represents the aggregate data rate of all three SPC-2 workloads: Large File Processing (LFP), Large Database Query (LDQ), and Video On Demand (VOD)				
Currency Used:		**"Target Country":**		
U.S. dollars		USA		
SPC-2 Large File Processing (LFP) Reported Data				
	Data Rate *(MB/second)*	**Number of Streams**	**Data Rate per Stream**	**Price-Performance**
LFP Composite	46,219.13			$15.64
Write Only:				
1024 KiB Transfer	34,271.86	2,000	17.14	
256 KiB Transfer	32,794.37	2,000	16.40	
Read-Write:				
1024 KiB Transfer	49,405.38	2,000	24.70	
256 KiB Transfer	50,818.13	2,000	25.41	
Read Only:				
1024 KiB Transfer	55,480.75	2,000	27.74	
256 KiB Transfer	54,544.28	2,000	27.27	
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	54,661.72			$13.22
1024 KiB Transfer Size				
4 I/Os Outstanding	56,828.51	2,000	28.41	
1 I/O Outstanding	55,369.30	2,000	27.68	
64 KiB Transfer Size				
4 I/Os Outstanding	53,424.77	2,000	26.71	
1 I/O Outstanding	53,024.29	2,000	26.51	
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**
	27,525.10	35,000	0.79	$26.26

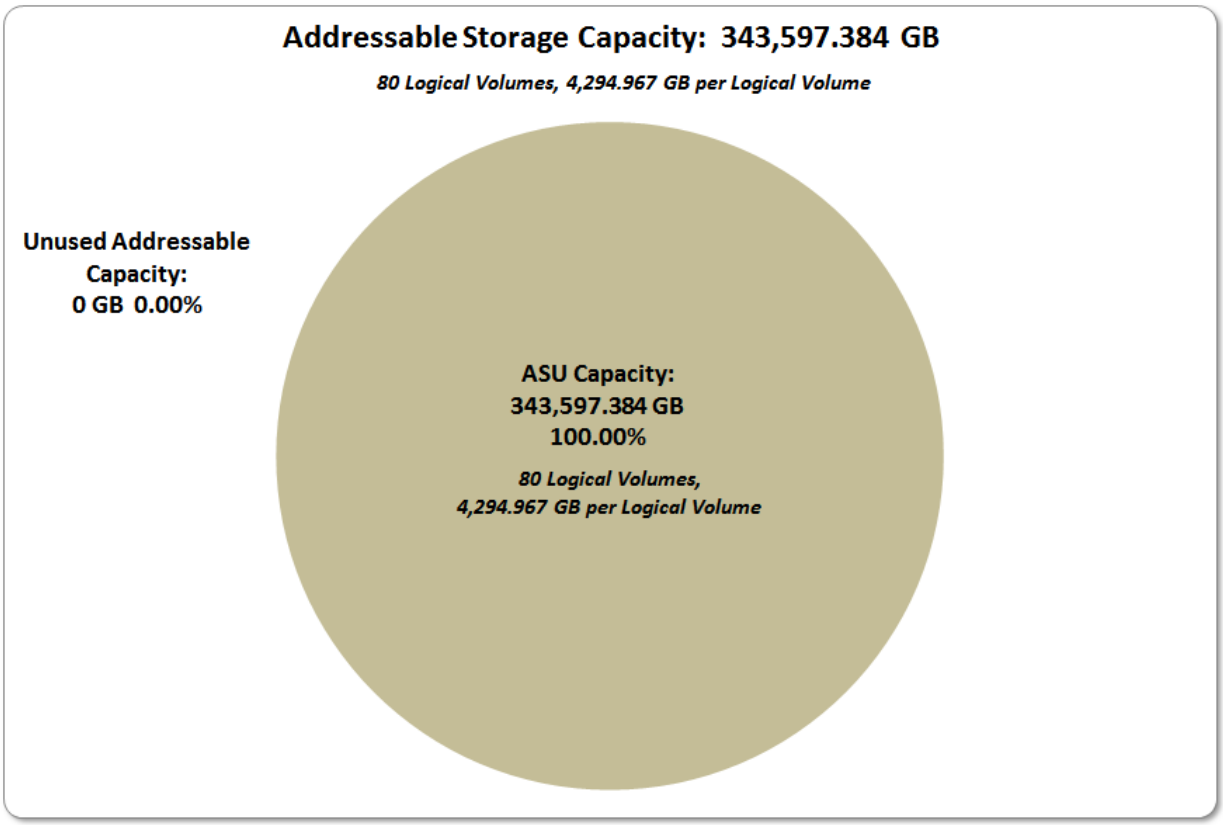
Storage Capacities, Relationships and Utilization

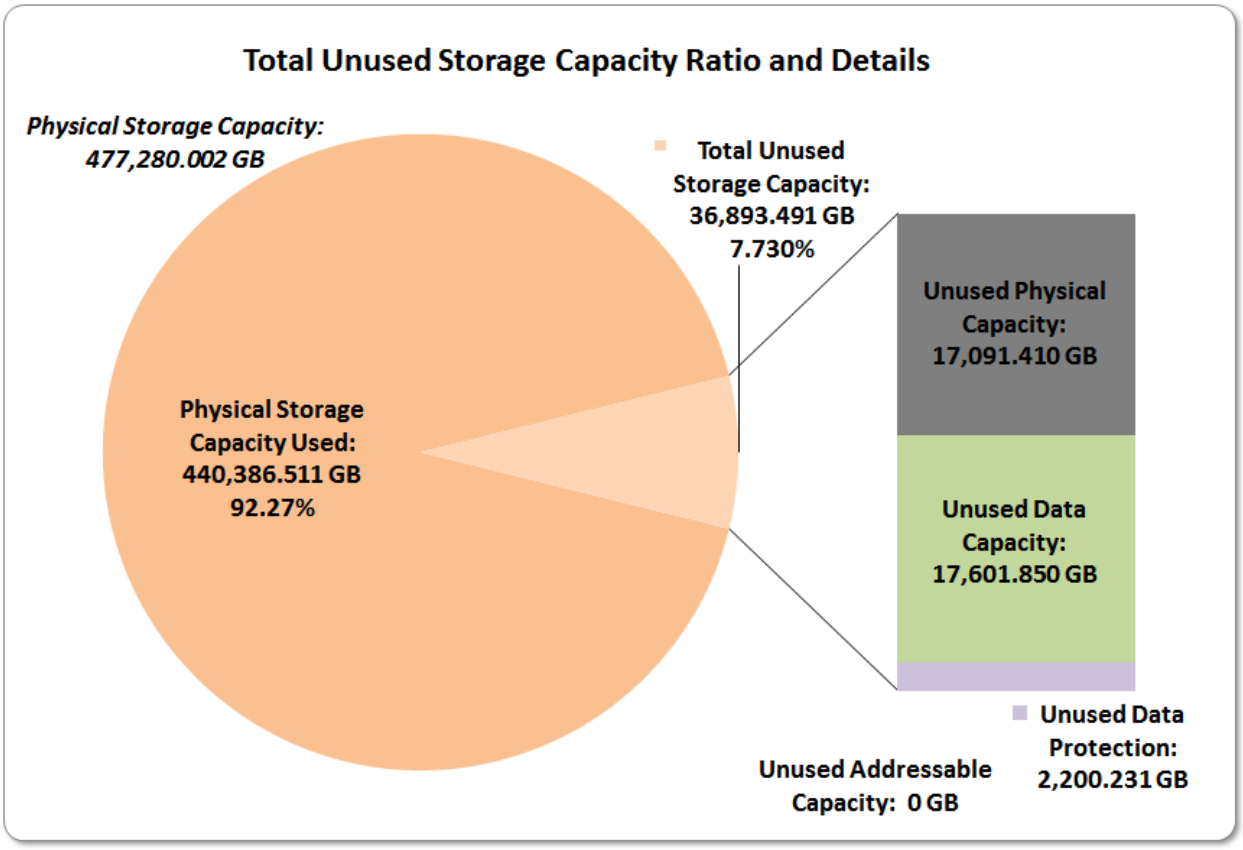
The following four charts and table document the various storage capacities, used in this benchmark, and their relationships, as well as the storage utilization values required to be reported.

The capacity values in each of the following four charts are listed as integer values, for readability, rather than the decimal values listed elsewhere in this document.




Configured Storage Capacity: 452,275.900 GB
Metadata: 102.005 0.02%
Unused Data Capacity: 17,601.85 GB 3.89%
Sparing Capacity: 45,812.006 GB 10.13%
Configured Storage Capacity Available for Application Use: 406,463.894 GB 89.87%
Addressable Storage Capacity: 343,597.384 GB 75.97%
Data Protection Capacity (used): 42,962.424 GB 9.50%
Data Protection Capacity (unused): 2,200.231 GB 0.49%


Addressable Storage Capacity: 343,597.384 GB
80 Logical Volumes, 4,294.967 GB per Logical Volume
Unused Addressable Capacity: 0 GB 0.00%
ASU Capacity: 343,597.384 GB 100.00%
80 Logical Volumes, 4,294.967 GB per Logical Volume



SPC-2 Storage Capacity Utilization	
Application Utilization	71.99%
Protected Application Utilization	80.99%
Unused Storage Ratio	7.73%

Application Utilization: Total ASU Capacity *(343,597.384 GB)* divided by Physical Storage Capacity *(477,280.002 GB)*.

Protected Application Utilization: (Total ASU Capacity *(343,597.384 GB)* plus total Data Protection Capacity (*45,162.655 GB)* minus unused Data Protection Capacity (2,200.231 *GB)*) divided by Physical Storage Capacity *(477,280.002 GB)*.

Unused Storage Ratio: Total Unused Capacity *(36,893.491 GB)* divided by Physical Storage Capacity *(477,280.002 GB)* and may not exceed 45%.

Detailed information for the various storage capacities and utilizations is available on pages 27-28 in the Full Disclosure Report.

Priced Storage Configuration Pricing

No.	Model	Description	Qty.	Unit Price (USD)	Total Price (USD)
1	Phase				
1.1	Location				
1.1.1	OceanStor 6800 V3 Storage System				
1.1.1	Engine				
	6800V3-512G-AC	6800 V3(6U,Dual Ctrl,AC,512GB,SPE72C0600)	2	44,791.92	89,583.84
	6800V3-256G-CTL	Controller Module(2*Intel 6 Cores,256GB Cache)	4	12,631.92	50,527.68
1.1.2	Expand Interface Module				
	SMARTIO8FC	4 port SmartIO I/O module(SFP+,8Gb FC)	24	665.04	15,960.96
	SMARTIO10ETH	4 port SmartIO I/O module(SFP+,10Gb Eth/FCoE(VN2VF)/Scale-out)	8	1,310.16	10,481.28
	LPU4S12V3	4 port 4*12Gb SAS I/O module(MiniSAS HD)	16	992.64	15,882.24
1.1.3	Disk Components				
	SAS600-10K-2-V3	600GB 10K RPM SAS Disk Unit(2.5")	800	439.44	351,552.00
1.1.4	Disk Enclosure				
	DAE22525U2-1-AC	Disk Enclosure(2U,AC,2.5",Expanding Module,25 Disk Slots,without Disk Unit, DAE22525U2)	32	2,116.80	67,737.60
1.1.5	Cabinet				
	RACK-42U-1	T or V3 Series Universal 42U Storage AC Cabinet	2	1,200.00	2,400.00
	PDU2000-32-1PH-20/4-B2	AC Power Distribution Unit	4	180.00	360.00
1.1.6	Installation Material				
	CE6850-EI-B00	CE6850-48S4Q-EI Switch(2*350W AC Power Module,2*FAN Box,Port side exhaust)	2	5,000.00	10,000.00
	SN2F01FCPC	Patch Cord,DLC/PC,DLC/PC,Multi-mode,3m,A1a.2,2mm,OM3 bending insensitive	88	11.00	968.00
	HS-SAS-1-01	High Speed Cable,External MiniSAS HD Cable,1m,(SFF 8644 Plug),(28AWG*4P*2B(S)),(SFF 8644 Plug),Indoor use	48	55.00	2,640.00
	HS-SAS-3-01	High Speed Cable,Mini SAS HD Cable,3m,(SFF 8644 Plug),(28AWG*4P*2B(S)),(SFF 8644 Plug),Indoor use	16	96.00	1,536.00
	C3018BK00	Power Cable,300V/500V,60227 IEC 10(BVV),3x6mm^2,Black(3Cores:Brown,Blue,Yellow/Green),46A, Outdoor Cable,CCC,CE (Unit:meter)	74	5.70	421.80
1.1.7	HBA				
	N8GHBA000	QLOGIC QLE2562 HBA Card,PCIE,8Gbps DualPort ,Fiber Channel Multimode LC Optic Interface,English Manual, No Drive CD	36	1,000.00	36,000.00
1.1.8	Storage Software				
	LIC-6800V3-BS	Basic Software License for Block(Include Device Management,SmartThin,SmartMulti-tenant,SmartMigration,SmartErase,SmartMotion,Cloud Service)	1	6,146.88	6,146.88
	LIC-6800V3-PATH	OceanStor HW UltraPath Software License	1	945.60	945.60
Total of Product					663,143.88

Priced Storage Configuration Pricing *(continued)*

1.1.9	**Maintenance Support Service**				
	02350BRY-88134ULJ-3	6800 V3(6U,Dual Ctrl,AC,512GB,SPE72C0600)-Warranty Upgrade To Hi-Care Onsite Premier 24x7x4H Engineer Onsite Service-3Year(s)	2	4,054.29	8,108.57
	02359806-88134ULJ-3	Disk Enclosure(2U,AC,2.5",Expanding Module,25 Disk Slots,without Disk Unit,DAE22525U2)-Warranty Upgrade To Hi-Care Onsite Premier 24x7x4H Engineer Onsite Service-3Year(s)	32	1,568.57	50,194.24
	88032KMV-88134UHK-3	OceanStor HW UltraPath Software License-Hi-Care Application Software Upgrade Support Service-3Year(s)	1	177.00	177.00
	88032NMR-88134UHK-3	Basic Software License for Block(Include Device Management,SmartThin,SmartMulti-tenant,SmartMigration,SmartErase,SmartMotion,Cloud Service)-Hi-Care Application Software Upgrade Support Service-3Year(s)	1	1,152.00	1,152.00
Total of Service (3 years)					**59,631.81**
Total Price					**722,775.69**

The above pricing includes the following:

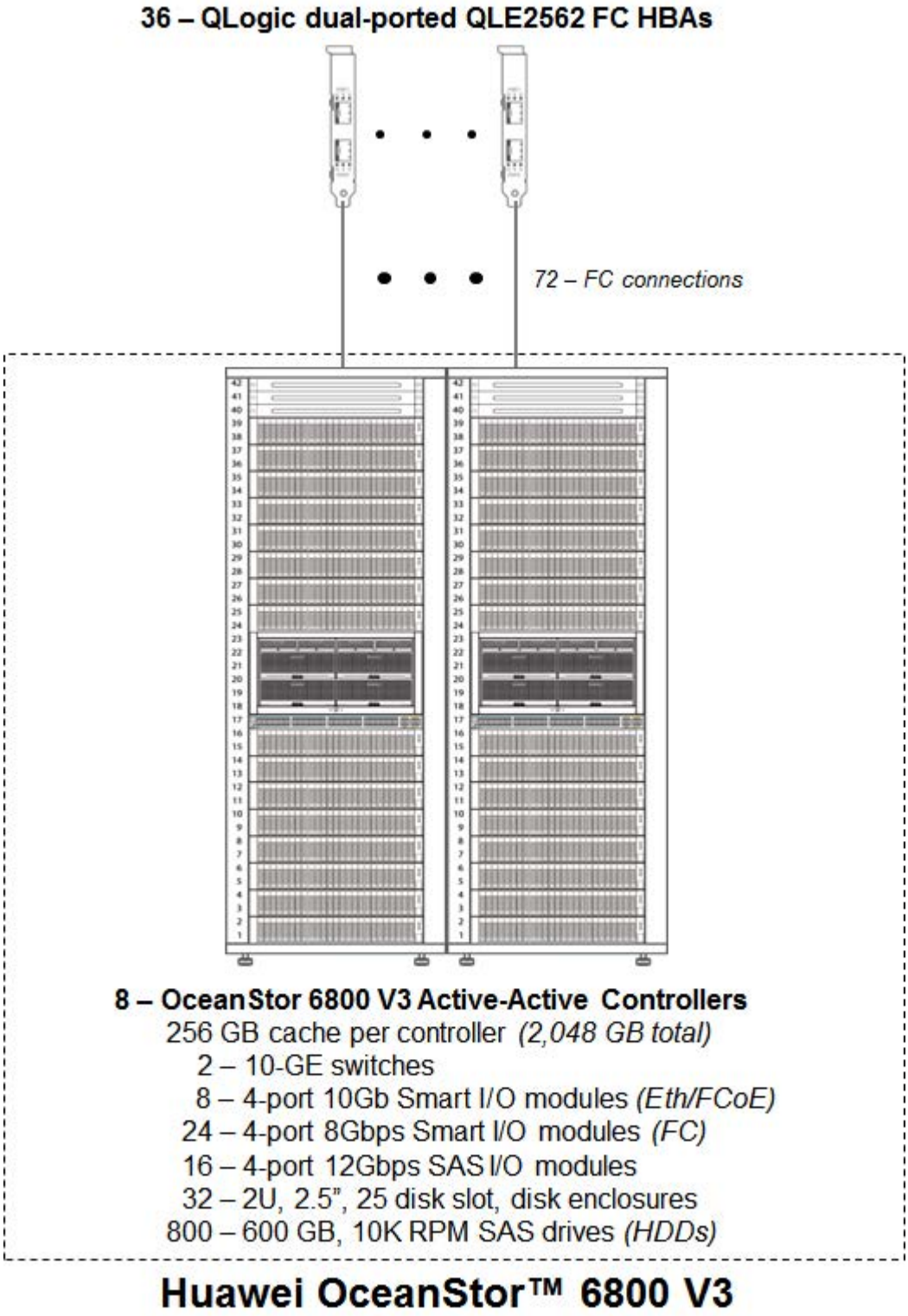
- Acknowledgement of new and existing hardware and/or software problems within four hours.
- Onsite presence of a qualified maintenance engineer or provision of a customer replaceable part within four hours of the above acknowledgement for any hardware failure that results in an inoperative Priced Storage 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 103 *(Appendix F: Third-Party Quotation)* 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



Priced Storage Configuration Components

Priced Storage Configuration
Huawei OceanStor UltraPath
36 – QLogic QLE2562 dual-port, 8 Gbps, FC HBAs
Huawei OceanStor™ 6800 V3 8 – Active-Active Controllers each controller includes: 256 GB cache *(2,048 GB total)* 3 – 4-port 8Gbps Smart I/O modules *(FC)* *(24 modules total, 12 ports per controller, 96 ports total)* *(9 ports used per controller, 72 ports total used)* 2 – 4-port 12 Gbps SAS I/O modules *(16 modules total, 64 ports total)* *(4 ports used per controller, 32 ports total used)*
8 – 4-port 10Gb Smart I/O modules *(for inter-controller connectivity)*
2 – 10-GE switches *(for inter-controller connectivity)*
32 – Disk Enclosures *(2U, 2.5")*
800 – 600 GB 10K RPM SAS HDDs *(25 HDDs per disk enclosure)*
2 –V3 Series System Cabinet
4 – AC Power Distribution Units

CONFIGURATION INFORMATION

This portion of the Full Disclosure Report documents and illustrates the detailed information necessary to recreate the Benchmark Configuration (BC), including the Tested Storage Configuration (TSC), so that the SPC-2 benchmark result produced by the BC may be independently reproduced.

In each of the following sections of this document, the appropriate Full Disclosure Report requirement, from the SPC-2 benchmark specification, is stated in italics followed by the information to fulfill the stated requirement.

Benchmark Configuration (BC)/Tested Storage Configuration (TSC) Diagram

Clause 10.6.6

The FDR will contain a one page BC/TSC diagram that illustrates all major components of the BC/TSC.

The Benchmark Configuration (BC)/Tested Storage Configuration (TSC) is illustrated on page 23 *(Benchmark Configuration (BC)/Tested Storage Configuration (TSC) Diagram)*.

Storage Network Configuration

Clause 10.6.6.1

If a storage network was configured as a part of the Tested Storage Configuration and the Benchmark Configuration described in Clause 10.6.6 contains a high-level illustration of the network configuration, the Executive Summary will contain a one page topology diagram of the storage network as illustrated in Figure 10.11.

The benchmark configuration utilized directed attached storage.

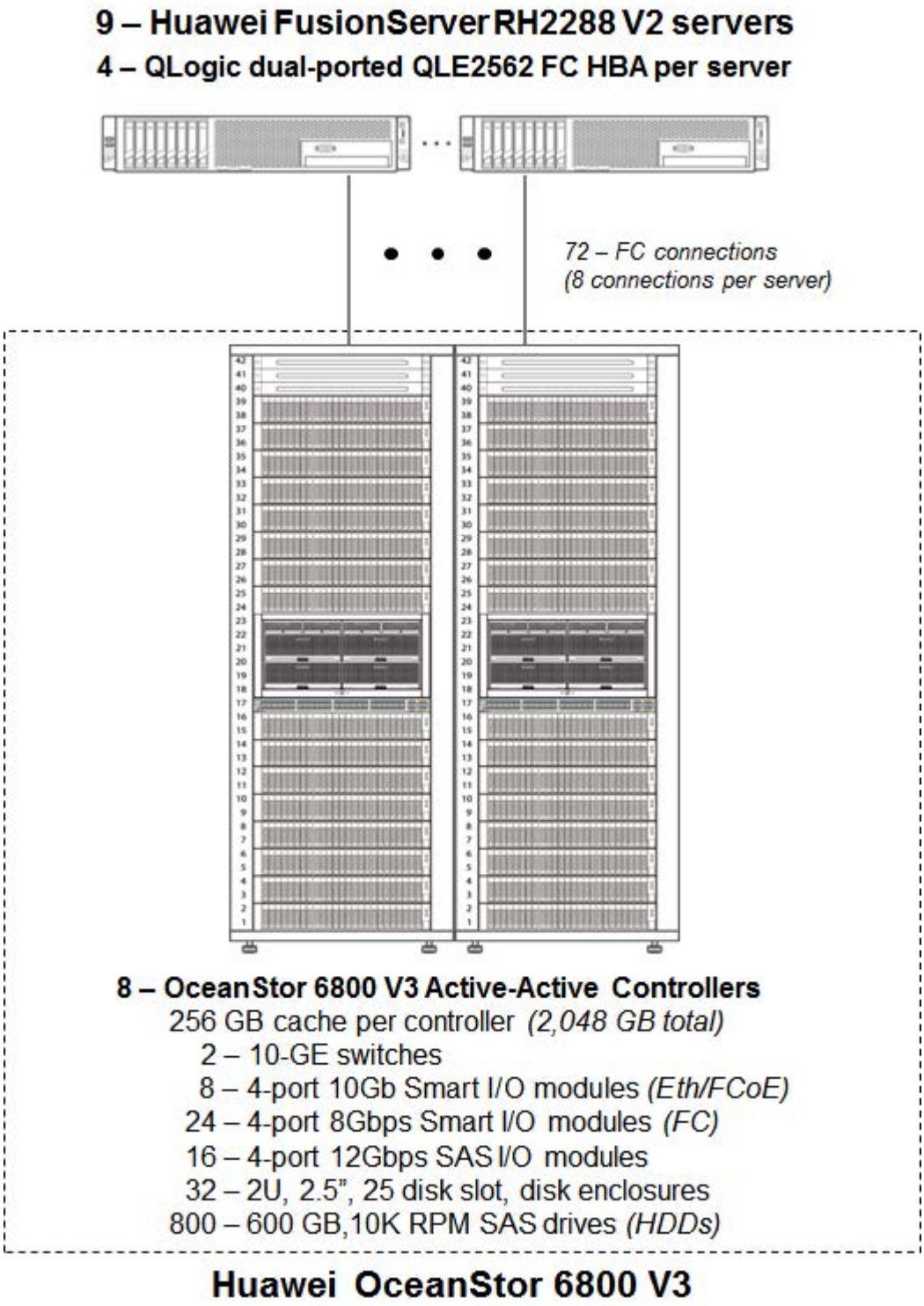
Host System and Tested Storage Configuration Table

Clause 10.6.6.2

The FDR will contain a table that lists the major components of each Host System and the Tested Storage Configuration.

The components that comprise each Host System and the Tested Storage Configuration are listed in the table that appears on page 24 *(Host System and Tested Storage Configuration Components)*.

Benchmark Configuration/Tested Storage Configuration Diagram



Host System and Tested Storage Configuration Components

Host Systems
9 – Huawei FusionServer RH2288 V2 servers, each with: 2 – Intel® Xeon® 2.00 GHz E5-2620 processors each with 6 cores, 15 MB Intel® Smart Cache 192 GB main memory Microsoft Windows Server 2008 R2 Enterprise PCIe
Tested Storage Configuration
Huawei OceanStor UltraPath
36 – QLogic QLE2562 dual-port, 8 Gbps, FC HBAs
Huawei OceanStor™ 6800 V3 8 – Active-Active Controllers each controller includes: 256 GB cache *(2,048 GB total)* 3 – 4-port 8Gbps Smart I/O modules *(FC)* *(24 modules total, 12 ports per controller, 96 ports total)* *(9 ports used per controller, 72 ports total used)* 2 – 4-port 12 Gbps SAS I/O modules *(16 modules total, 64 ports total)* *(4 ports used per controller, 32 ports total used)*
8 – 4-port 10Gb Smart I/O modules *(for inter-controller connectivity)*
2 – 10-GE switches *(for inter-controller connectivity)*
32 – Disk Enclosures *(2U, 2.5")*
800 – 600 GB 10K RPM SAS HDDs *(25 HDDs per disk enclosure)*
2 –V3 Series System Cabinet
4 – AC Power Distribution Units

Customer Tunable Parameters and Options

Clause 10.6.7.1

All Benchmark Configuration (BC) components with customer tunable parameter and options that have been altered from their default values must be listed in the FDR. The FDR entry for each of those components must include both the name of the component and the altered value of the parameter or option. If the parameter name is not self-explanatory to a knowledgeable practitioner, a brief description of the parameter's use must also be included in the FDR entry.

Appendix B: Customer Tunable Parameters and Options on page 68 contains the customer tunable parameters and options that have been altered from their default values for this benchmark.

Tested Storage Configuration (TSC) Creation and Configuration

Clause 10.6.7.2

The Full Disclosure Report must include sufficient information to recreate the logical representation of the Tested Storage Configuration (TSC). In addition to customer tunable parameters and options (Clause10.6.6.1), that information must include, at a minimum:

- *A diagram and/or description of the following:*
  - *All physical components that comprise the TSC. Those components are also illustrated in the BC Configuration Diagram in Clause 10.6.5.7 and the Storage Network Configuration Diagram in Clause 10.6.5.8.*
  - *The logical representation of the TSC, configured from the above components that will be presented to the SPC-2 Workload Generator.*
- *Listings of scripts used to create the logical representation of the TSC.*
- *If scripts were not used, a description of the process used with sufficient detail to recreate the logical representation of the TSC.*

Appendix C: Tested Storage Configuration (TSC) Creation on page 69 contains the detailed information that describes how to create and configure the logical TSC.

SPC-2 Workload Generator Storage Configuration

Clause 10.6.7.3

The Full Disclosure Report will include all SPC-2 Workload Generator storage configuration commands and parameters used in the SPC-2 benchmark measurement.

The SPC-2 Workload Generator storage configuration commands and parameters for this measurement appear in Appendix D: SPC-2 Workload Generator Storage Commands and Parameter Files on page 83.

ASU Pre-Fill

Clause 6.3.3

The SPC-2 ASU is required to be completely filled with specified content prior to the execution of audited SPC-2 Tests. The content is required to consist of random data pattern such as that produced by an SPC recommended tool.

…

Clause 6.3.3.3

The required ASU pre-fill must be executed as the first step in the uninterrupted benchmark execution sequence described in Clause 6.4.2. That uninterrupted sequence will consist of: ASU Pre-Fill, Large File Processing, Large Database Query, Video on Demand Delivery and Persistence Test Run 1. The only exception to this requirement is described in Clause 6.3.3.4.

Clause 6.3.3.4

If approved by the Auditor, the Test Sponsor may complete the required ASU pre-fill prior to the execution of the audited SPC-2 Tests and not as part of the SPC-2 Test execution sequence.

The Auditor will verify the required random data pattern content in the ASU prior to the execution of the audited SPC-2 Tests. If that verification fails, the Test Sponsor is required to reload the specified content to the ASU.

The configuration file used to complete the required ASU pre-fill appears in Appendix D: SPC-2 Workload Generator Storage Commands and Parameter Files on page 83.

SPC-2 DATA REPOSITORY

This portion of the Full Disclosure Report presents the detailed information that fully documents the various SPC-2 storage capacities and mappings used in the Tested Storage Configuration. SPC-2 Data Repository Definitions on page 63 contains definitions of terms specific to the SPC-2 Data Repository.

In each of the following sections of this document, the appropriate Full Disclosure Report requirement, from the SPC-2 benchmark specification, is stated in italics followed by the information to fulfill the stated requirement.

SPC-2 Storage Capacities and Relationships

Clause 10.6.8.1

Two tables and four charts documenting the storage capacities and relationships of the SPC-2 Storage Hierarchy (Clause 2.1) shall be included in the FDR. … The capacity value in each chart may be listed as an integer value, for readability, rather than the decimal value listed in the table below.

SPC-2 Storage Capacities

The Physical Storage Capacity consisted of 477,280.002 GB distributed over 800 disk drives (HDDs) each with a formatted capacity of 596.600 GB. There was 17,091.410 GB (3.58%) of Unused Storage within the Physical Storage Capacity. Global Storage Overhead consisted of 7,912.692 GB (1.66%) of the Physical Storage Capacity. There was 17,601.850 GB (3.89%) of Unused Storage within the Configured Storage Capacity. The Total ASU Capacity utilized 100.00% of the Addressable Storage Capacity resulting in 0.000 GB (0.00%) of Unused Storage within the Addressable Storage Capacity. The Data Protection capacity *(RAID-5)* was 45,162.655 GB of which 42,962.424 GB was utilized. The total Unused Storage was 36,893.491 GB.

Note: The configured Storage Devices may include additional storage capacity reserved for system overhead, which is not accessible for application use. That storage capacity may not be included in the value presented for Physical Storage Capacity.

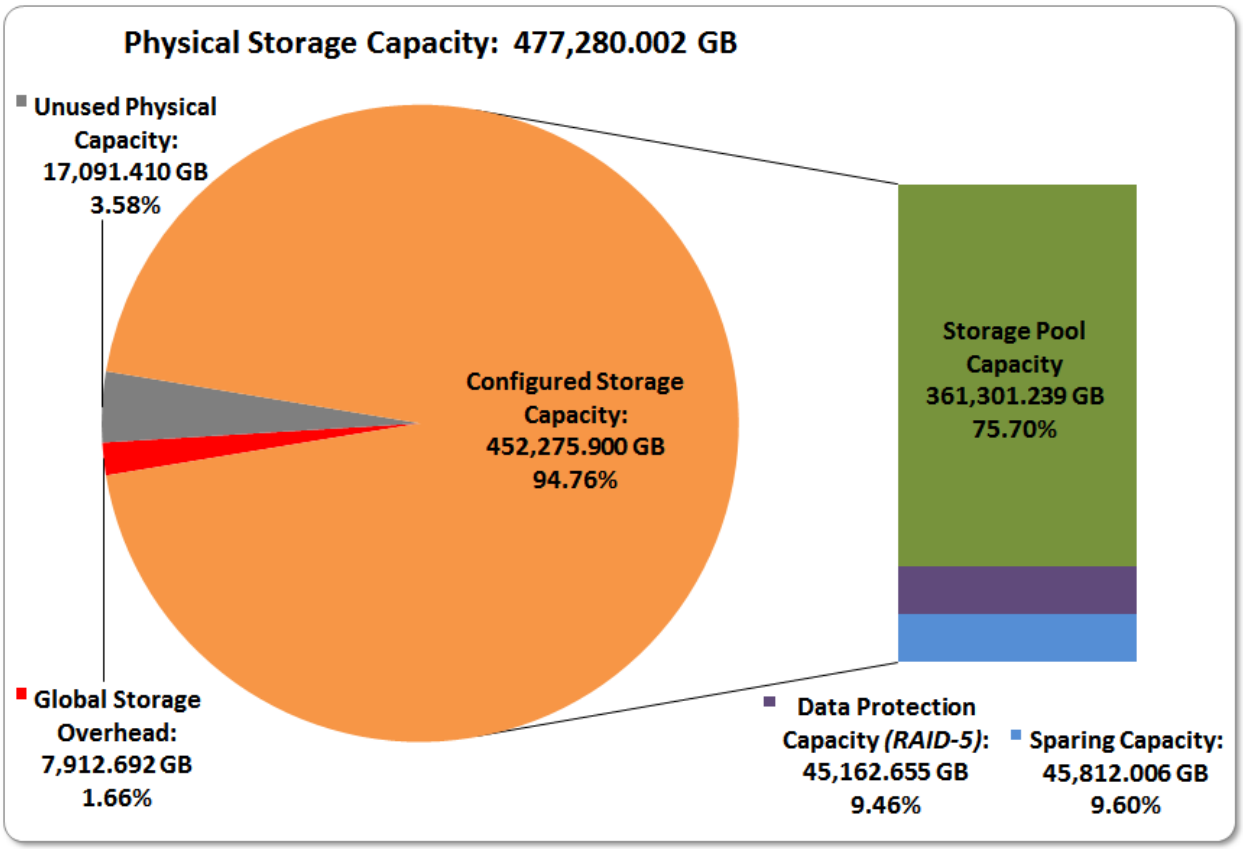
SPC-2 Storage Capacities

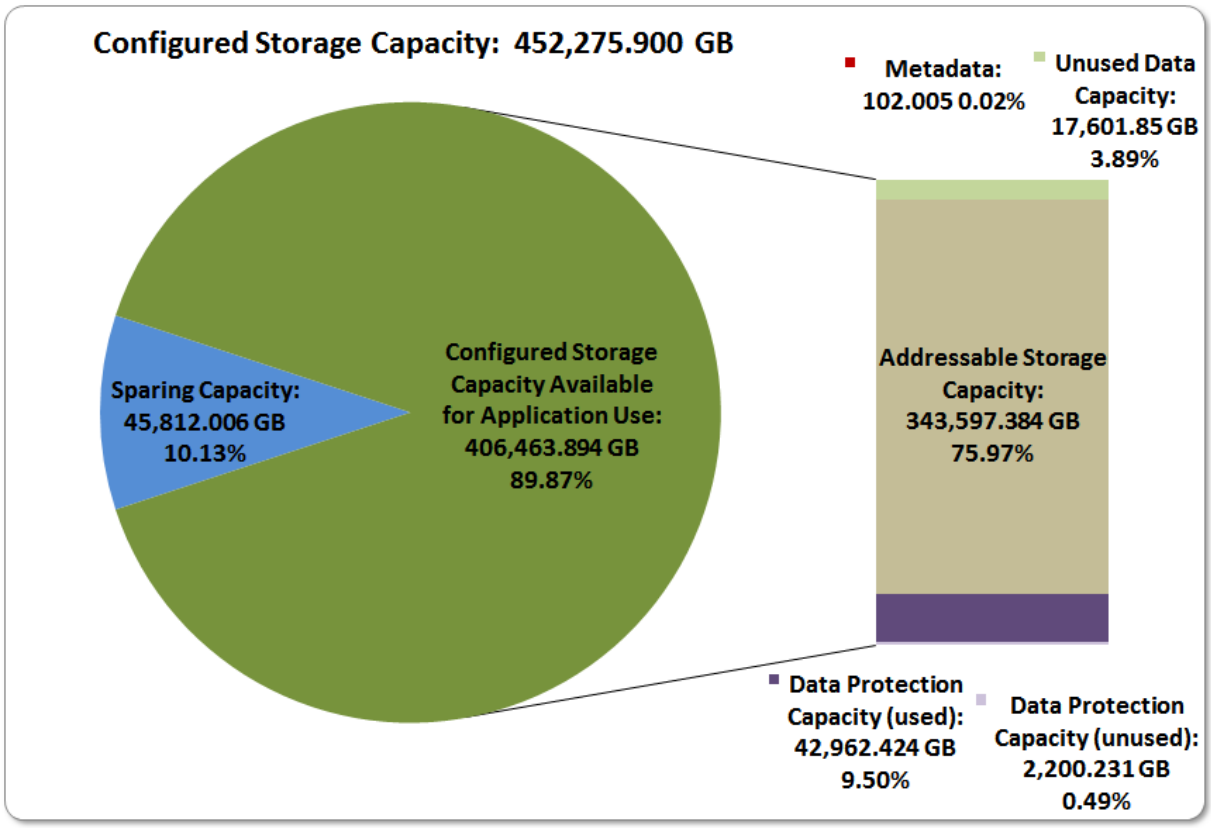
Storage Hierarchy Component	Units	Capacity
Total ASU Capacity	Gigabytes (GB)	343,597.384
Addressable Storage Capacity	Gigabytes (GB)	343,597.384
Configured Storage Capacity	Gigabytes (GB)	452,275.900
Physical Storage Capacity	Gigabytes (GB)	477,280.002
Data Protection *(RAID-5)*	Gigabytes (GB)	45,162.655
Required Storage *(sparing, metadata)*	Gigabytes (GB)	45,914.011
Global Storage Overhead	Gigabytes (GB)	7,912.692
Total Unused Storage	Gigabytes (GB)	36,893.491

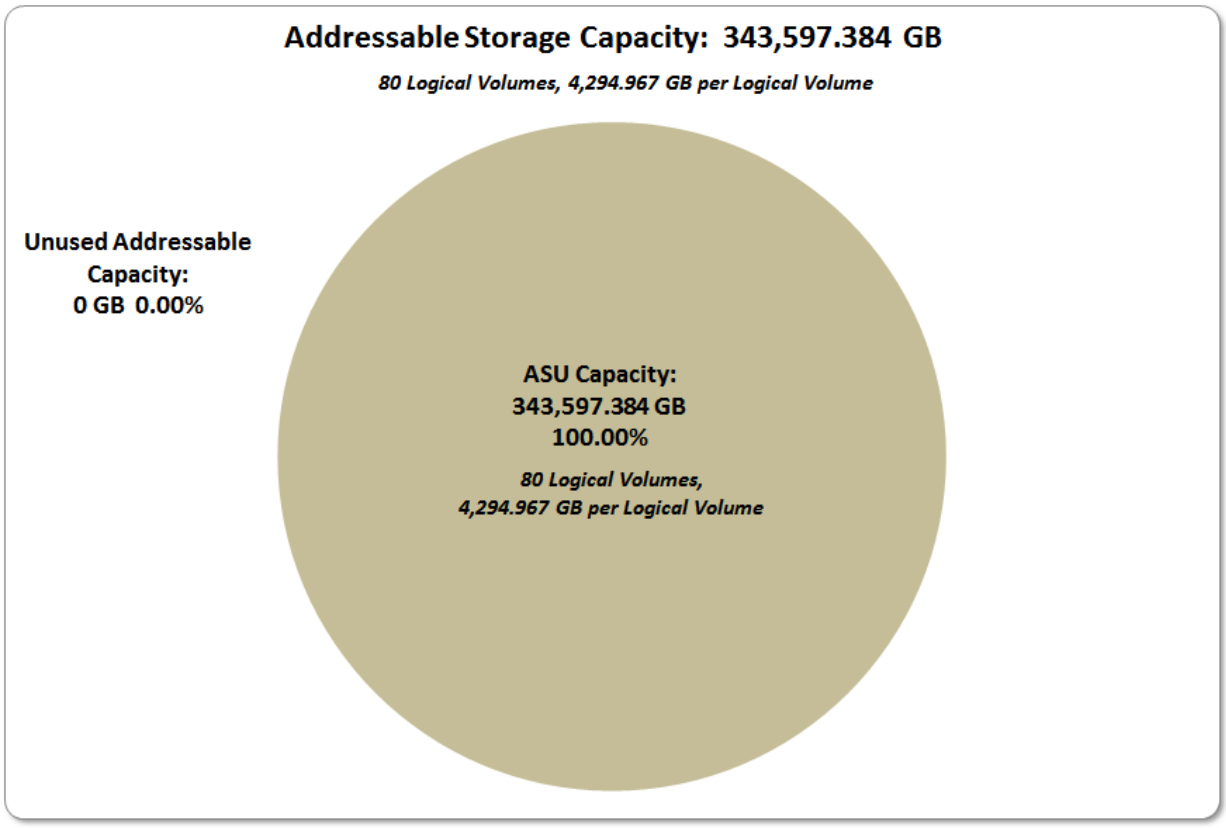
SPC-2 Storage Hierarchy Ratios

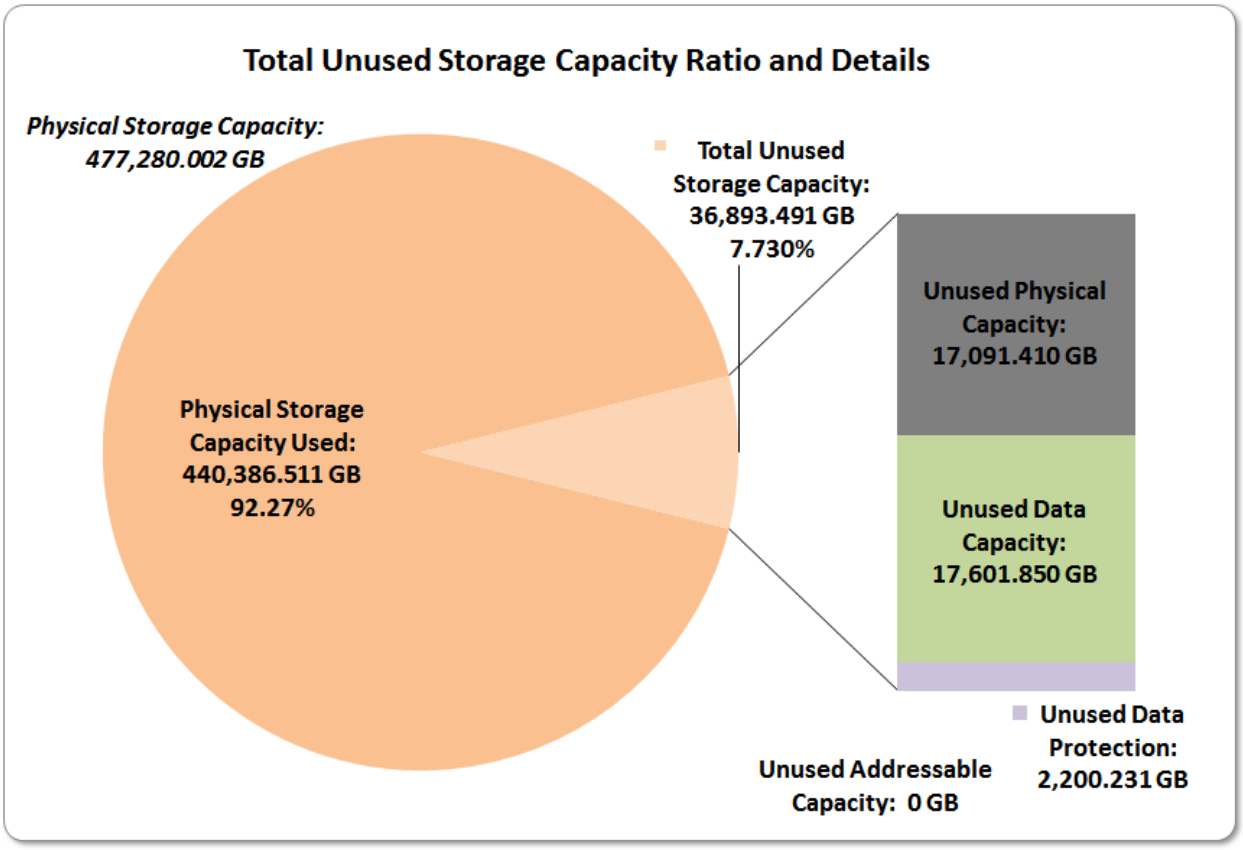
	Addressable Storage Capacity	Configured Storage Capacity	Physical Storage Capacity
Total ASU Capacity	100.00%	75.97%	71.99%
Data Protection *(RAID-6)*		9.99%	9.46%
Addressable Storage Capacity		75.97%	71.99%
Required Storage *(metadata, sparing)*		10.15%	9.62%
Configured Storage Capacity			94.76%
Global Storage Overhead			1.66%
Unused Storage:			
Addressable	0.00%		
Configured		3.89%	
Physical			3.58%

SPC-2 Storage Capacity Charts




Configured Storage Capacity: 452,275.900 GB
Metadata: 102.005 0.02%
Unused Data Capacity: 17,601.85 GB 3.89%
Sparing Capacity: 45,812.006 GB 10.13%
Configured Storage Capacity Available for Application Use: 406,463.894 GB 89.87%
Addressable Storage Capacity: 343,597.384 GB 75.97%
Data Protection Capacity (used): 42,962.424 GB 9.50%
Data Protection Capacity (unused): 2,200.231 GB 0.49%


Addressable Storage Capacity: 343,597.384 GB
80 Logical Volumes, 4,294.967 GB per Logical Volume
Unused Addressable Capacity: 0 GB 0.00%
ASU Capacity: 343,597.384 GB 100.00%
80 Logical Volumes, 4,294.967 GB per Logical Volume



Storage Capacity Utilization

Clause 10.6.8.2

The FDR will include a table illustrating the storage capacity utilization values defined for Application Utilization (Clause 2.8.1), Protected Application Utilization (Clause 2.8.2), and Unused Storage Ratio (Clause 2.8.3).

Clause 2,8.1

Application Utilization *is defined as Total ASU Capacity divided by Physical Storage Capacity.*

Clause 2,8.2

Protected Application Utilization *is defined as (Total ASU Capacity plus total Data Protection Capacity minus unused Data Protection Capacity) divided by Physical Storage Capacity.*

Clause 2,8.3

Unused Storage Ratio *is defined as Total Unused Capacity divided by Physical Storage Capacity and may not exceed 45%.*

SPC-2 Storage Capacity Utilization	
Application Utilization	71.99%
Protected Application Utilization	80.99%
Unused Storage Ratio	7.73%

Logical Volume Capacity and ASU Mapping

Clause 10.6.8.3

A table illustrating the capacity of the Application Storage Unit (ASU) and the mapping of Logical Volumes to ASU will be provided in the FDR. Capacity must be stated in gigabytes (GB) as a value with a minimum of two digits to the right of the decimal point. Each Logical Volume will be sequenced in the table from top to bottom per its position in the contiguous address space of the ASU. Each Logical Volume entry will list its total capacity, the portion of that capacity used for the ASU, and any unused capacity.

Logical Volume (LV) Capacity and Mapping			
ASU (343,597.384 GB)			
	Total Capacity	Capacity Used	Capacity Unused
80 Logical Volumes	4,294.967 GB per LV	4,294.967 GB per LV	0 GB per LV

See the Storage Definition (sd) entries in Appendix D: SPC-2 Workload Generator Storage Commands and Parameter Files on page 83 for more detailed configuration information.

SPC-2 BENCHMARK EXECUTION RESULTS

This portion of the Full Disclosure Report documents the results of the various SPC-2 Tests, Test Phases, Test Run Sequences, and Test Runs. An SPC-2 glossary on page 63 contains definitions of terms specific to the SPC-2 Data Repository.

In each of the following sections of this document, the appropriate Full Disclosure Report requirement, from the SPC-2 benchmark specification, is stated in italics followed by the information to fulfill the stated requirement.

SPC-2 Tests, Test Phases, Test Run Sequences, and Test Runs

The SPC-2 benchmark consists of the following Tests, Test Phases, Test Run Sequences, and Test Runs:

- **Data Persistence Test**
  - Data Persistence Test Run 1
  - Data Persistence Test Run 2
- **Large File Processing Test**
  - WRITE ONLY Test Phase
    - Test Run Sequence 1
      - ✓ Test Run 1 – 1024 KiB Transfer – maximum number of Streams
      - ✓ Test Run 2 – 1024 KiB Transfer – 50% of Test Run 1's Streams value
      - ✓ Test Run 3 – 1024 KiB Transfer – 25% of Test Run 1's Streams value
      - ✓ Test Run 4 – 1024 KiB Transfer – 12.5% of Test Run 1's Streams value
      - ✓ Test Run 5 – 1024 KiB Transfer – single (1) Stream
    - Test Run Sequence 2
      - ✓ Test Run 6 – 256 KiB Transfer – maximum number of Streams
      - ✓ Test Run 7 – 256 KiB Transfer – 50% of Test Run 6's Streams value
      - ✓ Test Run 8 – 256 KiB Transfer – 25% of Test Run 6's Streams value
      - ✓ Test Run 9 – 256 KiB Transfer – 12.5% of Test Run 6's Streams value
      - ✓ Test Run 10 – 256 KiB Transfer – single (1) Stream
  - READ-WRITE Test Phase
    - Test Run Sequence 3
      - ✓ Test Run 11 – 1024 KiB Transfer – maximum number of Streams
      - ✓ Test Run 12 – 1024 KiB Transfer – 50% of Test Run 11's Streams value
      - ✓ Test Run 13 – 1024 KiB Transfer – 25% of Test Run 11's Streams value
      - ✓ Test Run 14 – 1024 KiB Transfer – 12.5% of Test Run 11's Streams value
      - ✓ Test Run 15 – 1024 KiB Transfer – single (1) Stream
    - Test Run Sequence 4
      - ✓ Test Run 16 – 256 KiB Transfer – maximum number of Streams
      - ✓ Test Run 17 – 256 KiB Transfer – 50% of Test Run 16's Streams value
      - ✓ Test Run 18 – 256 KiB Transfer – 25% of Test Run 16's Streams value
      - ✓ Test Run 19 – 256 KiB Transfer – 12.5% of Test Run 16's Streams value
      - ✓ Test Run 20 – 256 KiB Transfer – single (1) Stream
  - READ ONLY Test Phase
    - Test Run Sequence 5
      - ✓ Test Run 21 – 1024 KiB Transfer – maximum number of Streams

- ✓ Test Run 22 – 1024 KiB Transfer – 50% of Test Run 21's Streams value
- ✓ Test Run 23 – 1024 KiB Transfer – 25% of Test Run 21's Streams value
- ✓ Test Run 24 – 1024 KiB Transfer – 12.5% of Test Run 21's Streams value
- ✓ Test Run 25 – 1024 KiB Transfer – single (1) Stream

- Test Run Sequence 6
  - ✓ Test Run 26 – 256 KiB Transfer – maximum number of Streams
  - ✓ Test Run 27 – 256 KiB Transfer – 50% of Test Run 26's Streams value
  - ✓ Test Run 28 – 256 KiB Transfer – 25% of Test Run 26's Streams value
  - ✓ Test Run 29 – 256 KiB Transfer – 12.5% of Test Run 26's Streams value
  - ✓ Test Run 30 – 256 KiB Transfer – single (1) Stream

- **Large Database Query Test**
  - 1024 KIB TRANSFER SIZE Test Phase
    - Test Run Sequence 1
      - ✓ Test Run 1 – 4 I/O Requests Outstanding – maximum number of Streams
      - ✓ Test Run 2 – 4 I/O Requests Outstanding – 50% of Test Run 1's Streams value
      - ✓ Test Run 3 – 4 I/O Requests Outstanding – 25% of Test Run 1's Streams value
      - ✓ Test Run 4 – 4 I/O Requests Outstanding – 12.5% of Test Run 1's Streams value
      - ✓ Test Run 5 – 4 I/O Requests Outstanding – single (1) Stream
    - Test Run Sequence 2
      - ✓ Test Run 6 – 1 I/O Request Outstanding – maximum number of Streams
      - ✓ Test Run 7 – 1 I/O Request Outstanding – 50% of Test Run 6's Streams value
      - ✓ Test Run 8 – 1 I/O Request Outstanding – 25% of Test Run 6's Streams value
      - ✓ Test Run 9 – 1 I/O Request Outstanding – 12.5% of Test Run 6's Streams value
      - ✓ Test Run 10 – 1 I/O Request Outstanding – single (1) Stream
  - 64 KIB TRANSFER SIZE Test Phase
    - Test Run Sequence 3
      - ✓ Test Run 11 – 4 I/O Requests Outstanding – maximum number of Streams
      - ✓ Test Run 12 – 4 I/O Requests Outstanding – 50% of Test Run 11's Streams value
      - ✓ Test Run 13 – 4 I/O Requests Outstanding – 25% of Test Run 11's Streams value
      - ✓ Test Run 14 – 4 I/O Requests Outstanding – 12.5% of Test Run 11's Streams value
      - ✓ Test Run 15 – 4 I/O Requests Outstanding – single (1) Stream
    - Test Run Sequence 4
      - ✓ Test Run 16 – 1 I/O Request Outstanding – maximum number of Streams
      - ✓ Test Run 17 – 1 I/O Request Outstanding – 50% of Test Run 16's Streams value
      - ✓ Test Run 18 – 1 I/O Request Outstanding – 25% of Test Run 16's Streams value
      - ✓ Test Run 19 – 1 I/O Request Outstanding – 12.5% of Test Run 16's Streams value
      - ✓ Test Run 20 – 1 I/O Request Outstanding – single (1) Stream

- **Video on Demand Delivery Test**
  - Video on Demand Delivery Test Run

Each Test is an atomic unit that must be executed from start to finish before any other Test, Test Phase, or Test Run may be executed. The Tests may be executed in any sequence.

The results from each Test, Test Phase, and Test Run are listed below along with a more detailed explanation of each component.

Large File Processing Test

Clause 6.4.3.1

The Large File Processing Test consists of the I/O operations associated with the type of applications, in a wide range of fields, which require simple sequential processing of one or more large files. Specific examples of those types of applications include scientific computing and large-scale financial processing

Clause 6.4.3.2

The Large File Processing Test has three Test Phases, which shall be executed in the following uninterrupted sequence:

1. *WRITE ONLY*
2. *READ-WRITE*
3. *READ ONLY*

The BC shall not be restarted or manually disturbed, altered, or adjusted during the execution of the Large File Processing Test. If power is lost to the BC during this Test all results shall be rendered invalid and the Test re-run in its entirety.

Clause 10.6.9.1

The Full Disclosure Report will contain the following content for the Large File Processing Test:

1. *A listing of the SPC-2 Workload Generator commands and parameters used to execute each of the Test Runs in the Large File Processing Test.*
2. *The human readable SPC-2 Test Results File for each of the Test Runs in the Large File Processing Test.*
3. *The following three tables:*
    - *Average Data Rate: The average Data Rate, in MB per second for the Measurement Interval of each Test Run in the Large File Processing Test.*
    - *Average Data Rate per Stream: The average Data Rate per Stream, in MB per second, for the Measurement Interval of each Test Run in the Large File Processing Test.*
    - *Average Response Time: The average response time, in milliseconds (ms), for the Measurement Interval of each Test Run in the Large File Processing Test.*
4. *Average Data Rate, Average Data Rate per Stream and Average Response Time graphs as defined in Clauses 10.1.1, 10.1.2 and 10.1.3.*

SPC-2 Workload Generator Commands and Parameters

The SPC-2 Workload Generator commands and parameters for the Large File Processing Test Runs are documented in Appendix E: SPC-2 Workload Generator Execution Commands and Parameters on Page 100.

SPC-2 Test Results File

A link to the SPC-2 Test Results file generated from the Large File Processing Test Runs is listed below.

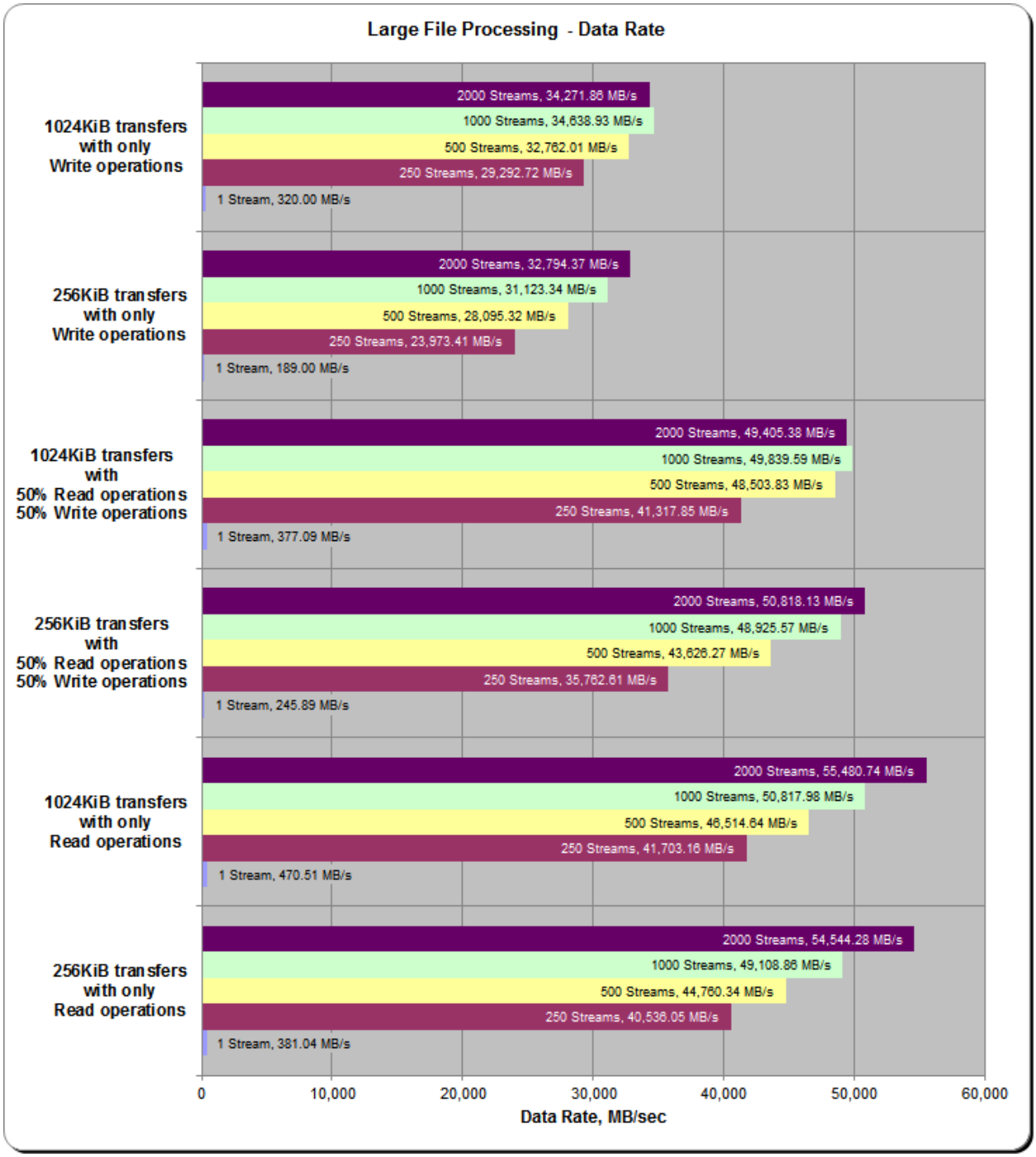
SPC-2 Large File Processing Test Results File

SPC-2 Large File Processing Average Data Rates (MB/s)

The average Data Rate (MB/s) for each Test Run in the three Test Phases of the SPC-2 Large File Processing Test is listed in the table below as well as illustrated in the following graph.

Test Run Sequence	1 Stream	250 Streams	500 Streams	1000 Streams	2000 Streams
Write 1024KiB	320.00	29,292.72	32,762.01	34,638.93	34,271.86
Write 256KiB	189.00	23,973.41	28,095.32	31,123.34	32,794.37
Read/Write 1024KiB	377.09	41,317.85	48,503.83	49,839.59	49,405.38
Read/Write 256KiB	245.89	35,762.61	43,626.27	48,925.57	50,818.13
Read 1024KiB	470.51	41,703.16	46,514.64	50,817.98	55,480.74
Read 256KiB	381.04	40,536.05	44,760.34	49,108.86	54,544.28

SPC-2 Large File Processing Average Data Rates Graph

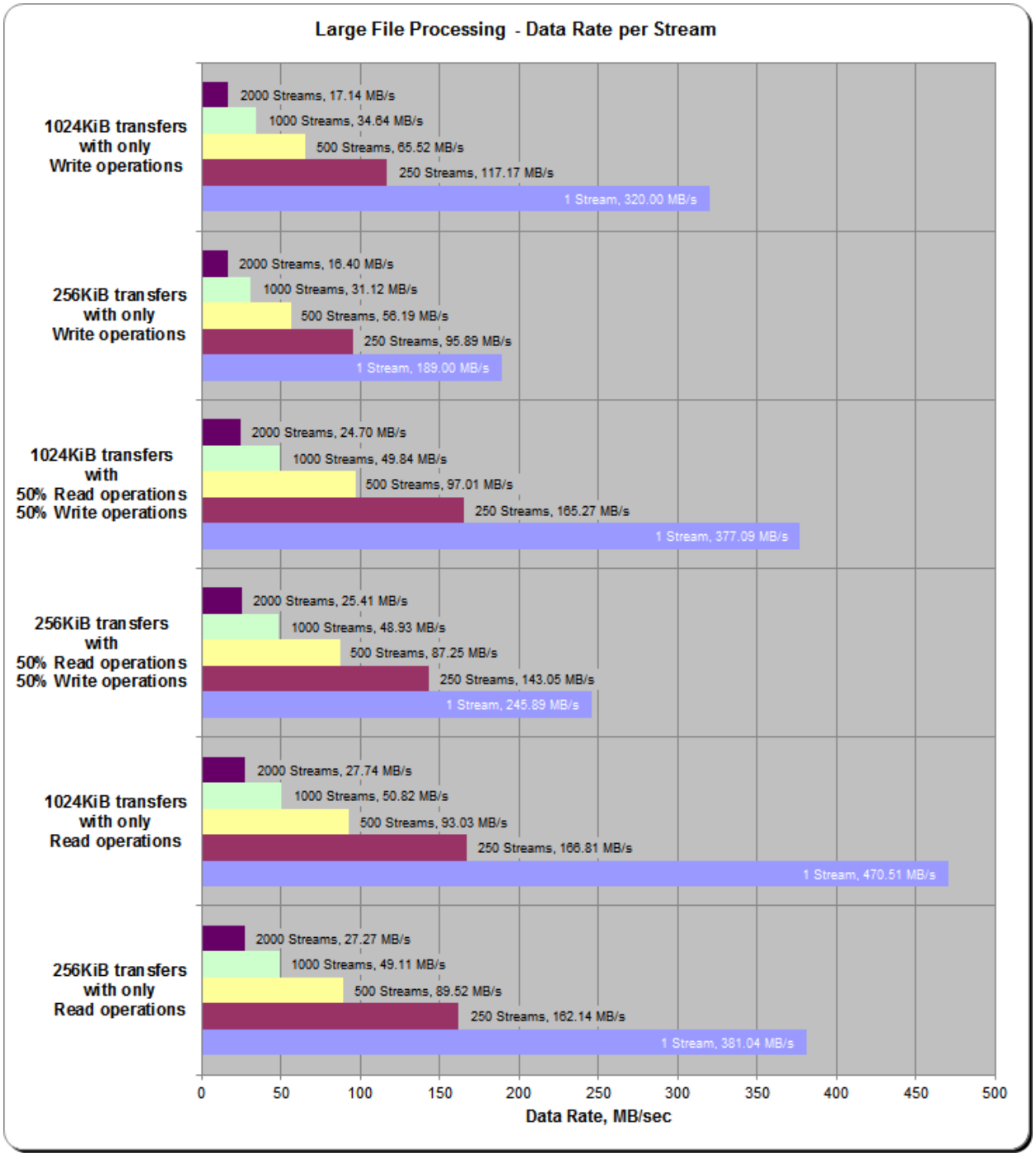


SPC-2 Large File Processing Average Data Rate per Stream

The average Data Rate per Stream for each Test Run in the three Test Phases of the SPC-2 Large File Processing Test is listed in the table below as well as illustrated in the following graph.

Test Run Sequence	1 Stream	250 Streams	500 Streams	1000 Streams	2000 Streams
Write 1024KiB	320.00	117.17	65.52	34.64	17.14
Write 256KiB	189.00	95.89	56.19	31.12	16.40
Read/Write 1024KiB	377.09	165.27	97.01	49.84	24.70
Read/Write 256KiB	245.89	143.05	87.25	48.93	25.41
Read 1024KiB	470.51	166.81	93.03	50.82	27.74
Read 256KiB	381.04	162.14	89.52	49.11	27.27

SPC-2 Large File Processing Average Data Rate per Stream Graph

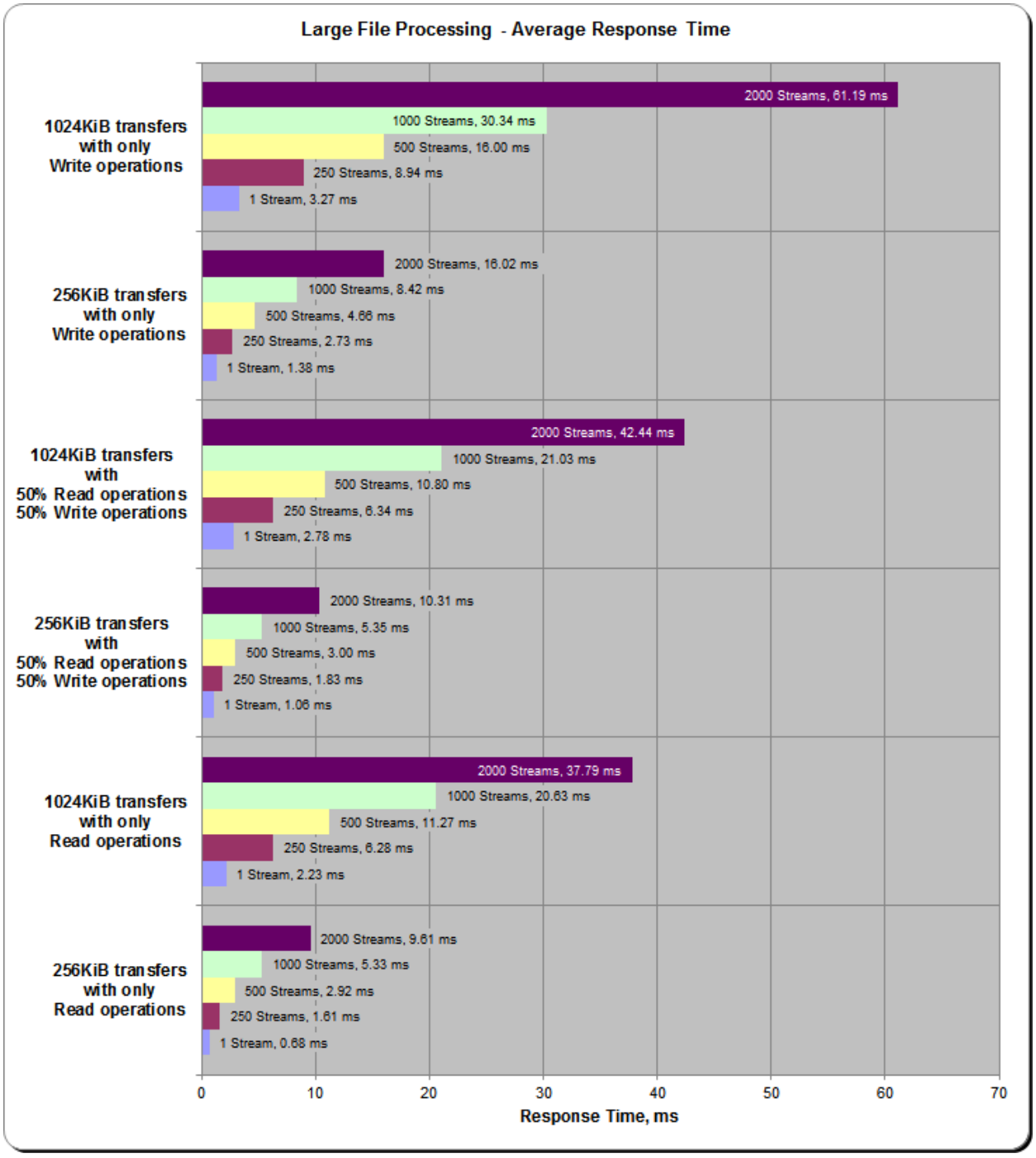


SPC-2 Large File Processing Average Response Time

The average Response Time, milliseconds (ms), for each Test Run in the three Test Phases of the SPC-2 Large File Processing Test is listed in the table below as well as illustrated in the following graph.

Test Run Sequence	1 Stream	250 Streams	500 Streams	1000 Streams	2000 Streams
Write 1024KiB	3.27	8.94	16.00	30.34	61.19
Write 256KiB	1.38	2.73	4.66	8.42	16.02
Read/Write 1024KiB	2.78	6.34	10.80	21.03	42.44
Read/Write 256KiB	1.06	1.83	3.00	5.35	10.31
Read 1024KiB	2.23	6.28	11.27	20.63	37.79
Read 256KiB	0.68	1.61	2.92	5.33	9.61

SPC-2 Large File Processing Average Response Time Graph



Large File Processing Test – WRITE ONLY Test Phase

Clause 10.6.9.1.1

1. *A table that will contain the following information for each "WRITE ONLY, 1024 KiB Transfer Size" Test Run:*
   - *The number of Streams specified.*
   - *The Average Data Rate, Average Data Rate per Stream, and Average Response Time reported at five second intervals.*
2. *Average Data Rate by Intervals, Average Data Rate per Stream by Intervals, and Average Response Time by Intervals graphs for the "WRITE ONLY, 1024 KiB Transfer Size" Test Runs as specified in Clauses 10.1.4 – 10.1.6.*
3. *A table that will contain the following information for each "WRITE ONLY, 256 KiB Transfer Size" Test Run:*
   - *The number of Streams specified.*
   - *The Average Data Rate, Average Data Rate per Stream, and Average Response Time reported at five second intervals.*
4. *Average Data Rate by Intervals, Average Data Rate per Stream by Intervals, and Average Response Time by Intervals graphs for the "WRITE ONLY, 256 KiB Transfer Size" Test Runs as specified in Clauses 10.1.4 – 10.1.6.*

A hyperlink for each of the above tables and graphs may appear in the FDR to provide access to the table or graph.

A hyperlink to a table with the SPC-2 "Large File Processing/WRITE ONLY/1024 KiB Transfer Size" Test Run data appears on the next page. That entry is followed by hyperlinks to graphs illustrating the average Data Rate, average Data Rate per Stream, and average Response Time produced by the same Test Runs. The table and graphs present the data at five-second intervals.

Immediately following the above SPC-2 "Large File Processing/WRITE ONLY/1024 KiB Transfer Size" entries will be hyperlinks for SPC-2 "Large File Processing/WRITE ONLY/256 KiB Transfer Size" table and graphs. The table contains the Test Run data and the graphs illustrate the average Data Rate, average Data Rate per Stream, and average Response Time produced by the Test Runs.

SPC-2 "Large File Processing/WRITE ONLY/1024 KiB Transfer Size" Test Run Data

SPC-2 "Large File Processing/WRITE ONLY/1024 KiB Transfer Size" Test Run Data Tables: Ramp-Up, Measurement Interval, Run-Out, and Ramp-Down Periods
(3 pages)

SPC-2 "Large File Processing/WRITE ONLY/1024 KiB Transfer Size" Graphs

Average Data Rate – Complete Test Run

Average Data Rate – Measurement Interval (MI) Only

Average Data Rate per Stream

Average Response Time

SPC-2 "Large File Processing/WRITE ONLY/1024 KiB Transfer Size" graphs
(four pages, 1 graph per page)

SPC-2 "Large File Processing/WRITE ONLY/256 KiB Transfer Size" Test Run Data

SPC-2 "Large File Processing/WRITE ONLY/256 KiB Transfer Size" Test Run Data Tables: Ramp-Up, Measurement Interval, Run-Out, and Ramp-Down Periods
(3 pages)

SPC-2 "Large File Processing/WRITE ONLY/256 KiB Transfer Size" Graphs

Average Data Rate – Complete Test Run

Average Data Rate – Measurement Interval (MI) Only

Average Data Rate per Stream

Average Response Time

SPC-2 "Large File Processing/WRITE ONLY/256 KiB Transfer Size" graphs
(four pages, 1 graph per page)

Large File Processing Test – READ-WRITE Test Phase

Clause 10.6.9.1.2

1. *A table that will contain the following information for each "READ-WRITE, 1024 KiB Transfer Size" Test Run:*
   - *The number of Streams specified.*
   - *The Average Data Rate, Average Data Rate per Stream, and Average Response Time reported at five second intervals.*
2. *Average Data Rate by Intervals, Average Data Rate per Stream by Intervals, and Average Response Time by Intervals graphs for the "READ-WRITE, 1024 KiB Transfer Size" Test Runs as specified in Clauses 10.1.4 – 10.1.6.*
3. *A table that will contain the following information for each " READ-WRITE, 256 KiB Transfer Size" Test Run:*
   - *The number of Streams specified.*
   - *The Average Data Rate, Average Data Rate per Stream, and Average Response Time reported at five second intervals.*
4. *Average Data Rate by Intervals, Average Data Rate per Stream by Intervals, and Average Response Time by Intervals graphs for the "READ-WRITE, 256 KiB Transfer Size" Test Runs as specified in Clauses 10.1.4 – 10.1.6.*

A hyperlink for each of the above tables and graphs may appear in the FDR to provide access to the table or graph.

A hyperlink to a table with the SPC-2 "Large File Processing/READ-WRITE/1024 KiB Transfer Size" Test Run data appears on the next page. That entry is followed by hyperlinks to graphs illustrating the average Data Rate, average Data Rate per Stream, and average Response Time produced by the same Test Runs. The table and graphs present the data at five-second intervals.

Immediately following the above SPC-2 "Large File Processing/READ-WRITE/1024 KiB Transfer Size" entries will be hyperlinks for SPC-2 "Large File Processing/READ-WRITE/256 KiB Transfer Size" table and graphs. The table contains the Test Run data and the graphs illustrate the average Data Rate, average Data Rate per Stream, and average Response Time produced by the Test Runs.

SPC-2 "Large File Processing/READ-WRITE/1024 KiB Transfer Size" Test Run Data

SPC-2 "Large File Processing/READ-WRITE/1024 KiB Transfer Size" Test Run Data Tables: Ramp-Up, Measurement Interval, Run-Out, and Ramp-Down Periods
(3 pages)

SPC-2 "Large File Processing/READ-WRITE/1024 KIB Transfer Size" Graphs

Average Data Rate – Complete Test Run

Average Data Rate – Measurement Interval (MI) Only

Average Data Rate per Stream

Average Response Time

SPC-2 "Large File Processing/READ-WRITE/1024 KiB Transfer Size" graphs
(four pages, 1 graph per page)

SPC-2 "Large File Processing/READ-WRITE/256 KiB Transfer Size" Test Run Data

SPC-2 "Large File Processing/READ-WRITE/256 KiB Transfer Size" Test Run Data Tables: Ramp-Up, Measurement Interval, Run-Out, and Ramp-Down Periods
(3 pages)

SPC-2 "Large File Processing/READ-WRITE/256 KiB Transfer Size" Graphs

Average Data Rate – Complete Test Run

Average Data Rate – Measurement Interval (MI) Only

Average Data Rate per Stream

Average Response Time

SPC-2 "Large File Processing/READ-WRITE/256 KiB Transfer Size" graphs
(four pages, 1 graph per page)

Large File Processing Test – READ ONLY Test Phase

Clause 10.6.9.1.3

1. *A table that will contain the following information for each "READ ONLY, 1024 KiB Transfer Size" Test Run:*
   - *The number of Streams specified.*
   - *The Average Data Rate, Average Data Rate per Stream, and Average Response Time reported at five second intervals.*
2. *Average Data Rate by Intervals, Average Data Rate per Stream by Intervals, and Average Response Time by Intervals graphs for the "READ ONLY, 1024 KiB Transfer Size" Test Runs as specified in Clauses 10.1.4 – 10.1.6.*
3. *A table that will contain the following information for each "READ ONLY, 256 KiB Transfer Size" Test Run:*
   - *The number of Streams specified.*
   - *The Average Data Rate, Average Data Rate per Stream, and Average Response Time reported at five second intervals.*
4. *Average Data Rate by Intervals, Average Data Rate per Stream by Intervals, and Average Response Time by Intervals graphs for the "READ ONLY, 256 KiB Transfer Size" Test Runs as specified in Clauses 10.1.4 – 10.1.6.*

A hyperlink for each of the above tables and graphs may appear in the FDR to provide access to the table or graph.

A hyperlink to a table with the SPC-2 "Large File Processing/READ ONLY/1024 KiB Transfer Size" Test Run data appears on the next page. That entry is followed by hyperlinks to graphs illustrating the average Data Rate, average Data Rate per Stream, and average Response Time produced by the same Test Runs. The table and graphs present the data at five-second intervals.

Immediately following the above SPC-2 "Large File Processing/READ ONLY/1024 KiB Transfer Size" entries will be hyperlinks for SPC-2 "Large File Processing/READ ONLY/256 KiB Transfer Size" table and graphs. The table contains the Test Run data and the graphs illustrate the average Data Rate, average Data Rate per Stream, and average Response Time produced by the Test Runs.

SPC-2 "Large File Processing/READ ONLY/1024 KiB Transfer Size" Test Run Data

SPC-2 "Large File Processing/READ ONLY/1024 KiB Transfer Size" Test Run Data Tables: Ramp-Up, Measurement Interval, Run-Out, and Ramp-Down Periods
(3 pages)

SPC-2 "Large File Processing/READ ONLY/1024 KiB Transfer Size" Graphs

Average Data Rate – Complete Test Run

Average Data Rate – Measurement Interval (MI) Only

Average Data Rate per Stream

Average Response Time

SPC-2 "Large File Processing/READ ONLY/1024 KiB Transfer Size" graphs
(four pages, 1 graph per page)

SPC-2 "Large File Processing/READ ONLY/256 KiB Transfer Size" Test Run Data

SPC-2 "Large File Processing/READ ONLY/256 KiB Transfer Size" Test Run Data Tables: Ramp-Up, Measurement Interval, Run-Out, and Ramp-Down Periods
(3 pages)

SPC-2 "Large File Processing/READ ONLY/256 KiB Transfer Size" Graphs

Average Data Rate – Complete Test Run

Average Data Rate – Measurement Interval (MI) Only

Average Data Rate per Stream

Average Response Time

SPC-2 "Large File Processing/READ ONLY/256 KiB Transfer Size" graphs
(four pages, 1 graph per page)

Large Database Query Test

Clause 6.4.4.1

The Large Database Query Test is comprised of a set of I/O operations representative of scans or joins of large relational tables such as those performed for data mining or business intelligence.

Clause 6.4.4.2

The Large Database Query Test has two Test Phases, which shall be executed in the following uninterrupted sequence:

1. *1024 KIB TRANSFER SIZE*
2. *64 KIB TRANSFER SIZE*

The BC shall not be restarted or manually disturbed, altered, or adjusted during the execution of the Large File Processing Test. If power is lost to the BC during this Test all results shall be rendered invalid and the Test re-run in its entirety.

Clause 10.6.9.2

The Full Disclosure Report will contain the following content for the Large Database Query Test:

1. *A listing of the SPC-2 Workload Generator commands and parameters used to execute each of the Test Runs in the Large Database Query Test.*
2. *The human readable SPC-2 Test Results File for each of the Test Runs in the Large Database Query Test.*
3. *A table that contains the following information for each Test Run in the two Test Phases of the Large Database Query Test:*
    - *Average Data Rate: The average Data Rate, in MB per second for the Measurement Interval of each Test Run in the Large Database Query Test.*
    - *Average Data Rate per Stream: The average Data Rate per Stream, in MB per second, for the Measurement Interval of each Test Run in the Large Database Query Test.*
    - *Average Response Time: The average response time, in milliseconds (ms), for the Measurement Interval of each Test Run in the Large Database Query Test.*
4. *Average Data Rate, Average Data Rate per Stream and Average Response time graphs as defined in Clauses 10.1.1, 10.1.2 and 10.1.3.*

SPC-2 Workload Generator Commands and Parameters

The SPC-2 Workload Generator commands and parameters for the Large Database Query Test Runs are documented in Appendix E: SPC-2 Workload Generator Execution Commands and Parameters on Page 100.

SPC-2 Test Results File

A link to the SPC-2 Test Results file generated from the Large Database Query Test Runs is listed below.

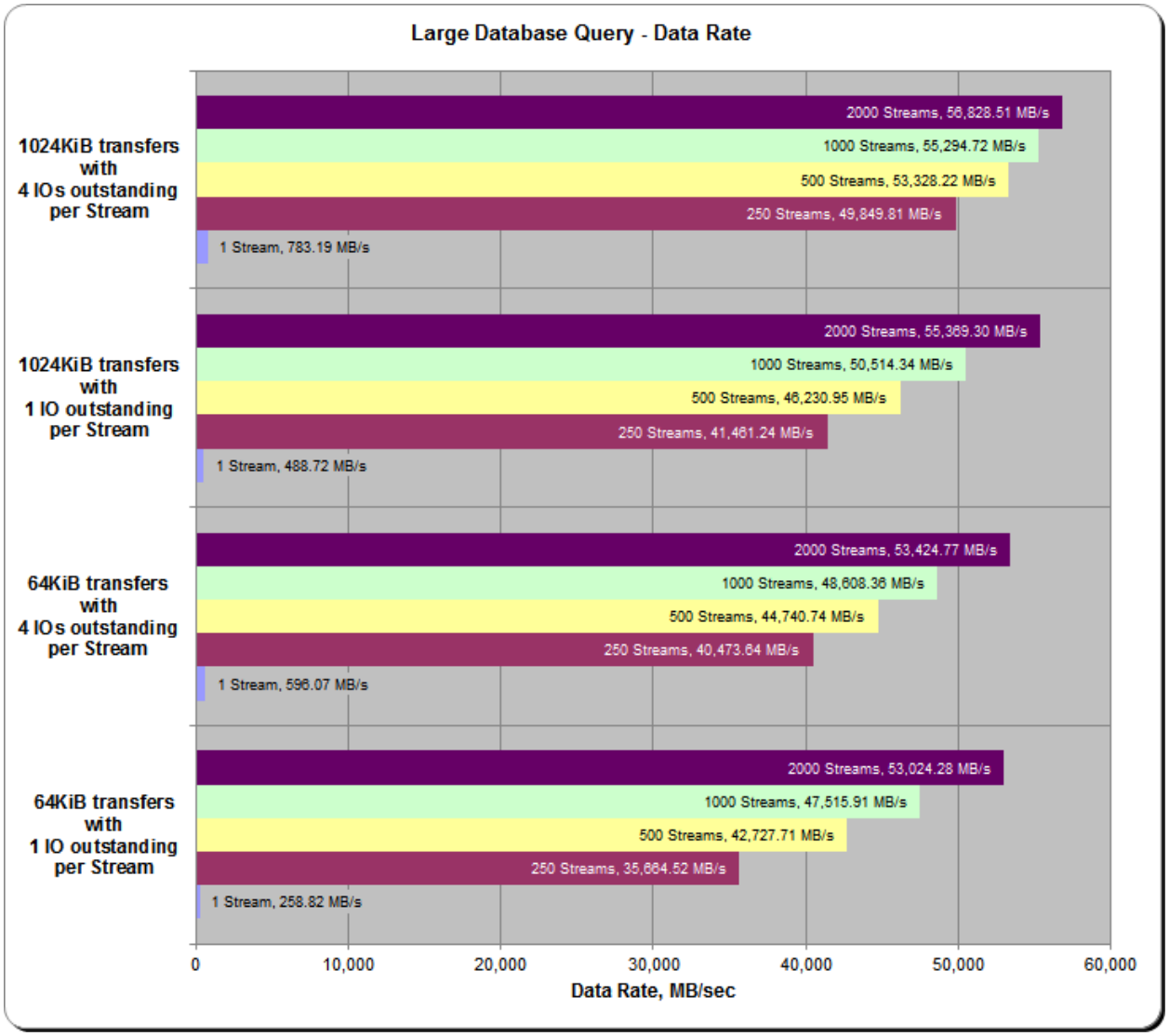
SPC-2 Large Database Query Test Results File

SPC-2 Large Database Query Average Data Rates (MB/s)

The average Data Rate (MB/s) for each Test Run in the two Test Phases of the SPC-2 Large Database Query Test is listed in the table below as well as illustrated in the following graph.

Test Run Sequence	1 Stream	250 Streams	500 Streams	1000 Streams	2000 Streams
1024KiB w/ 4 IOs/Stream	783.19	49,849.81	53,328.22	55,294.72	56,828.51
1024KiB w/ 1 IO/Stream	488.72	41,461.24	46,230.95	50,514.34	55,369.30
64KiB w/ 4 IOs/Stream	596.07	40,473.64	44,740.74	48,608.36	53,424.77
64KiB w/ 1 IO/Stream	258.82	35,664.52	42,727.71	47,515.91	53,024.28

SPC-2 Large Database Query Average Data Rates Graph

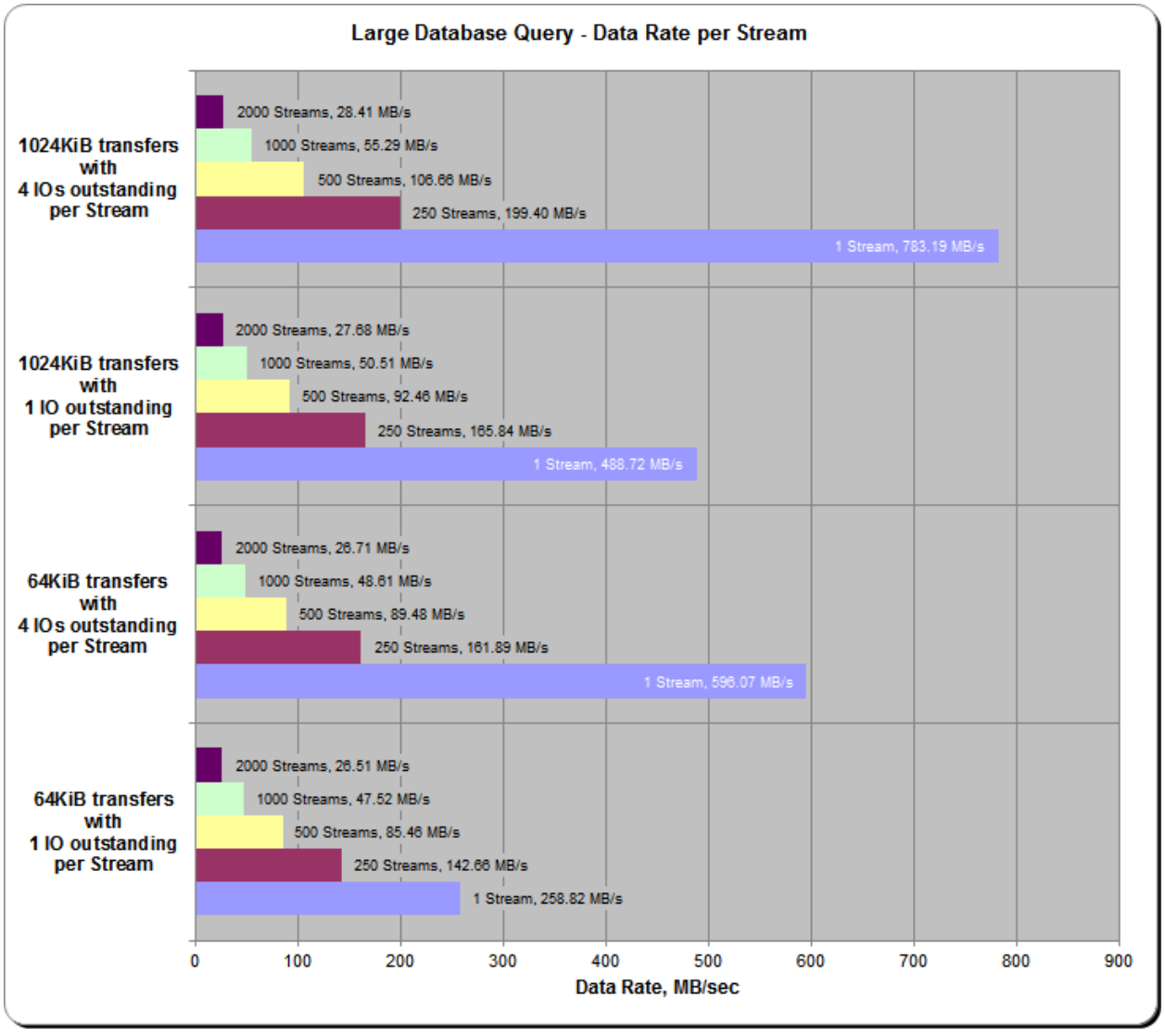


SPC-2 Large Database Query Average Data Rate per Stream

The average Data Rate per Stream for each Test Run in the two Test Phases of the SPC-2 Large Database Query Test is listed in the table below as well as illustrated in the following graph.

Test Run Sequence	1 Stream	250 Streams	500 Streams	1000 Streams	2000 Streams
1024KiB w/ 4 IOs/Stream	783.19	199.40	106.66	55.29	28.41
1024KiB w/ 1 IO/Stream	488.72	165.84	92.46	50.51	27.68
64KiB w/ 4 IOs/Stream	596.07	161.89	89.48	48.61	26.71
64KiB w/ 1 IO/Stream	258.82	142.66	85.46	47.52	26.51

SPC-2 Large Database Query Average Data Rate per Stream Graph

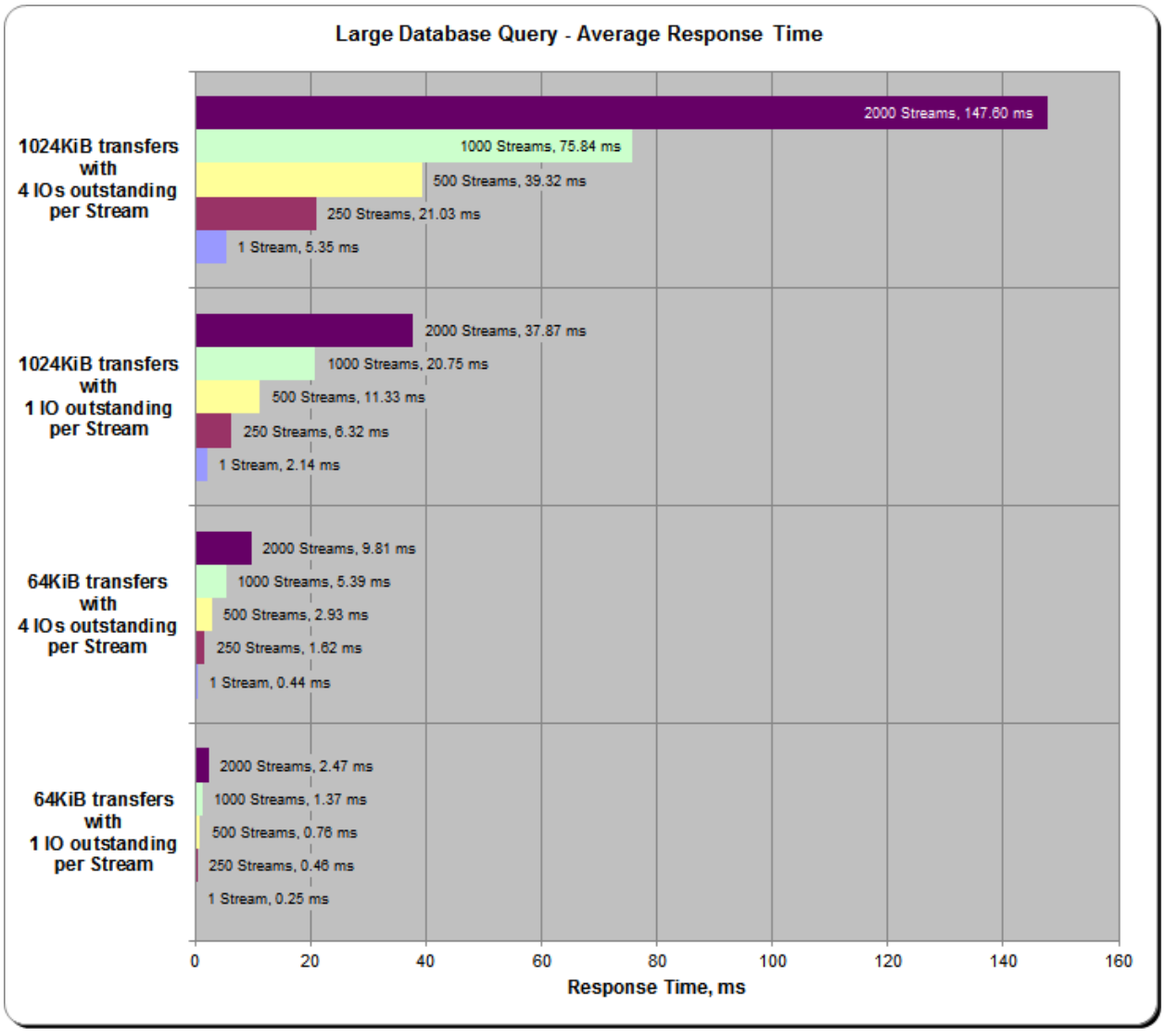


SPC-2 Large Database Query Average Response Time

The average Response Time, in milliseconds, for each Test Run in the two Test Phases of the SPC-2 Large Database Query Test is listed in the table below as well as illustrated in the following graph.

Test Run Sequence	1 Stream	250 Streams	500 Streams	1000 Streams	2000 Streams
1024KiB w/ 4 IOs/Stream	5.35	21.03	39.32	75.84	147.60
1024KiB w/ 1 IO/Stream	2.14	6.32	11.33	20.75	37.87
64KiB w/ 4 IOs/Stream	0.44	1.62	2.93	5.39	9.81
64KiB w/ 1 IO/Stream	0.25	0.46	0.76	1.37	2.47

SPC-2 Large Database Query Average Response Time Graph



Large Database Query Test – 1024 KIB TRANSFER SIZE Test Phase

Clause 10.6.9.2.1

1. *A table that will contain the following information for each "1024 KiB Transfer Size, 4 Outstanding I/Os" Test Run:*
   - *The number of Streams specified.*
   - *The Average Data Rate, Average Data Rate per Stream, and Average Response Time reported at five second intervals.*
2. *Average Data Rate by Intervals, Average Data Rate per Stream by Intervals, and Average Response Time by Intervals graphs for the "1024 KiB Transfer Size, 4 Outstanding I/Os" Test Runs as specified in Clauses 10.1.4 – 10.1.6.*
3. *A table that will contain the following information for each "1024 KiB Transfer Size, 1 Outstanding I/O" Test Run:*
   - *The number of Streams specified.*
   - *The Average Data Rate, Average Data Rate per Stream, and Average Response Time reported at five second intervals.*
4. *Average Data Rate by Intervals, Average Data Rate per Stream by Intervals, and Average Response Time by Intervals graphs for the "1024 KiB Transfer Size, 1 Outstanding I/O" Test Runs as specified in Clauses 10.1.4 – 10.1.6.*

A hyperlink for each of the above tables and graphs may appear in the FDR to provide access to the table or graph.

A hyperlink to a table with the SPC-2 "Large Database Query/1024 KIB TRANSFER SIZE/4 Outstanding I/Os" Test Run data appears on the next page. That entry is followed by hyperlinks to graphs illustrating the average Data Rate, average Data Rate per Stream, and average Response Time produced by the same Test Runs. The table and graphs present the data at five-second intervals.

Immediately following the above SPC-2 "Large Database Query/1024 KIB TRANSFER SIZE/4 Outstanding I/Os" entries will be hyperlinks for SPC-2 "Large Database Query/1024 KIB TRANSFER SIZE/1 Outstanding I/O" table and graphs. The table contains the Test Run data and the graphs illustrate the average Data Rate, average Data Rate per Stream, and average Response Time produced by the Test Runs.

SPC-2 "Large Database Query/1024 KIB TRANSFER SIZE/4 Outstanding I/Os" Test Run Data

SPC-2 "Large Database Query/1024 KIB TRANSFER SIZE/4 Outstanding I/Os" Test Run Data Tables: Ramp-Up, Measurement Interval, Run-Out, and Ramp-Down Periods
(3 pages)

SPC-2 "Large Database Query/1024 KIB TRANSFER SIZE/4 Outstanding I/Os" Graphs

Average Data Rate – Complete Test Run

Average Data Rate – Measurement Interval (MI) Only

Average Data Rate per Stream

Average Response Time

SPC-2 "Large Database Query/1024 KIB TRANSFER SIZE/4 Outstanding I/Os" graphs
(four pages, 1 graph per page)

SPC-2 "Large Database Query/1024 KIB TRANSFER SIZE/1 Outstanding I/O" Test Run Data

SPC-2 "Large Database Query/1024 KIB TRANSFER SIZE/1 Outstanding I/O" Test Run Data Tables: Ramp-Up, Measurement Interval, Run-Out, and Ramp-Down Periods
(3 pages)

SPC-2 "Large Database Query/1024 KIB TRANSFER SIZE/1 Outstanding I/O" Graphs

Average Data Rate – Complete Test Run

Average Data Rate – Measurement Interval (MI) Only

Average Data Rate per Stream

Average Response Time

SPC-2 "Large Database Query/1024 KIB TRANSFER SIZE/1 Outstanding I/O" graphs
(four pages, 1 graph per page)

Large Database Query Test – 64 KiB TRANSFER SIZE Test Phase

Clause 10.6.9.2.2

1. *A table that will contain the following information for each "64 KiB Transfer Size, 4 Outstanding I/Os" Test Run:*
   - *The number of Streams specified.*
   - *The Average Data Rate, Average Data Rate per Stream, and Average Response Time reported at five second intervals.*
2. *Average Data Rate by Intervals, Average Data Rate per Stream by Intervals, and Average Response Time by Intervals graphs for the "64 KiB Transfer Size, 4 Outstanding I/Os" Test Runs as specified in Clauses 10.1.4 – 10.1.6.*
3. *A table that will contain the following information for each "64 KiB Transfer Size, 1 Outstanding I/O" Test Run:*
   - *The number of Streams specified.*
   - *The Average Data Rate, Average Data Rate per Stream, and Average Response Time reported at five second intervals.*
4. *Average Data Rate by Intervals, Average Data Rate per Stream by Intervals, and Average Response Time by Intervals graphs for the "64 KiB Transfer Size, 1 Outstanding I/O" Test Runs as specified in Clauses 10.1.4 – 10.1.6.*

A hyperlink for each of the above tables and graphs may appear in the FDR to provide access to the table or graph.

A hyperlink to a table with the SPC-2 "Large Database Query/64 KIB TRANSFER SIZE/4 Outstanding I/Os" Test Run data appears on the next page. That entry is followed by hyperlinks to graphs illustrating the average Data Rate, average Data Rate per Stream, and average Response Time produced by the same Test Runs. The table and graphs present the data at five-second intervals.

Immediately following the above SPC-2 "Large Database Query/64 KIB TRANSFER SIZE/4 Outstanding I/Os" entries will be hyperlinks for SPC-2 "Large Database Query/64 KIB TRANSFER SIZE/1 Outstanding I/O" table and graphs. The table contains the Test Run data and the graphs illustrate the average Data Rate, average Data Rate per Stream, and average Response Time produced by the Test Runs.

SPC-2 "Large Database Query/64 KIB TRANSFER SIZE/4 Outstanding I/Os" Test Run Data

SPC-2 "Large Database Query/64 KIB TRANSFER SIZE/4 Outstanding I/Os" Test Run Data Tables: Ramp-Up, Measurement Interval, Run-Out, and Ramp-Down Periods
(3 pages)

SPC-2 "Large Database Query/64 KIB TRANSFER SIZE/4 Outstanding I/Os" Graphs

Average Data Rate – Complete Test Run

Average Data Rate – Measurement Interval (MI) Only

Average Data Rate per Stream

Average Response Time

SPC-2 "Large Database Query/64 KIB TRANSFER SIZE/4 Outstanding I/Os" graphs
(four pages, 1 graph per page)

SPC-2 "Large Database Query/64 KIB TRANSFER SIZE/1 Outstanding I/O" Test Run Data

SPC-2 "Large Database Query/64 KIB TRANSFER SIZE/1 Outstanding I/O" Test Run Data Tables: Ramp-Up, Measurement Interval, Run-Out, and Ramp-Down Periods
(3 pages)

SPC-2 "Large Database Query/64 KIB TRANSFER SIZE/1 Outstanding I/O" Graphs

Average Data Rate – Complete Test Run

Average Data Rate – Measurement Interval (MI) Only

Average Data Rate per Stream

Average Response Time

SPC-2 "Large Database Query/64 KIB TRANSFER SIZE/1 Outstanding I/O" graphs
(four pages, 1 graph per page)

Video on Demand Delivery Test

Clause 6.4.5.1

The Video on Demand Delivery Test represents the I/O operations required to enable individualized video entertainment for a community of subscribers, which draw from a digital film library.

Clause 6.4.5.2

The Video on Demand Delivery Test consists of one (1) Test Run.

The BC shall not be restarted or manually disturbed, altered, or adjusted during the execution of the Video on Demand Delivery Test. If power is lost to the BC during this Test all results shall be rendered invalid and the Test re-run in its entirety.

Clause 10.6.9.3

The Full Disclosure Report will contain the following content for the Video on Demand Delivery Test:

1. *A listing of the SPC-2 Workload Generator commands and parameters used to execute the Test Run in the Video on Demand Delivery Test.*
2. *The human readable SPC-2 Test Results File for the Test Run in the Video on Demand Delivery Test.*
3. *A table that contains the following information for the Test Run in the Video on Demand Delivery Test:*
    - *The number Streams specified.*
    - *The Ramp-Up duration in seconds.*
    - *The Measurement Interval duration in seconds.*
    - *The average data rate, in MB per second, for the Measurement Interval.*
    - *The average data rate, in MB per second, per Stream for the Measurement Interval.*
4. *A table that contains the following information for the single Video on Demand Delivery Test Run:*
    - *The number Streams specified.*
    - *The average data rate, average data rate per stream, average Response Time, and Maximum Response Time reported at 60 second intervals.*
5. *Average Data Rate by Intervals, Average Data Rate per Stream by Intervals, and Average Response Time by Intervals graphs for the single Video on Demand Delivery Test Run as specified in Clause 10.1.8.*
6. *A Maximum Response Time (intervals) graph as specified in Clause 10.1.8.*

SPC-2 Workload Generator Commands and Parameters

The SPC-2 Workload Generator commands and parameters for the Video on Demand Delivery Test Run are documented in Appendix E: SPC-2 Workload Generator Execution Commands and Parameters on Page 100..

SPC-2 Test Results File

A link to the SPC-2 Test Results file generated from the Video on Demand Delivery Test Run is listed below.

SPC-2 Video on Demand Delivery Test Results File

SPC-2 Video on Demand Delivery Test Run Data

The number of Streams specified, Ramp-Up duration in seconds, Measurement Interval duration in seconds, average Data Rate for the Measurement Interval, and average Data Rate per Stream for the Measurement Interval are listed in the following table.

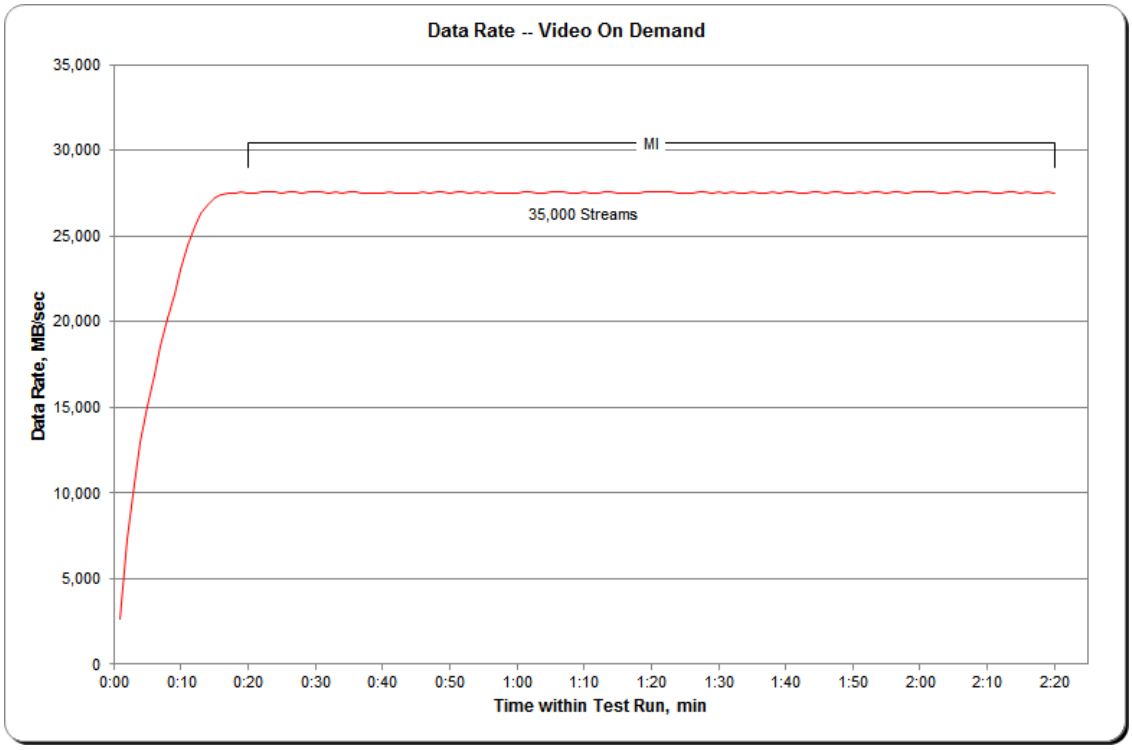
SPC-2-VOD	TR1
Number of Streams	35,000
Ramp-up Time, sec	1,200
Measurement Interval, sec	7,200
Average Data Rate, MB/sec	27,525.10
Per Stream Data Rate, MB/sec	0.79
Average Response Time, ms	1.02
Average Max Response Time, ms	249.72

Video on Demand Delivery Test – TEST RUN DATA BY INTERVAL

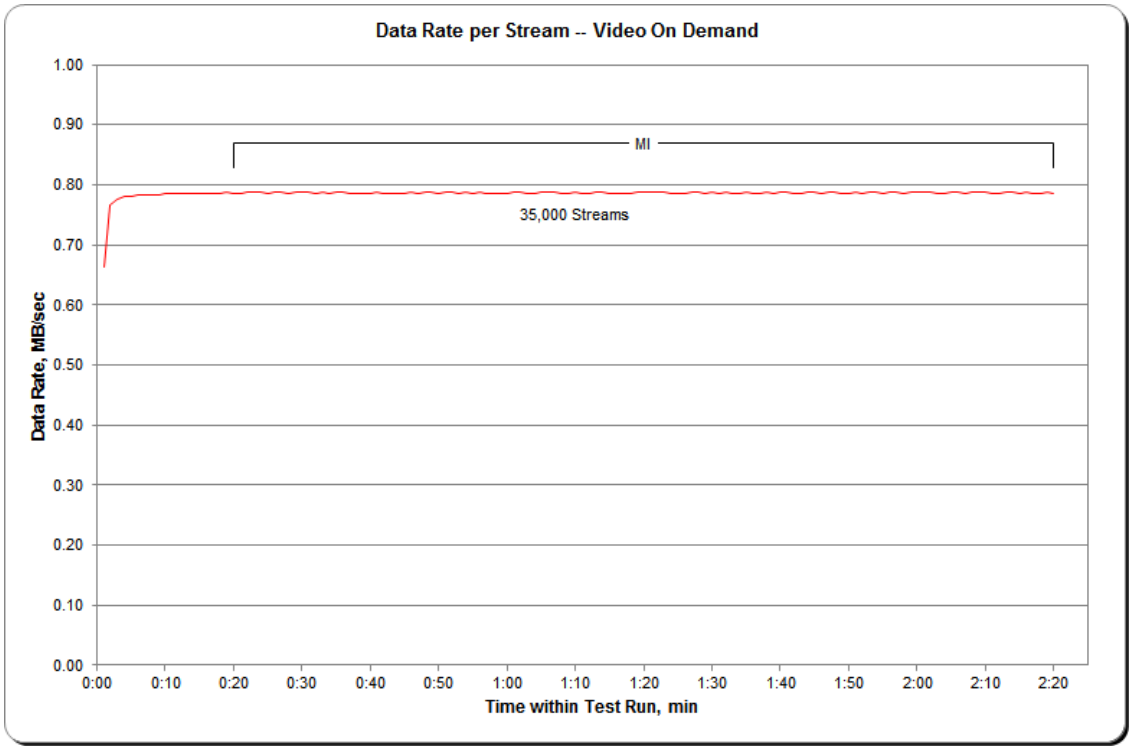
The SPC-2 Video on Demand Delivery Test Run data is contained in the table that appears below. That table is followed by graphs illustrating the average Data Rate and average Data Rate per Stream produced by the same Test Runs. The table and graphs present the data at sixty second intervals.

TR1	35,000 Streams				TR1	35,000 Streams				TR1	35,000 Streams			
Test Run Sequence Time	Data Rate, MB/sec	Data Rate / Stream, MB/sec	Response Time, ms	Maximum Response Time, ms	Test Run Sequence Time	Data Rate, MB/sec	Data Rate / Stream, MB/sec	Response Time, ms	Maximum Response Time, ms	Test Run Sequence Time	Data Rate, MB/sec	Data Rate / Stream, MB/sec	Response Time, ms	Maximum Response Time, ms
0:01:00	2,652.14	0.66	2.78	186.70	0:48:00	27,532.69	0.79	1.06	250.11	1:35:00	27,538.27	0.79	0.94	213.98
0:02:00	7,313.05	0.77	1.43	356.38	0:49:00	27,530.53	0.79	1.05	222.75	1:36:00	27,520.98	0.79	0.93	220.26
0:03:00	10,535.41	0.78	0.96	145.90	0:50:00	27,518.65	0.79	1.05	235.84	1:37:00	27,513.56	0.79	0.92	228.88
0:04:00	12,982.95	0.78	0.90	140.50	0:51:00	27,534.45	0.79	1.06	240.62	1:38:00	27,528.44	0.79	0.92	206.64
0:05:00	15,041.28	0.78	0.88	111.50	0:52:00	27,550.52	0.79	1.06	220.53	1:39:00	27,516.70	0.79	0.92	197.97
0:06:00	16,948.58	0.78	0.90	182.82	0:53:00	27,513.04	0.79	1.04	341.88	1:40:00	27,533.69	0.79	0.92	222.80
0:07:00	18,627.79	0.78	1.20	404.56	0:54:00	27,542.41	0.79	1.03	247.83	1:41:00	27,531.72	0.79	1.13	307.83
0:08:00	20,204.07	0.78	0.94	175.21	0:55:00	27,514.32	0.79	1.03	184.30	1:42:00	27,525.58	0.79	1.10	271.52
0:09:00	21,616.11	0.78	1.00	256.85	0:56:00	27,535.80	0.79	1.02	256.84	1:43:00	27,526.49	0.79	1.07	249.64
0:10:00	23,040.28	0.78	0.99	183.27	0:57:00	27,513.96	0.79	1.02	252.30	1:44:00	27,538.97	0.79	1.04	210.43
0:11:00	24,432.27	0.78	1.01	196.30	0:58:00	27,504.84	0.79	1.01	240.74	1:45:00	27,531.79	0.79	1.04	282.96
0:12:00	25,585.22	0.79	1.05	260.63	0:59:00	27,514.10	0.79	1.02	220.97	1:46:00	27,502.82	0.79	1.03	213.00
0:13:00	26,344.05	0.79	1.07	229.10	1:00:00	27,509.42	0.79	1.02	248.92	1:47:00	27,538.43	0.79	1.03	269.85
0:14:00	26,848.75	0.79	1.07	219.07	1:01:00	27,535.91	0.79	1.21	353.22	1:48:00	27,530.93	0.79	1.02	318.74
0:15:00	27,208.66	0.79	1.06	243.41	1:02:00	27,533.11	0.79	1.17	314.99	1:49:00	27,514.85	0.79	1.01	253.75
0:16:00	27,435.89	0.79	1.05	276.78	1:03:00	27,500.45	0.79	1.11	258.56	1:50:00	27,524.52	0.79	1.00	231.01
0:17:00	27,525.26	0.79	1.04	271.20	1:04:00	27,524.42	0.79	1.06	211.13	1:51:00	27,532.19	0.79	0.99	246.07
0:18:00	27,503.49	0.79	1.04	254.52	1:05:00	27,542.63	0.79	1.06	238.42	1:52:00	27,509.51	0.79	0.98	240.14
0:19:00	27,530.01	0.79	1.04	238.60	1:06:00	27,537.21	0.79	1.04	299.11	1:53:00	27,527.73	0.79	0.97	255.80
0:20:00	27,525.90	0.79	1.03	263.65	1:07:00	27,539.21	0.79	1.03	264.75	1:54:00	27,547.26	0.79	0.96	225.27
0:21:00	27,508.04	0.79	1.23	308.04	1:08:00	27,508.33	0.79	1.02	216.89	1:55:00	27,495.33	0.79	0.98	183.85
0:22:00	27,550.74	0.79	1.18	286.28	1:09:00	27,513.63	0.79	1.01	227.79	1:56:00	27,541.20	0.79	0.97	242.38
0:23:00	27,531.66	0.79	1.13	273.03	1:10:00	27,530.19	0.79	1.00	231.60	1:57:00	27,530.56	0.79	0.98	232.83
0:24:00	27,532.83	0.79	1.10	230.72	1:11:00	27,523.75	0.79	0.99	250.30	1:58:00	27,526.16	0.79	0.99	286.72
0:25:00	27,516.97	0.79	1.07	253.76	1:12:00	27,516.96	0.79	0.98	215.53	1:59:00	27,546.77	0.79	0.98	210.21
0:26:00	27,536.92	0.79	1.06	246.78	1:13:00	27,534.76	0.79	0.95	253.61	2:00:00	27,534.83	0.79	0.97	203.63
0:27:00	27,532.21	0.79	1.06	223.65	1:14:00	27,527.94	0.79	0.94	219.94	2:01:00	27,538.66	0.79	1.17	267.75
0:28:00	27,498.81	0.79	1.05	229.49	1:15:00	27,511.99	0.79	0.93	240.88	2:02:00	27,527.86	0.79	1.12	275.06
0:29:00	27,540.53	0.79	1.05	242.11	1:16:00	27,514.45	0.79	0.92	191.69	2:03:00	27,494.85	0.79	1.07	292.24
0:30:00	27,544.54	0.79	1.05	288.22	1:17:00	27,503.07	0.79	0.91	304.31	2:04:00	27,502.04	0.79	1.05	206.39
0:31:00	27,542.38	0.79	1.04	296.91	1:18:00	27,516.82	0.79	0.91	235.81	2:05:00	27,533.11	0.79	1.04	294.82
0:32:00	27,521.28	0.79	1.03	235.71	1:19:00	27,529.12	0.79	0.92	205.11	2:06:00	27,547.25	0.79	1.04	239.62
0:33:00	27,542.11	0.79	1.01	197.27	1:20:00	27,552.27	0.79	0.92	214.01	2:07:00	27,509.85	0.79	1.03	278.88
0:34:00	27,513.11	0.79	1.00	186.28	1:21:00	27,534.85	0.79	1.12	308.58	2:08:00	27,546.81	0.79	1.02	267.88
0:35:00	27,538.35	0.79	0.99	229.02	1:22:00	27,529.73	0.79	1.07	253.70	2:09:00	27,538.66	0.79	1.01	242.20
0:36:00	27,532.48	0.79	0.98	287.16	1:23:00	27,544.59	0.79	1.04	272.94	2:10:00	27,553.36	0.79	1.00	329.42
0:37:00	27,524.14	0.79	0.98	290.39	1:24:00	27,521.59	0.79	1.02	259.40	2:11:00	27,526.65	0.79	0.98	196.82
0:38:00	27,508.84	0.79	0.98	241.28	1:25:00	27,499.60	0.79	1.02	236.18	2:12:00	27,526.16	0.79	0.96	229.12
0:39:00	27,507.74	0.79	0.98	220.89	1:26:00	27,509.73	0.79	1.01	267.22	2:13:00	27,534.87	0.79	0.95	240.18
0:40:00	27,523.77	0.79	0.98	238.61	1:27:00	27,533.67	0.79	1.00	243.08	2:14:00	27,542.79	0.79	0.94	208.04
0:41:00	27,547.41	0.79	1.17	293.85	1:28:00	27,539.28	0.79	1.00	239.29	2:15:00	27,504.52	0.79	0.94	196.01
0:42:00	27,525.74	0.79	1.13	347.94	1:29:00	27,488.72	0.79	0.99	222.00	2:16:00	27,535.44	0.79	0.93	206.87
0:43:00	27,520.70	0.79	1.08	252.09	1:30:00	27,540.32	0.79	0.98	212.22	2:17:00	27,525.95	0.79	0.93	226.57
0:44:00	27,499.18	0.79	1.06	282.74	1:31:00	27,516.60	0.79	0.97	307.06	2:18:00	27,521.69	0.79	0.93	277.40
0:45:00	27,526.01	0.79	1.05	236.32	1:32:00	27,540.38	0.79	0.95	244.65	2:19:00	27,543.33	0.79	0.93	287.67
0:46:00	27,552.70	0.79	1.06	354.29	1:33:00	27,516.56	0.79	0.94	255.83	2:20:00	27,523.48	0.79	0.93	253.74
0:47:00	27,523.58	0.79	1.06	288.97	1:34:00	27,510.83	0.79	0.94	197.52	0:00:00	0.00	0.00	0.00	0.00

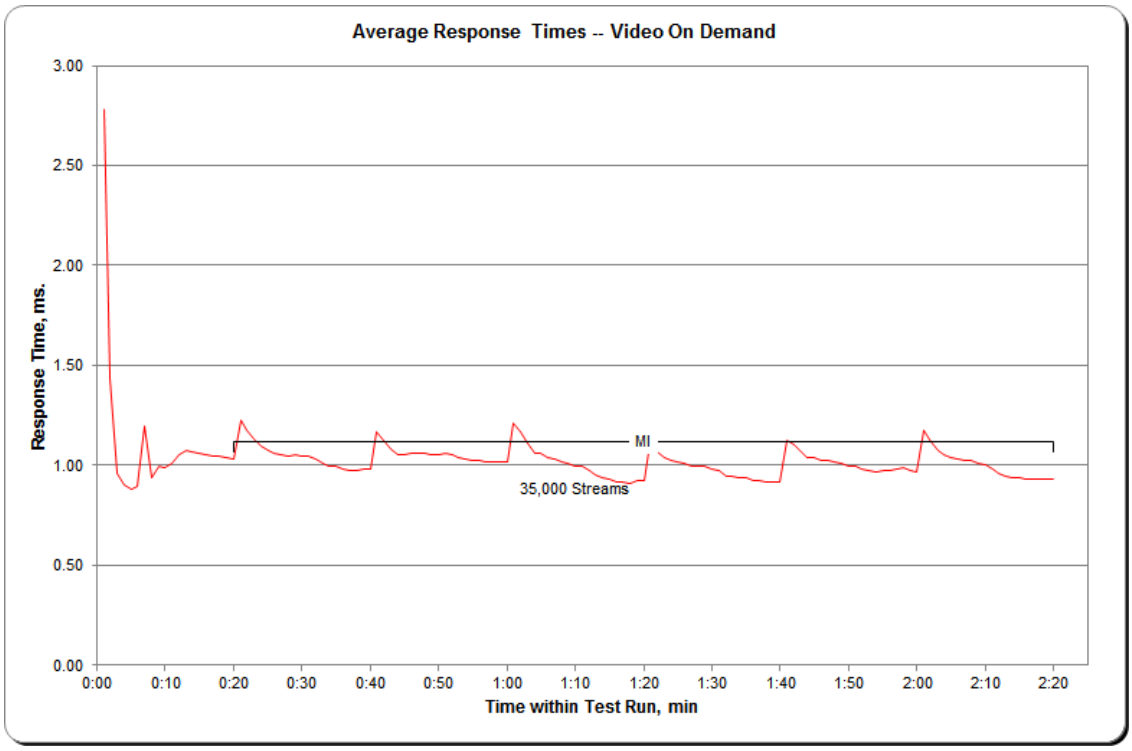
SPC-2 Video on Demand Delivery Average Data Rate Graph



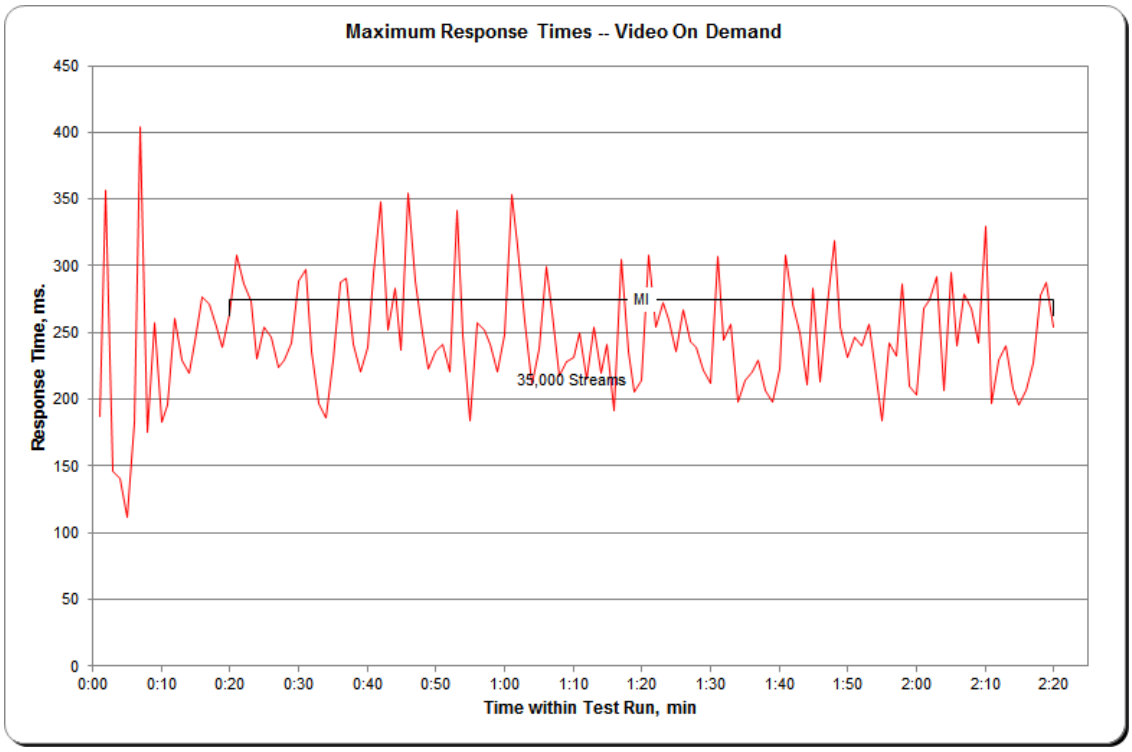
SPC-2 Video on Demand Delivery Average Data Rate per Stream Graph



SPC-2 Video on Demand Delivery Average Response Time Graph



SPC-2 Video on Demand Delivery Maximum Response Time Graph



Data Persistence Test

Clause 7

The Data Persistence Test demonstrates the Tested Storage Configuration (TSC):

- *Is capable of maintain data integrity across a power cycle.*
- *Ensures the transfer of data between Logical Volumes and host systems occurs without corruption or loss.*

The SPC-2 Workload Generator will write a specific pattern at randomly selected locations throughout the Total ASU Capacity (Persistence Test Run 1). The SPC-2 Workload Generator will retain the information necessary to later validate the pattern written at each location.

The Tested Storage Configuration will be shutdown and restarted using a power off/power on cycle at the end of the above sequence of write operations. In addition, any caches employing battery backup must be flushed/emptied.

Restart the TSC, and if the Host System(s) were shutdown and powered off, restart the Host System(s).

The SPC-2 Workload Generator will utilize the retained data from Persistence Test Run 1 to verify (Persistence Run 2) the bit patterns written in Persistence Test Run 1 and their corresponding location.

Clause 10.6.9.4

The Full Disclosure Report will contain the following content for the Data Persistence Test:

1. *A listing of the SPC-2 Workload Generator commands and parameters used to execute each of the Test Runs in the Persistence Test.*
2. *The human readable SPC-2 Test Results File for each of the Test Runs in the Data Persistence Test.*
3. *A table from the successful Persistence Test, which contains the results from the test.*

SPC-2 Workload Generator Commands and Parameters

The SPC-2 Workload Generator commands and parameters for the Persistence Test Runs are documented in Appendix E: SPC-2 Workload Generator Execution Commands and Parameters on Page 100.

Data Persistence Test Results File

A link to the test result file generated from each Data Persistence Test Run is listed below.

Persistence 1 Test Run *(write phase)* Results File

Persistence 2 Test Run *(read phase)* Results File

Data Persistence Test Results

Data Persistence Test Results	
Data Persistence Test Number: 1	
Total Number of Logical Blocks Written	7,895,930
Total Number of Logical Blocks Re-referenced	101,629
Total Number of Logical Blocks Verified	7,794,301
Total Number of Logical Blocks that Failed Verification	0
Number of Failed I/O Requests in the process of the Test	0

PRICED STORAGE CONFIGURATION AVAILABILITY DATE

Clause 10.6.9

The committed delivery date for general availability (Availability Date) of all products that comprise the Priced Storage Configuration must be reported. When the Priced Storage Configuration includes products or components with different availability dates, the reported Availability Date must be the date at which all components are committed to be available. All availability dates, whether for individual components or for the Priced Storage Configuration as a whole, must be disclosed to a precision of one day.

The Availability Data shall be stated in either a combination of specific alphanumeric month, numeric day and numeric year or as "Currently Available".

The Huawei OceanStor™ 6800 V3, as documented in this SPC-2 Full Disclosure Report, is currently available for customer purchase and shipment.

ANOMALIES OR IRREGULARITIES

Clause 10.6.12

The FDR shall include a clear and complete description of any anomalies or irregularities encountered in the course of executing the SPC-2 benchmark that may in any way call into question the accuracy, verifiability, or authenticity of information published in this FDR.

There were no anomalies or irregularities encountered during the SPC-2 Onsite Audit of the Huawei OceanStor™ 6800 V3.

APPENDIX A: SPC-2 GLOSSARY

"Decimal" *(powers of ten)* Measurement Units

In the storage industry, the terms "kilo", "mega", "giga", "tera", "peta", and "exa" are commonly used prefixes for computing performance and capacity. For the purposes of the SPC workload definitions, all of the following terms are defined in "powers of ten" measurement units.

- A kilobyte (KB) is equal to 1,000 (10^3) bytes.
- A megabyte (MB) is equal to 1,000,000 (10^6) bytes.
- A gigabyte (GB) is equal to 1,000,000,000 (10^9) bytes.
- A terabyte (TB) is equal to 1,000,000,000,000 (10^{12}) bytes.
- A petabyte (PB) is equal to 1,000,000,000,000,000 (10^{15}) bytes
- An exabyte (EB) is equal to 1,000,000,000,000,000,000 (10^{18}) bytes

"Binary" *(powers of two)* Measurement Units

The sizes reported by many operating system components use "powers of two" measurement units rather than "power of ten" units. The following standardized definitions and terms are also valid and may be used in this document.

- A kibibyte (KiB) is equal to 1,024 (2^{10}) bytes.
- A mebibyte (MiB) is equal to 1,048,576 (2^{20}) bytes.
- A gigibyte (GiB) is equal to 1,073,741,824 (2^{30}) bytes.
- A tebibyte (TiB) is equal to 1,099,511,627,776 (2^{40}) bytes.
- A pebibyte (PiB) is equal to 1,125,899,906,842,624 (2^{50}) bytes.
- An exbibyte (EiB) is equal to 1,152,921,504,606,846,967 (2^{60}) bytes.

SPC-2 Data Repository Definitions

Total ASU Capacity: The total storage capacity read and written in the course of executing the SPC-2 benchmark.

Application Storage Unit (ASU): The logical interface between the storage and SPC-2 Workload Generator. The ASU is implemented on one or more Logical Volume.

Logical Volume: The division of Addressable Storage Capacity into individually addressable logical units of storage used in the SPC-2 benchmark. Each Logical Volume is implemented as a single, contiguous address space.

Addressable Storage Capacity: The total storage (sum of Logical Volumes) that can be read and written by application programs such as the SPC-2 Workload Generator.

Configured Storage Capacity: This capacity includes the Addressable Storage Capacity and any other storage (parity disks, hot spares, etc.) necessary to implement the Addressable Storage Capacity.

Physical Storage Capacity: The formatted capacity of all storage devices physically present in the Tested Storage Configuration (TSC).

Data Protection Overhead: The storage capacity required to implement the selected level of data protection.

Required Storage: The amount of Configured Storage Capacity required to implement the Addressable Storage Configuration, excluding the storage required for the ASU.

Global Storage Overhead: The amount of Physical Storage Capacity that is required for storage subsystem use and unavailable for use by application programs.

Total Unused Storage: The sum of unused storage capacity within the Physical Storage Capacity, Configured Storage Capacity, and Addressable Storage Capacity.

SPC-2 Data Protection Levels

Protected 1: The single point of failure of any ***storage device*** in the configuration will not result in permanent loss of access to or integrity of the SPC-2 Data Repository.

Protected 2: The single point of failure of any ***component*** in the configuration will not result in permanent loss of access to or integrity of the SPC-2 Data Repository.

SPC-2 Test Execution Definitions

Completed I/O Request: An I/O Request with a Start Time and a Completion Time *(see "I/O Completion Types" illustrated below).*

Completion Time: The time recorded by the Workload Generator when an I/O Request is completed by the Tested Storage Configuration (TSC) as signaled by System Software.

Data Rate: The data volume, in MB, transferred by all Measured I/O Requests in an SPC-2 Test Run divided by the length of the Test Run in seconds.

Failed I/O Request: Any I/O Request issued by the SPC-2 Workload Generator that meets one of the following conditions *(see "I/O Completion Types" illustrated below)*:

- The I/O Request was signaled as failed by System Software.
- The I/O Request started within the Measurement Interval, but did not complete prior to the end of the appropriate Run-Out period..
- The I/O Request started within the Run-Out period, but did not complete prior to the end of the appropriate Ramp-Down period.

I/O Request Throughput: The total number of Measured I/O Requests in an SPC-2 Test Run divided by the duration of the Measurement Interval in seconds.

Measured I/O Request: A Completed I/O Request that begins (Start Time) within a Measurement Interval and completes (Completion Time) prior to the end of the appropriate Ramp Down *(see "I/O Completion Types" illustrated below).*

Measurement Interval: A specified, contiguous period of time, after the TSC has reached Steady State, when data is collected by the Workload Generator to produce the test results for a SPC-2 Test Run *(see "SPC-2 Test Run Components" illustrated below, Test Run 1: T_2-T_3 and Test Run 2: T_7-T_8).*

Outstanding I/O Requests: The Outstanding I/O Requests parameter specifies the maximum number of concurrent I/O Requests, associated with a give Stream, which have been issued but not yet completed. *(Clause 3.4.4 of the SPC-2 Benchmark Specification).*

Ramp-Down: A specified, contiguous period of time in which the TSC is required to complete I/O Requests started but not completed during the preceding Run-Out period. Ramp-Down begins at the end of the preceding Run-Out period *(see "SPC-2 Test Run Components" illustrated below, Test Run 1: T_4-T_5 and Test Run 2: T_9-T_{10}).* The Workload Generator will not submit any I/O Requests during the Ramp-Down.

Ramp-Up: A specified, contiguous period of time required for the Benchmark Configuration (BC) to produce Steady State throughput after the Workload Generator begins submitting I/O Requests to the TSC for execution. The Ramp-Up period ends at the beginning of the Measurement Interval *(see "SPC-2 Test Run Components" illustrated below, Test Run 1: T_0-T_2 and Test Run 2: T_5-T_7).*

Response Time: The Response Time of a Measured I/O Request is its Completion Time minus its Start Time.

Run-Out: A specified, contiguous period of time in which the TSC is required to complete I/O Requests started but not completed during the preceding Measurement Interval. The Run-Out period begins at the end of the preceding Measurement Interval and is a component of the Steady State period *(see "SPC-2 Test Run Components" illustrated below, Test Run 1: T_3-T_4 and Test Run 2: T_9-T_{10}).* The Workload Generator will continue to submit I/O Requests at the Test Run's specified rate during the Run-Out period.

Start Time: The time recorded by the Workload Generator when an I/O Request is submitted, by the Workload Generator, to the System Software for execution on the TSC.

Steady State: The period during which the workload presented to the TSC by the SPC-2 Workload Generator is constant and the resulting TSC I/O Request Throughput is both consistent and sustainable. The Steady State period includes both the Measurement Interval and Run-Out periods *(see "SPC-2 Test Run Components" illustrated below, Test Run 1: T_1-T_4 and Test Run 2: T_6-T_9).*

Steady State is achieved only after caches in the TSC have filled and as a result the I/O Request Throughput of the TSC has stabilized.

Stream: A collection of Stream Segments that started within a Test Run.

Stream Segment: A sequentially organized pattern of I/O requests, which transfers a contiguous range of data.

Test: A collection of Test Phases and or Test Runs sharing a common objective.

Test Phase: A collection of one or more SPC-2 Test Runs sharing a common objective and intended to be run in a specific sequence.

Test Run: The execution of SPC-2 that produces specific SPC-2 test results. SPC-2 Test Runs have specified, measured Ramp-Up, Measurement Interval, Run-Out and Ramp-Down periods. "SPC-2 Test Run Components" *(see below)* illustrates the Ramp-Up, Steady State, Measurement Interval, Run-Out, and Ramp-Down components contained in two uninterrupted SPC-2 Test Runs *(Test Run 1: T_0-T_5 and Test Run 2: T_5-T_{10})*.

Test Run Sequence: A related sequence of Large File Processing (LFP) or Large Database Query (LDQ) Test Runs. Each Test Run Sequence will consist of five Test Runs, which vary the number of Streams as follows:

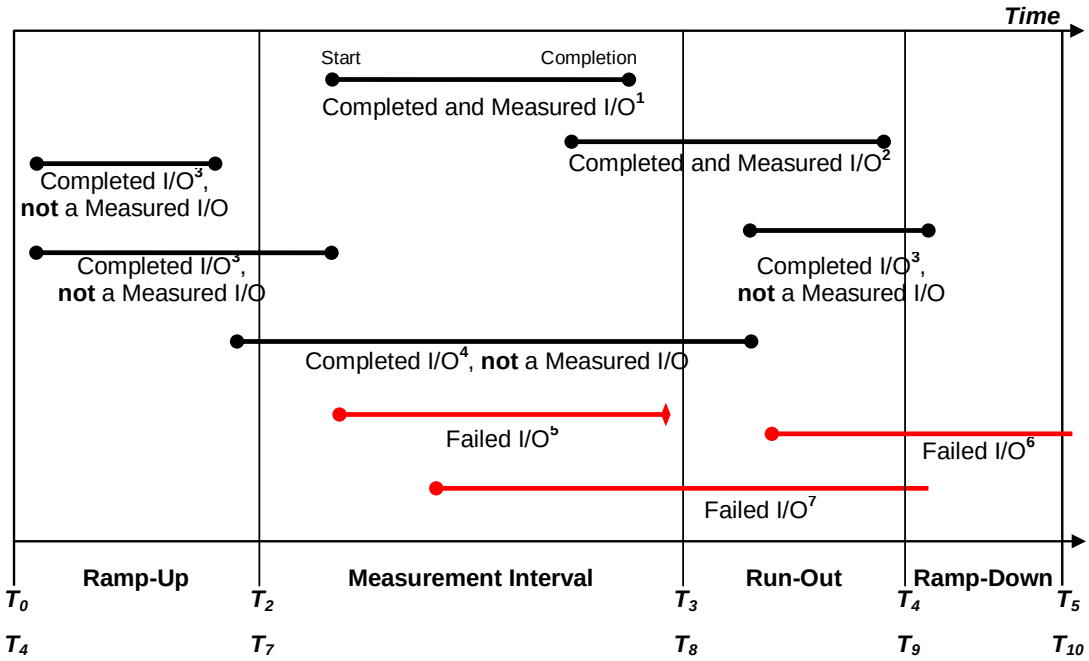
- Test Run 1: Maximum number of Streams, which is selected by the Test Sponsor
- Test Run 2: 50% of the maximum number of Streams used in Test Run 1.
- Test Run 3: 25% of the maximum number of Streams used in Test Run 1.
- Test Run 4: 12.5% of the maximum number of Streams used in Test Run 1.
- Test Run 5: 1 Stream.

Each of the five Test Runs in a Test Run Sequence will share the same attributes with the exception of the number of Streams. For example:

- Large File Processing, Read, 1024 KiB Transfer Size: Maximum Streams
- Large File Processing, Read, 1024 KiB Transfer Size: 50% of Maximum Streams
- Large File Processing, Read, 1024 KiB Transfer Size: 25% of Maximum Streams
- Large File Processing, Read, 1024 KiB Transfer Size: 12.5% of Maximum Streams
- Large File Processing, Read, 1024 KiB Transfer Size: 1 Stream

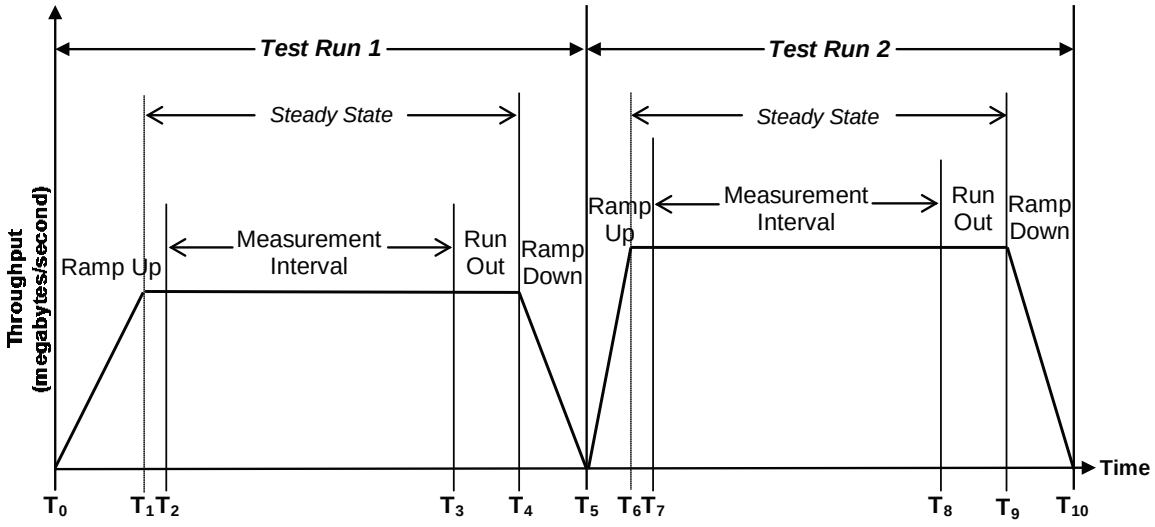
Transfer Size: The Transfer Size parameter specifies the number of bytes in KiB to transfer. *(Clause 3.4.7 of the SPC-2 Benchmark Specification)*

I/O Completion Types



Completed and Measured I/O[1]: *I/O started and completed within the Measurement Interval.*
Completed and Measured I/O[2]: *I/O started within the Measurement Interval and completed within Ramp Down.*
Completed I/O[3]: *I/O started before or after the Measurement Interval – not measured.*
Completed I/O[4]: *I/O started before and completed after the Measurement Interval – not measured.*
Failed I/O[5]: *Signaled as failed by System Software.*
Failed I/O[6]: *I/O did not complete prior to the end of Ramp-Down.*
Failed I/O[7]: *I/O did not complete prior to the end of Run-Out.*

SPC-2 Test Run Components



APPENDIX B: CUSTOMER TUNABLE PARAMETERS AND OPTIONS

There were no customer tunable parameters or options changed from their default values for this benchmark execution.

APPENDIX C: TESTED STORAGE CONFIGURATION (TSC) CREATION

Step 1: Create Mapping View, LUN Group, Host Group and Host

Execute the following commands using the OceanStor 6800 V3 CLI from one of the Host Systems to complete the following:

- Create one ***mapping_view*** (***mp0***)
- Create one ***lun_group*** (***lg0***)
- Create one ***host_group*** (***hg0***)
- Create three ***hosts*** (***h0, h1, h2***)
- Add ***h0, h1*** and ***h2*** to ***hg0***
- Add ***hg0*** and ***lg0*** to ***mp0***
- Add the FC ports' WWN to ***h0, h1*** and ***h2***

```
create mapping_view name=mp0 mapping_view_id=1
create lun_group name=lg0 lun_group_id=0
create host_group name=hg0 host_group_id=0
create host name=h0 operating_system=Windows host_id=0
create host name=h1 operating_system=Windows host_id=1
create host name=h2 operating_system=Windows host_id=2

add host_group host host_group_id=0 host_id_list=0,1,2
add mapping_view host_group mapping_view_id=1 host_group_id=0
add mapping_view lun_group mapping_view_id=1 lun_group_id=0

add host initiator host_id=0 initiator_type=FC wwn=2001000e1e09f9ca
add host initiator host_id=0 initiator_type=FC wwn=2001000e1e09f9cb
add host initiator host_id=0 initiator_type=FC wwn=2001000e1ec22c60
add host initiator host_id=0 initiator_type=FC wwn=2001000e1ec22c61
add host initiator host_id=0 initiator_type=FC wwn=2100000e1e13b300
add host initiator host_id=0 initiator_type=FC wwn=2100000e1e13b301
add host initiator host_id=0 initiator_type=FC wwn=2100000e1e1a8990
add host initiator host_id=0 initiator_type=FC wwn=2100000e1e1a8991
add host initiator host_id=0 initiator_type=FC wwn=2100000e1e1a89c0
add host initiator host_id=0 initiator_type=FC wwn=2100000e1e1a89c1
add host initiator host_id=0 initiator_type=FC wwn=2100000e1e1a8a40
add host initiator host_id=0 initiator_type=FC wwn=2100000e1e1a8a41
add host initiator host_id=0 initiator_type=FC wwn=2100000e1e1a9c30
add host initiator host_id=0 initiator_type=FC wwn=2100000e1e1a9c31
add host initiator host_id=0 initiator_type=FC wwn=2100000e1e1a9ca0
add host initiator host_id=0 initiator_type=FC wwn=2100000e1e1a9ca1
add host initiator host_id=0 initiator_type=FC wwn=21000024ff29aff6
add host initiator host_id=0 initiator_type=FC wwn=21000024ff29aff7
add host initiator host_id=0 initiator_type=FC wwn=21000024ff2b9980
add host initiator host_id=0 initiator_type=FC wwn=21000024ff2b9981
add host initiator host_id=0 initiator_type=FC wwn=21000024ff2c952a
```

```
add host initiator host_id=0 initiator_type=FC wwn=21000024ff2c952b
add host initiator host_id=0 initiator_type=FC wwn=21000024ff2c95cc
add host initiator host_id=0 initiator_type=FC wwn=21000024ff2c95cd
add host initiator host_id=1 initiator_type=FC wwn=21000024ff34df20
add host initiator host_id=1 initiator_type=FC wwn=21000024ff34df21
add host initiator host_id=1 initiator_type=FC wwn=21000024ff35e744
add host initiator host_id=1 initiator_type=FC wwn=21000024ff35e745
add host initiator host_id=1 initiator_type=FC wwn=21000024ff36e6e2
add host initiator host_id=1 initiator_type=FC wwn=21000024ff36e6e3
add host initiator host_id=1 initiator_type=FC wwn=21000024ff371eec
add host initiator host_id=1 initiator_type=FC wwn=21000024ff371eed
add host initiator host_id=1 initiator_type=FC wwn=21000024ff371f92
add host initiator host_id=1 initiator_type=FC wwn=21000024ff371f93
add host initiator host_id=1 initiator_type=FC wwn=21000024ff37290c
add host initiator host_id=1 initiator_type=FC wwn=21000024ff37290d
add host initiator host_id=1 initiator_type=FC wwn=21000024ff3cc406
add host initiator host_id=1 initiator_type=FC wwn=21000024ff3cc407
add host initiator host_id=1 initiator_type=FC wwn=21000024ff499aa2
add host initiator host_id=1 initiator_type=FC wwn=21000024ff499aa3
add host initiator host_id=1 initiator_type=FC wwn=21000024ff49af78
add host initiator host_id=1 initiator_type=FC wwn=21000024ff49af79
add host initiator host_id=1 initiator_type=FC wwn=21000024ff4a4d56
add host initiator host_id=1 initiator_type=FC wwn=21000024ff4a4d57
add host initiator host_id=1 initiator_type=FC wwn=21000024ff4bc382
add host initiator host_id=1 initiator_type=FC wwn=21000024ff4bc383
add host initiator host_id=1 initiator_type=FC wwn=21000024ff535126
add host initiator host_id=1 initiator_type=FC wwn=21000024ff535127
add host initiator host_id=2 initiator_type=FC wwn=2100001b329308ae
add host initiator host_id=2 initiator_type=FC wwn=2100001b329c37e9
add host initiator host_id=2 initiator_type=FC wwn=21000024ff28e93e
add host initiator host_id=2 initiator_type=FC wwn=21000024ff28e93f
add host initiator host_id=2 initiator_type=FC wwn=21000024ff536a1c
add host initiator host_id=2 initiator_type=FC wwn=21000024ff536a1d
add host initiator host_id=2 initiator_type=FC wwn=21000024ff536ab4
add host initiator host_id=2 initiator_type=FC wwn=21000024ff536ab5
add host initiator host_id=2 initiator_type=FC wwn=21000024ff536aea
add host initiator host_id=2 initiator_type=FC wwn=21000024ff536aeb
add host initiator host_id=2 initiator_type=FC wwn=21000024ff53b43c
add host initiator host_id=2 initiator_type=FC wwn=21000024ff53b43d
add host initiator host_id=2 initiator_type=FC wwn=21000024ff53b496
add host initiator host_id=2 initiator_type=FC wwn=21000024ff53b497
add host initiator host_id=2 initiator_type=FC wwn=21000024ff53b4d6
add host initiator host_id=2 initiator_type=FC wwn=21000024ff53b4d7
add host initiator host_id=2 initiator_type=FC wwn=21000024ff543a1c
add host initiator host_id=2 initiator_type=FC wwn=21000024ff543a1d
add host initiator host_id=2 initiator_type=FC wwn=21000024ff5bca1a
add host initiator host_id=2 initiator_type=FC wwn=21000024ff5bca1b
add host initiator host_id=2 initiator_type=FC wwn=21000024ff5c29ce
add host initiator host_id=2 initiator_type=FC wwn=21000024ff5c29cf
```

```
add host initiator host_id=2 initiator_type=FC wwn=2101001b32b308ae
add host initiator host_id=2 initiator_type=FC wwn=2101001b32bc37e9
```

Step 2: Create Disk Domains, Storage Pools, LUNs

Execute the **mklun.sh** script on one of the Host Systems, which has **expect** installed to complete the following:

- Create 80 disk domains
- Create 80 storage pools
  (one storage pool per disk domain using all available capacity)
- Create 80 LUNs
  (one LUNs per storage pool using all available capacity)
- Add the 80 LUNs to the ***lun_group***, ***lg0***

*Note: **Expect** is a Unix automation and testing tool, written by Don Libes as an extension to the Tcl scripting language, for interactive applications such as telnet, ftp, passwd, fsck, rlogin, tip, ssh, and others. It uses Unix pseudo terminals to wrap up subprocesses transparently, allowing the automation of arbitrary applications that are accessed over a terminal. Expect is an open source tool can be downloaded at the following location: http://www.nist.gov/el/msid/expect.cfm*

mklun.sh

```
#!/bin/bash

stor=100.154.68.10
stor_user=admin
stor_pswd=Admin@storage1

export LANG=C

echo "creating LUN ..."

expect <<__END_CREATE_LUN
     spawn ssh $stor_user@$stor
     set timeout 60
     expect {
            -re "assword" { send "$stor_pswd\r" }
            -re "yes/no" { send "yes\r"; exp_continue }
     }
     expect ">"

            # ------create disk_domain--------
                send "create disk_domain name=ASU100 disk_list=DAE000.0-9
disk_domain_id=0\r"
                          expect ">"
send "create disk_domain name=ASU101 disk_list=DAE000.10-19 disk_domain_id=1\r"
                          expect ">"
send "create disk_domain name=ASU102 disk_list=DAE000.20-24,DAE001.0-4
disk_domain_id=2\r"
                          expect ">"
send "create disk_domain name=ASU103 disk_list=DAE001.5-14 disk_domain_id=3\r"
                          expect ">"
send "create disk_domain name=ASU104 disk_list=DAE001.15-24 disk_domain_id=4\r"
                          expect ">"
send "create disk_domain name=ASU200 disk_list=DAE010.0-9 disk_domain_id=5\r"
```

```
                          expect ">"
  send "create disk_domain name=ASU201 disk_list=DAE010.10-19 disk_domain_id=6\r"
                          expect ">"
  send "create disk_domain name=ASU202 disk_list=DAE010.20-24,DAE011.0-4
  disk_domain_id=7\r"
                          expect ">"
  send "create disk_domain name=ASU203 disk_list=DAE011.5-14 disk_domain_id=8\r"
                          expect ">"
  send "create disk_domain name=ASU204 disk_list=DAE011.15-24 disk_domain_id=9\r"
                          expect ">"
  send "create disk_domain name=ASU300 disk_list=DAE020.0-9 disk_domain_id=10\r"
                          expect ">"
  send "create disk_domain name=ASU301 disk_list=DAE020.10-19 disk_domain_id=11\r"
                          expect ">"
  send "create disk_domain name=ASU302 disk_list=DAE020.20-24,DAE021.0-4
  disk_domain_id=12\r"
                          expect ">"
  send "create disk_domain name=ASU303 disk_list=DAE021.5-14 disk_domain_id=13\r"
                          expect ">"
  send "create disk_domain name=ASU304 disk_list=DAE021.15-24 disk_domain_id=14\r"
                          expect ">"
  send "create disk_domain name=ASU400 disk_list=DAE040.0-9 disk_domain_id=15\r"
                          expect ">"
  send "create disk_domain name=ASU401 disk_list=DAE040.10-19 disk_domain_id=16\r"
                          expect ">"
  send "create disk_domain name=ASU402 disk_list=DAE040.20-24,DAE041.0-4
  disk_domain_id=17\r"
                          expect ">"
  send "create disk_domain name=ASU403 disk_list=DAE041.5-14 disk_domain_id=18\r"
                          expect ">"
  send "create disk_domain name=ASU404 disk_list=DAE041.15-24 disk_domain_id=19\r"
                          expect ">"
  send "create disk_domain name=ASU500 disk_list=DAE080.0-9 disk_domain_id=20\r"
                          expect ">"
  send "create disk_domain name=ASU501 disk_list=DAE080.10-19 disk_domain_id=21\r"
                          expect ">"
  send "create disk_domain name=ASU502 disk_list=DAE080.20-24,DAE081.0-4
  disk_domain_id=22\r"
                          expect ">"
  send "create disk_domain name=ASU503 disk_list=DAE081.5-14 disk_domain_id=23\r"
                          expect ">"
  send "create disk_domain name=ASU504 disk_list=DAE081.15-24 disk_domain_id=24\r"
                          expect ">"
  send "create disk_domain name=ASU600 disk_list=DAE090.0-9 disk_domain_id=25\r"
                          expect ">"
  send "create disk_domain name=ASU601 disk_list=DAE090.10-19 disk_domain_id=26\r"
                          expect ">"
  send "create disk_domain name=ASU602 disk_list=DAE090.20-24,DAE091.0-4
  disk_domain_id=27\r"
                          expect ">"
  send "create disk_domain name=ASU603 disk_list=DAE091.5-14 disk_domain_id=28\r"
                          expect ">"
  send "create disk_domain name=ASU604 disk_list=DAE091.15-24 disk_domain_id=29\r"
                          expect ">"
  send "create disk_domain name=ASU700 disk_list=DAE0A0.0-9 disk_domain_id=30\r"
                          expect ">"
  send "create disk_domain name=ASU701 disk_list=DAE0A0.10-19 disk_domain_id=31\r"
                          expect ">"
  send "create disk_domain name=ASU702 disk_list=DAE0A0.20-24,DAE0A1.0-4
  disk_domain_id=32\r"
                          expect ">"
  send "create disk_domain name=ASU703 disk_list=DAE0A1.5-14 disk_domain_id=33\r"
                          expect ">"
```

```
send "create disk_domain name=ASU704 disk_list=DAE0A1.15-24 disk_domain_id=34\r"
                          expect ">"
send "create disk_domain name=ASU800 disk_list=DAE0C0.0-9 disk_domain_id=35\r"
                          expect ">"
send "create disk_domain name=ASU801 disk_list=DAE0C0.10-19 disk_domain_id=36\r"
                          expect ">"
send "create disk_domain name=ASU802 disk_list=DAE0C0.20-24,DAE0C1.0-4
disk_domain_id=37\r"
                          expect ">"
send "create disk_domain name=ASU803 disk_list=DAE0C1.5-14 disk_domain_id=38\r"
                          expect ">"
send "create disk_domain name=ASU804 disk_list=DAE0C1.15-24 disk_domain_id=39\r"
                          expect ">"
send "create disk_domain name=ASU110 disk_list=DAE100.0-9 disk_domain_id=40\r"
                          expect ">"
send "create disk_domain name=ASU111 disk_list=DAE100.10-19 disk_domain_id=41\r"
                          expect ">"
send "create disk_domain name=ASU112 disk_list=DAE100.20-24,DAE101.0-4
disk_domain_id=42\r"
                          expect ">"
send "create disk_domain name=ASU113 disk_list=DAE101.5-14 disk_domain_id=43\r"
                          expect ">"
send "create disk_domain name=ASU114 disk_list=DAE101.15-24 disk_domain_id=44\r"
                          expect ">"
send "create disk_domain name=ASU210 disk_list=DAE110.0-9 disk_domain_id=45\r"
                          expect ">"
send "create disk_domain name=ASU211 disk_list=DAE110.10-19 disk_domain_id=46\r"
                          expect ">"
send "create disk_domain name=ASU212 disk_list=DAE110.20-24,DAE111.0-4
disk_domain_id=47\r"
                          expect ">"
send "create disk_domain name=ASU213 disk_list=DAE111.5-14 disk_domain_id=48\r"
                          expect ">"
send "create disk_domain name=ASU214 disk_list=DAE111.15-24 disk_domain_id=49\r"
                          expect ">"
send "create disk_domain name=ASU310 disk_list=DAE120.0-9 disk_domain_id=50\r"
                          expect ">"
send "create disk_domain name=ASU311 disk_list=DAE120.10-19 disk_domain_id=51\r"
                          expect ">"
send "create disk_domain name=ASU312 disk_list=DAE120.20-24,DAE121.0-4
disk_domain_id=52\r"
                          expect ">"
send "create disk_domain name=ASU313 disk_list=DAE121.5-14 disk_domain_id=53\r"
                          expect ">"
send "create disk_domain name=ASU314 disk_list=DAE121.15-24 disk_domain_id=54\r"
                          expect ">"
send "create disk_domain name=ASU410 disk_list=DAE140.0-9 disk_domain_id=55\r"
                          expect ">"
send "create disk_domain name=ASU411 disk_list=DAE140.10-19 disk_domain_id=56\r"
                          expect ">"
send "create disk_domain name=ASU412 disk_list=DAE140.20-24,DAE141.0-4
disk_domain_id=57\r"
                          expect ">"
send "create disk_domain name=ASU413 disk_list=DAE141.5-14 disk_domain_id=58\r"
                          expect ">"
send "create disk_domain name=ASU414 disk_list=DAE141.15-24 disk_domain_id=59\r"
                          expect ">"
send "create disk_domain name=ASU510 disk_list=DAE180.0-9 disk_domain_id=60\r"
                          expect ">"
send "create disk_domain name=ASU511 disk_list=DAE180.10-19 disk_domain_id=61\r"
                          expect ">"
send "create disk_domain name=ASU512 disk_list=DAE180.20-24,DAE181.0-4
disk_domain_id=62\r"
```

```
                          expect ">"
 send "create disk_domain name=ASU513 disk_list=DAE181.5-14 disk_domain_id=63\r"
                          expect ">"
 send "create disk_domain name=ASU514 disk_list=DAE181.15-24 disk_domain_id=64\r"
                          expect ">"
 send "create disk_domain name=ASU610 disk_list=DAE190.0-9 disk_domain_id=65\r"
                          expect ">"
 send "create disk_domain name=ASU611 disk_list=DAE190.10-19 disk_domain_id=66\r"
                          expect ">"
 send "create disk_domain name=ASU612 disk_list=DAE190.20-24,DAE191.0-4
 disk_domain_id=67\r"
                          expect ">"
 send "create disk_domain name=ASU613 disk_list=DAE191.5-14 disk_domain_id=68\r"
                          expect ">"
 send "create disk_domain name=ASU614 disk_list=DAE191.15-24 disk_domain_id=69\r"
                          expect ">"
 send "create disk_domain name=ASU710 disk_list=DAE1A0.0-9 disk_domain_id=70\r"
                          expect ">"
 send "create disk_domain name=ASU711 disk_list=DAE1A0.10-19 disk_domain_id=71\r"
                          expect ">"
 send "create disk_domain name=ASU712 disk_list=DAE1A0.20-24,DAE1A1.0-4
 disk_domain_id=72\r"
                          expect ">"
 send "create disk_domain name=ASU713 disk_list=DAE1A1.5-14 disk_domain_id=73\r"
                          expect ">"
 send "create disk_domain name=ASU714 disk_list=DAE1A1.15-24 disk_domain_id=74\r"
                          expect ">"
 send "create disk_domain name=ASU810 disk_list=DAE1C0.0-9 disk_domain_id=75\r"
                          expect ">"
 send "create disk_domain name=ASU811 disk_list=DAE1C0.10-19 disk_domain_id=76\r"
                          expect ">"
 send "create disk_domain name=ASU812 disk_list=DAE1C0.20-24,DAE1C1.0-4
 disk_domain_id=77\r"
                          expect ">"
 send "create disk_domain name=ASU813 disk_list=DAE1C1.5-14 disk_domain_id=78\r"
                          expect ">"
 send "create disk_domain name=ASU814 disk_list=DAE1C1.15-24 disk_domain_id=79\r"
                          expect ">"


              # ------create storage_pool --------
                   send "create storage_pool name=ASU100 disk_type=SAS capacity=4170GB
 pool_id=0 disk_domain_id=0 raid_level=RAID5-9 stripe_depth=512KB\r"
                          expect ">"
 send "create storage_pool name=ASU101 disk_type=SAS capacity=4208GB pool_id=1
 disk_domain_id=1 raid_level=RAID5-9 stripe_depth=512KB\r"
                          expect ">"
 send "create storage_pool name=ASU102 disk_type=SAS capacity=4208GB pool_id=2
 disk_domain_id=2 raid_level=RAID5-9 stripe_depth=512KB\r"
                          expect ">"
 send "create storage_pool name=ASU103 disk_type=SAS capacity=4208GB pool_id=3
 disk_domain_id=3 raid_level=RAID5-9 stripe_depth=512KB\r"
                          expect ">"
 send "create storage_pool name=ASU104 disk_type=SAS capacity=4208GB pool_id=4
 disk_domain_id=4 raid_level=RAID5-9 stripe_depth=512KB\r"
                          expect ">"
 send "create storage_pool name=ASU200 disk_type=SAS capacity=4208GB pool_id=5
 disk_domain_id=5 raid_level=RAID5-9 stripe_depth=512KB\r"
                          expect ">"
 send "create storage_pool name=ASU201 disk_type=SAS capacity=4208GB pool_id=6
 disk_domain_id=6 raid_level=RAID5-9 stripe_depth=512KB\r"
                          expect ">"
```

```
send "create storage_pool name=ASU202 disk_type=SAS capacity=4208GB pool_id=7
disk_domain_id=7 raid_level=RAID5-9 stripe_depth=512KB\r"
                        expect ">"
send "create storage_pool name=ASU203 disk_type=SAS capacity=4208GB pool_id=8
disk_domain_id=8 raid_level=RAID5-9 stripe_depth=512KB\r"
                        expect ">"
send "create storage_pool name=ASU204 disk_type=SAS capacity=4208GB pool_id=9
disk_domain_id=9 raid_level=RAID5-9 stripe_depth=512KB\r"
                        expect ">"
send "create storage_pool name=ASU300 disk_type=SAS capacity=4208GB pool_id=10
disk_domain_id=10 raid_level=RAID5-9 stripe_depth=512KB\r"
                        expect ">"
send "create storage_pool name=ASU301 disk_type=SAS capacity=4208GB pool_id=11
disk_domain_id=11 raid_level=RAID5-9 stripe_depth=512KB\r"
                        expect ">"
send "create storage_pool name=ASU302 disk_type=SAS capacity=4208GB pool_id=12
disk_domain_id=12 raid_level=RAID5-9 stripe_depth=512KB\r"
                        expect ">"
send "create storage_pool name=ASU303 disk_type=SAS capacity=4208GB pool_id=13
disk_domain_id=13 raid_level=RAID5-9 stripe_depth=512KB\r"
                        expect ">"
send "create storage_pool name=ASU304 disk_type=SAS capacity=4208GB pool_id=14
disk_domain_id=14 raid_level=RAID5-9 stripe_depth=512KB\r"
                        expect ">"
send "create storage_pool name=ASU400 disk_type=SAS capacity=4208GB pool_id=15
disk_domain_id=15 raid_level=RAID5-9 stripe_depth=512KB\r"
                        expect ">"
send "create storage_pool name=ASU401 disk_type=SAS capacity=4208GB pool_id=16
disk_domain_id=16 raid_level=RAID5-9 stripe_depth=512KB\r"
                        expect ">"
send "create storage_pool name=ASU402 disk_type=SAS capacity=4208GB pool_id=17
disk_domain_id=17 raid_level=RAID5-9 stripe_depth=512KB\r"
                        expect ">"
send "create storage_pool name=ASU403 disk_type=SAS capacity=4208GB pool_id=18
disk_domain_id=18 raid_level=RAID5-9 stripe_depth=512KB\r"
                        expect ">"
send "create storage_pool name=ASU404 disk_type=SAS capacity=4208GB pool_id=19
disk_domain_id=19 raid_level=RAID5-9 stripe_depth=512KB\r"
                        expect ">"
send "create storage_pool name=ASU500 disk_type=SAS capacity=4170GB pool_id=20
disk_domain_id=20 raid_level=RAID5-9 stripe_depth=512KB\r"
                        expect ">"
send "create storage_pool name=ASU501 disk_type=SAS capacity=4208GB pool_id=21
disk_domain_id=21 raid_level=RAID5-9 stripe_depth=512KB\r"
                        expect ">"
send "create storage_pool name=ASU502 disk_type=SAS capacity=4208GB pool_id=22
disk_domain_id=22 raid_level=RAID5-9 stripe_depth=512KB\r"
                        expect ">"
send "create storage_pool name=ASU503 disk_type=SAS capacity=4208GB pool_id=23
disk_domain_id=23 raid_level=RAID5-9 stripe_depth=512KB\r"
                        expect ">"
send "create storage_pool name=ASU504 disk_type=SAS capacity=4208GB pool_id=24
disk_domain_id=24 raid_level=RAID5-9 stripe_depth=512KB\r"
                        expect ">"
send "create storage_pool name=ASU600 disk_type=SAS capacity=4208GB pool_id=25
disk_domain_id=25 raid_level=RAID5-9 stripe_depth=512KB\r"
                        expect ">"
send "create storage_pool name=ASU601 disk_type=SAS capacity=4208GB pool_id=26
disk_domain_id=26 raid_level=RAID5-9 stripe_depth=512KB\r"
                        expect ">"
send "create storage_pool name=ASU602 disk_type=SAS capacity=4208GB pool_id=27
disk_domain_id=27 raid_level=RAID5-9 stripe_depth=512KB\r"
                        expect ">"
```

```
send "create storage_pool name=ASU603 disk_type=SAS capacity=4208GB pool_id=28
disk_domain_id=28 raid_level=RAID5-9 stripe_depth=512KB\r"
                        expect ">"
send "create storage_pool name=ASU604 disk_type=SAS capacity=4208GB pool_id=29
disk_domain_id=29 raid_level=RAID5-9 stripe_depth=512KB\r"
                        expect ">"
send "create storage_pool name=ASU700 disk_type=SAS capacity=4208GB pool_id=30
disk_domain_id=30 raid_level=RAID5-9 stripe_depth=512KB\r"
                        expect ">"
send "create storage_pool name=ASU701 disk_type=SAS capacity=4208GB pool_id=31
disk_domain_id=31 raid_level=RAID5-9 stripe_depth=512KB\r"
                        expect ">"
send "create storage_pool name=ASU702 disk_type=SAS capacity=4208GB pool_id=32
disk_domain_id=32 raid_level=RAID5-9 stripe_depth=512KB\r"
                        expect ">"
send "create storage_pool name=ASU703 disk_type=SAS capacity=4208GB pool_id=33
disk_domain_id=33 raid_level=RAID5-9 stripe_depth=512KB\r"
                        expect ">"
send "create storage_pool name=ASU704 disk_type=SAS capacity=4208GB pool_id=34
disk_domain_id=34 raid_level=RAID5-9 stripe_depth=512KB\r"
                        expect ">"
send "create storage_pool name=ASU800 disk_type=SAS capacity=4208GB pool_id=35
disk_domain_id=35 raid_level=RAID5-9 stripe_depth=512KB\r"
                        expect ">"
send "create storage_pool name=ASU801 disk_type=SAS capacity=4208GB pool_id=36
disk_domain_id=36 raid_level=RAID5-9 stripe_depth=512KB\r"
                        expect ">"
send "create storage_pool name=ASU802 disk_type=SAS capacity=4208GB pool_id=37
disk_domain_id=37 raid_level=RAID5-9 stripe_depth=512KB\r"
                        expect ">"
send "create storage_pool name=ASU803 disk_type=SAS capacity=4208GB pool_id=38
disk_domain_id=38 raid_level=RAID5-9 stripe_depth=512KB\r"
                        expect ">"
send "create storage_pool name=ASU804 disk_type=SAS capacity=4208GB pool_id=39
disk_domain_id=39 raid_level=RAID5-9 stripe_depth=512KB\r"
                        expect ">"
send "create storage_pool name=ASU110 disk_type=SAS capacity=4170GB pool_id=40
disk_domain_id=40 raid_level=RAID5-9 stripe_depth=512KB\r"
                        expect ">"
send "create storage_pool name=ASU111 disk_type=SAS capacity=4208GB pool_id=41
disk_domain_id=41 raid_level=RAID5-9 stripe_depth=512KB\r"
                        expect ">"
send "create storage_pool name=ASU112 disk_type=SAS capacity=4208GB pool_id=42
disk_domain_id=42 raid_level=RAID5-9 stripe_depth=512KB\r"
                        expect ">"
send "create storage_pool name=ASU113 disk_type=SAS capacity=4208GB pool_id=43
disk_domain_id=43 raid_level=RAID5-9 stripe_depth=512KB\r"
                        expect ">"
send "create storage_pool name=ASU114 disk_type=SAS capacity=4208GB pool_id=44
disk_domain_id=44 raid_level=RAID5-9 stripe_depth=512KB\r"
                        expect ">"
send "create storage_pool name=ASU210 disk_type=SAS capacity=4208GB pool_id=45
disk_domain_id=45 raid_level=RAID5-9 stripe_depth=512KB\r"
                        expect ">"
send "create storage_pool name=ASU211 disk_type=SAS capacity=4208GB pool_id=46
disk_domain_id=46 raid_level=RAID5-9 stripe_depth=512KB\r"
                        expect ">"
send "create storage_pool name=ASU212 disk_type=SAS capacity=4208GB pool_id=47
disk_domain_id=47 raid_level=RAID5-9 stripe_depth=512KB\r"
                        expect ">"
send "create storage_pool name=ASU213 disk_type=SAS capacity=4208GB pool_id=48
disk_domain_id=48 raid_level=RAID5-9 stripe_depth=512KB\r"
                        expect ">"
```

```
send "create storage_pool name=ASU214 disk_type=SAS capacity=4208GB pool_id=49
disk_domain_id=49 raid_level=RAID5-9 stripe_depth=512KB\r"
                        expect ">"
send "create storage_pool name=ASU310 disk_type=SAS capacity=4208GB pool_id=50
disk_domain_id=50 raid_level=RAID5-9 stripe_depth=512KB\r"
                        expect ">"
send "create storage_pool name=ASU311 disk_type=SAS capacity=4208GB pool_id=51
disk_domain_id=51 raid_level=RAID5-9 stripe_depth=512KB\r"
                        expect ">"
send "create storage_pool name=ASU312 disk_type=SAS capacity=4208GB pool_id=52
disk_domain_id=52 raid_level=RAID5-9 stripe_depth=512KB\r"
                        expect ">"
send "create storage_pool name=ASU313 disk_type=SAS capacity=4208GB pool_id=53
disk_domain_id=53 raid_level=RAID5-9 stripe_depth=512KB\r"
                        expect ">"
send "create storage_pool name=ASU314 disk_type=SAS capacity=4208GB pool_id=54
disk_domain_id=54 raid_level=RAID5-9 stripe_depth=512KB\r"
                        expect ">"
send "create storage_pool name=ASU410 disk_type=SAS capacity=4208GB pool_id=55
disk_domain_id=55 raid_level=RAID5-9 stripe_depth=512KB\r"
                        expect ">"
send "create storage_pool name=ASU411 disk_type=SAS capacity=4208GB pool_id=56
disk_domain_id=56 raid_level=RAID5-9 stripe_depth=512KB\r"
                        expect ">"
send "create storage_pool name=ASU412 disk_type=SAS capacity=4208GB pool_id=57
disk_domain_id=57 raid_level=RAID5-9 stripe_depth=512KB\r"
                        expect ">"
send "create storage_pool name=ASU413 disk_type=SAS capacity=4208GB pool_id=58
disk_domain_id=58 raid_level=RAID5-9 stripe_depth=512KB\r"
                        expect ">"
send "create storage_pool name=ASU414 disk_type=SAS capacity=4208GB pool_id=59
disk_domain_id=59 raid_level=RAID5-9 stripe_depth=512KB\r"
                        expect ">"
send "create storage_pool name=ASU510 disk_type=SAS capacity=4170GB pool_id=60
disk_domain_id=60 raid_level=RAID5-9 stripe_depth=512KB\r"
                        expect ">"
send "create storage_pool name=ASU511 disk_type=SAS capacity=4208GB pool_id=61
disk_domain_id=61 raid_level=RAID5-9 stripe_depth=512KB\r"
                        expect ">"
send "create storage_pool name=ASU512 disk_type=SAS capacity=4208GB pool_id=62
disk_domain_id=62 raid_level=RAID5-9 stripe_depth=512KB\r"
                        expect ">"
send "create storage_pool name=ASU513 disk_type=SAS capacity=4208GB pool_id=63
disk_domain_id=63 raid_level=RAID5-9 stripe_depth=512KB\r"
                        expect ">"
send "create storage_pool name=ASU514 disk_type=SAS capacity=4208GB pool_id=64
disk_domain_id=64 raid_level=RAID5-9 stripe_depth=512KB\r"
                        expect ">"
send "create storage_pool name=ASU610 disk_type=SAS capacity=4208GB pool_id=65
disk_domain_id=65 raid_level=RAID5-9 stripe_depth=512KB\r"
                        expect ">"
send "create storage_pool name=ASU611 disk_type=SAS capacity=4208GB pool_id=66
disk_domain_id=66 raid_level=RAID5-9 stripe_depth=512KB\r"
                        expect ">"
send "create storage_pool name=ASU612 disk_type=SAS capacity=4208GB pool_id=67
disk_domain_id=67 raid_level=RAID5-9 stripe_depth=512KB\r"
                        expect ">"
send "create storage_pool name=ASU613 disk_type=SAS capacity=4208GB pool_id=68
disk_domain_id=68 raid_level=RAID5-9 stripe_depth=512KB\r"
                        expect ">"
send "create storage_pool name=ASU614 disk_type=SAS capacity=4208GB pool_id=69
disk_domain_id=69 raid_level=RAID5-9 stripe_depth=512KB\r"
                        expect ">"
```

```
send "create storage_pool name=ASU710 disk_type=SAS capacity=4208GB pool_id=70
disk_domain_id=70 raid_level=RAID5-9 stripe_depth=512KB\r"
                        expect ">"
send "create storage_pool name=ASU711 disk_type=SAS capacity=4208GB pool_id=71
disk_domain_id=71 raid_level=RAID5-9 stripe_depth=512KB\r"
                        expect ">"
send "create storage_pool name=ASU712 disk_type=SAS capacity=4208GB pool_id=72
disk_domain_id=72 raid_level=RAID5-9 stripe_depth=512KB\r"
                        expect ">"
send "create storage_pool name=ASU713 disk_type=SAS capacity=4208GB pool_id=73
disk_domain_id=73 raid_level=RAID5-9 stripe_depth=512KB\r"
                        expect ">"
send "create storage_pool name=ASU714 disk_type=SAS capacity=4208GB pool_id=74
disk_domain_id=74 raid_level=RAID5-9 stripe_depth=512KB\r"
                        expect ">"
send "create storage_pool name=ASU810 disk_type=SAS capacity=4208GB pool_id=75
disk_domain_id=75 raid_level=RAID5-9 stripe_depth=512KB\r"
                        expect ">"
send "create storage_pool name=ASU811 disk_type=SAS capacity=4208GB pool_id=76
disk_domain_id=76 raid_level=RAID5-9 stripe_depth=512KB\r"
                        expect ">"
send "create storage_pool name=ASU812 disk_type=SAS capacity=4208GB pool_id=77
disk_domain_id=77 raid_level=RAID5-9 stripe_depth=512KB\r"
                        expect ">"
send "create storage_pool name=ASU813 disk_type=SAS capacity=4208GB pool_id=78
disk_domain_id=78 raid_level=RAID5-9 stripe_depth=512KB\r"
                        expect ">"
send "create storage_pool name=ASU814 disk_type=SAS capacity=4208GB pool_id=79
disk_domain_id=79 raid_level=RAID5-9 stripe_depth=512KB\r"
                        expect ">"



           # ------create lun --------
                        send "create lun name=ASU100 pool_id=0 capacity=4160GB
owner_controller=0A  lun_id=0\r"
                        expect ">"
send "create lun name=ASU101 pool_id=1 capacity=4200GB owner_controller=0B
lun_id=1\r"
                        expect ">"
send "create lun name=ASU102 pool_id=2 capacity=4200GB owner_controller=0A
lun_id=2\r"
                        expect ">"
send "create lun name=ASU103 pool_id=3 capacity=4200GB owner_controller=0B
lun_id=3\r"
                        expect ">"
send "create lun name=ASU104 pool_id=4 capacity=4200GB owner_controller=0A
lun_id=4\r"
                        expect ">"
send "create lun name=ASU200 pool_id=5 capacity=4200GB owner_controller=0B
lun_id=5\r"
                        expect ">"
send "create lun name=ASU201 pool_id=6 capacity=4200GB owner_controller=0A
lun_id=6\r"
                        expect ">"
send "create lun name=ASU202 pool_id=7 capacity=4200GB owner_controller=0B
lun_id=7\r"
                        expect ">"
send "create lun name=ASU203 pool_id=8 capacity=4200GB owner_controller=0A
lun_id=8\r"
                        expect ">"
```

```
send "create lun name=ASU204 pool_id=9 capacity=4200GB owner_controller=0B  lun_id=9
\r"
                        expect ">"
send "create lun name=ASU300 pool_id=10 capacity=4200GB owner_controller=0A
lun_id=10\r"
                        expect ">"
send "create lun name=ASU301 pool_id=11 capacity=4200GB owner_controller=0B
lun_id=11\r"
                        expect ">"
send "create lun name=ASU302 pool_id=12 capacity=4200GB owner_controller=0A
lun_id=12\r"
                        expect ">"
send "create lun name=ASU303 pool_id=13 capacity=4200GB owner_controller=0B
lun_id=13\r"
                        expect ">"
send "create lun name=ASU304 pool_id=14 capacity=4200GB owner_controller=0A
lun_id=14\r"
                        expect ">"
send "create lun name=ASU400 pool_id=15 capacity=4200GB owner_controller=0B
lun_id=15\r"
                        expect ">"
send "create lun name=ASU401 pool_id=16 capacity=4200GB owner_controller=0A
lun_id=16\r"
                        expect ">"
send "create lun name=ASU402 pool_id=17 capacity=4200GB owner_controller=0B
lun_id=17\r"
                        expect ">"
send "create lun name=ASU403 pool_id=18 capacity=4200GB owner_controller=0A
lun_id=18\r"
                        expect ">"
send "create lun name=ASU404 pool_id=19 capacity=4200GB owner_controller=0B
lun_id=19\r"
                        expect ">"
send "create lun name=ASU500 pool_id=20 capacity=4160GB owner_controller=0C
lun_id=20\r"
                        expect ">"
send "create lun name=ASU501 pool_id=21 capacity=4200GB owner_controller=0D
lun_id=21\r"
                        expect ">"
send "create lun name=ASU502 pool_id=22 capacity=4200GB owner_controller=0C
lun_id=22\r"
                        expect ">"
send "create lun name=ASU503 pool_id=23 capacity=4200GB owner_controller=0D
lun_id=23\r"
                        expect ">"
send "create lun name=ASU504 pool_id=24 capacity=4200GB owner_controller=0C
lun_id=24\r"
                        expect ">"
send "create lun name=ASU600 pool_id=25 capacity=4200GB owner_controller=0D
lun_id=25\r"
                        expect ">"
send "create lun name=ASU601 pool_id=26 capacity=4200GB owner_controller=0C
lun_id=26\r"
                        expect ">"
send "create lun name=ASU602 pool_id=27 capacity=4200GB owner_controller=0D
lun_id=27\r"
                        expect ">"
send "create lun name=ASU603 pool_id=28 capacity=4200GB owner_controller=0C
lun_id=28\r"
                        expect ">"
send "create lun name=ASU604 pool_id=29 capacity=4200GB owner_controller=0D
lun_id=29\r"
                        expect ">"
```

```
send "create lun name=ASU700 pool_id=30 capacity=4200GB owner_controller=0C
lun_id=30\r"
                        expect ">"
send "create lun name=ASU701 pool_id=31 capacity=4200GB owner_controller=0D
lun_id=31\r"
                        expect ">"
send "create lun name=ASU702 pool_id=32 capacity=4200GB owner_controller=0C
lun_id=32\r"
                        expect ">"
send "create lun name=ASU703 pool_id=33 capacity=4200GB owner_controller=0D
lun_id=33\r"
                        expect ">"
send "create lun name=ASU704 pool_id=34 capacity=4200GB owner_controller=0C
lun_id=34\r"
                        expect ">"
send "create lun name=ASU800 pool_id=35 capacity=4200GB owner_controller=0D
lun_id=35\r"
                        expect ">"
send "create lun name=ASU801 pool_id=36 capacity=4200GB owner_controller=0C
lun_id=36\r"
                        expect ">"
send "create lun name=ASU802 pool_id=37 capacity=4200GB owner_controller=0D
lun_id=37\r"
                        expect ">"
send "create lun name=ASU803 pool_id=38 capacity=4200GB owner_controller=0C
lun_id=38\r"
                        expect ">"
send "create lun name=ASU804 pool_id=39 capacity=4200GB owner_controller=0D
lun_id=39\r"
                        expect ">"
send "create lun name=ASU110 pool_id=40 capacity=4160GB owner_controller=1A
lun_id=40\r"
                        expect ">"
send "create lun name=ASU111 pool_id=41 capacity=4200GB owner_controller=1B
lun_id=41\r"
                        expect ">"
send "create lun name=ASU112 pool_id=42 capacity=4200GB owner_controller=1A
lun_id=42\r"
                        expect ">"
send "create lun name=ASU113 pool_id=43 capacity=4200GB owner_controller=1B
lun_id=43\r"
                        expect ">"
send "create lun name=ASU114 pool_id=44 capacity=4200GB owner_controller=1A
lun_id=44\r"
                        expect ">"
send "create lun name=ASU210 pool_id=45 capacity=4200GB owner_controller=1B
lun_id=45\r"
                        expect ">"
send "create lun name=ASU211 pool_id=46 capacity=4200GB owner_controller=1A
lun_id=46\r"
                        expect ">"
send "create lun name=ASU212 pool_id=47 capacity=4200GB owner_controller=1B
lun_id=47\r"
                        expect ">"
send "create lun name=ASU213 pool_id=48 capacity=4200GB owner_controller=1A
lun_id=48\r"
                        expect ">"
send "create lun name=ASU214 pool_id=49 capacity=4200GB owner_controller=1B
lun_id=49\r"
                        expect ">"
send "create lun name=ASU310 pool_id=50 capacity=4200GB owner_controller=1A
lun_id=50\r"
                        expect ">"
```

```
send "create lun name=ASU311 pool_id=51 capacity=4200GB owner_controller=1B
lun_id=51\r"
                        expect ">"
send "create lun name=ASU312 pool_id=52 capacity=4200GB owner_controller=1A
lun_id=52\r"
                        expect ">"
send "create lun name=ASU313 pool_id=53 capacity=4200GB owner_controller=1B
lun_id=53\r"
                        expect ">"
send "create lun name=ASU314 pool_id=54 capacity=4200GB owner_controller=1A
lun_id=54\r"
                        expect ">"
send "create lun name=ASU410 pool_id=55 capacity=4200GB owner_controller=1B
lun_id=55\r"
                        expect ">"
send "create lun name=ASU411 pool_id=56 capacity=4200GB owner_controller=1A
lun_id=56\r"
                        expect ">"
send "create lun name=ASU412 pool_id=57 capacity=4200GB owner_controller=1B
lun_id=57\r"
                        expect ">"
send "create lun name=ASU413 pool_id=58 capacity=4200GB owner_controller=1A
lun_id=58\r"
                        expect ">"
send "create lun name=ASU414 pool_id=59 capacity=4200GB owner_controller=1B
lun_id=59\r"
                        expect ">"
send "create lun name=ASU510 pool_id=60 capacity=4160GB owner_controller=1C
lun_id=60\r"
                        expect ">"
send "create lun name=ASU511 pool_id=61 capacity=4200GB owner_controller=1D
lun_id=61\r"
                        expect ">"
send "create lun name=ASU512 pool_id=62 capacity=4200GB owner_controller=1C
lun_id=62\r"
                        expect ">"
send "create lun name=ASU513 pool_id=63 capacity=4200GB owner_controller=1D
lun_id=63\r"
                        expect ">"
send "create lun name=ASU514 pool_id=64 capacity=4200GB owner_controller=1C
lun_id=64\r"
                        expect ">"
send "create lun name=ASU610 pool_id=65 capacity=4200GB owner_controller=1D
lun_id=65\r"
                        expect ">"
send "create lun name=ASU611 pool_id=66 capacity=4200GB owner_controller=1C
lun_id=66\r"
                        expect ">"
send "create lun name=ASU612 pool_id=67 capacity=4200GB owner_controller=1D
lun_id=67\r"
                        expect ">"
send "create lun name=ASU613 pool_id=68 capacity=4200GB owner_controller=1C
lun_id=68\r"
                        expect ">"
send "create lun name=ASU614 pool_id=69 capacity=4200GB owner_controller=1D
lun_id=69\r"
                        expect ">"
send "create lun name=ASU710 pool_id=70 capacity=4200GB owner_controller=1C
lun_id=70\r"
                        expect ">"
send "create lun name=ASU711 pool_id=71 capacity=4200GB owner_controller=1D
lun_id=71\r"
                        expect ">"
```

```
send "create lun name=ASU712 pool_id=72 capacity=4200GB owner_controller=1C
lun_id=72\r"
                        expect ">"
send "create lun name=ASU713 pool_id=73 capacity=4200GB owner_controller=1D
lun_id=73\r"
                        expect ">"
send "create lun name=ASU714 pool_id=74 capacity=4200GB owner_controller=1C
lun_id=74\r"
                        expect ">"
send "create lun name=ASU810 pool_id=75 capacity=4200GB owner_controller=1D
lun_id=75\r"
                        expect ">"
send "create lun name=ASU811 pool_id=76 capacity=4200GB owner_controller=1C
lun_id=76\r"
                        expect ">"
send "create lun name=ASU812 pool_id=77 capacity=4200GB owner_controller=1D
lun_id=77\r"
                        expect ">"
send "create lun name=ASU813 pool_id=78 capacity=4200GB owner_controller=1C
lun_id=78\r"
                        expect ">"
send "create lun name=ASU814 pool_id=79 capacity=4200GB owner_controller=1D
lun_id=79\r"
                        expect ">"




            # ------ add all luns to lun_group--------
               send "add lun_group lun lun_group_id=0
lun_id_list=0,1,2,3,4,5,6,7,8,9,10,11,12,13,14,15,16,17,18,19,20,21,22,23,24,25,26,2
7,28,29,30,31,32,33,34,35,36,37,38,39,40,41,42,43,44,45,46,47,48,49,50,51,52,53,54,5
5,56,57,58,59,60,61,62,63,64,65,66,67,68,69,70,71,72,73,74,75,76,77,78,79
"
                        expect ">"


            send "exit\r"
            expect "(y/n):"
            send "y\r"
            expect EOF
__END_CREATE_LUN
```

APPENDIX D: SPC-2 WORKLOAD GENERATOR STORAGE COMMANDS AND PARAMETER FILES

ASU Pre-Fill

```
hd=default,vdbench=C:\vdbench,shell=vdbench

hd=hd1,system=100.154.68.126

sd=default,threads=16

sd=sd1,host=hd1,lun=\\.\PhysicalDrive1,size=4000g
sd=sd2,host=hd1,lun=\\.\PhysicalDrive2,size=4000g
sd=sd3,host=hd1,lun=\\.\PhysicalDrive3,size=4000g
sd=sd4,host=hd1,lun=\\.\PhysicalDrive4,size=4000g
sd=sd5,host=hd1,lun=\\.\PhysicalDrive5,size=4000g
sd=sd6,host=hd1,lun=\\.\PhysicalDrive6,size=4000g
sd=sd7,host=hd1,lun=\\.\PhysicalDrive7,size=4000g
sd=sd8,host=hd1,lun=\\.\PhysicalDrive8,size=4000g
sd=sd9,host=hd1,lun=\\.\PhysicalDrive9,size=4000g
sd=sd10,host=hd1,lun=\\.\PhysicalDrive10,size=4000g
sd=sd11,host=hd1,lun=\\.\PhysicalDrive11,size=4000g
sd=sd12,host=hd1,lun=\\.\PhysicalDrive12,size=4000g
sd=sd13,host=hd1,lun=\\.\PhysicalDrive13,size=4000g
sd=sd14,host=hd1,lun=\\.\PhysicalDrive14,size=4000g
sd=sd15,host=hd1,lun=\\.\PhysicalDrive15,size=4000g
sd=sd16,host=hd1,lun=\\.\PhysicalDrive16,size=4000g
sd=sd17,host=hd1,lun=\\.\PhysicalDrive17,size=4000g
sd=sd18,host=hd1,lun=\\.\PhysicalDrive18,size=4000g
sd=sd19,host=hd1,lun=\\.\PhysicalDrive19,size=4000g
sd=sd20,host=hd1,lun=\\.\PhysicalDrive20,size=4000g
sd=sd21,host=hd1,lun=\\.\PhysicalDrive21,size=4000g
sd=sd22,host=hd1,lun=\\.\PhysicalDrive22,size=4000g
sd=sd23,host=hd1,lun=\\.\PhysicalDrive23,size=4000g
sd=sd24,host=hd1,lun=\\.\PhysicalDrive24,size=4000g
sd=sd25,host=hd1,lun=\\.\PhysicalDrive25,size=4000g
sd=sd26,host=hd1,lun=\\.\PhysicalDrive26,size=4000g
sd=sd27,host=hd1,lun=\\.\PhysicalDrive27,size=4000g
sd=sd28,host=hd1,lun=\\.\PhysicalDrive28,size=4000g
sd=sd29,host=hd1,lun=\\.\PhysicalDrive29,size=4000g
sd=sd30,host=hd1,lun=\\.\PhysicalDrive30,size=4000g
sd=sd31,host=hd1,lun=\\.\PhysicalDrive31,size=4000g
sd=sd32,host=hd1,lun=\\.\PhysicalDrive32,size=4000g
sd=sd33,host=hd1,lun=\\.\PhysicalDrive33,size=4000g
sd=sd34,host=hd1,lun=\\.\PhysicalDrive34,size=4000g
sd=sd35,host=hd1,lun=\\.\PhysicalDrive35,size=4000g
sd=sd36,host=hd1,lun=\\.\PhysicalDrive36,size=4000g
sd=sd37,host=hd1,lun=\\.\PhysicalDrive37,size=4000g
sd=sd38,host=hd1,lun=\\.\PhysicalDrive38,size=4000g
sd=sd39,host=hd1,lun=\\.\PhysicalDrive39,size=4000g
sd=sd40,host=hd1,lun=\\.\PhysicalDrive40,size=4000g
sd=sd41,host=hd1,lun=\\.\PhysicalDrive41,size=4000g
sd=sd42,host=hd1,lun=\\.\PhysicalDrive42,size=4000g
sd=sd43,host=hd1,lun=\\.\PhysicalDrive43,size=4000g
sd=sd44,host=hd1,lun=\\.\PhysicalDrive44,size=4000g
sd=sd45,host=hd1,lun=\\.\PhysicalDrive45,size=4000g
sd=sd46,host=hd1,lun=\\.\PhysicalDrive46,size=4000g
sd=sd47,host=hd1,lun=\\.\PhysicalDrive47,size=4000g
sd=sd48,host=hd1,lun=\\.\PhysicalDrive48,size=4000g
sd=sd49,host=hd1,lun=\\.\PhysicalDrive49,size=4000g
```

```
sd=sd50,host=hd1,lun=\\.\PhysicalDrive50,size=4000g
sd=sd51,host=hd1,lun=\\.\PhysicalDrive51,size=4000g
sd=sd52,host=hd1,lun=\\.\PhysicalDrive52,size=4000g
sd=sd53,host=hd1,lun=\\.\PhysicalDrive53,size=4000g
sd=sd54,host=hd1,lun=\\.\PhysicalDrive54,size=4000g
sd=sd55,host=hd1,lun=\\.\PhysicalDrive55,size=4000g
sd=sd56,host=hd1,lun=\\.\PhysicalDrive56,size=4000g
sd=sd57,host=hd1,lun=\\.\PhysicalDrive57,size=4000g
sd=sd58,host=hd1,lun=\\.\PhysicalDrive58,size=4000g
sd=sd59,host=hd1,lun=\\.\PhysicalDrive59,size=4000g
sd=sd60,host=hd1,lun=\\.\PhysicalDrive60,size=4000g
sd=sd61,host=hd1,lun=\\.\PhysicalDrive61,size=4000g
sd=sd62,host=hd1,lun=\\.\PhysicalDrive62,size=4000g
sd=sd63,host=hd1,lun=\\.\PhysicalDrive63,size=4000g
sd=sd64,host=hd1,lun=\\.\PhysicalDrive64,size=4000g
sd=sd65,host=hd1,lun=\\.\PhysicalDrive65,size=4000g
sd=sd66,host=hd1,lun=\\.\PhysicalDrive66,size=4000g
sd=sd67,host=hd1,lun=\\.\PhysicalDrive67,size=4000g
sd=sd68,host=hd1,lun=\\.\PhysicalDrive68,size=4000g
sd=sd69,host=hd1,lun=\\.\PhysicalDrive69,size=4000g
sd=sd70,host=hd1,lun=\\.\PhysicalDrive70,size=4000g
sd=sd71,host=hd1,lun=\\.\PhysicalDrive71,size=4000g
sd=sd72,host=hd1,lun=\\.\PhysicalDrive72,size=4000g
sd=sd73,host=hd1,lun=\\.\PhysicalDrive73,size=4000g
sd=sd74,host=hd1,lun=\\.\PhysicalDrive74,size=4000g
sd=sd75,host=hd1,lun=\\.\PhysicalDrive75,size=4000g
sd=sd76,host=hd1,lun=\\.\PhysicalDrive76,size=4000g
sd=sd77,host=hd1,lun=\\.\PhysicalDrive77,size=4000g
sd=sd78,host=hd1,lun=\\.\PhysicalDrive78,size=4000g
sd=sd79,host=hd1,lun=\\.\PhysicalDrive79,size=4000g
sd=sd80,host=hd1,lun=\\.\PhysicalDrive80,size=4000g


wd=wd1,sd=sd*,rdpct=0,seekpct=-1,xfersize=256K
rd=PREPASU1,wd=wd1,iorate=max,elapsed=3600000,interval=10
```

Common Commands/Parameters – LFP, LDQ, VOD and Persistence Tests

The following command/parameter lines appear in each of the command and parameter files for the Large File Processing (LFP), Large Database Query (LDQ), Video on Demand (VOD) and Persistence Tests. The command lines are only listed below to eliminate redundancy.

```
* Master Host Definition Parameter
host=localhost,java=("C:\Java\jre7\bin\java","-d64 -Xmx4096m -Xms4096m -Xmn1024m -
Xss104k -Xincgc"),spc2="C:\spc\spc2",shell=spc2,jvms=3
host=(100.154.68.121,coltrane1),java=("C:\Java\jre7\bin\java","-d64 -Xmx4096m -
Xms4096m -Xmn1024m -Xss104k -Xincgc"),spc2="C:\spc\spc2",shell=spc2,jvms=3
host=(100.154.68.122,coltrane2),java=("C:\Java\jre7\bin\java","-d64 -Xmx4096m -
Xms4096m -Xmn1024m -Xss104k -Xincgc"),spc2="C:\spc\spc2",shell=spc2,jvms=3
host=(100.154.68.123,coltrane3),java=("C:\Java\jre7\bin\java","-d64 -Xmx4096m -
Xms4096m -Xmn1024m -Xss104k -Xincgc"),spc2="C:\spc\spc2",shell=spc2,jvms=3
host=(100.154.68.124,coltrane4),java=("C:\Java\jre7\bin\java","-d64 -Xmx4096m -
Xms4096m -Xmn1024m -Xss104k -Xincgc"),spc2="C:\spc\spc2",shell=spc2,jvms=3
host=(100.154.68.125,coltrane5),java=("C:\Java\jre7\bin\java","-d64 -Xmx4096m -
Xms4096m -Xmn1024m -Xss104k -Xincgc"),spc2="C:\spc\spc2",shell=spc2,jvms=3
host=(100.154.68.127,coltrane6),java=("C:\Java\jre7\bin\java","-d64 -Xmx4096m -
Xms4096m -Xmn1024m -Xss104k -Xincgc"),spc2="C:\spc\spc2",shell=spc2,jvms=3
host=(100.154.68.128,coltrane7),java=("C:\Java\jre7\bin\java","-d64 -Xmx4096m -
Xms4096m -Xmn1024m -Xss104k -Xincgc"),spc2="C:\spc\spc2",shell=spc2,jvms=3
host=(100.154.68.129,coltrane8),java=("C:\Java\jre7\bin\java","-d64 -Xmx4096m -
Xms4096m -Xmn1024m -Xss104k -Xincgc"),spc2="C:\spc\spc2",shell=spc2,jvms=3


* Storage Definition Parameters Master Host
sd=default,host=localhost,size=4000g
sd=sd1,lun=\\.\PhysicalDrive1
sd=sd2,lun=\\.\PhysicalDrive2
sd=sd3,lun=\\.\PhysicalDrive3
sd=sd4,lun=\\.\PhysicalDrive4
sd=sd5,lun=\\.\PhysicalDrive5
sd=sd6,lun=\\.\PhysicalDrive6
sd=sd7,lun=\\.\PhysicalDrive7
sd=sd8,lun=\\.\PhysicalDrive8
sd=sd9,lun=\\.\PhysicalDrive9
sd=sd10,lun=\\.\PhysicalDrive10
sd=sd11,lun=\\.\PhysicalDrive11
sd=sd12,lun=\\.\PhysicalDrive12
sd=sd13,lun=\\.\PhysicalDrive13
sd=sd14,lun=\\.\PhysicalDrive14
sd=sd15,lun=\\.\PhysicalDrive15
sd=sd16,lun=\\.\PhysicalDrive16
sd=sd17,lun=\\.\PhysicalDrive17
sd=sd18,lun=\\.\PhysicalDrive18
sd=sd19,lun=\\.\PhysicalDrive19
sd=sd20,lun=\\.\PhysicalDrive20
sd=sd21,lun=\\.\PhysicalDrive21
sd=sd22,lun=\\.\PhysicalDrive22
sd=sd23,lun=\\.\PhysicalDrive23
sd=sd24,lun=\\.\PhysicalDrive24
sd=sd25,lun=\\.\PhysicalDrive25
sd=sd26,lun=\\.\PhysicalDrive26
sd=sd27,lun=\\.\PhysicalDrive27
sd=sd28,lun=\\.\PhysicalDrive28
sd=sd29,lun=\\.\PhysicalDrive29
sd=sd30,lun=\\.\PhysicalDrive30
```

```
sd=sd31,lun=\\.\PhysicalDrive31
sd=sd32,lun=\\.\PhysicalDrive32
sd=sd33,lun=\\.\PhysicalDrive33
sd=sd34,lun=\\.\PhysicalDrive34
sd=sd35,lun=\\.\PhysicalDrive35
sd=sd36,lun=\\.\PhysicalDrive36
sd=sd37,lun=\\.\PhysicalDrive37
sd=sd38,lun=\\.\PhysicalDrive38
sd=sd39,lun=\\.\PhysicalDrive39
sd=sd40,lun=\\.\PhysicalDrive40
sd=sd41,lun=\\.\PhysicalDrive41
sd=sd42,lun=\\.\PhysicalDrive42
sd=sd43,lun=\\.\PhysicalDrive43
sd=sd44,lun=\\.\PhysicalDrive44
sd=sd45,lun=\\.\PhysicalDrive45
sd=sd46,lun=\\.\PhysicalDrive46
sd=sd47,lun=\\.\PhysicalDrive47
sd=sd48,lun=\\.\PhysicalDrive48
sd=sd49,lun=\\.\PhysicalDrive49
sd=sd50,lun=\\.\PhysicalDrive50
sd=sd51,lun=\\.\PhysicalDrive51
sd=sd52,lun=\\.\PhysicalDrive52
sd=sd53,lun=\\.\PhysicalDrive53
sd=sd54,lun=\\.\PhysicalDrive54
sd=sd55,lun=\\.\PhysicalDrive55
sd=sd56,lun=\\.\PhysicalDrive56
sd=sd57,lun=\\.\PhysicalDrive57
sd=sd58,lun=\\.\PhysicalDrive58
sd=sd59,lun=\\.\PhysicalDrive59
sd=sd60,lun=\\.\PhysicalDrive60
sd=sd61,lun=\\.\PhysicalDrive61
sd=sd62,lun=\\.\PhysicalDrive62
sd=sd63,lun=\\.\PhysicalDrive63
sd=sd64,lun=\\.\PhysicalDrive64
sd=sd65,lun=\\.\PhysicalDrive65
sd=sd66,lun=\\.\PhysicalDrive66
sd=sd67,lun=\\.\PhysicalDrive67
sd=sd68,lun=\\.\PhysicalDrive68
sd=sd69,lun=\\.\PhysicalDrive69
sd=sd70,lun=\\.\PhysicalDrive70
sd=sd71,lun=\\.\PhysicalDrive71
sd=sd72,lun=\\.\PhysicalDrive72
sd=sd73,lun=\\.\PhysicalDrive73
sd=sd74,lun=\\.\PhysicalDrive74
sd=sd75,lun=\\.\PhysicalDrive75
sd=sd76,lun=\\.\PhysicalDrive76
sd=sd77,lun=\\.\PhysicalDrive77
sd=sd78,lun=\\.\PhysicalDrive78
sd=sd79,lun=\\.\PhysicalDrive79
sd=sd80,lun=\\.\PhysicalDrive80

sd=default,host=coltrane1,size=4000g
sd=sd1,lun=\\.\PhysicalDrive11
sd=sd2,lun=\\.\PhysicalDrive12
sd=sd3,lun=\\.\PhysicalDrive13
sd=sd4,lun=\\.\PhysicalDrive14
sd=sd5,lun=\\.\PhysicalDrive15
sd=sd6,lun=\\.\PhysicalDrive16
sd=sd7,lun=\\.\PhysicalDrive17
sd=sd8,lun=\\.\PhysicalDrive18
sd=sd9,lun=\\.\PhysicalDrive19
sd=sd10,lun=\\.\PhysicalDrive20
sd=sd11,lun=\\.\PhysicalDrive21
```

```
sd=sd12,lun=\\.\PhysicalDrive22
sd=sd13,lun=\\.\PhysicalDrive23
sd=sd14,lun=\\.\PhysicalDrive24
sd=sd15,lun=\\.\PhysicalDrive25
sd=sd16,lun=\\.\PhysicalDrive26
sd=sd17,lun=\\.\PhysicalDrive27
sd=sd18,lun=\\.\PhysicalDrive28
sd=sd19,lun=\\.\PhysicalDrive29
sd=sd20,lun=\\.\PhysicalDrive30
sd=sd21,lun=\\.\PhysicalDrive31
sd=sd22,lun=\\.\PhysicalDrive32
sd=sd23,lun=\\.\PhysicalDrive33
sd=sd24,lun=\\.\PhysicalDrive34
sd=sd25,lun=\\.\PhysicalDrive35
sd=sd26,lun=\\.\PhysicalDrive36
sd=sd27,lun=\\.\PhysicalDrive37
sd=sd28,lun=\\.\PhysicalDrive38
sd=sd29,lun=\\.\PhysicalDrive39
sd=sd30,lun=\\.\PhysicalDrive40
sd=sd31,lun=\\.\PhysicalDrive41
sd=sd32,lun=\\.\PhysicalDrive42
sd=sd33,lun=\\.\PhysicalDrive43
sd=sd34,lun=\\.\PhysicalDrive44
sd=sd35,lun=\\.\PhysicalDrive45
sd=sd36,lun=\\.\PhysicalDrive46
sd=sd37,lun=\\.\PhysicalDrive47
sd=sd38,lun=\\.\PhysicalDrive48
sd=sd39,lun=\\.\PhysicalDrive49
sd=sd40,lun=\\.\PhysicalDrive50
sd=sd41,lun=\\.\PhysicalDrive51
sd=sd42,lun=\\.\PhysicalDrive52
sd=sd43,lun=\\.\PhysicalDrive53
sd=sd44,lun=\\.\PhysicalDrive54
sd=sd45,lun=\\.\PhysicalDrive55
sd=sd46,lun=\\.\PhysicalDrive56
sd=sd47,lun=\\.\PhysicalDrive57
sd=sd48,lun=\\.\PhysicalDrive58
sd=sd49,lun=\\.\PhysicalDrive59
sd=sd50,lun=\\.\PhysicalDrive60
sd=sd51,lun=\\.\PhysicalDrive61
sd=sd52,lun=\\.\PhysicalDrive62
sd=sd53,lun=\\.\PhysicalDrive63
sd=sd54,lun=\\.\PhysicalDrive64
sd=sd55,lun=\\.\PhysicalDrive65
sd=sd56,lun=\\.\PhysicalDrive66
sd=sd57,lun=\\.\PhysicalDrive67
sd=sd58,lun=\\.\PhysicalDrive68
sd=sd59,lun=\\.\PhysicalDrive69
sd=sd60,lun=\\.\PhysicalDrive70
sd=sd61,lun=\\.\PhysicalDrive71
sd=sd62,lun=\\.\PhysicalDrive72
sd=sd63,lun=\\.\PhysicalDrive73
sd=sd64,lun=\\.\PhysicalDrive74
sd=sd65,lun=\\.\PhysicalDrive75
sd=sd66,lun=\\.\PhysicalDrive76
sd=sd67,lun=\\.\PhysicalDrive77
sd=sd68,lun=\\.\PhysicalDrive78
sd=sd69,lun=\\.\PhysicalDrive79
sd=sd70,lun=\\.\PhysicalDrive80
sd=sd71,lun=\\.\PhysicalDrive81
sd=sd72,lun=\\.\PhysicalDrive82
sd=sd73,lun=\\.\PhysicalDrive83
sd=sd74,lun=\\.\PhysicalDrive84
```

```
sd=sd75,lun=\\.\PhysicalDrive85
sd=sd76,lun=\\.\PhysicalDrive86
sd=sd77,lun=\\.\PhysicalDrive87
sd=sd78,lun=\\.\PhysicalDrive88
sd=sd79,lun=\\.\PhysicalDrive89
sd=sd80,lun=\\.\PhysicalDrive90

sd=default,host=coltrane2,size=4000g
sd=sd1,lun=\\.\PhysicalDrive1
sd=sd2,lun=\\.\PhysicalDrive2
sd=sd3,lun=\\.\PhysicalDrive3
sd=sd4,lun=\\.\PhysicalDrive4
sd=sd5,lun=\\.\PhysicalDrive5
sd=sd6,lun=\\.\PhysicalDrive6
sd=sd7,lun=\\.\PhysicalDrive7
sd=sd8,lun=\\.\PhysicalDrive8
sd=sd9,lun=\\.\PhysicalDrive9
sd=sd10,lun=\\.\PhysicalDrive10
sd=sd11,lun=\\.\PhysicalDrive11
sd=sd12,lun=\\.\PhysicalDrive12
sd=sd13,lun=\\.\PhysicalDrive13
sd=sd14,lun=\\.\PhysicalDrive14
sd=sd15,lun=\\.\PhysicalDrive15
sd=sd16,lun=\\.\PhysicalDrive16
sd=sd17,lun=\\.\PhysicalDrive17
sd=sd18,lun=\\.\PhysicalDrive18
sd=sd19,lun=\\.\PhysicalDrive19
sd=sd20,lun=\\.\PhysicalDrive20
sd=sd21,lun=\\.\PhysicalDrive21
sd=sd22,lun=\\.\PhysicalDrive22
sd=sd23,lun=\\.\PhysicalDrive23
sd=sd24,lun=\\.\PhysicalDrive24
sd=sd25,lun=\\.\PhysicalDrive25
sd=sd26,lun=\\.\PhysicalDrive26
sd=sd27,lun=\\.\PhysicalDrive27
sd=sd28,lun=\\.\PhysicalDrive28
sd=sd29,lun=\\.\PhysicalDrive29
sd=sd30,lun=\\.\PhysicalDrive30
sd=sd31,lun=\\.\PhysicalDrive31
sd=sd32,lun=\\.\PhysicalDrive32
sd=sd33,lun=\\.\PhysicalDrive33
sd=sd34,lun=\\.\PhysicalDrive34
sd=sd35,lun=\\.\PhysicalDrive35
sd=sd36,lun=\\.\PhysicalDrive36
sd=sd37,lun=\\.\PhysicalDrive37
sd=sd38,lun=\\.\PhysicalDrive38
sd=sd39,lun=\\.\PhysicalDrive39
sd=sd40,lun=\\.\PhysicalDrive40
sd=sd41,lun=\\.\PhysicalDrive41
sd=sd42,lun=\\.\PhysicalDrive42
sd=sd43,lun=\\.\PhysicalDrive43
sd=sd44,lun=\\.\PhysicalDrive44
sd=sd45,lun=\\.\PhysicalDrive45
sd=sd46,lun=\\.\PhysicalDrive46
sd=sd47,lun=\\.\PhysicalDrive47
sd=sd48,lun=\\.\PhysicalDrive48
sd=sd49,lun=\\.\PhysicalDrive49
sd=sd50,lun=\\.\PhysicalDrive50
sd=sd51,lun=\\.\PhysicalDrive51
sd=sd52,lun=\\.\PhysicalDrive52
sd=sd53,lun=\\.\PhysicalDrive53
sd=sd54,lun=\\.\PhysicalDrive54
sd=sd55,lun=\\.\PhysicalDrive55
```

```
sd=sd56,lun=\\.\PhysicalDrive56
sd=sd57,lun=\\.\PhysicalDrive57
sd=sd58,lun=\\.\PhysicalDrive58
sd=sd59,lun=\\.\PhysicalDrive59
sd=sd60,lun=\\.\PhysicalDrive60
sd=sd61,lun=\\.\PhysicalDrive61
sd=sd62,lun=\\.\PhysicalDrive62
sd=sd63,lun=\\.\PhysicalDrive63
sd=sd64,lun=\\.\PhysicalDrive64
sd=sd65,lun=\\.\PhysicalDrive65
sd=sd66,lun=\\.\PhysicalDrive66
sd=sd67,lun=\\.\PhysicalDrive67
sd=sd68,lun=\\.\PhysicalDrive68
sd=sd69,lun=\\.\PhysicalDrive69
sd=sd70,lun=\\.\PhysicalDrive70
sd=sd71,lun=\\.\PhysicalDrive71
sd=sd72,lun=\\.\PhysicalDrive72
sd=sd73,lun=\\.\PhysicalDrive73
sd=sd74,lun=\\.\PhysicalDrive74
sd=sd75,lun=\\.\PhysicalDrive75
sd=sd76,lun=\\.\PhysicalDrive76
sd=sd77,lun=\\.\PhysicalDrive77
sd=sd78,lun=\\.\PhysicalDrive78
sd=sd79,lun=\\.\PhysicalDrive79
sd=sd80,lun=\\.\PhysicalDrive80

sd=default,host=coltrane3,size=4000g
sd=sd1,lun=\\.\PhysicalDrive1
sd=sd2,lun=\\.\PhysicalDrive2
sd=sd3,lun=\\.\PhysicalDrive3
sd=sd4,lun=\\.\PhysicalDrive4
sd=sd5,lun=\\.\PhysicalDrive5
sd=sd6,lun=\\.\PhysicalDrive6
sd=sd7,lun=\\.\PhysicalDrive7
sd=sd8,lun=\\.\PhysicalDrive8
sd=sd9,lun=\\.\PhysicalDrive9
sd=sd10,lun=\\.\PhysicalDrive10
sd=sd11,lun=\\.\PhysicalDrive11
sd=sd12,lun=\\.\PhysicalDrive12
sd=sd13,lun=\\.\PhysicalDrive13
sd=sd14,lun=\\.\PhysicalDrive14
sd=sd15,lun=\\.\PhysicalDrive15
sd=sd16,lun=\\.\PhysicalDrive16
sd=sd17,lun=\\.\PhysicalDrive17
sd=sd18,lun=\\.\PhysicalDrive18
sd=sd19,lun=\\.\PhysicalDrive19
sd=sd20,lun=\\.\PhysicalDrive20
sd=sd21,lun=\\.\PhysicalDrive21
sd=sd22,lun=\\.\PhysicalDrive22
sd=sd23,lun=\\.\PhysicalDrive23
sd=sd24,lun=\\.\PhysicalDrive24
sd=sd25,lun=\\.\PhysicalDrive25
sd=sd26,lun=\\.\PhysicalDrive26
sd=sd27,lun=\\.\PhysicalDrive27
sd=sd28,lun=\\.\PhysicalDrive28
sd=sd29,lun=\\.\PhysicalDrive29
sd=sd30,lun=\\.\PhysicalDrive30
sd=sd31,lun=\\.\PhysicalDrive31
sd=sd32,lun=\\.\PhysicalDrive32
sd=sd33,lun=\\.\PhysicalDrive33
sd=sd34,lun=\\.\PhysicalDrive34
sd=sd35,lun=\\.\PhysicalDrive35
sd=sd36,lun=\\.\PhysicalDrive36
```

```
sd=sd37,lun=\\.\PhysicalDrive37
sd=sd38,lun=\\.\PhysicalDrive38
sd=sd39,lun=\\.\PhysicalDrive39
sd=sd40,lun=\\.\PhysicalDrive40
sd=sd41,lun=\\.\PhysicalDrive41
sd=sd42,lun=\\.\PhysicalDrive42
sd=sd43,lun=\\.\PhysicalDrive43
sd=sd44,lun=\\.\PhysicalDrive44
sd=sd45,lun=\\.\PhysicalDrive45
sd=sd46,lun=\\.\PhysicalDrive46
sd=sd47,lun=\\.\PhysicalDrive47
sd=sd48,lun=\\.\PhysicalDrive48
sd=sd49,lun=\\.\PhysicalDrive49
sd=sd50,lun=\\.\PhysicalDrive50
sd=sd51,lun=\\.\PhysicalDrive51
sd=sd52,lun=\\.\PhysicalDrive52
sd=sd53,lun=\\.\PhysicalDrive53
sd=sd54,lun=\\.\PhysicalDrive54
sd=sd55,lun=\\.\PhysicalDrive55
sd=sd56,lun=\\.\PhysicalDrive56
sd=sd57,lun=\\.\PhysicalDrive57
sd=sd58,lun=\\.\PhysicalDrive58
sd=sd59,lun=\\.\PhysicalDrive59
sd=sd60,lun=\\.\PhysicalDrive60
sd=sd61,lun=\\.\PhysicalDrive61
sd=sd62,lun=\\.\PhysicalDrive62
sd=sd63,lun=\\.\PhysicalDrive63
sd=sd64,lun=\\.\PhysicalDrive64
sd=sd65,lun=\\.\PhysicalDrive65
sd=sd66,lun=\\.\PhysicalDrive66
sd=sd67,lun=\\.\PhysicalDrive67
sd=sd68,lun=\\.\PhysicalDrive68
sd=sd69,lun=\\.\PhysicalDrive69
sd=sd70,lun=\\.\PhysicalDrive70
sd=sd71,lun=\\.\PhysicalDrive71
sd=sd72,lun=\\.\PhysicalDrive72
sd=sd73,lun=\\.\PhysicalDrive73
sd=sd74,lun=\\.\PhysicalDrive74
sd=sd75,lun=\\.\PhysicalDrive75
sd=sd76,lun=\\.\PhysicalDrive76
sd=sd77,lun=\\.\PhysicalDrive77
sd=sd78,lun=\\.\PhysicalDrive78
sd=sd79,lun=\\.\PhysicalDrive79
sd=sd80,lun=\\.\PhysicalDrive80

sd=default,host=coltrane4,size=4000g
sd=sd1,lun=\\.\PhysicalDrive1
sd=sd2,lun=\\.\PhysicalDrive2
sd=sd3,lun=\\.\PhysicalDrive3
sd=sd4,lun=\\.\PhysicalDrive4
sd=sd5,lun=\\.\PhysicalDrive5
sd=sd6,lun=\\.\PhysicalDrive6
sd=sd7,lun=\\.\PhysicalDrive7
sd=sd8,lun=\\.\PhysicalDrive8
sd=sd9,lun=\\.\PhysicalDrive9
sd=sd10,lun=\\.\PhysicalDrive10
sd=sd11,lun=\\.\PhysicalDrive11
sd=sd12,lun=\\.\PhysicalDrive12
sd=sd13,lun=\\.\PhysicalDrive13
sd=sd14,lun=\\.\PhysicalDrive14
sd=sd15,lun=\\.\PhysicalDrive15
sd=sd16,lun=\\.\PhysicalDrive16
sd=sd17,lun=\\.\PhysicalDrive17
```

```
sd=sd18,lun=\\.\PhysicalDrive18
sd=sd19,lun=\\.\PhysicalDrive19
sd=sd20,lun=\\.\PhysicalDrive20
sd=sd21,lun=\\.\PhysicalDrive21
sd=sd22,lun=\\.\PhysicalDrive22
sd=sd23,lun=\\.\PhysicalDrive23
sd=sd24,lun=\\.\PhysicalDrive24
sd=sd25,lun=\\.\PhysicalDrive25
sd=sd26,lun=\\.\PhysicalDrive26
sd=sd27,lun=\\.\PhysicalDrive27
sd=sd28,lun=\\.\PhysicalDrive28
sd=sd29,lun=\\.\PhysicalDrive29
sd=sd30,lun=\\.\PhysicalDrive30
sd=sd31,lun=\\.\PhysicalDrive31
sd=sd32,lun=\\.\PhysicalDrive32
sd=sd33,lun=\\.\PhysicalDrive33
sd=sd34,lun=\\.\PhysicalDrive34
sd=sd35,lun=\\.\PhysicalDrive35
sd=sd36,lun=\\.\PhysicalDrive36
sd=sd37,lun=\\.\PhysicalDrive37
sd=sd38,lun=\\.\PhysicalDrive38
sd=sd39,lun=\\.\PhysicalDrive39
sd=sd40,lun=\\.\PhysicalDrive40
sd=sd41,lun=\\.\PhysicalDrive41
sd=sd42,lun=\\.\PhysicalDrive42
sd=sd43,lun=\\.\PhysicalDrive43
sd=sd44,lun=\\.\PhysicalDrive44
sd=sd45,lun=\\.\PhysicalDrive45
sd=sd46,lun=\\.\PhysicalDrive46
sd=sd47,lun=\\.\PhysicalDrive47
sd=sd48,lun=\\.\PhysicalDrive48
sd=sd49,lun=\\.\PhysicalDrive49
sd=sd50,lun=\\.\PhysicalDrive50
sd=sd51,lun=\\.\PhysicalDrive51
sd=sd52,lun=\\.\PhysicalDrive52
sd=sd53,lun=\\.\PhysicalDrive53
sd=sd54,lun=\\.\PhysicalDrive54
sd=sd55,lun=\\.\PhysicalDrive55
sd=sd56,lun=\\.\PhysicalDrive56
sd=sd57,lun=\\.\PhysicalDrive57
sd=sd58,lun=\\.\PhysicalDrive58
sd=sd59,lun=\\.\PhysicalDrive59
sd=sd60,lun=\\.\PhysicalDrive60
sd=sd61,lun=\\.\PhysicalDrive61
sd=sd62,lun=\\.\PhysicalDrive62
sd=sd63,lun=\\.\PhysicalDrive63
sd=sd64,lun=\\.\PhysicalDrive64
sd=sd65,lun=\\.\PhysicalDrive65
sd=sd66,lun=\\.\PhysicalDrive66
sd=sd67,lun=\\.\PhysicalDrive67
sd=sd68,lun=\\.\PhysicalDrive68
sd=sd69,lun=\\.\PhysicalDrive69
sd=sd70,lun=\\.\PhysicalDrive70
sd=sd71,lun=\\.\PhysicalDrive71
sd=sd72,lun=\\.\PhysicalDrive72
sd=sd73,lun=\\.\PhysicalDrive73
sd=sd74,lun=\\.\PhysicalDrive74
sd=sd75,lun=\\.\PhysicalDrive75
sd=sd76,lun=\\.\PhysicalDrive76
sd=sd77,lun=\\.\PhysicalDrive77
sd=sd78,lun=\\.\PhysicalDrive78
sd=sd79,lun=\\.\PhysicalDrive79
sd=sd80,lun=\\.\PhysicalDrive80
```

```
sd=default,host=coltrane5,size=4000g
sd=sd1,lun=\\.\PhysicalDrive1
sd=sd2,lun=\\.\PhysicalDrive2
sd=sd3,lun=\\.\PhysicalDrive3
sd=sd4,lun=\\.\PhysicalDrive4
sd=sd5,lun=\\.\PhysicalDrive5
sd=sd6,lun=\\.\PhysicalDrive6
sd=sd7,lun=\\.\PhysicalDrive7
sd=sd8,lun=\\.\PhysicalDrive8
sd=sd9,lun=\\.\PhysicalDrive9
sd=sd10,lun=\\.\PhysicalDrive10
sd=sd11,lun=\\.\PhysicalDrive11
sd=sd12,lun=\\.\PhysicalDrive12
sd=sd13,lun=\\.\PhysicalDrive13
sd=sd14,lun=\\.\PhysicalDrive14
sd=sd15,lun=\\.\PhysicalDrive15
sd=sd16,lun=\\.\PhysicalDrive16
sd=sd17,lun=\\.\PhysicalDrive17
sd=sd18,lun=\\.\PhysicalDrive18
sd=sd19,lun=\\.\PhysicalDrive19
sd=sd20,lun=\\.\PhysicalDrive20
sd=sd21,lun=\\.\PhysicalDrive21
sd=sd22,lun=\\.\PhysicalDrive22
sd=sd23,lun=\\.\PhysicalDrive23
sd=sd24,lun=\\.\PhysicalDrive24
sd=sd25,lun=\\.\PhysicalDrive25
sd=sd26,lun=\\.\PhysicalDrive26
sd=sd27,lun=\\.\PhysicalDrive27
sd=sd28,lun=\\.\PhysicalDrive28
sd=sd29,lun=\\.\PhysicalDrive29
sd=sd30,lun=\\.\PhysicalDrive30
sd=sd31,lun=\\.\PhysicalDrive31
sd=sd32,lun=\\.\PhysicalDrive32
sd=sd33,lun=\\.\PhysicalDrive33
sd=sd34,lun=\\.\PhysicalDrive34
sd=sd35,lun=\\.\PhysicalDrive35
sd=sd36,lun=\\.\PhysicalDrive36
sd=sd37,lun=\\.\PhysicalDrive37
sd=sd38,lun=\\.\PhysicalDrive38
sd=sd39,lun=\\.\PhysicalDrive39
sd=sd40,lun=\\.\PhysicalDrive40
sd=sd41,lun=\\.\PhysicalDrive41
sd=sd42,lun=\\.\PhysicalDrive42
sd=sd43,lun=\\.\PhysicalDrive43
sd=sd44,lun=\\.\PhysicalDrive44
sd=sd45,lun=\\.\PhysicalDrive45
sd=sd46,lun=\\.\PhysicalDrive46
sd=sd47,lun=\\.\PhysicalDrive47
sd=sd48,lun=\\.\PhysicalDrive48
sd=sd49,lun=\\.\PhysicalDrive49
sd=sd50,lun=\\.\PhysicalDrive50
sd=sd51,lun=\\.\PhysicalDrive51
sd=sd52,lun=\\.\PhysicalDrive52
sd=sd53,lun=\\.\PhysicalDrive53
sd=sd54,lun=\\.\PhysicalDrive54
sd=sd55,lun=\\.\PhysicalDrive55
sd=sd56,lun=\\.\PhysicalDrive56
sd=sd57,lun=\\.\PhysicalDrive57
sd=sd58,lun=\\.\PhysicalDrive58
sd=sd59,lun=\\.\PhysicalDrive59
sd=sd60,lun=\\.\PhysicalDrive60
sd=sd61,lun=\\.\PhysicalDrive61
```

```
sd=sd62,lun=\\.\PhysicalDrive62
sd=sd63,lun=\\.\PhysicalDrive63
sd=sd64,lun=\\.\PhysicalDrive64
sd=sd65,lun=\\.\PhysicalDrive65
sd=sd66,lun=\\.\PhysicalDrive66
sd=sd67,lun=\\.\PhysicalDrive67
sd=sd68,lun=\\.\PhysicalDrive68
sd=sd69,lun=\\.\PhysicalDrive69
sd=sd70,lun=\\.\PhysicalDrive70
sd=sd71,lun=\\.\PhysicalDrive71
sd=sd72,lun=\\.\PhysicalDrive72
sd=sd73,lun=\\.\PhysicalDrive73
sd=sd74,lun=\\.\PhysicalDrive74
sd=sd75,lun=\\.\PhysicalDrive75
sd=sd76,lun=\\.\PhysicalDrive76
sd=sd77,lun=\\.\PhysicalDrive77
sd=sd78,lun=\\.\PhysicalDrive78
sd=sd79,lun=\\.\PhysicalDrive79
sd=sd80,lun=\\.\PhysicalDrive80


sd=default,host=coltrane6,size=4000g
sd=sd1,lun=\\.\PhysicalDrive3
sd=sd2,lun=\\.\PhysicalDrive4
sd=sd3,lun=\\.\PhysicalDrive5
sd=sd4,lun=\\.\PhysicalDrive6
sd=sd5,lun=\\.\PhysicalDrive7
sd=sd6,lun=\\.\PhysicalDrive8
sd=sd7,lun=\\.\PhysicalDrive9
sd=sd8,lun=\\.\PhysicalDrive10
sd=sd9,lun=\\.\PhysicalDrive11
sd=sd10,lun=\\.\PhysicalDrive12
sd=sd11,lun=\\.\PhysicalDrive13
sd=sd12,lun=\\.\PhysicalDrive14
sd=sd13,lun=\\.\PhysicalDrive15
sd=sd14,lun=\\.\PhysicalDrive16
sd=sd15,lun=\\.\PhysicalDrive17
sd=sd16,lun=\\.\PhysicalDrive18
sd=sd17,lun=\\.\PhysicalDrive19
sd=sd18,lun=\\.\PhysicalDrive20
sd=sd19,lun=\\.\PhysicalDrive21
sd=sd20,lun=\\.\PhysicalDrive22
sd=sd21,lun=\\.\PhysicalDrive23
sd=sd22,lun=\\.\PhysicalDrive24
sd=sd23,lun=\\.\PhysicalDrive25
sd=sd24,lun=\\.\PhysicalDrive26
sd=sd25,lun=\\.\PhysicalDrive27
sd=sd26,lun=\\.\PhysicalDrive28
sd=sd27,lun=\\.\PhysicalDrive29
sd=sd28,lun=\\.\PhysicalDrive30
sd=sd29,lun=\\.\PhysicalDrive31
sd=sd30,lun=\\.\PhysicalDrive32
sd=sd31,lun=\\.\PhysicalDrive33
sd=sd32,lun=\\.\PhysicalDrive34
sd=sd33,lun=\\.\PhysicalDrive35
sd=sd34,lun=\\.\PhysicalDrive36
sd=sd35,lun=\\.\PhysicalDrive37
sd=sd36,lun=\\.\PhysicalDrive38
sd=sd37,lun=\\.\PhysicalDrive39
sd=sd38,lun=\\.\PhysicalDrive40
sd=sd39,lun=\\.\PhysicalDrive41
sd=sd40,lun=\\.\PhysicalDrive42
sd=sd41,lun=\\.\PhysicalDrive43
```

```
sd=sd42,lun=\\.\PhysicalDrive44
sd=sd43,lun=\\.\PhysicalDrive45
sd=sd44,lun=\\.\PhysicalDrive46
sd=sd45,lun=\\.\PhysicalDrive47
sd=sd46,lun=\\.\PhysicalDrive48
sd=sd47,lun=\\.\PhysicalDrive49
sd=sd48,lun=\\.\PhysicalDrive50
sd=sd49,lun=\\.\PhysicalDrive51
sd=sd50,lun=\\.\PhysicalDrive52
sd=sd51,lun=\\.\PhysicalDrive53
sd=sd52,lun=\\.\PhysicalDrive54
sd=sd53,lun=\\.\PhysicalDrive55
sd=sd54,lun=\\.\PhysicalDrive56
sd=sd55,lun=\\.\PhysicalDrive57
sd=sd56,lun=\\.\PhysicalDrive58
sd=sd57,lun=\\.\PhysicalDrive59
sd=sd58,lun=\\.\PhysicalDrive60
sd=sd59,lun=\\.\PhysicalDrive61
sd=sd60,lun=\\.\PhysicalDrive62
sd=sd61,lun=\\.\PhysicalDrive63
sd=sd62,lun=\\.\PhysicalDrive64
sd=sd63,lun=\\.\PhysicalDrive65
sd=sd64,lun=\\.\PhysicalDrive66
sd=sd65,lun=\\.\PhysicalDrive67
sd=sd66,lun=\\.\PhysicalDrive68
sd=sd67,lun=\\.\PhysicalDrive69
sd=sd68,lun=\\.\PhysicalDrive70
sd=sd69,lun=\\.\PhysicalDrive71
sd=sd70,lun=\\.\PhysicalDrive72
sd=sd71,lun=\\.\PhysicalDrive73
sd=sd72,lun=\\.\PhysicalDrive74
sd=sd73,lun=\\.\PhysicalDrive75
sd=sd74,lun=\\.\PhysicalDrive76
sd=sd75,lun=\\.\PhysicalDrive77
sd=sd76,lun=\\.\PhysicalDrive78
sd=sd77,lun=\\.\PhysicalDrive79
sd=sd78,lun=\\.\PhysicalDrive80
sd=sd79,lun=\\.\PhysicalDrive81
sd=sd80,lun=\\.\PhysicalDrive82

sd=default,host=coltrane7,size=4000g
sd=sd1,lun=\\.\PhysicalDrive1
sd=sd2,lun=\\.\PhysicalDrive2
sd=sd3,lun=\\.\PhysicalDrive3
sd=sd4,lun=\\.\PhysicalDrive4
sd=sd5,lun=\\.\PhysicalDrive5
sd=sd6,lun=\\.\PhysicalDrive6
sd=sd7,lun=\\.\PhysicalDrive7
sd=sd8,lun=\\.\PhysicalDrive8
sd=sd9,lun=\\.\PhysicalDrive9
sd=sd10,lun=\\.\PhysicalDrive10
sd=sd11,lun=\\.\PhysicalDrive11
sd=sd12,lun=\\.\PhysicalDrive12
sd=sd13,lun=\\.\PhysicalDrive13
sd=sd14,lun=\\.\PhysicalDrive14
sd=sd15,lun=\\.\PhysicalDrive15
sd=sd16,lun=\\.\PhysicalDrive16
sd=sd17,lun=\\.\PhysicalDrive17
sd=sd18,lun=\\.\PhysicalDrive18
sd=sd19,lun=\\.\PhysicalDrive19
sd=sd20,lun=\\.\PhysicalDrive20
sd=sd21,lun=\\.\PhysicalDrive21
sd=sd22,lun=\\.\PhysicalDrive22
```

```
  sd=sd23,lun=\\.\PhysicalDrive23
  sd=sd24,lun=\\.\PhysicalDrive24
  sd=sd25,lun=\\.\PhysicalDrive25
  sd=sd26,lun=\\.\PhysicalDrive26
  sd=sd27,lun=\\.\PhysicalDrive27
  sd=sd28,lun=\\.\PhysicalDrive28
  sd=sd29,lun=\\.\PhysicalDrive29
  sd=sd30,lun=\\.\PhysicalDrive30
  sd=sd31,lun=\\.\PhysicalDrive31
  sd=sd32,lun=\\.\PhysicalDrive32
  sd=sd33,lun=\\.\PhysicalDrive33
  sd=sd34,lun=\\.\PhysicalDrive34
  sd=sd35,lun=\\.\PhysicalDrive35
  sd=sd36,lun=\\.\PhysicalDrive36
  sd=sd37,lun=\\.\PhysicalDrive37
  sd=sd38,lun=\\.\PhysicalDrive38
  sd=sd39,lun=\\.\PhysicalDrive39
  sd=sd40,lun=\\.\PhysicalDrive40
  sd=sd41,lun=\\.\PhysicalDrive41
  sd=sd42,lun=\\.\PhysicalDrive42
  sd=sd43,lun=\\.\PhysicalDrive43
  sd=sd44,lun=\\.\PhysicalDrive44
  sd=sd45,lun=\\.\PhysicalDrive45
  sd=sd46,lun=\\.\PhysicalDrive46
  sd=sd47,lun=\\.\PhysicalDrive47
  sd=sd48,lun=\\.\PhysicalDrive48
  sd=sd49,lun=\\.\PhysicalDrive49
  sd=sd50,lun=\\.\PhysicalDrive50
  sd=sd51,lun=\\.\PhysicalDrive51
  sd=sd52,lun=\\.\PhysicalDrive52
  sd=sd53,lun=\\.\PhysicalDrive53
  sd=sd54,lun=\\.\PhysicalDrive54
  sd=sd55,lun=\\.\PhysicalDrive55
  sd=sd56,lun=\\.\PhysicalDrive56
  sd=sd57,lun=\\.\PhysicalDrive57
  sd=sd58,lun=\\.\PhysicalDrive58
  sd=sd59,lun=\\.\PhysicalDrive59
  sd=sd60,lun=\\.\PhysicalDrive60
  sd=sd61,lun=\\.\PhysicalDrive61
  sd=sd62,lun=\\.\PhysicalDrive62
  sd=sd63,lun=\\.\PhysicalDrive63
  sd=sd64,lun=\\.\PhysicalDrive64
  sd=sd65,lun=\\.\PhysicalDrive65
  sd=sd66,lun=\\.\PhysicalDrive66
  sd=sd67,lun=\\.\PhysicalDrive67
  sd=sd68,lun=\\.\PhysicalDrive68
  sd=sd69,lun=\\.\PhysicalDrive69
  sd=sd70,lun=\\.\PhysicalDrive70
  sd=sd71,lun=\\.\PhysicalDrive71
  sd=sd72,lun=\\.\PhysicalDrive72
  sd=sd73,lun=\\.\PhysicalDrive73
  sd=sd74,lun=\\.\PhysicalDrive74
  sd=sd75,lun=\\.\PhysicalDrive75
  sd=sd76,lun=\\.\PhysicalDrive76
  sd=sd77,lun=\\.\PhysicalDrive77
  sd=sd78,lun=\\.\PhysicalDrive78
  sd=sd79,lun=\\.\PhysicalDrive79
  sd=sd80,lun=\\.\PhysicalDrive80

  sd=default,host=coltrane8,size=4000g
  sd=sd1,lun=\\.\PhysicalDrive1
  sd=sd2,lun=\\.\PhysicalDrive2
  sd=sd3,lun=\\.\PhysicalDrive3
```

```
sd=sd4,lun=\\.\PhysicalDrive4
sd=sd5,lun=\\.\PhysicalDrive5
sd=sd6,lun=\\.\PhysicalDrive6
sd=sd7,lun=\\.\PhysicalDrive7
sd=sd8,lun=\\.\PhysicalDrive8
sd=sd9,lun=\\.\PhysicalDrive9
sd=sd10,lun=\\.\PhysicalDrive10
sd=sd11,lun=\\.\PhysicalDrive11
sd=sd12,lun=\\.\PhysicalDrive12
sd=sd13,lun=\\.\PhysicalDrive13
sd=sd14,lun=\\.\PhysicalDrive14
sd=sd15,lun=\\.\PhysicalDrive15
sd=sd16,lun=\\.\PhysicalDrive16
sd=sd17,lun=\\.\PhysicalDrive17
sd=sd18,lun=\\.\PhysicalDrive18
sd=sd19,lun=\\.\PhysicalDrive19
sd=sd20,lun=\\.\PhysicalDrive20
sd=sd21,lun=\\.\PhysicalDrive21
sd=sd22,lun=\\.\PhysicalDrive22
sd=sd23,lun=\\.\PhysicalDrive23
sd=sd24,lun=\\.\PhysicalDrive24
sd=sd25,lun=\\.\PhysicalDrive25
sd=sd26,lun=\\.\PhysicalDrive26
sd=sd27,lun=\\.\PhysicalDrive27
sd=sd28,lun=\\.\PhysicalDrive28
sd=sd29,lun=\\.\PhysicalDrive29
sd=sd30,lun=\\.\PhysicalDrive30
sd=sd31,lun=\\.\PhysicalDrive31
sd=sd32,lun=\\.\PhysicalDrive32
sd=sd33,lun=\\.\PhysicalDrive33
sd=sd34,lun=\\.\PhysicalDrive34
sd=sd35,lun=\\.\PhysicalDrive35
sd=sd36,lun=\\.\PhysicalDrive36
sd=sd37,lun=\\.\PhysicalDrive37
sd=sd38,lun=\\.\PhysicalDrive38
sd=sd39,lun=\\.\PhysicalDrive39
sd=sd40,lun=\\.\PhysicalDrive40
sd=sd41,lun=\\.\PhysicalDrive41
sd=sd42,lun=\\.\PhysicalDrive42
sd=sd43,lun=\\.\PhysicalDrive43
sd=sd44,lun=\\.\PhysicalDrive44
sd=sd45,lun=\\.\PhysicalDrive45
sd=sd46,lun=\\.\PhysicalDrive46
sd=sd47,lun=\\.\PhysicalDrive47
sd=sd48,lun=\\.\PhysicalDrive48
sd=sd49,lun=\\.\PhysicalDrive49
sd=sd50,lun=\\.\PhysicalDrive50
sd=sd51,lun=\\.\PhysicalDrive51
sd=sd52,lun=\\.\PhysicalDrive52
sd=sd53,lun=\\.\PhysicalDrive53
sd=sd54,lun=\\.\PhysicalDrive54
sd=sd55,lun=\\.\PhysicalDrive55
sd=sd56,lun=\\.\PhysicalDrive56
sd=sd57,lun=\\.\PhysicalDrive57
sd=sd58,lun=\\.\PhysicalDrive58
sd=sd59,lun=\\.\PhysicalDrive59
sd=sd60,lun=\\.\PhysicalDrive60
sd=sd61,lun=\\.\PhysicalDrive61
sd=sd62,lun=\\.\PhysicalDrive62
sd=sd63,lun=\\.\PhysicalDrive63
sd=sd64,lun=\\.\PhysicalDrive64
sd=sd65,lun=\\.\PhysicalDrive65
sd=sd66,lun=\\.\PhysicalDrive66
```

```
sd=sd67,lun=\\.\PhysicalDrive67
sd=sd68,lun=\\.\PhysicalDrive68
sd=sd69,lun=\\.\PhysicalDrive69
sd=sd70,lun=\\.\PhysicalDrive70
sd=sd71,lun=\\.\PhysicalDrive71
sd=sd72,lun=\\.\PhysicalDrive72
sd=sd73,lun=\\.\PhysicalDrive73
sd=sd74,lun=\\.\PhysicalDrive74
sd=sd75,lun=\\.\PhysicalDrive75
sd=sd76,lun=\\.\PhysicalDrive76
sd=sd77,lun=\\.\PhysicalDrive77
sd=sd78,lun=\\.\PhysicalDrive78
sd=sd79,lun=\\.\PhysicalDrive79
sd=sd80,lun=\\.\PhysicalDrive80
```

Large File Processing Test (LFP)

Common Command/Parameters – LFP, LDQ, VOD and Persistence

```
maxlatestart=0
reportinginterval=5
segmentlength=512m
rd=default,rampup=180,periods=90,measurement=180,runout=45,rampdown=15,buffers=1
* LFP, "write" Test Phase
rd=default,rdpct=0,xfersize=1024k
rd=TR1_SPC-2-FP2.0,streams=2000
rd=TR2_SPC-2-FP2.0,streams=1000
rd=TR3_SPC-2-FP2.0,streams=500
rd=TR4_SPC-2-FP2.0,streams=250
rd=TR5_SPC-2-FP2.0,streams=1
rd=default,rdpct=0,xfersize=256k
rd=TR6_SPC-2-FP2.0,streams=2000
rd=TR7_SPC-2-FP2.0,streams=1000
rd=TR8_SPC-2-FP2.0,streams=500
rd=TR9_SPC-2-FP2.0,streams=250
rd=TR10_SPC-2-FP2.0,streams=1
* LFP, "read-write" Test Phase
rd=default,rdpct=50,xfersize=1024k
rd=TR11_SPC-2-FP2.0,streams=2000
rd=TR12_SPC-2-FP2.0,streams=1000
rd=TR13_SPC-2-FP2.0,streams=500
rd=TR14_SPC-2-FP2.0,streams=250
rd=TR15_SPC-2-FP2.0,streams=1
rd=default,rdpct=50,xfersize=256k
rd=TR16_SPC-2-FP2.0,streams=2000
rd=TR17_SPC-2-FP2.0,streams=1000
rd=TR18_SPC-2-FP2.0,streams=500
rd=TR19_SPC-2-FP2.0,streams=250
rd=TR20_SPC-2-FP2.0,streams=1
* LFP, "read" Test Phase
rd=default,rdpct=100,xfersize=1024k
rd=TR21_SPC-2-FP2.0,streams=2000
rd=TR22_SPC-2-FP2.0,streams=1000
rd=TR23_SPC-2-FP2.0,streams=500
rd=TR24_SPC-2-FP2.0,streams=250
rd=TR25_SPC-2-FP2.0,streams=1
rd=default,rdpct=100,xfersize=256k
rd=TR26_SPC-2-FP2.0,streams=2000
rd=TR27_SPC-2-FP2.0,streams=1000
rd=TR28_SPC-2-FP2.0,streams=500
rd=TR29_SPC-2-FP2.0,streams=250
rd=TR30_SPC-2-FP2.0,streams=1
```

Large Database Query (LDQ)

Common Command/Parameters – LFP, LDQ, VOD and Persistence

```
maxlatestart=0
reportinginterval=5
segmentlength=512m
rd=default,rdpct=99,rampup=180,periods=90,measurement=180,runout=45,rampdown=15
* LDQ, 1024 KiB Test Phase
rd=default,xfersize=1024k,buffers=4
rd=TR1_SPC-2-DQ2.0,streams=2000
rd=TR2_SPC-2-DQ2.0,streams=1000
rd=TR3_SPC-2-DQ2.0,streams=500
rd=TR4_SPC-2-DQ2.0,streams=250
rd=TR5_SPC-2-DQ2.0,streams=1
rd=default,xfersize=1024k,buffers=1
rd=TR6_SPC-2-DQ2.0,streams=2000
rd=TR7_SPC-2-DQ2.0,streams=1000
rd=TR8_SPC-2-DQ2.0,streams=500
rd=TR9_SPC-2-DQ2.0,streams=250
rd=TR10_SPC-2-DQ2.0,streams=1
* LDQ, 64 KiB Test Phase
rd=default,xfersize=64k,buffers=4
rd=TR11_SPC-2-DQ2.0,streams=2000
rd=TR12_SPC-2-DQ2.0,streams=1000
rd=TR13_SPC-2-DQ2.0,streams=500
rd=TR14_SPC-2-DQ2.0,streams=250
rd=TR15_SPC-2-DQ2.0,streams=1
rd=default,xfersize=64k,buffers=1
rd=TR16_SPC-2-DQ2.0,streams=2000
rd=TR17_SPC-2-DQ2.0,streams=1000
rd=TR18_SPC-2-DQ2.0,streams=500
rd=TR19_SPC-2-DQ2.0,streams=250
rd=TR20_SPC-2-DQ2.0,streams=1
```

Video on Demand Delivery (VOD)

Common Command/Parameters – LFP, LDQ, VOD and Persistence

```
maxlatestart=0
videosegmentduration=1200
maxlatevod=0
reportinginterval=5
* Official RD
rd=default,rampup=1200,periods=600,measurement=7200,runout=45,rampdown=15
rd=TR1_SPC-2-VOD11.0,streams=35000,buffers=8
```

SPC-2 Persistence Test Run 1 *(write phase)*

Common Command/Parameters – LFP, LDQ, VOD and Persistence

```
maxlatestart=1
reportinginterval=5
segmentlength=512m

rd=default,rampup=360,periods=180,measurement=300,runout=0,rampdown=0,buffers=1

rd=default,rdpct=0,xfersize=1024k
rd=TR1-101s_SPC-2-persist-w,streams=2000
```

SPC-2 Persistence Test Run 2 *(read phase)*

Common Command/Parameters – LFP, LDQ, VOD and Persistence

```
maxlatestart=1
reportinginterval=5
segmentlength=512m

maxpersistenceerrors=10

rd=default,buffers=1,rdpct=100,xfersize=1024k
rd=TR1-5s_SPC-2-persist-r
```

APPENDIX E: SPC-2 WORKLOAD GENERATOR EXECUTION COMMANDS AND PARAMETERS

The following 'master' script, **Mauto_test.bat**, was invoked to execute the following:

- Produce the first detailed TSC information listing and storage capacity documentation required for this audit.
- Complete the required ASU pre-fill.
- Start the Slave JVMs on each remote Host System.
  javaremotestart.bat
- Execute the following:
  - Video On Demand (VOD) Test
  - Large File Processing (LFP) Test
  - Large Database Query (LDQ) Test
  - SPC-2 Persistence Test Run 1 *(write phase)*
- Pause until the required TSC power off/power cycle completes.
- Produce the second detailed TSC information listing and storage capacity documentation required for this audit.
- Execute SPC-2 Persistence Test Run 2 *(read phase)*

Mauto_test.bat

```
@echo off
cd "C:\spc\spc2\"

diskpart /s logic_volume_command.txt > storage_volume1.log

echo %date% >> storage_volume1.log
echo %time% >> storage_volume1.log


cd C:\CliDK

java -jar clidk.jar -devip 100.154.68.10 -u admin -p Admin@storage2 -batchfile
"C:\spc\spc2\storage_profile_command" -logfile C:\spc\spc2\storage_profile1.log


cd C:\vdbench

call vdbench.bat -f C:\spc\spc2\prefilling.cfg -o C:\spc\spc2\Prefill

cd "C:\PSTools"

psexec \\100.154.68.121 -d -u administrator -p huawei@123
C:\spc\spc2\javaremotestart.bat
psexec \\100.154.68.122 -d -u administrator -p huawei@123
C:\spc\spc2\javaremotestart.bat
psexec \\100.154.68.123 -d -u administrator -p huawei@123
C:\spc\spc2\javaremotestart.bat
psexec \\100.154.68.124 -d -u administrator -p huawei@123
C:\spc\spc2\javaremotestart.bat
```

```
psexec \\100.154.68.125 -d -u administrator -p huawei@123
C:\spc\spc2\javaremotestart.bat
psexec \\100.154.68.127 -d -u administrator -p huawei@123
C:\spc\spc2\javaremotestart.bat
psexec \\100.154.68.128 -d -u administrator -p huawei@123
C:\spc\spc2\javaremotestart.bat
psexec \\100.154.68.129 -d -u administrator -p huawei@123
C:\spc\spc2\javaremotestart.bat



cd "C:\spc\spc2\"



call C:\spc\spc2\spc2.bat -f persist1.cfg -o persist1-init -init


call C:\spc\spc2\spc2.bat -f Muti-VOD.txt -o Muti-VOD


call C:\spc\spc2\spc2.bat -f Muti-LFP.txt -o LFP


call C:\spc\spc2\spc2.bat -f Muti-LDQ.txt -o LDQ


call C:\spc\spc2\spc2.bat -f persist1.cfg -o persist1




echo "Power cycle TSC, then Enter to continue"
pause



cd "C:\spc\spc2\"

diskpart /s logic_volume_command.txt > storage_volume2.log

echo %date% >> storage_volume2.log
echo %time% >> storage_volume2.log


cd C:\CliDK

java -jar clidk.jar -devip 100.154.68.10 -u admin -p Admin@storage2 -batchfile
"C:\spc\spc2\storage_profile_command" -logfile C:\spc\spc2\storage_profile2.log



cd "C:\spc\spc2\"

call C:\spc\spc2\spc2.bat -f persist2.cfg -o persist2




echo "persist2 is finished"
pause
```

javaremotestart.bat

```
echo off
cd "C:\spc\spc2\"
@java RemoteStart
```

APPENDIX F: THIRD-PARTY QUOTATION

Priced Storage Configuration

Netfast Technology Solutions, Inc.
989, Avenues of America, Fl 12
New York, NY 10018, USA
Voice: (212) 792-5200 , Fax: (212) 213-1152

12/15/2015, Quote Valid:90 Days

No.	Model	Description	Qty.	Unit Price (USD)	Total Price (USD)
1	Phase				
1.1	Location				
1.1.1	OceanStor 6800 V3 Storage System				
1.1.1	Engine				
	6800V3-512G-AC	6800 V3(6U,Dual Ctrl,AC,512GB,SPE72C0600)	2	44,791.92	89,583.84
	6800V3-256G-CTL	Controller Module(2*Intel 6 Cores,256GB Cache)	4	12,631.92	50,527.68
1.1.2	Expand Interface Module				
	SMARTIO8FC	4 port SmartIO I/O module(SFP+,8Gb FC)	24	665.04	15,960.96
	SMARTIO10ETH	4 port SmartIO I/O module(SFP+,10Gb Eth/FCoE(VN2VF)/Scale-out)	8	1,310.16	10,481.28
	LPU4S12V3	4 port 4*12Gb SAS I/O module(MiniSAS HD)	16	992.64	15,882.24
1.1.3	Disk Components				
	SAS600-10K-2-V3	600GB 10K RPM SAS Disk Unit(2.5")	800	439.44	351,552.00
1.1.4	Disk Enclosure				
	DAE22525U2-1-AC	Disk Enclosure(2U,AC,2.5",Expanding Module,25 Disk Slots,without Disk Unit, DAE22525U2)	32	2,116.80	67,737.60
1.1.5	Cabinet				
	RACK-42U-1	T or V3 Series Universal 42U Storage AC Cabinet	2	1,200.00	2,400.00
	PDU2000-32-1PH-20A-B2	AC Power Distribution Unit	4	180.00	360.00
1.1.6	Installation Material				
	CE6850-EI-B00	CE6850-48S4Q-EI Switch(2*350W AC Power Module,2*FAN Box,Port side exhaust)	2	5,000.00	10,000.00
	SN2F01FCPC	Patch Cord,DLC/PC,DLC/PC,Multi-mode,3m,A1a.2,2mm,OM3 bending insensitive	88	11.00	968.00
	HS-SAS-1-01	High Speed Cable,External MiniSAS HD Cable,1m,(SFF 8644 Plug),(28AWG*4P*2B(S)),(SFF 8644 Plug),Indoor use	48	55.00	2,640.00
	HS-SAS-3-01	High Speed Cable,Mini SAS HD Cable,3m,(SFF 8644 Plug),(28AWG*4P*2B(S)),(SFF 8644 Plug),Indoor use	16	96.00	1,536.00
	C3018BK00	Power Cable,300V/500V,60227 IEC 10(BVV),3x6mm^2,Black(3Cores:Brown,Blue,Yellow/Green),46A,Outdoor Cable,CCC,CE (Unit:meter)	74	5.70	421.80
1.1.7	HBA				
	N8GHBA000	QLOGIC QLE2562 HBA Card,PCIE,8Gbps DualPort ,Fiber Channel Multimode LC Optic Interface,English Manual, No Drive CD	36	1,000.00	36,000.00
1.1.8	Storage Software				
	LIC-6800V3-BS	Basic Software License for Block(Include Device Management,SmartThin,SmartMulti-tenant,SmartMigration,SmartErase,SmartMotion,Cloud Service)	1	6,146.88	6,146.88
	LIC-6800V3-PATH	OceanStor HW UltraPath Software License	1	945.60	945.60
Total of Product					663,143.88

Priced Storage Configuration *(continued)*

No.	Model	Description	Qty.	Unit Price (USD)	Total Price (USD)
1.1.9	Maintenance Support Service				
	02350BRY-88134ULJ-3	6800 V3(6U,Dual Ctrl,AC,512GB,SPE72C0600)-Warranty Upgrade To Hi-Care Onsite Premier 24x7x4H Engineer Onsite Service-3Year(s)	2	4,054.29	8,108.57
	02359806-88134ULJ-3	Disk Enclosure(2U,AC,2.5",Expanding Module,25 Disk Slots,without Disk Unit,DAE22525U2)-Warranty Upgrade To Hi-Care Onsite Premier 24x7x4H Engineer Onsite Service-3Year(s)	32	1,568.57	50,194.24
	88032KMV-88134UHK-3	OceanStor HW UltraPath Software License-Hi-Care Application Software Upgrade Support Service-3Year(s)	1	177.00	177.00
	88032NMR-88134UHK-3	Basic Software License for Block(Include Device Management,SmartThin,SmartMulti-tenant,SmartMigration,SmartErase,SmartMotion,Cloud Service)-Hi-Care Application Software Upgrade Support Service-3Year(s)	1	1,152.00	1,152.00
Total of Service (3 years)					59,631.81
Total Price					722,775.69
Notes:Hi-Care Premier On-Site Service include: 7*24 Technical Assistance Center Access. Access to all new software updates and Online Support. 24*7*4 Hours Onsite Hardware Replacement.					