SPC BENCHMARK 2™

FULL DISCLOSURE REPORT

TEXAS MEMORY SYSTEMS, INC.
TEXAS MEMORY SYSTEMS RAMSAN-630

SPC-2™ V1.3

Submitted for Review: May 10, 2011
Submission Identifier: B00054

First Edition – May 2011

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AUDIT CERTIFICATION

Timothy Logan
Texas Memory Systems, Inc.
10777 Westheimer, Ste. 600
Houston, TX 77042

May 10, 2011

The SPC Benchmark 2™ results listed below for the Texas Memory Systems RamSan-630 produced in compliance with the SPC Benchmark 2™ V1.3 Onsite Audit requirements.

SPC Benchmark 2™ V1.3 Reported Data	
Tested Storage Product (TSP) Name:	
Texas Memory Systems RamSan-630	
Metric	**Reported Result**
SPC-2 MBPS™	8,323.13
SPC-2 Price-Performance	$49.37/SPC-2 MBPS™
ASU Capacity	8,116.563 GB
Data Protection Level	Protected (RAID-5)
Total Price (including three-year maintenance)	$410,926.90

The following SPC Benchmark 2™ Onsite Audit requirements were reviewed and found compliant with V1.3 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 physical inspection and documentation supplied by Texas Memory Systems, Inc.:
  - ✓ 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 Application Storage Unit (ASU) Capacity was filled with random data using Vdbench 5.03 Beta prior to the execution of the SPC-2 Tests.

- An appropriate diagram of the Benchmark Configuration (BC)/Tested Storage Configuration (TSC).

- Physical verification of the components to match the above diagram.

Storage Performance Council
643 Bair Island Road, Suite 103
Redwood City, CA 94062
AuditService@StoragePerformance.org
650.556.9384
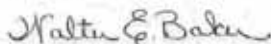
- Listings and commands used to create and configure the Benchmark Configuration/Tested Storage Configuration.

- Documentation that no customer tunable parameter or option was changed from its default value.

- The following Host System items were verified by physical inspection and documentation supplied by Texas Memory Systems, Inc.:
  - ✓ 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 Texas Memory Systems, Inc.:
  - ✓ 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 execution of each Test, Test Phase, and Test Run was observed and found compliant with all of the requirements and constraints of Clauses 6 and 7 of the SPC-2 Benchmark Specification.

- The Test Results Files and resultant Summary Results Files received from Texas Memory Systems, Inc. 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
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650.556.9384

LETTER OF GOOD FAITH

Texas Memory Systems, Inc.

10777 Westheimer #600, Houston, TX 77042   713.266.3200

April 21, 2011
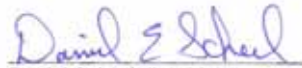
From: Daniel Scheel, President, Texas Memory Systems, Inc.

Subject: SPC-2 Letter of Good Faith for the RamSan-630

Texas Memory Systems 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 full in compliance with Version 1.3 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:

Daniel E Scheel   4-21-2011

Daniel Scheel, President

EXECUTIVE SUMMARY

Test Sponsor and Contact Information

Test Sponsor and Contact Information	
Test Sponsor Primary Contact	Texas Memory Systems, Inc. – http://www.ramsan.com Timothy Logan – timothy.logan@texmemsys.com 10777 Westheimer, Ste. 600 Houston, TX 77042 Phone: (713) 266-3200 FAX: (713) 266-0332
Test Sponsor Alternate Contact	Texas Memory Systems, Inc. – http://www.ramsan.com Jamon Bowen – jamon.b@texmemsys.com 10777 Westheimer, Ste. 600 Houston, TX 77042 Phone: (713) 266-3200 FAX: (713) 266-0332
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	V1.3
SPC-2 Workload Generator revision number	V1.0
Date Results were first used publicly	May 10, 2011
Date FDR was submitted to the SPC	May 10, 2011
Date the TSC will be available for shipment to customers	currently available
Date the TSC completed audit certification	May 10, 2011

Tested Storage Product (TSP) Description

The Texas Memory Systems' RamSan-630 rack mounted SLC NAND Flash system is a 3U enterprise class designed solid state disk offering scalable performance and affordable high capacity. In addition it offers:

- 1-10TB usable SLC NAND Flash storage capacity
- ECC and RAID protection designed in at the chip level
- Extremely low latency, providing both outstanding transaction and bandwidth performance
- Fibre Channel or Infiniband connectivity

The SPC-1 result demonstrates the latest performance ability of the Texas Memory Systems' RamSan product line. This product is available for purchase today.

SPC-2 Reported Data

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

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

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

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

SPC-2 Reported Data				
Texas Memory Systems RamSan-630				
SPC-2 MBPS™	**SPC-2 Price-Performance**	**ASU Capacity (GB)**	**Total Price**	**Data Protection Level**
8,323.13	$49.37	8,116.563	$ 410,926.90	Protected *(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)				
SPC-2 Large File Processing (LFP) Reported Data				
	Data Rate (MB/second)	**Number of Streams**	**Data Rate per Stream**	**Price-Performance**
LFP Composite	7,129.06			$57.64
Write Only:				
1024 KiB Transfer	10,602.06	10	1,060.21	
256 KiB Transfer	4,187.26	10	418.73	
Read-Write:				
1024 KiB Transfer	5,461.05	20	273.05	
256 KiB Transfer	4,927.81	20	246.39	
Read Only:				
1024 KiB Transfer	8,010.56	10	801.06	
256 KiB Transfer	9,585.61	40	239.64	
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	9,189.62			$44.72
1024 KiB Transfer Size				
4 I/Os Outstanding	10,648.56	10	1,064.86	
1 I/O Outstanding	9,841.00	20	492.05	
64 KiB Transfer Size				
4 I/Os Outstanding	10,703.31	40	267.58	
1 I/O Outstanding	5,565.62	40	139.14	
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**
	8,650.71	11,000	0.79	$47.50

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

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

A **Data Protection Level** of **Protected** using *RAID-5*.

The Texas Memory Systems RamSan-630 uses a modified RAID-5 algorithm to ensure that the failure of a Flash memory chip does not result in data corruption. The modification to the RAID-5 makes an important leap forward over HDD-based RAID-5 write performance. On HDD RAID-5 implementations, any time even a small block of data is written, the RAID-5 controller must read back the entire data stripe and the parity bits, then rewrite the data, and finally rewrite the parity. But the RamSan-630 always writes to a new location on the Flash medium as part of its wear leveling algorithm, so a read of the old data and parity before a write is not required.

Storage Capacities and Relationships

The following diagram *(not to scale)* 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.
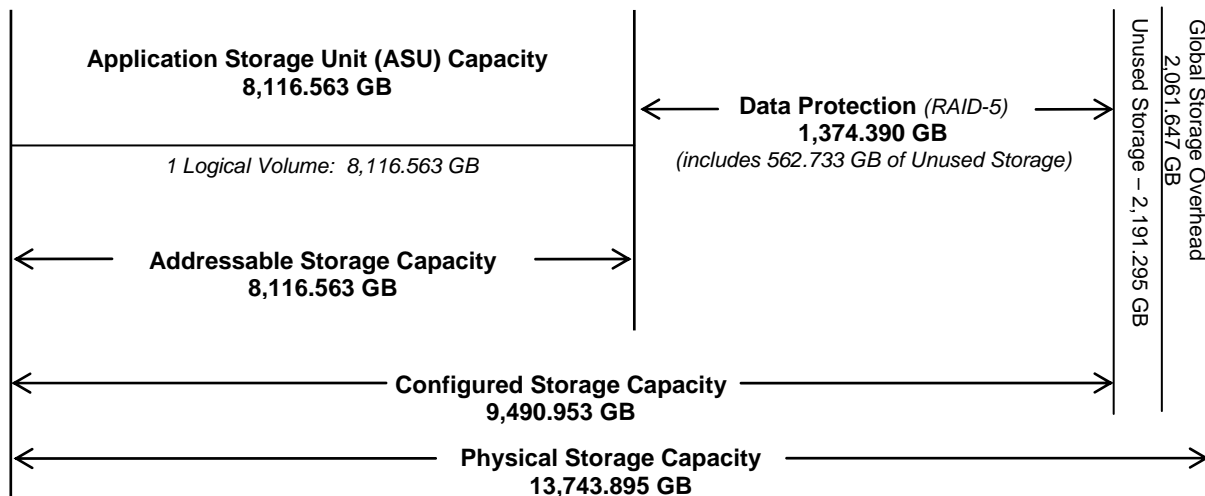
Application Storage Unit (ASU) Capacity
8,116.563 GB

Data Protection (RAID-5)
1,374.390 GB
(includes 562.733 GB of Unused Storage)

1 Logical Volume: 8,116.563 GB

Addressable Storage Capacity
8,116.563 GB

Configured Storage Capacity
9,490.953 GB

Physical Storage Capacity
13,743.895 GB

Unused Storage – 2,191.295 GB

Global Storage Overhead
2,061.647 GB

SPC-1 Storage Capacity Utilization	
Application Utilization	59.06%
Protected Application Utilization	64.96%
Unused Storage Ratio	20.04%

Application Utilization: Total ASU Capacity *(8,116.563 GB)* divided by Physical Storage Capacity *(13,743.895 GB)*

Protected Application Utilization: (Total ASU Capacity *(8,116.563 GB)* plus total Data Protection Capacity *(1,374.390 GB)* minus unused Data Protection Capacity *(562.733 GB)* divided by Physical Storage Capacity *(13,743.895 GB)*.

Unused Storage Ratio: Total Unused Capacity *(2,754.029 GB)* divided by Physical Storage Capacity *(13,743.895 GB)* and may not exceed 45%.

Detailed information for the various storage capacities and utilizations is available on pages 21-22 in the Full Disclosure Report.

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 Pricing

Ln #	Qty	Part	Description	Unit Price	Ext Price
HARDWARE					
1	1	U-RS630/10	RamSan-630 (10TB)	$314,500.00	$314,500.00
2	1	U-630-IB-381-i	Included IB Interface	$0.00	$0.00
3	4	U-630-IB-381	Additional IB Interface	$4,000.00	$16,000.00
4	1	U-630-SparesKit-GM/500GB-i	Included Spares Kit with 500GB Flash	$0.00	$0.00
5	1	U-630-RackSL	Rack Slide Kit	$200.00	$200.00

Hardware List Price		$330,700.00
Hardware Discount	0%	-
Hardware Sub-Total		$330,700.00

Ln #	Qty	Part	Description	Unit Price	Ext Price
SUPPORT					
6	1	i-Warranty-Critical	Critical Warranty	$72,710.00	$72,710.00

Support List Price		$72,710.00
Support Discount	0%	-
Support Sub-Total		$72,710.00

Ln #	Qty	Part	Description	Unit Price	Ext Price
Third-Party Components					
8	10	MHQH19B-XTR	Mellanox QDR Single Port HCA	$594.82	$5,948.20
9	10	J9281B	HP X242 SFP+ SFP+ 1m Direct Attach Cable	$156.87	$1,568.70

Third-Party Components SUB-TOTAL	$7,516.90

TOTAL PURCHASE PRICE	**$410,926.90**

The following 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.**

Priced Storage Configuration Diagram

Texas Memory Systems
RamSan-630

20 – 640 GiB Solid State Devices *(SSDs)*
5 – dual-ported QDR InfiniBand Controllers
10 – Mellanox MHQH19B HCAs

Priced Storage Configuration Components

Priced Storage Configuration Components:
10 – Mellanox MHQH19B HCAs

Texas Memory System RamSan-630
    5 – dual-ported QDR InfiniBand Controllers
    10 – IB-381 InfiniBand QDR connections *(10 used)*
    20 – 640 GiB Solid State Devices *(SSDs)*

10 – HP X242 SFP+ SFP+ 1m direct attach cables
1 – U-630 Spares Kit with 500 GB Flash
1 – Rack Slide Kit

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 17.

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 (BC)/Tested Storage Configuration (TSC) was configured with local storage and, as such, did not employ a storage network.

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 17.

Benchmark Configuration/Tested Storage Configuration Diagram

Texas Memory Systems
RamSan-630

20 – 640 GiB Solid State Devices *(SSDs)*
5 – dual-ported QDR InfiniBand Controllers
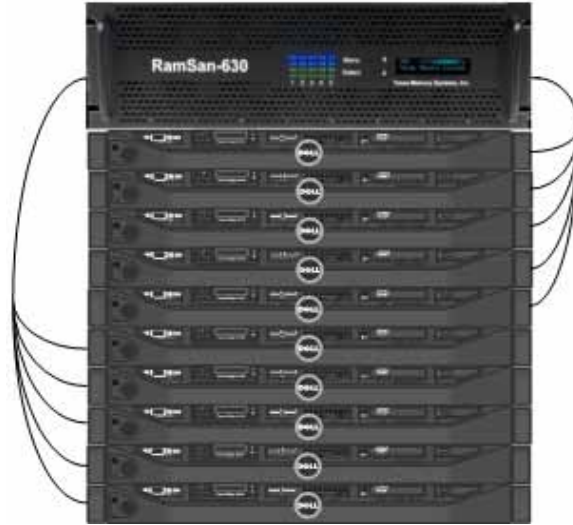
10 – Dell™ PowerEdge™ R310 Host Systems
Windows Server 2003 x86 Enterprise Edition w/SP2

10 – Mellanox MHQH19B HCAs

Host System and Tested Storage Configuration Components

Host System:	Tested Storage Configuration Components:
10 – Dell™ PowerEdge™ R310 Host Systems each with:	10 – Mellanox MHQH19B HCAs
1 – Intel® Xeon® X3430 2.4 GHz Processor 8 MB cache	**Texas Memory System RamSan-630** 5 – dual-ported QDR InfiniBand Controllers 10 – FC IB-381 InfiniBand QDR connections *(10 used)* 20 – 640 GiB Solid State Devices *(SSDs)*
8 GB main memory	
2 – PCIe Generation 2 x8 slots	
Microsoft Windows Server 2003 x86 Enterprise Edition w/SP2	10 – HP X242 SFP+ SFP+ 1m direct attach cables
	1 – U-630 Spares Kit with 500 GB Flash
	1 – Rack Slide Kit

Customer Tunable Parameters and Options

Clause 10.6.6.1

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 96 contains the customer tunable parameters and options that have been altered from their default values for this benchmark.

Tested Storage Configuration (TSC) Description

Clause 10.6.6.2

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 97 contains the detailed information that describes how to create and configure the logical TSC.

SPC-2 Workload Generator Storage Configuration

Clause 10.6.6.3

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 Parameters" on page 97.

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 91 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

Two tables and an illustration documenting the storage capacities and relationships of the SPC-2 Storage Hierarchy (Clause 2.1) shall be included in the FDR.

SPC-2 Storage Capacities

SPC-2 Storage Capacities		
Storage Hierarchy Component	Units	Capacity
Total ASU Capacity	Gigabytes (GB)	8,116.563
Addressable Storage Capacity	Gigabytes (GB)	8,116.563
Configured Storage Capacity	Gigabytes (GB)	9,490.953
Physical Storage Capacity	Gigabytes (GB)	13,743.895
Data Protection *(RAID-5 parity)*	Gigabytes (GB)	1,374.390
Required Storage	Gigabytes (GB)	0.000
Global Storage Overhead	Gigabytes (GB)	2,061.647
Total Unused Storage	Gigabytes (GB)	2,754.029

SPC-2 Storage Hierarchy Ratios

	Addressable Storage Capacity	Configured Storage Capacity	Physical Storage Capacity
Total ASU Capacity	100.00%	85.52%	59.06%
Data Protection *(RAID-5 parity)*		14.48%	10.00%
Addressable Storage Capacity		85.52%	59.06%
Required Storage		0.00%	0.00%
Configured Storage Capacity			69.06%
Global Storage Overhead			15.00%
Unused Storage:			
Addressable	0.00%		
Configured		0.00%	
Physical			15.94%

The Physical Storage Capacity consisted of 13,743.895 GB distributed over 20 solid state devices (SSDs) each with a formatted capacity of 687.195 GB. There was 2,191.295 GB (15.94%) of Unused Storage within the Physical Storage Capacity. Global Storage Overhead consisted of 2,061.647 GB (15.00%) of the Physical Storage Capacity. There was 0.000 GB (0.00%) of Unused Storage within the Configured Storage Capacity. The Total ASU Capacity utilized 100% of the Addressable Storage Capacity resulting in 0.000 GB (0.00%) of Unused Storage within the Addressable Storage Capacity. The Data Protection *(RAID-5)* capacity was 1,374.390 GB of which 811.656 GB was utilized. The total Unused Storage was 2,754.029 GB.

SPC-2 Storage Capacities and Relationships Illustration

The various storage capacities configured in the benchmark result are illustrated below (*not to scale).*
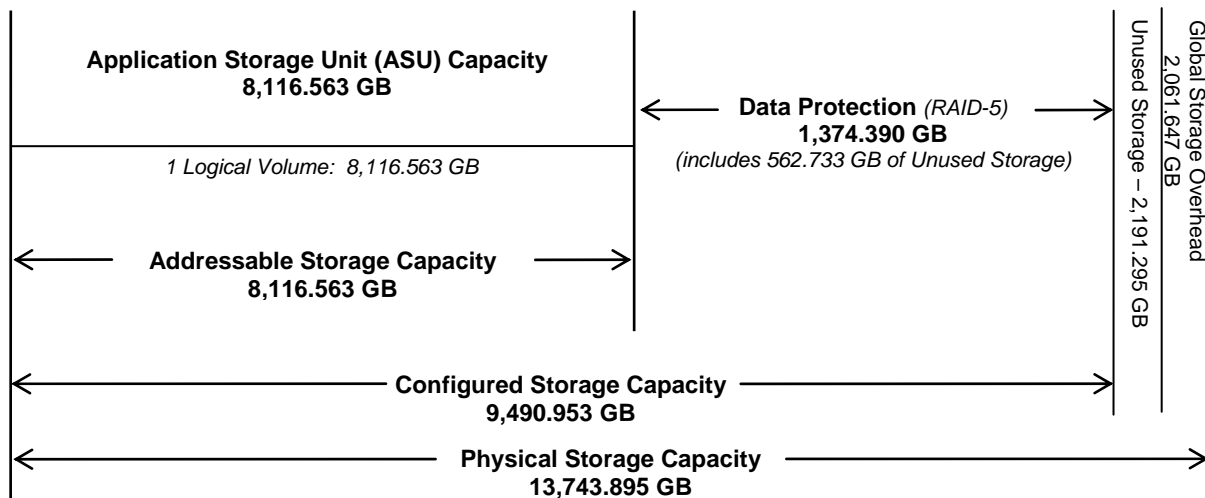
Storage Capacity Utilization

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-1 Storage Capacity Utilization	
Application Utilization	59.06%
Protected Application Utilization	64.96%
Unused Storage Ratio	20.04%

Logical Volume Capacity and ASU Mapping

Clause 10.6.7.2
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 (8,116.563 GB)			
	Total Capacity *(GB)*	Capacity Used *(GB)*	Capacity Unused *(GB)*
Logical Volumes 1	8,116.563 per LV	8,116.563 per LV	0.000 per LV

See the Storage Definition (sd) entries in "Appendix D: SPC-2 Workload Generator Storage Commands and Parameters" on page 97 for more detailed configuration information.

SPC-2 TEST EXECUTION RESULTS

This portion of the Full Disclosure Report documents the results of the various SPC-2 Test, Test Phases, Test Run Sequences, and Test Runs. "SPC-2 Test Execution Definitions" on page 92 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

▪ **Large File Processing Test** *(continued)*

  ➢ 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 6.4.2.1

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 6.4.2.2

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 10.6.8.1

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. *A table that contains the following information for each Test Run in all three Test Phases of the Large File Processing 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. *Average Data Rate and Average Data Rate per Stream graphs as defined in Clauses 10.1.1 and 10.1.2.*

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 108.

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	2 Streams	3 Streams	5 Streams	10 Streams
Write 1024KiB	1,903.68	3,217.43	3,946.90	4,448.58	10,602.06
Test Run Sequence	**1 Stream**	**2 Streams**	**3 Streams**	**5 Streams**	**10 Streams**
Write 256KiB	1,085.16	2,064.12	2,769.40	3,508.99	4,187.26
Test Run Sequence	**1 Stream**	**3 Streams**	**5 Streams**	**10 Streams**	**20 Streams**
Read/Write 1024KiB	1,305.30	3,104.92	4,078.96	5,294.94	5,461.05
Test Run Sequence	**1 Stream**	**3 Streams**	**5 Streams**	**10 Streams**	**20 Streams**
Read/Write 256KiB	659.15	1,820.70	2,442.23	3,619.20	4,927.81
Test Run Sequence	**1 Stream**	**2 Streams**	**3 Streams**	**5 Streams**	**10 Streams**
Read 1024KiB	1,229.06	2,441.66	3,624.71	5,105.03	8,010.56
Test Run Sequence	**1 Stream**	**5 Streams**	**10 Streams**	**20 Streams**	**40 Streams**
Read 256KiB	567.84	2,578.86	4,465.58	6,995.21	9,585.61

SPC-2 Large File Processing Average Data Rates Graph

Large File Processing - Data Rate

1024KiB transfers with only Write operations
- 10 Streams, 10,602.06 MB/s
- 5 Streams, 4,448.58 MB/s
- 3 Streams, 3,946.90 MB/s
- 2 Streams, 3,217.43 MB/s
- 1 Stream, 1,903.68 MB/s

256KiB transfers with only Write operations
- 10 Streams, 4,187.26 MB/s
- 5 Streams, 3,508.99 MB/s
- 3 Streams, 2,769.40 MB/s
- 2 Streams, 2,064.12 MB/s
- 1 Stream, 1,085.16 MB/s

1024KiB transfers with 50% Read operations 50% Write operations
- 20 Streams, 5,461.05 MB/s
- 10 Streams, 5,294.94 MB/s
- 5 Streams, 4,078.96 MB/s
- 3 Streams, 3,104.92 MB/s
- 1 Stream, 1,305.30 MB/s

256KiB transfers with 50% Read operations 50% Write operations
- 20 Streams, 4,927.81 MB/s
- 10 Streams, 3,619.20 MB/s
- 5 Streams, 2,442.23 MB/s
- 3 Streams, 1,820.70 MB/s
- 1 Stream, 659.15 MB/s

1024KiB transfers with only Read operations
- 10 Streams, 8,010.56 MB/s
- 5 Streams, 5,105.03 MB/s
- 3 Streams, 3,624.71 MB/s
- 2 Streams, 2,441.66 MB/s
- 1 Stream, 1,229.06 MB/s

256KiB transfers with only Read operations
- 40 Streams, 9,585.61 MB/s
- 20 Streams, 6,995.21 MB/s
- 10 Streams, 4,465.58 MB/s
- 5 Streams, 2,578.86 MB/s
- 1 Stream, 567.84 MB/s

X-axis: Data Rate, MB/sec (0, 2,000, 4,000, 6,000, 8,000, 10,000, 12,000)

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	2 Streams	3 Streams	5 Streams	10 Streams
Write 1024KiB	1,903.68	1,608.72	1,315.63	889.72	1,060.21
Test Run Sequence	1 Stream	2 Streams	3 Streams	5 Streams	10 Streams
Write 256KiB	1,085.16	1,032.06	923.13	701.80	418.73
Test Run Sequence	1 Stream	3 Streams	5 Streams	10 Streams	20 Streams
Read/Write 1024KiB	1,305.30	1,034.97	815.79	529.49	273.05
Test Run Sequence	1 Stream	3 Streams	5 Streams	10 Streams	20 Streams
Read/Write 256KiB	659.15	606.90	488.45	361.92	246.39
Test Run Sequence	1 Stream	2 Streams	3 Streams	5 Streams	10 Streams
Read 1024KiB	1,229.06	1,220.83	1,208.24	1,021.01	801.06
Test Run Sequence	1 Stream	5 Streams	10 Streams	20 Streams	40 Streams
Read 256KiB	567.84	515.77	446.56	349.76	239.64

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

Large File Processing - Data Rate per Stream

1024KiB transfers with only Write operations
- 10 Streams, 1,060.21 MB/s
- 5 Streams, 889.72 MB/s
- 3 Streams, 1,315.63 MB/s
- 2 Streams, 1,608.72 MB/s
- 1 Stream, 1,903.68 MB/s

256KiB transfers with only Write operations
- 10 Streams, 418.73 MB/s
- 5 Streams, 701.80 MB/s
- 3 Streams, 923.13 MB/s
- 2 Streams, 1,032.06 MB/s
- 1 Stream, 1,085.16 MB/s

1024KiB transfers with 50% Read operations 50% Write operations
- 20 Streams, 273.05 MB/s
- 10 Streams, 529.49 MB/s
- 5 Streams, 815.79 MB/s
- 3 Streams, 1,034.97 MB/s
- 1 Stream, 1,305.30 MB/s

256KiB transfers with 50% Read operations 50% Write operations
- 20 Streams, 246.39 MB/s
- 10 Streams, 361.92 MB/s
- 5 Streams, 488.45 MB/s
- 3 Streams, 606.90 MB/s
- 1 Stream, 659.15 MB/s

1024KiB transfers with only Read operations
- 10 Streams, 801.06 MB/s
- 5 Streams, 1,021.01 MB/s
- 3 Streams, 1,208.24 MB/s
- 2 Streams, 1,220.83 MB/s
- 1 Stream, 1,229.06 MB/s

256KiB transfers with only Read operations
- 40 Streams, 239.64 MB/s
- 20 Streams, 349.76 MB/s
- 10 Streams, 446.56 MB/s
- 5 Streams, 515.77 MB/s
- 1 Stream, 567.84 MB/s

Data Rate, MB/sec (0, 200, 400, 600, 800, 1,000, 1,200, 1,400, 1,600, 1,800, 2,000)

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	2 Streams	3 Streams	5 Streams	10 Streams
Write 1024KiB	0.55	0.65	0.79	1.17	0.98
Test Run Sequence	1 Stream	2 Streams	3 Streams	5 Streams	10 Streams
Write 256KiB	0.24	0.25	0.28	0.37	0.62
Test Run Sequence	1 Stream	3 Streams	5 Streams	10 Streams	20 Streams
Read/Write 1024KiB	0.80	1.01	1.28	1.97	3.83
Test Run Sequence	1 Stream	3 Streams	5 Streams	10 Streams	20 Streams
Read/Write 256KiB	0.39	0.43	0.53	0.72	1.06
Test Run Sequence	1 Stream	2 Streams	3 Streams	5 Streams	10 Streams
Read 1024KiB	0.85	0.86	0.86	1.02	1.30
Test Run Sequence	1 Stream	5 Streams	10 Streams	20 Streams	40 Streams
Read 256KiB	0.46	0.50	0.58	0.74	1.09

SPC-2 Large File Processing Average Response Time Graph

Large File Processing - Average Response Time

1024KiB transfers with only Write operations
- 10 Streams, 0.98 ms
- 5 Streams, 1.17 ms
- 3 Streams, 0.79 ms
- 2 Streams, 0.65 ms
- 1 Stream, 0.55 ms

256KiB transfers with only Write operations
- 10 Streams, 0.62 ms
- 5 Streams, 0.37 ms
- 3 Streams, 0.28 ms
- 2 Streams, 0.25 ms
- 1 Stream, 0.24 ms

1024KiB transfers with 50% Read operations 50% Write operations
- 20 Streams, 3.83 ms
- 10 Streams, 1.97 ms
- 5 Streams, 1.28 ms
- 3 Streams, 1.01 ms
- 1 Stream, 0.80 ms

256KiB transfers with 50% Read operations 50% Write operations
- 20 Streams, 1.06 ms
- 10 Streams, 0.72 ms
- 5 Streams, 0.53 ms
- 3 Streams, 0.43 ms
- 1 Stream, 0.39 ms

1024KiB transfers with only Read operations
- 10 Streams, 1.30 ms
- 5 Streams, 1.02 ms
- 3 Streams, 0.86 ms
- 2 Streams, 0.86 ms
- 1 Stream, 0.85 ms

256KiB transfers with only Read operations
- 40 Streams, 1.09 ms
- 20 Streams, 0.74 ms
- 10 Streams, 0.58 ms
- 5 Streams, 0.50 ms
- 1 Stream, 0.46 ms

X-axis: Response Time, ms (0, 1, 2, 3, 3, 4, 4, 5)

Large File Processing Test – WRITE ONLY Test Phase

Clause 10.6.8.1.1

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 (intervals), Average Data Rate per Stream (intervals), and Average Response Time (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 (intervals), Average Data Rate per Stream (intervals), and Average Response Time (intervals) graphs for the "WRITE ONLY, 256 KiB Transfer Size" Test Runs as specified in Clauses 10.1.4 – 10.1.6.*

The SPC-2 "Large File Processing/WRITE ONLY/1024 KiB Transfer Size" Test Run data is contained in the table that appears on the next page. That table is followed by 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 SPC-2 "Large File Processing/WRITE ONLY/1024 KiB Transfer Size" table and graphs will be the SPC-2 "Large File Processing/WRITE ONLY/64 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 – Ramp-Up Period

TR1	10 Streams			TR2	5 Streams			TR3	3 Streams			TR4	2 Streams			TR5	1 Stream		
Test Run Sequence Time	Data Rate, MB/sec	Data Rate / Stream, MB/sec	Response Time, ms	Test Run Sequence Time	Data Rate, MB/sec	Data Rate / Stream, MB/sec	Response Time, ms	Test Run Sequence Time	Data Rate, MB/sec	Data Rate / Stream, MB/sec	Response Time, ms	Test Run Sequence Time	Data Rate, MB/sec	Data Rate / Stream, MB/sec	Response Time, ms	Test Run Sequence Time	Data Rate, MB/sec	Data Rate / Stream, MB/sec	Response Time, ms
0:00:00	1,947.00	1,947.00	0.53	0:06:55	0.00	0.00	0.00	0:13:55	0.00	0.00	0.00	0:20:55	0.00	0.00	0.00	0:27:55	0.00	0.00	0.00
0:00:05	3,391.09	1,695.55	0.53	0:07:00	1,938.19	1,938.19	0.53	0:14:00	1,938.40	1,938.40	0.54	0:21:00	1,944.06	1,944.06	0.53	0:28:00	1,938.61	1,938.61	0.54
0:00:10	3,918.11	1,959.05	0.53	0:07:05	3,419.41	1,709.70	0.53	0:14:05	1,965.87	1,965.87	0.53	0:21:05	1,969.02	1,969.02	0.53	0:28:05	1,961.26	1,961.26	0.53
0:00:15	3,922.51	1,961.26	0.53	0:07:10	3,871.76	1,935.88	0.53	0:14:10	1,971.32	1,971.32	0.53	0:21:10	3,334.68	1,667.34	0.53	0:28:10	1,971.95	1,971.95	0.53
0:00:20	5,485.52	1,828.51	0.54	0:07:15	3,918.95	1,959.47	0.53	0:14:15	1,968.60	1,968.60	0.53	0:21:15	3,917.69	1,958.84	0.53	0:28:15	1,971.11	1,971.11	0.53
0:00:25	6,034.97	1,508.74	0.60	0:07:20	5,516.77	1,838.92	0.54	0:14:20	3,636.46	1,818.23	0.53	0:21:20	3,856.87	1,928.44	0.53	0:28:20	1,964.82	1,964.82	0.53
0:00:30	6,500.96	1,625.24	0.64	0:07:25	6,128.30	1,532.07	0.60	0:14:25	3,917.90	1,958.95	0.53	0:21:25	3,887.49	1,943.75	0.54	0:28:25	1,970.06	1,970.06	0.53
0:00:35	7,767.64	1,109.66	0.72	0:07:30	6,404.91	1,601.23	0.64	0:14:30	4,926.21	1,642.07	0.54	0:21:30	3,365.30	1,682.65	0.62	0:28:30	1,970.90	1,970.90	0.53
0:00:40	9,452.70	1,350.39	0.76	0:07:35	6,691.80	1,338.36	0.67	0:14:35	5,636.52	1,878.84	0.56	0:21:35	3,272.40	1,636.20	0.63	0:28:35	1,937.77	1,937.77	0.54
0:00:45	9,606.21	1,372.32	0.76	0:07:40	7,210.01	1,442.00	0.72	0:14:40	4,068.68	1,356.23	0.77	0:21:40	3,157.47	1,578.74	0.66	0:28:40	1,916.59	1,916.59	0.54
0:00:50	9,627.61	1,375.37	0.76	0:07:45	7,230.77	1,446.15	0.72	0:14:45	4,025.90	1,341.97	0.77	0:21:45	3,243.87	1,621.94	0.64	0:28:45	1,898.97	1,898.97	0.55
0:00:55	9,490.45	1,355.78	0.76	0:07:50	7,229.93	1,445.99	0.72	0:14:50	3,853.31	1,284.44	0.80	0:21:50	3,266.31	1,633.16	0.64	0:28:50	1,890.37	1,890.37	0.55
0:01:00	10,168.88	1,271.11	0.80	0:07:55	7,246.50	1,449.30	0.72	0:14:55	4,189.69	1,396.56	0.75	0:21:55	3,236.74	1,618.37	0.64	0:28:55	1,892.26	1,892.26	0.55
0:01:05	10,716.87	1,071.69	0.88	0:08:00	6,377.86	1,275.57	0.82	0:15:00	3,921.46	1,307.15	0.80	0:22:00	3,239.26	1,619.63	0.64	0:29:00	1,887.65	1,887.65	0.55
0:01:10	10,579.29	1,057.93	0.98	0:08:05	5,036.94	1,007.39	1.03	0:15:05	4,014.79	1,338.26	0.77	0:22:05	3,262.12	1,631.06	0.64	0:29:05	1,892.68	1,892.68	0.55
0:01:15	10,566.08	1,056.61	0.98	0:08:10	4,578.92	915.78	1.13	0:15:10	3,920.00	1,306.67	0.80	0:22:10	3,211.16	1,605.58	0.64	0:29:10	1,871.29	1,871.29	0.56
0:01:20	10,683.94	1,068.39	0.98	0:08:15	4,596.96	919.39	1.14	0:15:15	4,011.22	1,337.07	0.78	0:22:15	3,204.87	1,602.43	0.65	0:29:15	1,907.36	1,907.36	0.54
0:01:25	10,654.16	1,065.42	0.98	0:08:20	4,557.11	911.42	1.15	0:15:20	4,001.79	1,333.93	0.78	0:22:20	3,226.05	1,613.02	0.65	0:29:20	1,897.50	1,897.50	0.55
0:01:30	10,530.43	1,053.04	0.99	0:08:25	4,973.40	994.68	1.05	0:15:25	3,885.39	1,295.13	0.80	0:22:25	3,267.57	1,633.79	0.64	0:29:25	1,872.13	1,872.13	0.56
0:01:35	10,587.47	1,058.75	0.98	0:08:30	4,787.38	957.48	1.09	0:15:30	4,012.06	1,337.35	0.79	0:22:30	3,196.69	1,598.34	0.65	0:29:30	1,914.70	1,914.70	0.54
0:01:40	10,698.41	1,069.84	0.98	0:08:35	4,632.40	926.48	1.13	0:15:35	3,992.56	1,330.85	0.79	0:22:35	3,258.35	1,629.17	0.64	0:29:35	1,902.96	1,902.96	0.55
0:01:45	10,647.24	1,064.72	0.98	0:08:40	4,559.21	911.84	1.14	0:15:40	3,853.31	1,284.44	0.80	0:22:40	3,261.70	1,630.85	0.64	0:29:40	1,888.70	1,888.70	0.55
0:01:50	10,598.17	1,059.82	0.98	0:08:45	4,741.87	948.37	1.10	0:15:45	4,070.36	1,356.79	0.77	0:22:45	3,262.75	1,631.37	0.63	0:29:45	1,898.13	1,898.13	0.55
0:01:55	10,694.43	1,069.44	0.98	0:08:50	4,555.64	911.13	1.15	0:15:50	4,026.74	1,342.25	0.78	0:22:50	3,217.45	1,608.73	0.65	0:29:50	1,901.28	1,901.28	0.55
0:02:00	10,576.57	1,057.66	0.99	0:08:55	4,727.40	945.48	1.10	0:15:55	3,946.84	1,315.61	0.79	0:22:55	3,297.77	1,648.89	0.63	0:29:55	1,911.55	1,911.55	0.54
0:02:05	10,646.40	1,064.64	0.98	0:09:00	4,620.24	924.05	1.13	0:16:00	3,853.94	1,284.65	0.80	0:23:00	3,253.94	1,626.97	0.64	0:30:00	1,898.34	1,898.34	0.55
0:02:10	10,455.35	1,045.54	0.99	0:09:05	4,610.17	922.03	1.14	0:16:05	3,986.27	1,328.76	0.79	0:23:05	3,224.79	1,612.40	0.64	0:30:05	1,915.54	1,915.54	0.54
0:02:15	10,715.82	1,071.58	0.98	0:09:10	4,571.79	914.36	1.14	0:16:10	4,069.31	1,356.44	0.77	0:23:10	3,337.83	1,668.91	0.63	0:30:10	1,891.63	1,891.63	0.55
0:02:20	10,650.18	1,065.02	0.98	0:09:15	4,495.04	899.01	1.16	0:16:15	3,870.71	1,290.24	0.80	0:23:15	3,207.80	1,603.90	0.65	0:30:15	1,895.83	1,895.83	0.55
0:02:25	10,329.10	1,032.91	1.00	0:09:20	4,432.96	886.59	1.17	0:16:20	3,966.76	1,322.25	0.79	0:23:20	3,159.78	1,579.89	0.65	0:30:20	1,904.84	1,904.84	0.55
0:02:30	10,771.60	1,077.16	0.97	0:09:25	4,778.99	955.80	1.09	0:16:25	4,037.44	1,345.81	0.78	0:23:25	3,243.66	1,621.83	0.64	0:30:25	1,909.46	1,909.46	0.54
0:02:35	10,659.19	1,065.92	0.98	0:09:30	4,482.66	896.53	1.16	0:16:30	3,808.64	1,269.55	0.82	0:23:30	3,241.99	1,620.99	0.64	0:30:30	1,878.00	1,878.00	0.55
0:02:40	10,515.54	1,051.55	0.99	0:09:35	4,352.43	870.49	1.20	0:16:35	3,986.27	1,328.76	0.78	0:23:35	3,107.98	1,553.99	0.66	0:30:35	1,925.19	1,925.19	0.54
0:02:45	10,542.59	1,054.26	0.98	0:09:40	4,672.04	934.41	1.12	0:16:40	3,903.01	1,301.00	0.81	0:23:40	3,266.52	1,633.26	0.65	0:30:40	1,914.28	1,914.28	0.54
0:02:50	10,720.43	1,072.04	0.98	0:09:45	4,495.46	899.09	1.16	0:16:45	3,862.95	1,287.65	0.81	0:23:45	3,238.00	1,619.00	0.64	0:30:45	1,926.44	1,926.44	0.54
0:02:55	10,397.05	1,039.71	0.99	0:09:50	4,597.59	919.52	1.13	0:16:50	4,085.46	1,361.82	0.76	0:23:50	3,257.09	1,628.54	0.64	0:30:50	1,906.31	1,906.31	0.55
				0:09:55	4,416.81	883.36	1.15	0:16:55	3,871.13	1,290.38	0.80	0:23:55	3,174.88	1,587.44	0.64	0:30:55	1,906.94	1,906.94	0.54

SPC BENCHMARK 2™ V1.3

Texas Memory Systems, Inc.
Texas Memory Systems RamSan-630

FULL DISCLOSURE REPORT

Submitted for Review: MAY 10, 2011

Submission Identifier: B00054

SPC-2 "Large File Processing/WRITE ONLY/1024 KiB Transfer Size" Test Run Data
Measurement Interval, Run-Out, and Ramp-Down Periods

TR1 Test Run Sequence Time	10 Streams Data Rate, MB/sec	Data Rate / Stream, MB/sec	Response Time, ms	TR2 Test Run Sequence Time	5 Streams Data Rate, MB/sec	Data Rate / Stream, MB/sec	Response Time, ms	TR3 Test Run Sequence Time	3 Streams Data Rate, MB/sec	Data Rate / Stream, MB/sec	Response Time, ms	TR4 Test Run Sequence Time	2 Streams Data Rate, MB/sec	Data Rate / Stream, MB/sec	Response Time, ms	TR5 Test Run Sequence Time	1 Stream Data Rate, MB/sec	Data Rate / Stream, MB/sec	Response Time, ms
0:03:00	10,788.38	1,078.84	0.98	0:10:00	4,447.22	889.44	1.19	0:17:00	4,179.83	1,393.28	0.76	0:24:00	3,309.10	1,654.55	0.64	0:31:00	1,917.64	1,917.64	0.54
0:03:05	10,594.60	1,059.46	0.98	0:10:05	4,560.26	912.05	1.14	0:17:05	3,904.06	1,301.35	0.80	0:24:05	3,249.12	1,624.56	0.64	0:31:05	1,896.45	1,896.45	0.55
0:03:10	10,626.06	1,062.61	0.98	0:10:10	4,520.83	904.17	1.15	0:17:10	4,110.42	1,370.14	0.76	0:24:10	3,153.07	1,576.53	0.65	0:31:10	1,913.86	1,913.86	0.54
0:03:15	10,726.30	1,072.63	0.97	0:10:15	4,568.23	913.65	1.14	0:17:15	4,091.12	1,363.71	0.77	0:24:15	3,296.93	1,648.47	0.64	0:31:15	1,895.41	1,895.41	0.55
0:03:20	10,589.78	1,058.98	0.98	0:10:20	4,578.08	915.62	1.15	0:17:20	3,915.59	1,305.20	0.80	0:24:20	3,257.30	1,628.65	0.64	0:31:20	1,910.30	1,910.30	0.54
0:03:25	10,586.63	1,058.66	0.99	0:10:25	4,547.46	909.49	1.14	0:17:25	3,936.35	1,312.12	0.79	0:24:25	3,230.66	1,615.33	0.65	0:31:25	1,926.44	1,926.44	0.54
0:03:30	10,679.12	1,067.91	0.98	0:10:30	4,666.58	933.32	1.12	0:17:30	3,870.71	1,290.24	0.81	0:24:30	3,153.28	1,576.64	0.65	0:31:30	1,900.86	1,900.86	0.55
0:03:35	10,651.02	1,065.10	0.98	0:10:35	4,434.22	886.84	1.18	0:17:35	3,858.55	1,286.18	0.81	0:24:35	3,254.57	1,627.29	0.64	0:31:35	1,919.31	1,919.31	0.54
0:03:40	10,542.38	1,054.24	0.99	0:10:40	4,320.13	864.03	1.20	0:17:40	3,854.15	1,284.72	0.81	0:24:40	3,170.68	1,585.34	0.66	0:31:40	1,917.85	1,917.85	0.54
0:03:45	10,662.13	1,066.21	0.98	0:10:45	4,602.83	920.57	1.13	0:17:45	3,818.49	1,272.83	0.82	0:24:45	3,145.31	1,572.65	0.65	0:31:45	1,907.15	1,907.15	0.55
0:03:50	10,604.88	1,060.49	0.99	0:10:50	4,535.30	907.06	1.15	0:17:50	3,990.25	1,330.08	0.79	0:24:50	3,234.23	1,617.11	0.65	0:31:50	1,904.42	1,904.42	0.54
0:03:55	10,447.80	1,044.78	0.99	0:10:55	4,315.52	863.10	1.22	0:17:55	3,852.47	1,284.16	0.81	0:24:55	3,203.40	1,601.70	0.65	0:31:55	1,911.76	1,911.76	0.54
0:04:00	10,686.46	1,068.65	0.98	0:11:00	4,534.67	906.93	1.14	0:18:00	3,854.98	1,284.99	0.80	0:25:00	3,248.91	1,624.45	0.64	0:32:00	1,879.26	1,879.26	0.55
0:04:05	10,691.07	1,069.11	0.98	0:11:05	4,511.18	902.24	1.16	0:18:05	4,177.32	1,392.44	0.75	0:25:05	3,256.46	1,628.23	0.63	0:32:05	1,884.92	1,884.92	0.55
0:04:10	10,622.28	1,062.23	0.98	0:11:10	4,266.66	853.33	1.22	0:18:10	4,104.97	1,368.32	0.76	0:25:10	3,261.70	1,630.85	0.64	0:32:10	1,910.92	1,910.92	0.54
0:04:15	10,477.79	1,047.78	0.99	0:11:15	4,495.25	899.05	1.16	0:18:15	3,898.40	1,299.47	0.80	0:25:15	3,228.15	1,614.07	0.65	0:32:15	1,892.26	1,892.26	0.55
0:04:20	10,527.07	1,052.71	0.99	0:11:20	4,450.16	890.03	1.17	0:18:20	3,987.11	1,329.04	0.78	0:25:20	3,219.76	1,609.88	0.63	0:32:20	1,938.40	1,938.40	0.54
0:04:25	10,607.60	1,060.76	0.99	0:11:25	4,302.10	860.42	1.21	0:18:25	3,998.43	1,332.81	0.78	0:25:25	3,272.19	1,636.09	0.64	0:32:25	1,894.15	1,894.15	0.55
0:04:30	10,519.94	1,051.99	0.98	0:11:30	4,520.62	904.12	1.16	0:18:30	3,960.47	1,320.16	0.79	0:25:30	3,228.98	1,614.49	0.65	0:32:30	1,904.00	1,904.00	0.54
0:04:35	10,635.50	1,063.55	0.98	0:11:35	4,628.83	925.77	1.12	0:18:35	3,854.98	1,284.99	0.80	0:25:35	3,194.17	1,597.09	0.65	0:32:35	1,886.81	1,886.81	0.55
0:04:40	10,531.69	1,053.17	0.99	0:11:40	4,472.60	894.52	1.17	0:18:40	3,996.12	1,332.04	0.79	0:25:40	3,229.19	1,614.60	0.64	0:32:40	1,886.81	1,886.81	0.55
0:04:45	10,624.38	1,062.44	0.98	0:11:45	4,346.98	869.40	1.20	0:18:45	4,092.17	1,364.06	0.77	0:25:45	3,272.82	1,636.41	0.64	0:32:45	1,893.10	1,893.10	0.55
0:04:50	10,591.88	1,059.19	0.98	0:11:50	4,385.77	877.15	1.18	0:18:50	3,871.55	1,290.52	0.80	0:25:50	3,231.71	1,615.86	0.65	0:32:50	1,926.86	1,926.86	0.54
0:04:55	10,598.59	1,059.86	0.98	0:11:55	4,331.67	866.33	1.21	0:18:55	3,884.34	1,294.78	0.80	0:25:55	3,197.95	1,598.97	0.64	0:32:55	1,915.33	1,915.33	0.54
0:05:00	10,683.52	1,068.35	0.98	0:12:00	4,334.60	866.92	1.20	0:19:00	3,984.17	1,328.06	0.79	0:26:00	3,244.92	1,622.46	0.65	0:33:00	1,899.60	1,899.60	0.55
0:05:05	10,636.34	1,063.63	0.97	0:12:05	4,408.42	881.68	1.19	0:19:05	3,986.69	1,328.90	0.79	0:26:05	3,137.34	1,568.67	0.67	0:33:05	1,903.79	1,903.79	0.55
0:05:10	10,544.69	1,054.47	0.99	0:12:10	4,389.14	877.87	1.18	0:19:10	3,923.98	1,307.99	0.79	0:26:10	3,177.19	1,588.59	0.66	0:33:10	1,889.74	1,889.74	0.55
0:05:15	10,627.53	1,062.75	0.98	0:12:15	4,554.59	910.92	1.15	0:19:15	3,933.42	1,311.14	0.80	0:26:15	3,213.26	1,606.63	0.64	0:33:15	1,888.90	1,888.90	0.55
0:05:20	10,563.77	1,056.38	0.99	0:12:20	4,444.91	888.98	1.17	0:19:20	3,950.20	1,316.73	0.79	0:26:20	3,119.51	1,559.76	0.67	0:33:20	1,905.05	1,905.05	0.55
0:05:25	10,506.31	1,050.63	0.99	0:12:25	4,338.80	867.76	1.20	0:19:25	3,844.50	1,281.50	0.81	0:26:25	3,239.47	1,619.74	0.64	0:33:25	1,897.08	1,897.08	0.55
0:05:30	10,689.18	1,068.92	0.98	0:12:30	4,406.12	881.22	1.18	0:19:30	3,962.15	1,320.72	0.79	0:26:30	3,226.05	1,613.02	0.63	0:33:30	1,883.87	1,883.87	0.55
0:05:35	10,675.34	1,067.53	0.98	0:12:35	4,464.84	892.97	1.17	0:19:35	3,871.55	1,290.52	0.81	0:26:35	3,183.90	1,591.95	0.66	0:33:35	1,906.10	1,906.10	0.55
0:05:40	10,440.04	1,044.00	0.99	0:12:40	4,503.84	900.77	1.17	0:19:40	3,980.81	1,326.94	0.79	0:26:40	3,242.83	1,621.41	0.64	0:33:40	1,914.70	1,914.70	0.54
0:05:45	10,631.30	1,063.13	0.98	0:12:45	4,574.73	914.95	1.13	0:19:45	3,918.11	1,306.04	0.79	0:26:45	3,239.47	1,619.74	0.64	0:33:45	1,911.34	1,911.34	0.54
0:05:50	10,641.58	1,064.16	0.98	0:12:50	4,276.51	855.30	1.22	0:19:50	3,895.25	1,298.42	0.81	0:26:50	3,077.36	1,538.68	0.67	0:33:50	1,900.65	1,900.65	0.55
0:05:55	10,421.17	1,042.12	0.98	0:12:55	4,108.95	821.79	1.24	0:19:55	3,774.87	1,258.29	0.81	0:26:55	3,226.68	1,613.34	0.64	0:33:55	1,897.50	1,897.50	0.55
0:06:00	10,651.43	1,065.14	0.99	0:13:00	4,552.71	910.54	1.18	0:20:00	3,995.28	1,331.76	0.79	0:27:00	3,265.69	1,632.84	0.65	0:34:00	1,894.57	1,894.57	0.55
0:06:05	10,711.62	1,071.16	0.98	0:13:05	4,451.21	890.24	1.17	0:20:05	3,978.72	1,326.24	0.79	0:27:05	3,168.59	1,584.29	0.65	0:34:05	1,908.41	1,908.41	0.54
0:06:10	10,655.84	1,065.58	0.98	0:13:10	4,400.87	880.17	1.18	0:20:10	3,876.80	1,292.27	0.81	0:27:10	3,161.46	1,580.73	0.66	0:34:10	1,905.47	1,905.47	0.55
0:06:15	10,635.71	1,063.57	0.98	0:13:15	4,247.57	849.51	1.23	0:20:15	3,991.30	1,330.43	0.78	0:27:15	3,246.39	1,623.20	0.64	0:34:15	1,898.55	1,898.55	0.55
0:06:20	10,601.94	1,060.19	0.98	0:13:20	4,306.29	861.26	1.21	0:20:20	3,869.04	1,289.68	0.81	0:27:20	3,226.47	1,613.23	0.65	0:34:20	1,905.05	1,905.05	0.55
0:06:25	10,537.35	1,053.73	0.99	0:13:25	4,361.24	872.25	1.19	0:20:25	3,896.09	1,298.70	0.80	0:27:25	3,228.15	1,614.07	0.63	0:34:25	1,880.73	1,880.73	0.55
0:06:30	10,655.21	1,065.52	0.98	0:13:30	4,477.84	895.57	1.17	0:20:30	3,840.72	1,280.24	0.82	0:27:30	3,250.59	1,625.29	0.65	0:34:30	1,883.45	1,883.45	0.55
0:06:35	10,528.96	1,052.90	0.98	0:13:35	4,404.65	880.93	1.20	0:20:35	4,007.66	1,335.89	0.78	0:27:35	3,248.07	1,624.03	0.64	0:34:35	1,858.71	1,858.71	0.56
0:06:40	10,506.94	5,253.47	0.98	0:13:40	4,170.82	1,390.27	1.21	0:20:40	3,770.47	3,770.47	0.81	0:27:40	3,136.50	3,136.50	0.65	0:34:40	1,888.49	1,888.49	0.55
0:06:45	79.27	0.00	0.55	0:13:45	36.91	0.00	0.65	0:20:45	4.82	0.00	0.80	0:27:45	6.29	0.00	0.58	0:34:45	6.71	0.00	0.53
0:06:50	0.00	0.00	0.00	0:13:50	0.00	0.00	0.00	0:20:50	0.00	0.00	0.00	0:27:50	0.00	0.00	0.00	0:34:50	0.00	0.00	0.00

SPC-2 "Large File Processing/WRITE ONLY/1024 KiB Transfer Size" Average Data Rate Graph – Complete Test Run

SPC-2 "Large File Processing/ WRITE ONLY /1024 KiB Transfer Size" Average Data Rate Graph – Measurement Interval (MI) Only

SPC-2 "Large File Processing/ WRITE ONLY /1024 KiB Transfer Size" Average Data Rate per Stream Graph

SPC-2 "Large File Processing/ WRITE ONLY /1024 KiB Transfer Size" Average Response Time Graph

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

TR6 Test Run Sequence Time	10 Streams Data Rate, MB/sec	Data Rate / Stream, MB/sec	Response Time, ms	TR7 Test Run Sequence Time	5 Streams Data Rate, MB/sec	Data Rate / Stream, MB/sec	Response Time, ms	TR8 Test Run Sequence Time	3 Streams Data Rate, MB/sec	Data Rate / Stream, MB/sec	Response Time, ms	TR9 Test Run Sequence Time	2 Streams Data Rate, MB/sec	Data Rate / Stream, MB/sec	Response Time, ms	TR10 Test Run Sequence Time	1 Stream Data Rate, MB/sec	Data Rate / Stream, MB/sec	Response Time, ms
0:00:00	0.00	0.00	0.00	0:07:00	0.00	0.00	0.00	0:14:00	0.00	0.00	0.00	0:21:00	0.00	0.00	0.00	0:28:00	0.00	0.00	0.00
0:00:05	1,035.78	1,035.78	0.25	0:07:05	1,052.88	1,052.88	0.24	0:14:05	1,060.74	1,060.74	0.24	0:21:05	1,072.01	1,072.01	0.24	0:28:05	1,036.46	1,036.46	0.25
0:00:10	3,545.18	886.30	0.25	0:07:10	2,009.49	1,004.75	0.24	0:14:10	1,085.33	1,085.33	0.23	0:21:10	1,084.12	1,084.12	0.23	0:28:10	1,084.02	1,084.02	0.23
0:00:15	3,954.44	988.61	0.26	0:07:15	2,149.84	1,074.92	0.24	0:14:15	1,093.98	1,093.98	0.23	0:21:15	1,828.30	914.15	0.24	0:28:15	1,092.51	1,092.51	0.23
0:00:20	3,694.71	923.68	0.27	0:07:20	2,147.59	1,073.79	0.24	0:14:20	1,090.94	1,090.94	0.23	0:21:20	2,122.74	1,061.37	0.24	0:28:20	1,089.21	1,089.21	0.23
0:00:25	4,064.86	812.97	0.29	0:07:25	2,124.21	1,062.10	0.24	0:14:25	1,985.85	992.92	0.24	0:21:25	2,141.19	1,070.60	0.24	0:28:25	1,089.79	1,089.79	0.23
0:00:30	3,823.89	637.32	0.38	0:07:30	2,841.80	947.27	0.25	0:14:30	2,146.23	1,073.11	0.24	0:21:30	2,144.55	1,072.27	0.24	0:28:30	1,089.47	1,089.47	0.23
0:00:35	3,960.31	565.76	0.42	0:07:35	3,117.73	1,039.24	0.25	0:14:35	2,674.55	891.52	0.24	0:21:35	2,144.13	1,072.06	0.24	0:28:35	1,089.89	1,089.89	0.23
0:00:40	4,162.17	520.27	0.46	0:07:40	3,276.17	819.04	0.27	0:14:40	3,088.53	1,029.51	0.25	0:21:40	2,099.04	1,049.52	0.24	0:28:40	1,089.68	1,089.68	0.23
0:00:45	4,171.65	521.46	0.50	0:07:45	3,292.11	823.03	0.31	0:14:45	3,140.38	1,046.79	0.25	0:21:45	2,168.61	1,084.31	0.24	0:28:45	1,089.94	1,089.94	0.23
0:00:50	4,191.21	465.69	0.54	0:07:50	3,231.24	807.81	0.32	0:14:50	3,057.23	1,019.08	0.25	0:21:50	2,143.29	1,071.64	0.24	0:28:50	1,089.37	1,089.37	0.23
0:00:55	4,152.15	461.35	0.56	0:07:55	3,332.06	833.01	0.31	0:14:55	2,961.07	987.02	0.26	0:21:55	2,115.71	1,057.86	0.24	0:28:55	1,089.84	1,089.84	0.23
0:01:00	4,273.16	474.80	0.55	0:08:00	3,194.59	798.65	0.32	0:15:00	2,928.15	976.05	0.26	0:22:00	2,140.67	1,070.33	0.24	0:29:00	1,089.84	1,089.84	0.23
0:01:05	4,161.38	416.14	0.62	0:08:05	3,551.21	710.24	0.36	0:15:05	2,824.65	941.55	0.27	0:22:05	2,142.71	1,071.36	0.24	0:29:05	1,090.10	1,090.10	0.23
0:01:10	4,203.79	420.38	0.62	0:08:10	3,703.41	740.68	0.35	0:15:10	2,799.44	933.15	0.27	0:22:10	2,138.83	1,069.42	0.24	0:29:10	1,089.79	1,089.79	0.23
0:01:15	4,192.73	419.27	0.62	0:08:15	3,562.96	712.59	0.36	0:15:15	2,842.27	947.42	0.27	0:22:15	2,095.95	1,047.97	0.24	0:29:15	1,090.10	1,090.10	0.23
0:01:20	4,284.11	428.41	0.60	0:08:20	3,574.65	714.93	0.36	0:15:20	2,952.53	984.18	0.26	0:22:20	2,141.56	1,070.78	0.24	0:29:20	1,089.42	1,089.42	0.23
0:01:25	4,291.77	429.18	0.61	0:08:25	3,447.51	689.50	0.37	0:15:25	2,845.84	948.61	0.27	0:22:25	2,106.43	1,053.22	0.24	0:29:25	1,089.79	1,089.79	0.23
0:01:30	4,225.08	422.51	0.61	0:08:30	3,652.40	730.48	0.35	0:15:30	2,776.58	925.53	0.28	0:22:30	2,083.00	1,041.50	0.24	0:29:30	1,089.21	1,089.21	0.23
0:01:35	4,420.43	442.04	0.59	0:08:35	3,413.38	682.68	0.38	0:15:35	2,862.77	954.26	0.27	0:22:35	2,130.08	1,065.04	0.24	0:29:35	1,087.95	1,087.95	0.24
0:01:40	4,204.89	420.49	0.62	0:08:40	3,549.43	709.89	0.36	0:15:40	2,778.41	926.14	0.28	0:22:40	2,108.58	1,054.29	0.24	0:29:40	1,089.21	1,089.21	0.23
0:01:45	4,259.42	425.94	0.61	0:08:45	3,575.22	715.04	0.36	0:15:45	2,806.88	935.63	0.27	0:22:45	2,085.46	1,042.73	0.25	0:29:45	1,089.84	1,089.84	0.23
0:01:50	4,327.16	432.72	0.60	0:08:50	3,553.89	710.78	0.36	0:15:50	2,819.78	939.93	0.27	0:22:50	2,046.66	1,023.33	0.25	0:29:50	1,089.37	1,089.37	0.23
0:01:55	4,261.41	426.14	0.61	0:08:55	3,633.42	726.68	0.36	0:15:55	2,881.64	960.55	0.27	0:22:55	2,116.29	1,058.14	0.25	0:29:55	1,090.26	1,090.26	0.23
0:02:00	4,180.10	418.01	0.62	0:09:00	3,467.64	693.53	0.37	0:16:00	2,794.61	931.54	0.27	0:23:00	2,119.22	1,059.61	0.24	0:30:00	1,089.79	1,089.79	0.23
0:02:05	4,136.37	413.64	0.63	0:09:05	3,547.12	709.42	0.37	0:16:05	2,819.52	939.84	0.27	0:23:05	2,025.85	1,012.92	0.25	0:30:05	1,087.79	1,087.79	0.24
0:02:10	4,237.61	423.76	0.62	0:09:10	3,595.10	719.02	0.36	0:16:10	2,802.32	934.11	0.28	0:23:10	2,039.53	1,019.77	0.24	0:30:10	1,087.27	1,087.27	0.24
0:02:15	4,069.79	406.98	0.64	0:09:15	3,554.73	710.95	0.36	0:16:15	2,776.52	925.51	0.28	0:23:15	2,102.03	1,051.01	0.24	0:30:15	1,084.80	1,084.80	0.24
0:02:20	4,110.05	411.01	0.63	0:09:20	3,547.59	709.52	0.37	0:16:20	2,791.68	930.56	0.28	0:23:20	2,049.97	1,024.98	0.25	0:30:20	1,085.91	1,085.91	0.24
0:02:25	4,218.53	421.85	0.62	0:09:25	3,516.56	703.31	0.37	0:16:25	2,789.11	929.70	0.28	0:23:25	2,036.96	1,018.48	0.25	0:30:25	1,089.00	1,089.00	0.23
0:02:30	4,228.33	422.83	0.61	0:09:30	3,611.77	722.35	0.36	0:16:30	2,841.06	947.02	0.27	0:23:30	2,075.55	1,037.78	0.25	0:30:30	1,087.74	1,087.74	0.24
0:02:35	4,305.19	430.52	0.60	0:09:35	3,473.46	694.69	0.37	0:16:35	2,763.68	921.23	0.28	0:23:35	2,100.40	1,050.20	0.24	0:30:35	1,084.80	1,084.80	0.24
0:02:40	4,195.09	419.51	0.62	0:09:40	3,497.00	699.40	0.37	0:16:40	2,816.63	938.88	0.27	0:23:40	2,037.49	1,018.74	0.25	0:30:40	1,084.70	1,084.70	0.24
0:02:45	4,261.83	426.18	0.61	0:09:45	3,503.40	700.68	0.37	0:16:45	2,791.41	930.47	0.28	0:23:45	2,089.50	1,044.75	0.25	0:30:45	1,087.01	1,087.01	0.24
0:02:50	4,232.89	423.29	0.61	0:09:50	3,467.80	693.56	0.37	0:16:50	2,796.92	932.31	0.27	0:23:50	2,073.72	1,036.86	0.25	0:30:50	1,085.96	1,085.96	0.24
0:02:55	4,280.29	428.03	0.60	0:09:55	3,573.39	714.68	0.36	0:16:55	2,738.09	912.70	0.28	0:23:55	2,052.64	1,026.32	0.25	0:30:55	1,086.32	1,086.32	0.24
0:03:00	4,282.49	428.25	0.61	0:10:00	3,449.76	689.95	0.37	0:17:00	2,710.73	903.58	0.28	0:24:00	2,053.79	1,026.90	0.25	0:31:00	1,082.29	1,082.29	0.24

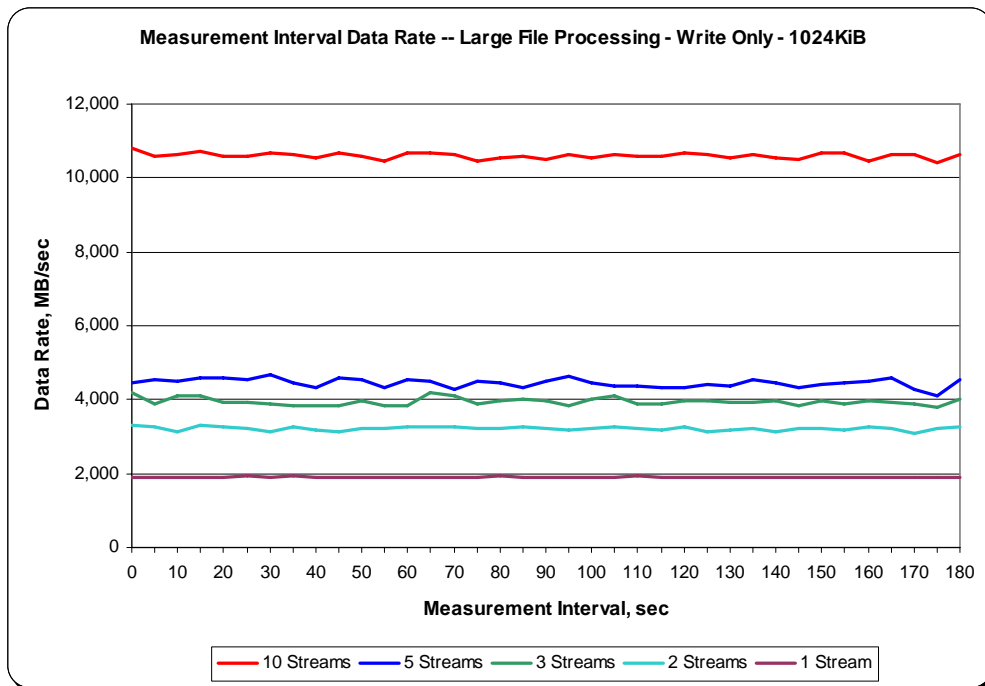## SPC-2 "Large File Processing/ WRITE ONLY /256 KiB Transfer Size" Test Run Data
Measurement Interval, Run-Out, and Ramp-Down Periods

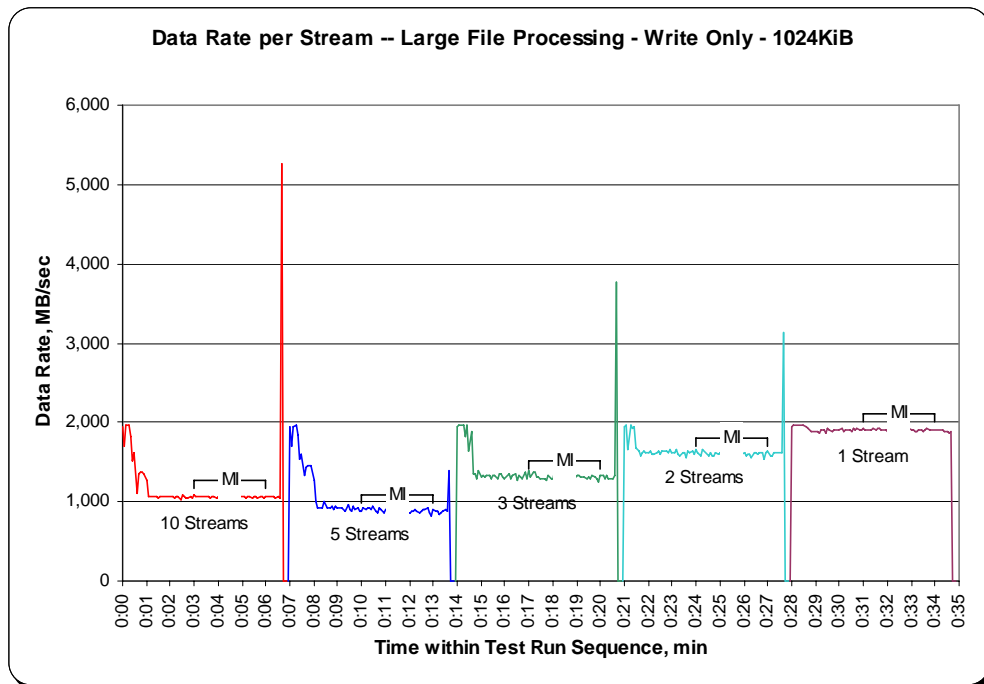| TR6 Test Run Sequence Time	10 Streams Data Rate, MB/sec	Data Rate / Stream, MB/sec	Response Time, ms	TR7 Test Run Sequence Time	5 Streams Data Rate, MB/sec	Data Rate / Stream, MB/sec	Response Time, ms	TR8 Test Run Sequence Time	3 Streams Data Rate, MB/sec	Data Rate / Stream, MB/sec	Response Time, ms	TR9 Test Run Sequence Time	2 Streams Data Rate, MB/sec	Data Rate / Stream, MB/sec	Response Time, ms	TR10 Test Run Sequence Time	1 Stream Data Rate, MB/sec	Data Rate / Stream, MB/sec	Response Time, ms
0:03:05	4,166.25	416.63	0.63	0:10:05	3,532.23	706.45	0.37	0:17:05	2,782.34	927.45	0.28	0:24:05	2,106.12	1,053.06	0.25	0:31:05	1,088.00	1,088.00	0.24
0:03:10	4,213.02	421.30	0.62	0:10:10	3,525.10	705.02	0.36	0:17:10	2,773.69	924.56	0.27	0:24:10	2,079.75	1,039.87	0.25	0:31:10	1,087.06	1,087.06	0.24
0:03:15	4,162.90	416.29	0.62	0:10:15	3,551.58	710.32	0.37	0:17:15	2,784.60	928.20	0.28	0:24:15	2,055.73	1,027.87	0.25	0:31:15	1,086.32	1,086.32	0.24
0:03:20	4,127.98	412.80	0.63	0:10:20	3,607.89	721.58	0.36	0:17:20	2,840.02	946.67	0.27	0:24:20	2,058.04	1,029.02	0.25	0:31:20	1,086.22	1,086.22	0.24
0:03:25	4,209.40	420.94	0.62	0:10:25	3,479.44	695.89	0.37	0:17:25	2,817.21	939.07	0.27	0:24:25	2,073.56	1,036.78	0.25	0:31:25	1,082.71	1,082.71	0.24
0:03:30	4,126.78	412.68	0.63	0:10:30	3,555.14	711.03	0.36	0:17:30	2,766.04	922.01	0.28	0:24:30	2,037.02	1,018.51	0.25	0:31:30	1,086.32	1,086.32	0.24
0:03:35	4,257.22	425.72	0.61	0:10:35	3,607.68	721.54	0.36	0:17:35	2,778.62	926.21	0.28	0:24:35	2,054.42	1,027.21	0.25	0:31:35	1,086.27	1,086.27	0.24
0:03:40	4,231.42	423.14	0.61	0:10:40	3,489.03	697.81	0.37	0:17:40	2,755.34	918.45	0.28	0:24:40	2,097.57	1,048.79	0.25	0:31:40	1,078.51	1,078.51	0.24
0:03:45	4,187.59	418.76	0.62	0:10:45	3,450.08	690.02	0.37	0:17:45	2,748.63	916.21	0.28	0:24:45	2,073.77	1,036.88	0.25	0:31:45	1,085.12	1,085.12	0.24
0:03:50	4,237.51	423.75	0.61	0:10:50	3,586.55	717.31	0.36	0:17:50	2,771.02	923.67	0.28	0:24:50	2,052.90	1,026.45	0.25	0:31:50	1,084.96	1,084.96	0.24
0:03:55	4,317.62	431.76	0.60	0:10:55	3,473.93	694.79	0.37	0:17:55	2,789.37	929.79	0.28	0:24:55	2,056.52	1,028.26	0.25	0:31:55	1,084.33	1,084.33	0.24
0:04:00	4,245.06	424.51	0.61	0:11:00	3,509.01	701.80	0.37	0:18:00	2,792.36	930.79	0.28	0:25:00	2,067.32	1,033.66	0.25	0:32:00	1,082.97	1,082.97	0.24
0:04:05	4,206.10	420.61	0.62	0:11:05	3,607.78	721.56	0.36	0:18:05	2,755.92	918.64	0.28	0:25:05	2,053.90	1,026.95	0.25	0:32:05	1,087.06	1,087.06	0.24
0:04:10	4,248.46	424.85	0.61	0:11:10	3,500.62	700.12	0.37	0:18:10	2,805.99	935.33	0.28	0:25:10	2,033.61	1,016.80	0.25	0:32:10	1,085.54	1,085.54	0.24
0:04:15	4,197.24	419.72	0.62	0:11:15	3,557.71	711.54	0.36	0:18:15	2,781.14	927.05	0.28	0:25:15	2,093.27	1,046.64	0.25	0:32:15	1,085.17	1,085.17	0.24
0:04:20	4,101.82	410.18	0.63	0:11:20	3,520.28	704.06	0.36	0:18:20	2,754.98	918.33	0.28	0:25:20	2,065.01	1,032.51	0.25	0:32:20	1,088.32	1,088.32	0.23
0:04:25	4,169.40	416.94	0.62	0:11:25	3,511.58	702.32	0.37	0:18:25	2,787.17	929.06	0.28	0:25:25	2,017.67	1,008.83	0.25	0:32:25	1,085.22	1,085.22	0.24
0:04:30	4,186.28	418.63	0.62	0:11:30	3,571.14	714.23	0.36	0:18:30	2,774.06	924.69	0.28	0:25:30	2,081.32	1,040.66	0.25	0:32:30	1,087.27	1,087.27	0.24
0:04:35	4,112.46	411.25	0.63	0:11:35	3,449.50	689.90	0.37	0:18:35	2,809.87	936.62	0.28	0:25:35	2,072.30	1,036.15	0.25	0:32:35	1,084.80	1,084.80	0.24
0:04:40	4,118.33	411.83	0.63	0:11:40	3,479.49	695.90	0.37	0:18:40	2,724.62	908.21	0.28	0:25:40	2,027.89	1,013.95	0.25	0:32:40	1,082.97	1,082.97	0.24
0:04:45	4,305.77	430.58	0.61	0:11:45	3,568.67	713.73	0.36	0:18:45	2,768.40	922.80	0.28	0:25:45	2,088.45	1,044.22	0.24	0:32:45	1,087.69	1,087.69	0.24
0:04:50	4,261.36	426.14	0.61	0:11:50	3,486.41	697.28	0.37	0:18:50	2,801.48	933.83	0.28	0:25:50	2,055.31	1,027.66	0.25	0:32:50	1,086.80	1,086.80	0.24
0:04:55	4,201.80	420.18	0.61	0:11:55	3,499.88	699.98	0.37	0:18:55	2,746.54	915.51	0.28	0:25:55	2,073.45	1,036.73	0.25	0:32:55	1,087.79	1,087.79	0.24
0:05:00	4,132.44	413.24	0.63	0:12:00	3,539.78	707.96	0.37	0:19:00	2,713.61	904.54	0.29	0:26:00	2,016.10	1,008.05	0.25	0:33:00	1,085.22	1,085.22	0.24
0:05:05	4,133.85	413.39	0.63	0:12:05	3,489.08	697.82	0.37	0:19:05	2,775.11	925.04	0.28	0:26:05	2,092.01	1,046.01	0.25	0:33:05	1,082.76	1,082.76	0.24
0:05:10	4,231.95	423.19	0.61	0:12:10	3,509.58	701.92	0.37	0:19:10	2,751.31	917.10	0.28	0:26:10	2,050.80	1,025.40	0.25	0:33:10	1,082.86	1,082.86	0.24
0:05:15	4,232.31	423.23	0.61	0:12:15	3,473.36	694.67	0.37	0:19:15	2,699.45	899.82	0.28	0:26:15	2,071.72	1,035.86	0.25	0:33:15	1,085.12	1,085.12	0.24
0:05:20	4,171.76	417.18	0.62	0:12:20	3,533.23	706.65	0.37	0:19:20	2,806.62	935.54	0.28	0:26:20	2,082.47	1,041.24	0.24	0:33:20	1,083.28	1,083.28	0.24
0:05:25	4,202.80	420.28	0.62	0:12:25	3,458.36	691.67	0.37	0:19:25	2,736.99	912.33	0.28	0:26:25	2,070.41	1,035.21	0.25	0:33:25	1,086.38	1,086.38	0.24
0:05:30	4,195.04	419.50	0.62	0:12:30	3,438.44	687.69	0.37	0:19:30	2,710.57	903.52	0.28	0:26:30	2,080.22	1,040.11	0.25	0:33:30	1,084.91	1,084.91	0.24
0:05:35	4,177.42	417.74	0.62	0:12:35	3,507.70	701.54	0.37	0:19:35	2,768.97	922.99	0.28	0:26:35	2,031.88	1,015.94	0.25	0:33:35	1,081.61	1,081.61	0.24
0:05:40	4,173.28	417.33	0.63	0:12:40	3,391.78	678.36	0.38	0:19:40	2,789.26	929.75	0.28	0:26:40	2,079.90	1,039.95	0.25	0:33:40	1,082.81	1,082.81	0.24
0:05:45	4,134.06	413.41	0.63	0:12:45	3,446.25	689.25	0.37	0:19:45	2,770.39	923.46	0.28	0:26:45	2,081.00	1,040.50	0.25	0:33:45	1,085.17	1,085.17	0.24
0:05:50	4,141.72	414.17	0.63	0:12:50	3,525.84	705.17	0.37	0:19:50	2,767.51	922.50	0.28	0:26:50	2,014.58	1,007.29	0.25	0:33:50	1,086.95	1,086.95	0.24
0:05:55	4,266.18	426.62	0.61	0:12:55	3,435.55	687.11	0.38	0:19:55	2,764.31	921.44	0.28	0:26:55	2,040.16	1,020.08	0.25	0:33:55	1,086.38	1,086.38	0.24
0:06:00	3,956.70	395.67	0.65	0:13:00	3,453.80	690.76	0.37	0:20:00	2,734.90	911.63	0.28	0:27:00	2,122.16	1,061.08	0.24	0:34:00	1,084.86	1,084.86	0.23
0:06:05	4,036.39	403.64	0.64	0:13:05	3,447.67	689.53	0.38	0:20:05	2,825.44	941.81	0.28	0:27:05	2,087.98	1,043.99	0.25	0:34:05	1,088.53	1,088.53	0.24
0:06:10	4,092.28	409.23	0.64	0:13:10	3,529.56	705.91	0.37	0:20:10	2,733.48	911.16	0.28	0:27:10	2,007.50	1,003.75	0.25	0:34:10	1,083.55	1,083.55	0.24
0:06:15	4,136.84	413.68	0.63	0:13:15	3,420.40	684.08	0.38	0:20:15	2,761.90	920.63	0.28	0:27:15	2,066.85	1,033.42	0.25	0:34:15	1,086.95	1,086.95	0.24
0:06:20	4,261.31	426.13	0.61	0:13:20	3,525.05	705.01	0.37	0:20:20	2,752.72	917.57	0.28	0:27:20	2,094.53	1,047.27	0.25	0:34:20	1,084.86	1,084.86	0.24
0:06:25	4,109.16	410.92	0.63	0:13:25	3,406.67	681.33	0.37	0:20:25	2,739.46	913.15	0.28	0:27:25	2,052.85	1,026.42	0.25	0:34:25	1,086.38	1,086.38	0.24
0:06:30	4,211.87	421.19	0.62	0:13:30	3,504.08	700.82	0.37	0:20:30	2,759.12	919.71	0.28	0:27:30	2,053.64	1,026.82	0.25	0:34:30	1,087.16	1,087.16	0.24
0:06:35	4,153.67	415.37	0.62	0:13:35	3,611.03	722.21	0.36	0:20:35	2,716.91	905.64	0.28	0:27:35	2,050.86	1,025.43	0.25	0:34:35	1,079.88	1,079.88	0.24
0:06:40	4,223.77	422.38	0.61	0:13:40	3,425.38	685.08	0.37	0:20:40	2,749.05	916.35	0.28	0:27:40	2,079.27	1,039.64	0.25	0:34:40	1,084.86	1,084.86	0.24
0:06:45	4,216.27	468.47	0.62	0:13:45	3,524.53	1,174.84	0.37	0:20:45	2,667.89	1,333.95	0.28	0:27:45	2,014.31	2,014.31	0.25	0:34:45	1,076.10	1,076.10	0.24
0:06:50	130.91	0.00	0.37	0:13:50	19.56	0.00	0.26	0:20:50	17.25	0.00	0.24	0:27:50	3.67	0.00	0.24	0:34:50	3.62	0.00	0.23
0:06:55	0.00	0.00	0.00	0:13:55	0.00	0.00	0.00	0:20:55	0.00	0.00	0.00	0:27:55	0.00	0.00	0.00	0:34:55	0.00	0.00	0.00

SPC-2 "Large File Processing/ WRITE ONLY /256 KiB Transfer Size" Average Data Rate Graph – Complete Test Run

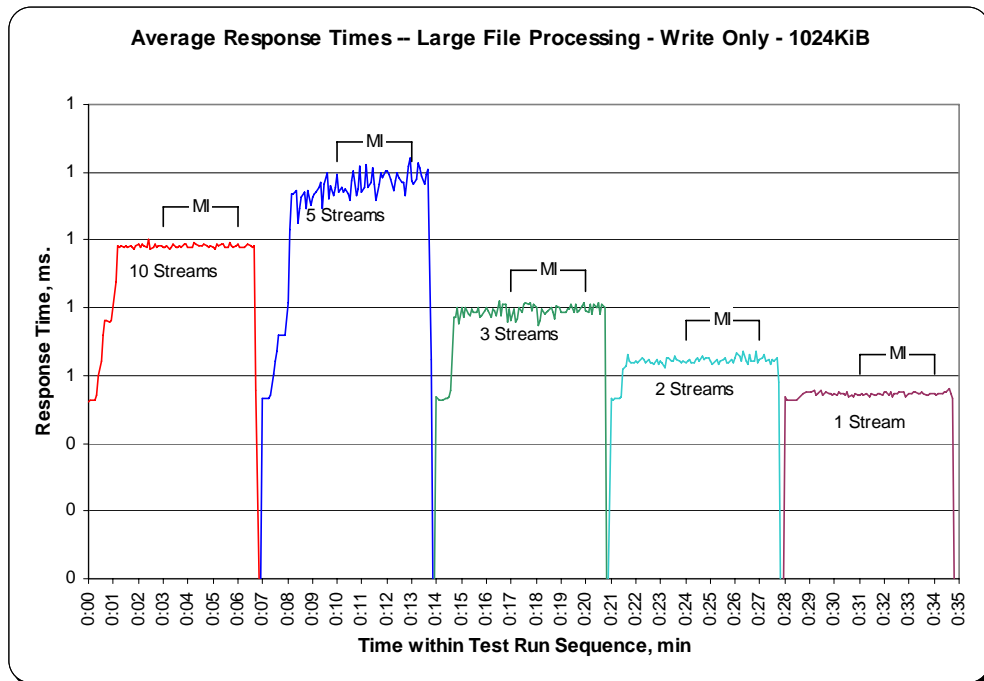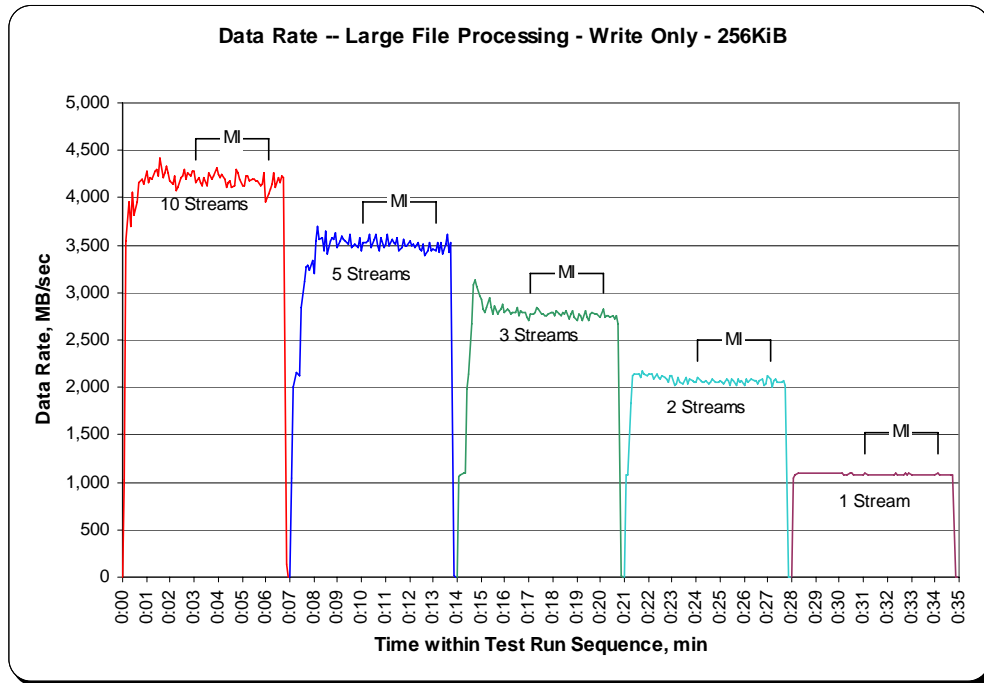## SPC-2 "Large File Processing/ WRITE ONLY /256 KiB Transfer Size" Average Data Rate Graph – Measurement Interval (MI) Only

SPC-2 "Large File Processing/ WRITE ONLY /256 KiB Transfer Size" Average Data Rate per Stream Graph

SPC-2 "Large File Processing/ WRITE ONLY /256 KiB Transfer Size" Average Response Time Graph

Large File Processing Test – READ-WRITE Test Phase

Clause 10.6.8.1.2

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 (intervals), Average Data Rate per Stream (intervals), and Average Response Time (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 (intervals), Average Data Rate per Stream (intervals), and Average Response Time (intervals) graphs for the "READ-WRITE, 256 KiB Transfer Size" Test Runs as specified in Clauses 10.1.4 – 10.1.6.*

The SPC-2 "Large File Processing/READ-WRITE/1024 KiB Transfer Size" Test Run data is contained in the table that appears on the next page. That table is followed by 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 SPC-2 "Large File Processing/ READ-WRITE /1024 KiB Transfer Size" table and graphs will be the SPC-2 "Large File Processing/ READ-WRITE /64 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 – Ramp-Up Period

TR11 Test Run Sequence Time	20 Streams Data Rate, MB/sec	Data Rate / Stream, MB/sec	Response Time, ms	TR12 Test Run Sequence Time	10 Streams Data Rate, MB/sec	Data Rate / Stream, MB/sec	Response Time, ms	TR13 Test Run Sequence Time	5 Streams Data Rate, MB/sec	Data Rate / Stream, MB/sec	Response Time, ms	TR14 Test Run Sequence Time	3 Streams Data Rate, MB/sec	Data Rate / Stream, MB/sec	Response Time, ms	TR15 Test Run Sequence Time	1 Stream Data Rate, MB/sec	Data Rate / Stream, MB/sec	Response Time, ms
0:00:00	0.00	0.00	0.00	0:07:00	0.00	0.00	0.00	0:14:00	0.00	0.00	0.00	0:21:00	0.00	0.00	0.00	0:28:00	0.00	0.00	0.00
0:00:05	2,319.03	1,159.52	0.75	0:07:05	2,261.15	1,130.57	0.76	0:14:05	1,429.21	714.60	0.74	0:21:05	1,399.01	1,399.01	0.74	0:28:05	1,401.95	1,401.95	0.74
0:00:10	4,126.78	1,031.69	0.80	0:07:10	3,211.16	1,070.39	0.74	0:14:10	2,797.39	1,398.70	0.73	0:21:10	1,496.53	1,496.53	0.69	0:28:10	1,490.24	1,490.24	0.70
0:00:15	5,132.15	1,026.43	0.92	0:07:15	4,077.91	1,359.30	0.77	0:14:15	2,895.75	1,447.87	0.73	0:21:15	1,503.24	1,503.24	0.70	0:28:15	1,516.45	1,516.45	0.69
0:00:20	5,283.15	1,056.63	0.98	0:07:20	4,060.09	1,353.36	0.77	0:14:20	2,833.46	1,416.73	0.74	0:21:20	1,508.90	1,508.90	0.69	0:28:20	1,497.37	1,497.37	0.70
0:00:25	5,239.94	1,047.99	1.00	0:07:25	3,839.47	1,279.82	0.81	0:14:25	2,832.41	1,416.21	0.74	0:21:25	1,502.40	1,502.40	0.69	0:28:25	1,502.61	1,502.61	0.69
0:00:30	5,405.83	900.97	1.05	0:07:30	3,817.66	1,272.55	0.82	0:14:30	3,702.10	925.53	0.83	0:21:30	2,874.78	958.26	0.74	0:28:30	1,502.19	1,502.19	0.69
0:00:35	5,246.65	524.67	1.62	0:07:35	4,758.86	793.14	1.03	0:14:35	4,367.11	1,091.78	0.95	0:21:35	4,059.46	1,353.15	0.77	0:28:35	1,503.87	1,503.87	0.69
0:00:40	5,503.98	458.66	2.16	0:07:40	5,010.10	626.26	1.49	0:14:40	4,139.36	1,034.84	1.01	0:21:40	3,819.33	1,273.11	0.82	0:28:40	1,499.25	1,499.25	0.70
0:00:45	5,498.31	392.74	2.47	0:07:45	5,165.08	573.90	1.64	0:14:45	3,821.64	764.33	1.17	0:21:45	3,803.60	1,267.87	0.83	0:28:45	1,504.08	1,504.08	0.69
0:00:50	5,314.18	379.58	2.74	0:07:50	5,247.91	583.10	1.79	0:14:50	4,016.05	803.21	1.28	0:21:50	3,775.71	1,258.57	0.83	0:28:50	1,498.83	1,498.83	0.70
0:00:55	5,558.08	370.54	2.70	0:07:55	5,159.83	573.31	1.82	0:14:55	4,081.06	816.21	1.28	0:21:55	3,394.24	1,131.41	0.93	0:28:55	1,455.42	1,455.42	0.72
0:01:00	5,464.55	321.44	2.90	0:08:00	5,278.32	586.48	1.79	0:15:00	4,106.22	821.24	1.28	0:22:00	3,229.40	1,076.47	0.97	0:29:00	1,501.77	1,501.77	0.69
0:01:05	5,492.86	323.11	3.23	0:08:05	5,303.28	589.25	1.78	0:15:05	4,081.48	816.30	1.27	0:22:05	3,169.64	1,056.55	0.98	0:29:05	1,501.14	1,501.14	0.69
0:01:10	5,421.35	318.90	3.27	0:08:10	5,138.23	570.91	1.81	0:15:10	3,960.05	792.01	1.31	0:22:10	3,152.86	1,050.95	1.00	0:29:10	1,430.89	1,430.89	0.73
0:01:15	5,522.01	290.63	3.34	0:08:15	5,246.03	582.89	1.79	0:15:15	4,047.08	809.42	1.30	0:22:15	3,045.90	1,015.30	1.02	0:29:15	1,499.25	1,499.25	0.70
0:01:20	5,441.27	286.38	3.65	0:08:20	5,169.90	574.43	1.84	0:15:20	3,985.43	797.09	1.32	0:22:20	3,175.72	1,058.57	0.99	0:29:20	1,492.12	1,492.12	0.70
0:01:25	5,274.13	263.71	3.81	0:08:25	5,215.83	521.58	1.84	0:15:25	3,963.41	792.68	1.30	0:22:25	3,174.25	1,058.08	0.98	0:29:25	1,395.44	1,395.44	0.75
0:01:30	5,551.37	277.57	3.78	0:08:30	5,320.26	532.03	1.97	0:15:30	4,089.87	817.97	1.28	0:22:30	3,201.30	1,067.10	0.98	0:29:30	1,441.37	1,441.37	0.72
0:01:35	5,371.85	268.59	3.89	0:08:35	5,351.51	535.15	1.96	0:15:35	4,079.38	815.88	1.29	0:22:35	3,141.53	1,047.18	0.99	0:29:35	1,376.36	1,376.36	0.76
0:01:40	5,508.17	275.41	3.79	0:08:40	5,223.17	522.32	2.00	0:15:40	4,017.30	803.46	1.29	0:22:40	3,131.26	1,043.75	1.00	0:29:40	1,334.42	1,334.42	0.78
0:01:45	5,347.11	267.36	3.90	0:08:45	5,305.79	530.58	1.96	0:15:45	4,031.77	806.35	1.29	0:22:45	3,161.46	1,053.82	0.99	0:29:45	1,379.93	1,379.93	0.76
0:01:50	5,487.62	274.38	3.86	0:08:50	5,263.85	526.39	1.99	0:15:50	4,063.02	812.60	1.29	0:22:50	3,080.09	1,026.70	1.01	0:29:50	1,340.92	1,340.92	0.78
0:01:55	5,386.95	269.35	3.88	0:08:55	5,284.19	528.42	1.98	0:15:55	4,041.84	808.37	1.30	0:22:55	3,048.63	1,016.21	1.03	0:29:55	1,332.95	1,332.95	0.78
0:02:00	5,373.95	268.70	3.88	0:09:00	5,295.10	529.51	1.97	0:16:00	4,047.71	809.54	1.27	0:23:00	3,077.78	1,025.93	1.01	0:30:00	1,346.79	1,346.79	0.77
0:02:05	5,425.96	271.30	3.87	0:09:05	5,287.76	528.78	1.97	0:16:05	4,091.33	818.27	1.28	0:23:05	3,188.30	1,062.77	0.98	0:30:05	1,377.41	1,377.41	0.76
0:02:10	5,386.33	269.32	3.87	0:09:10	5,397.44	539.74	1.95	0:16:10	4,038.91	807.78	1.30	0:23:10	3,080.51	1,026.84	1.02	0:30:10	1,288.91	1,288.91	0.81
0:02:15	5,271.61	263.58	3.96	0:09:15	5,359.48	535.95	1.96	0:16:15	4,061.34	812.27	1.28	0:23:15	3,072.12	1,024.04	1.02	0:30:15	1,353.08	1,353.08	0.77
0:02:20	5,461.40	273.07	3.82	0:09:20	5,247.07	524.71	1.97	0:16:20	4,103.08	820.62	1.27	0:23:20	3,069.81	1,023.27	1.02	0:30:20	1,371.54	1,371.54	0.76
0:02:25	5,413.17	270.66	3.92	0:09:25	5,299.08	529.91	1.97	0:16:25	4,100.56	820.11	1.28	0:23:25	3,013.40	1,004.47	1.04	0:30:25	1,326.24	1,326.24	0.79
0:02:30	5,597.51	279.88	3.73	0:09:30	5,279.16	527.92	2.00	0:16:30	4,042.68	808.54	1.30	0:23:30	3,135.87	1,045.29	1.00	0:30:30	1,302.96	1,302.96	0.80
0:02:35	5,319.64	265.98	3.91	0:09:35	5,290.07	529.01	1.96	0:16:35	4,002.00	800.40	1.29	0:23:35	3,084.49	1,028.16	1.01	0:30:35	1,326.87	1,326.87	0.79
0:02:40	5,473.57	273.68	3.84	0:09:40	5,355.50	535.55	1.96	0:16:40	4,068.89	813.78	1.28	0:23:40	3,069.81	1,023.27	1.02	0:30:40	1,317.01	1,317.01	0.79
0:02:45	5,435.19	271.76	3.84	0:09:45	5,261.96	526.20	1.98	0:16:45	4,135.37	827.07	1.27	0:23:45	3,060.58	1,020.19	1.03	0:30:45	1,289.54	1,289.54	0.81
0:02:50	5,666.71	283.34	3.68	0:09:50	5,251.48	525.15	1.99	0:16:50	4,052.75	810.55	1.28	0:23:50	3,050.52	1,016.84	1.02	0:30:50	1,293.31	1,293.31	0.81
0:02:55	5,419.46	270.97	3.85	0:09:55	5,291.32	529.13	1.96	0:16:55	4,003.25	800.65	1.30	0:23:55	3,136.50	1,045.50	1.00	0:30:55	1,344.90	1,344.90	0.78
0:03:00	5,557.45	277.87	3.78	0:10:00	5,297.41	529.74	1.98	0:17:00	4,078.54	815.71	1.28	0:24:00	3,047.79	1,015.93	1.02	0:31:00	1,304.64	1,304.64	0.80

SPC-2 "Large File Processing/READ-WRITE/1024 KiB Transfer Size" Test Run Data
Measurement Interval, Run-Out, and Ramp-Down Periods

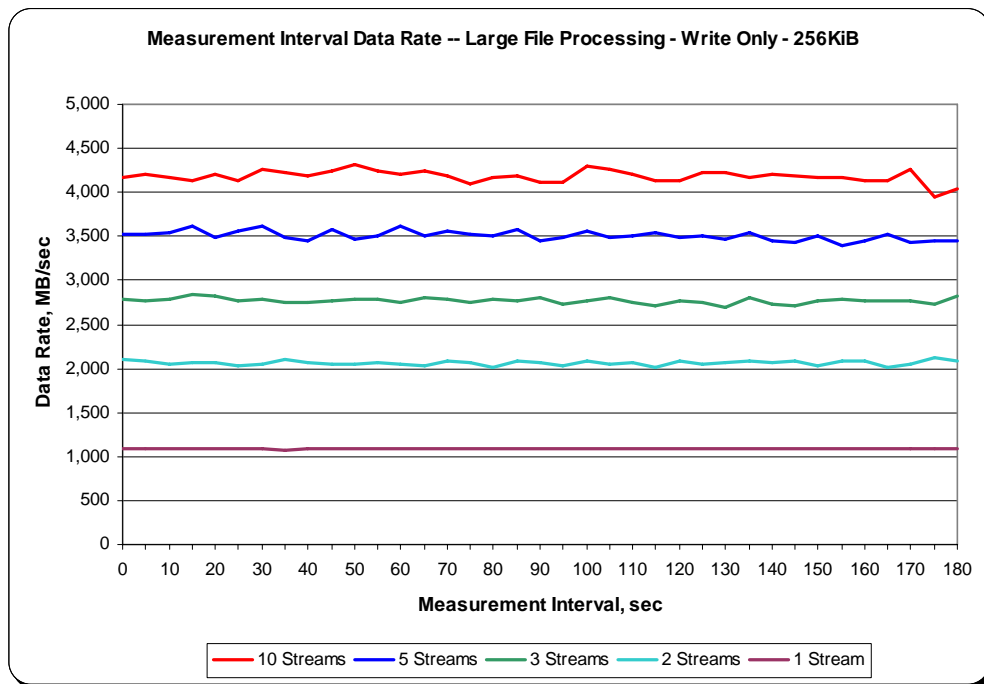| TR11 Test Run Sequence Time	20 Streams Data Rate, MB/sec	Data Rate / Stream, MB/sec	Response Time, ms	TR12 Test Run Sequence Time	10 Streams Data Rate, MB/sec	Data Rate / Stream, MB/sec	Response Time, ms	TR13 Test Run Sequence Time	5 Streams Data Rate, MB/sec	Data Rate / Stream, MB/sec	Response Time, ms	TR14 Test Run Sequence Time	3 Streams Data Rate, MB/sec	Data Rate / Stream, MB/sec	Response Time, ms	TR15 Test Run Sequence Time	1 Stream Data Rate, MB/sec	Data Rate / Stream, MB/sec	Response Time, ms
0:03:05	5,508.38	275.42	3.80	0:10:05	5,293.42	529.34	1.99	0:17:05	4,035.13	807.03	1.29	0:24:05	3,096.65	1,032.22	1.02	0:31:05	1,303.17	1,303.17	0.80
0:03:10	5,582.83	279.14	3.75	0:10:10	5,251.27	525.13	1.98	0:17:10	4,042.89	808.58	1.29	0:24:10	3,018.85	1,006.28	1.02	0:31:10	1,309.46	1,309.46	0.80
0:03:15	5,527.88	276.39	3.82	0:10:15	5,400.38	540.04	1.94	0:17:15	4,028.84	805.77	1.29	0:24:15	3,139.65	1,046.55	1.02	0:31:15	1,299.19	1,299.19	0.80
0:03:20	5,387.37	269.37	3.86	0:10:20	5,305.79	530.58	1.98	0:17:20	4,123.84	824.77	1.28	0:24:20	3,076.10	1,025.37	1.01	0:31:20	1,293.52	1,293.52	0.81
0:03:25	5,369.34	268.47	3.90	0:10:25	5,356.97	535.70	1.95	0:17:25	4,019.82	803.96	1.30	0:24:25	3,156.42	1,052.14	1.00	0:31:25	1,288.07	1,288.07	0.81
0:03:30	5,506.07	275.30	3.81	0:10:30	5,260.50	526.05	1.98	0:17:30	4,125.73	825.15	1.26	0:24:30	3,058.28	1,019.43	1.01	0:31:30	1,322.25	1,322.25	0.79
0:03:35	5,422.19	271.11	3.88	0:10:35	5,245.19	524.52	2.00	0:17:35	4,038.07	807.61	1.29	0:24:35	3,078.20	1,026.07	1.01	0:31:35	1,310.72	1,310.72	0.80
0:03:40	5,398.91	269.95	3.86	0:10:40	5,239.31	523.93	1.99	0:17:40	4,077.91	815.58	1.28	0:24:40	3,067.29	1,022.43	1.02	0:31:40	1,293.52	1,293.52	0.81
0:03:45	5,549.06	277.45	3.78	0:10:45	5,361.58	536.16	1.95	0:17:45	4,027.16	805.43	1.29	0:24:45	3,015.91	1,005.30	1.02	0:31:45	1,335.26	1,335.26	0.78
0:03:50	5,476.92	273.85	3.84	0:10:50	5,263.22	526.32	1.99	0:17:50	4,066.59	813.32	1.28	0:24:50	3,111.96	1,037.32	1.02	0:31:50	1,290.38	1,290.38	0.81
0:03:55	5,345.01	267.25	3.90	0:10:55	5,264.06	526.41	1.99	0:17:55	4,134.95	826.99	1.27	0:24:55	3,100.85	1,033.62	1.01	0:31:55	1,289.33	1,289.33	0.81
0:04:00	5,499.57	274.98	3.80	0:11:00	5,346.48	534.65	1.95	0:18:00	4,094.06	818.81	1.28	0:25:00	3,083.65	1,027.88	1.02	0:32:00	1,331.69	1,331.69	0.78
0:04:05	5,469.58	273.48	3.83	0:11:05	5,304.75	530.47	1.96	0:18:05	4,082.53	816.51	1.27	0:25:05	3,064.36	1,021.45	1.02	0:32:05	1,334.00	1,334.00	0.78
0:04:10	5,418.83	270.94	3.88	0:11:10	5,300.97	530.10	1.98	0:18:10	4,042.89	808.58	1.29	0:25:10	3,084.70	1,028.23	1.01	0:32:10	1,304.43	1,304.43	0.80
0:04:15	5,466.44	273.32	3.82	0:11:15	5,277.90	527.79	1.98	0:18:15	4,085.67	817.13	1.28	0:25:15	3,135.87	1,045.29	1.01	0:32:15	1,326.66	1,326.66	0.79
0:04:20	5,456.79	272.84	3.83	0:11:20	5,342.08	534.21	1.95	0:18:20	4,019.19	803.84	1.29	0:25:20	3,031.64	1,010.55	1.01	0:32:20	1,296.25	1,296.25	0.80
0:04:25	5,602.96	280.15	3.76	0:11:25	5,375.84	537.58	1.95	0:18:25	4,104.97	820.99	1.27	0:25:25	3,171.94	1,057.31	1.01	0:32:25	1,307.78	1,307.78	0.80
0:04:30	5,478.39	273.92	3.80	0:11:30	5,361.58	536.16	1.96	0:18:30	4,107.48	821.50	1.28	0:25:30	3,063.73	1,021.24	1.01	0:32:30	1,332.95	1,332.95	0.78
0:04:35	5,422.40	271.12	3.85	0:11:35	5,301.18	530.12	1.97	0:18:35	4,035.13	807.03	1.29	0:25:35	3,125.81	1,041.94	1.01	0:32:35	1,282.83	1,282.83	0.81
0:04:40	5,476.71	273.84	3.83	0:11:40	5,307.68	530.77	1.96	0:18:40	4,067.85	813.57	1.28	0:25:40	3,107.35	1,035.78	1.00	0:32:40	1,328.55	1,328.55	0.78
0:04:45	5,603.59	280.18	3.77	0:11:45	5,278.74	527.87	1.98	0:18:45	4,085.04	817.01	1.28	0:25:45	3,020.53	1,006.84	1.03	0:32:45	1,300.23	1,300.23	0.80
0:04:50	5,356.76	267.84	3.89	0:11:50	5,234.70	523.47	2.00	0:18:50	4,062.39	812.48	1.29	0:25:50	3,151.18	1,050.39	1.00	0:32:50	1,295.62	1,295.62	0.80
0:04:55	5,401.42	270.07	3.87	0:11:55	5,307.05	530.71	1.97	0:18:55	4,009.34	801.87	1.29	0:25:55	3,205.92	1,068.64	0.96	0:32:55	1,333.37	1,333.37	0.78
0:05:00	5,559.13	277.96	3.80	0:12:00	5,229.88	522.99	2.00	0:19:00	4,150.89	830.18	1.25	0:26:00	3,267.15	1,089.05	0.98	0:33:00	1,288.70	1,288.70	0.81
0:05:05	5,497.47	274.87	3.78	0:12:05	5,318.59	531.86	1.96	0:19:05	4,201.01	840.20	1.25	0:26:05	3,044.02	1,014.67	1.02	0:33:05	1,292.06	1,292.06	0.81
0:05:10	5,370.60	268.53	3.89	0:12:10	5,265.74	526.57	1.98	0:19:10	4,096.16	819.23	1.27	0:26:10	3,132.52	1,044.17	1.01	0:33:10	1,290.80	1,290.80	0.81
0:05:15	5,430.37	271.52	3.87	0:12:15	5,187.93	518.79	2.01	0:19:15	4,048.97	809.79	1.28	0:26:15	3,174.88	1,058.29	0.98	0:33:15	1,333.37	1,333.37	0.78
0:05:20	5,496.64	274.83	3.81	0:12:20	5,383.18	538.32	1.94	0:19:20	4,063.23	812.65	1.29	0:26:20	3,143.42	1,047.81	0.99	0:33:20	1,288.91	1,288.91	0.81
0:05:25	5,389.47	269.47	3.88	0:12:25	5,217.92	521.79	2.01	0:19:25	4,061.97	812.39	1.29	0:26:25	3,171.94	1,057.31	0.99	0:33:25	1,291.85	1,291.85	0.81
0:05:30	5,408.76	270.44	3.87	0:12:30	5,367.03	536.70	1.95	0:19:30	4,088.61	817.72	1.27	0:26:30	3,031.85	1,010.62	1.01	0:33:30	1,314.29	1,314.29	0.79
0:05:35	5,649.10	282.45	3.73	0:12:35	5,216.22	521.62	1.99	0:19:35	4,141.67	828.33	1.26	0:26:35	3,164.81	1,054.94	1.01	0:33:35	1,293.52	1,293.52	0.81
0:05:40	5,413.80	270.69	3.85	0:12:40	5,293.84	529.38	1.99	0:19:40	4,140.41	828.08	1.27	0:26:40	3,127.27	1,042.42	1.00	0:33:40	1,283.88	1,283.88	0.81
0:05:45	5,406.46	270.32	3.86	0:12:45	5,299.92	529.99	1.97	0:19:45	4,093.64	818.73	1.28	0:26:45	3,120.77	1,040.26	1.01	0:33:45	1,345.53	1,345.53	0.77
0:05:50	5,361.37	268.07	3.92	0:12:50	5,232.39	523.24	1.99	0:19:50	4,169.14	833.83	1.25	0:26:50	2,995.78	998.59	1.04	0:33:50	1,289.75	1,289.75	0.81
0:05:55	5,468.95	273.45	3.84	0:12:55	5,326.98	532.70	1.97	0:19:55	4,015.63	803.13	1.30	0:26:55	3,076.73	1,025.58	1.01	0:33:55	1,283.46	1,283.46	0.81
0:06:00	5,418.41	270.92	3.82	0:13:00	5,297.41	529.74	1.97	0:20:00	4,053.79	810.76	1.28	0:27:00	3,158.94	1,052.98	0.99	0:34:00	1,285.55	1,285.55	0.81
0:06:05	5,432.67	271.63	3.86	0:13:05	5,292.58	529.26	1.98	0:20:05	4,138.73	827.75	1.27	0:27:05	3,218.08	1,072.69	0.98	0:34:05	1,292.89	1,292.89	0.81
0:06:10	5,489.09	274.45	3.84	0:13:10	5,291.32	529.13	1.96	0:20:10	4,085.67	817.13	1.27	0:27:10	3,102.11	1,034.04	1.01	0:34:10	1,255.98	1,255.98	0.83
0:06:15	5,456.16	272.81	3.83	0:13:15	5,276.22	527.62	1.99	0:20:15	4,060.93	812.19	1.29	0:27:15	3,126.01	1,042.00	1.00	0:34:15	1,315.75	1,315.75	0.79
0:06:20	5,322.99	266.15	3.93	0:13:20	5,308.52	530.85	1.97	0:20:20	4,086.09	817.22	1.28	0:27:20	3,085.33	1,028.44	1.02	0:34:20	1,293.94	1,293.94	0.81
0:06:25	5,517.61	275.88	3.82	0:13:25	5,252.11	525.21	1.99	0:20:25	4,035.34	807.07	1.28	0:27:25	3,025.14	1,008.38	1.02	0:34:25	1,329.80	1,329.80	0.78
0:06:30	5,543.19	277.16	3.76	0:13:30	5,409.60	540.96	1.93	0:20:30	4,038.07	807.61	1.29	0:27:30	3,143.21	1,047.74	1.00	0:34:30	1,349.73	1,349.73	0.77
0:06:35	5,536.48	276.82	3.78	0:13:35	5,362.84	536.28	1.95	0:20:35	4,078.75	815.75	1.29	0:27:35	3,079.46	1,026.49	1.00	0:34:35	1,332.11	1,332.11	0.78
0:06:40	5,362.63	268.13	3.90	0:13:40	5,255.67	525.57	1.98	0:20:40	3,988.99	797.80	1.32	0:27:40	3,199.62	1,066.54	0.98	0:34:40	1,334.63	1,334.63	0.78
0:06:45	5,572.97	309.61	3.77	0:13:45	5,389.26	598.81	1.94	0:20:45	4,041.42	808.28	1.28	0:27:45	3,024.72	1,008.24	1.02	0:34:45	1,318.90	1,318.90	0.79
0:06:50	332.40	0.00	2.12	0:13:50	359.24	0.00	1.32	0:20:50	115.97	0.00	1.07	0:27:50	23.91	0.00	1.01	0:34:50	5.03	0.00	0.70
0:06:55	0.00	0.00	0.00	0:13:55	0.00	0.00	0.00	0:20:55	0.00	0.00	0.00	0:27:55	0.00	0.00	0.00	0:34:55	0.00	0.00	0.00

SPC BENCHMARK 2™ V1.3

Texas Memory Systems, Inc.
Texas Memory Systems RamSan-630

FULL DISCLOSURE REPORT

Submitted for Review: MAY 10, 2011

Submission Identifier: B00054

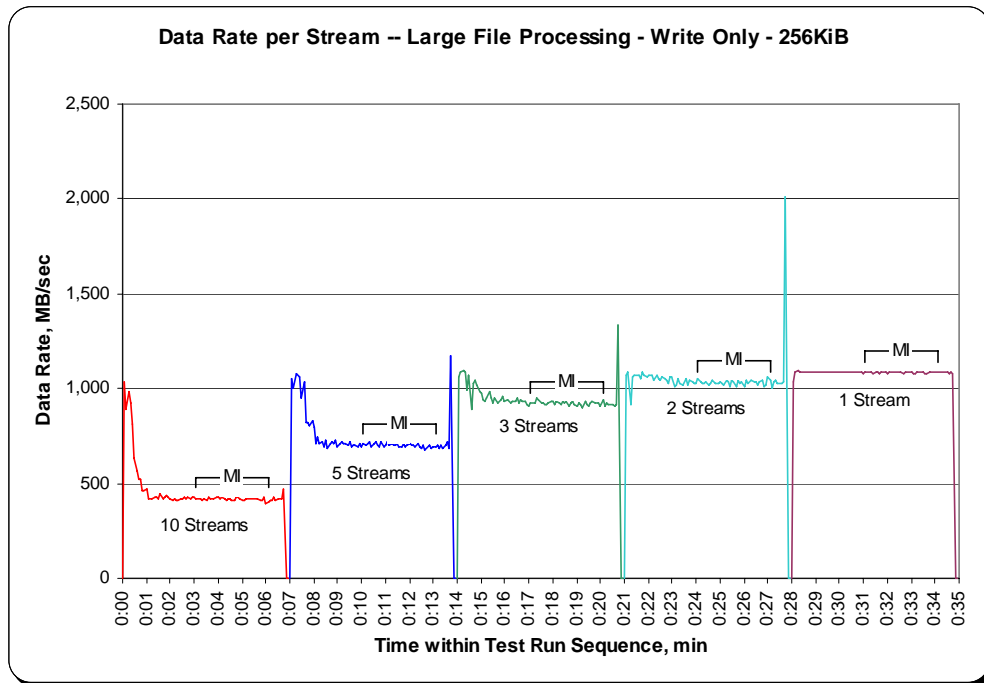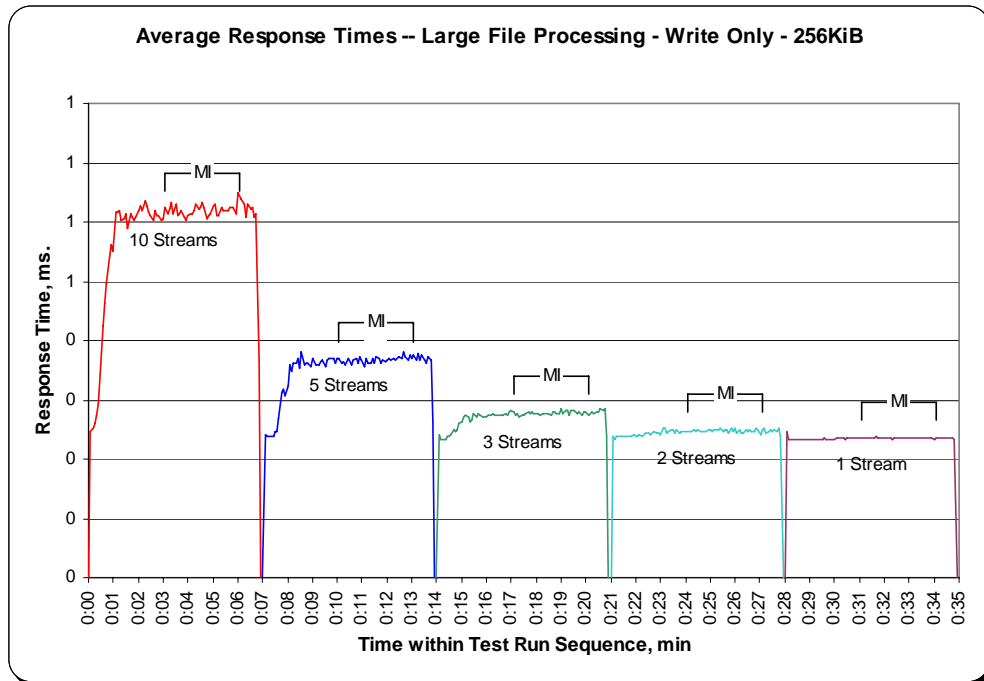## SPC-2 "Large File Processing/ READ-WRITE/1024 KiB Transfer Size" Average Data Rate Graph – Complete Test Run

SPC-2 "Large File Processing/ READ-WRITE/1024 KiB Transfer Size" Average Data Rate Graph – Measurement Interval (MI) Only

SPC-2 "Large File Processing/READ-WRITE/1024 KiB Transfer Size" Average Data Rate per Stream Graph

SPC-2 "Large File Processing/READ-WRITE/1024 KiB Transfer Size" Average Response Time Graph

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

TR16 Test Run Sequence Time	20 Streams Data Rate, MB/sec	Data Rate / Stream, MB/sec	Response Time, ms	TR17 Test Run Sequence Time	10 Streams Data Rate, MB/sec	Data Rate / Stream, MB/sec	Response Time, ms	TR18 Test Run Sequence Time	5 Streams Data Rate, MB/sec	Data Rate / Stream, MB/sec	Response Time, ms	TR19 Test Run Sequence Time	3 Streams Data Rate, MB/sec	Data Rate / Stream, MB/sec	Response Time, ms	TR20 Test Run Sequence Time	1 Stream Data Rate, MB/sec	Data Rate / Stream, MB/sec	Response Time, ms
0:00:00	0.00	0.00	0.00	0:07:00	0.00	0.00	0.00	0:14:00	0.00	0.00	0.00	0:21:00	0.00	0.00	0.00	0:28:00	0.00	0.00	0.00
0:00:05	1,192.76	596.38	0.43	0:07:05	1,257.50	419.17	0.44	0:14:05	782.34	391.17	0.42	0:21:05	612.05	612.05	0.42	0:28:05	613.26	613.26	0.42
0:00:10	2,310.75	462.15	0.44	0:07:10	1,854.30	618.10	0.42	0:14:10	1,299.03	649.51	0.40	0:21:10	667.73	667.73	0.38	0:28:10	684.14	684.14	0.38
0:00:15	3,258.82	543.14	0.47	0:07:15	1,827.62	609.21	0.42	0:14:15	1,303.69	651.85	0.40	0:21:15	675.07	675.07	0.38	0:28:15	664.12	664.12	0.39
0:00:20	4,127.14	458.57	0.50	0:07:20	1,828.30	609.43	0.42	0:14:20	1,298.92	649.46	0.40	0:21:20	667.21	667.21	0.39	0:28:20	647.02	647.02	0.40
0:00:25	4,655.15	465.52	0.52	0:07:25	2,125.57	425.11	0.45	0:14:25	1,297.93	648.96	0.40	0:21:25	670.35	670.35	0.39	0:28:25	700.97	700.97	0.37
0:00:30	5,454.74	419.60	0.55	0:07:30	2,769.03	553.81	0.47	0:14:30	1,278.42	639.21	0.40	0:21:30	719.43	359.71	0.38	0:28:30	701.60	701.60	0.37
0:00:35	5,869.61	451.51	0.57	0:07:35	2,916.25	486.04	0.47	0:14:35	1,516.08	505.36	0.41	0:21:35	1,294.47	647.23	0.40	0:28:35	645.45	645.45	0.40
0:00:40	4,986.82	356.20	0.69	0:07:40	3,246.23	541.04	0.48	0:14:40	1,852.99	617.66	0.42	0:21:40	1,285.76	642.88	0.40	0:28:40	620.81	620.81	0.42
0:00:45	4,792.78	319.52	0.77	0:07:45	3,195.48	532.58	0.49	0:14:45	1,849.95	616.65	0.42	0:21:45	1,286.55	643.28	0.40	0:28:45	660.39	660.39	0.39
0:00:50	4,693.74	312.92	0.84	0:07:50	3,163.08	527.18	0.49	0:14:50	1,853.46	617.82	0.42	0:21:50	1,307.52	653.76	0.40	0:28:50	661.86	661.86	0.39
0:00:55	4,657.83	273.99	0.88	0:07:55	3,320.84	474.41	0.51	0:14:55	1,856.50	618.83	0.42	0:21:55	1,296.35	648.18	0.40	0:28:55	664.06	664.06	0.39
0:01:00	4,867.07	256.16	0.98	0:08:00	3,498.05	499.72	0.52	0:15:00	1,844.29	614.76	0.42	0:22:00	1,259.65	629.83	0.40	0:29:00	680.05	680.05	0.38
0:01:05	4,939.84	246.99	1.04	0:08:05	3,436.60	490.94	0.53	0:15:05	1,839.62	613.21	0.42	0:22:05	1,298.35	649.17	0.40	0:29:05	661.07	661.07	0.39
0:01:10	4,977.17	248.86	1.04	0:08:10	3,266.42	466.63	0.56	0:15:10	1,844.86	614.95	0.42	0:22:10	1,293.89	646.95	0.40	0:29:10	659.82	659.82	0.39
0:01:15	5,061.74	253.09	1.03	0:08:15	3,324.67	415.58	0.57	0:15:15	2,072.46	414.49	0.43	0:22:15	1,707.08	569.03	0.42	0:29:15	661.91	661.91	0.39
0:01:20	5,136.76	256.84	1.01	0:08:20	3,907.78	390.78	0.63	0:15:20	2,751.10	550.22	0.47	0:22:20	1,859.54	619.85	0.42	0:29:20	659.40	659.40	0.39
0:01:25	5,140.17	257.01	1.02	0:08:25	3,914.23	391.42	0.66	0:15:25	2,768.24	553.65	0.47	0:22:25	1,857.81	619.27	0.42	0:29:25	668.21	668.21	0.39
0:01:30	4,968.05	248.40	1.04	0:08:30	3,891.48	389.15	0.67	0:15:30	2,732.64	546.53	0.48	0:22:30	1,832.54	610.85	0.42	0:29:30	669.25	669.25	0.39
0:01:35	5,164.34	258.22	1.00	0:08:35	3,915.17	391.52	0.66	0:15:35	2,743.28	548.66	0.47	0:22:35	1,844.60	614.87	0.42	0:29:35	663.07	663.07	0.39
0:01:40	5,010.41	250.52	1.05	0:08:40	3,884.50	388.45	0.67	0:15:40	2,726.40	545.28	0.48	0:22:40	1,865.57	621.86	0.42	0:29:40	661.13	661.13	0.39
0:01:45	5,000.19	250.01	1.04	0:08:45	3,816.92	381.69	0.68	0:15:45	2,661.71	532.34	0.49	0:22:45	1,857.92	619.31	0.42	0:29:45	645.40	645.40	0.40
0:01:50	4,997.78	249.89	1.04	0:08:50	3,756.66	375.66	0.69	0:15:50	2,630.25	526.05	0.49	0:22:50	1,820.28	606.76	0.42	0:29:50	661.86	661.86	0.39
0:01:55	5,010.20	250.51	1.04	0:08:55	3,694.03	369.40	0.70	0:15:55	2,690.33	538.07	0.48	0:22:55	1,846.02	615.34	0.42	0:29:55	659.87	659.87	0.39
0:02:00	5,113.91	255.70	1.03	0:09:00	3,692.19	369.22	0.70	0:16:00	2,598.84	519.77	0.50	0:23:00	1,839.52	613.17	0.42	0:30:00	663.54	663.54	0.39
0:02:05	4,928.78	246.44	1.05	0:09:05	3,697.49	369.75	0.71	0:16:05	2,683.41	536.68	0.49	0:23:05	1,828.82	609.61	0.42	0:30:05	660.55	660.55	0.39
0:02:10	5,007.26	250.36	1.03	0:09:10	3,590.01	359.00	0.72	0:16:10	2,611.06	522.21	0.50	0:23:10	1,838.52	612.84	0.42	0:30:10	658.14	658.14	0.39
0:02:15	4,995.05	249.75	1.05	0:09:15	3,694.50	369.45	0.71	0:16:15	2,649.17	529.83	0.49	0:23:15	1,869.98	623.33	0.42	0:30:15	662.02	662.02	0.39
0:02:20	5,039.77	251.99	1.03	0:09:20	3,675.78	367.58	0.71	0:16:20	2,620.39	524.08	0.50	0:23:20	1,853.15	617.72	0.42	0:30:20	661.07	661.07	0.39
0:02:25	4,985.77	249.29	1.05	0:09:25	3,707.03	370.70	0.70	0:16:25	2,538.08	507.62	0.51	0:23:25	1,829.61	609.87	0.42	0:30:25	664.90	664.90	0.39
0:02:30	5,034.89	251.74	1.03	0:09:30	3,719.56	371.96	0.70	0:16:30	2,586.21	517.24	0.50	0:23:30	1,839.20	613.07	0.42	0:30:30	663.01	663.01	0.39
0:02:35	5,041.45	252.07	1.04	0:09:35	3,692.14	369.21	0.70	0:16:35	2,583.74	516.75	0.50	0:23:35	1,846.02	615.34	0.42	0:30:35	666.00	666.00	0.39
0:02:40	4,947.50	247.37	1.05	0:09:40	3,696.28	369.63	0.71	0:16:40	2,613.84	522.77	0.50	0:23:40	1,821.69	607.23	0.42	0:30:40	665.95	665.95	0.39
0:02:45	4,885.26	244.26	1.06	0:09:45	3,602.12	360.21	0.71	0:16:45	2,586.73	517.35	0.50	0:23:45	1,842.61	614.20	0.42	0:30:45	669.46	669.46	0.39
0:02:50	5,007.79	250.39	1.05	0:09:50	3,685.80	368.58	0.71	0:16:50	2,512.34	502.47	0.51	0:23:50	1,842.82	614.27	0.42	0:30:50	658.61	658.61	0.39
0:02:55	5,095.45	254.77	1.02	0:09:55	3,696.34	369.63	0.71	0:16:55	2,506.99	501.40	0.52	0:23:55	1,852.78	617.59	0.42	0:30:55	663.85	663.85	0.39
0:03:00	5,028.76	251.44	1.03	0:10:00	3,581.99	358.20	0.72	0:17:00	2,454.82	490.96	0.53	0:24:00	1,824.94	608.31	0.42	0:31:00	658.87	658.87	0.39

SPC BENCHMARK 2™ V1.3

FULL DISCLOSURE REPORT

Submitted for Review: MAY 10, 2011

Texas Memory Systems, Inc.

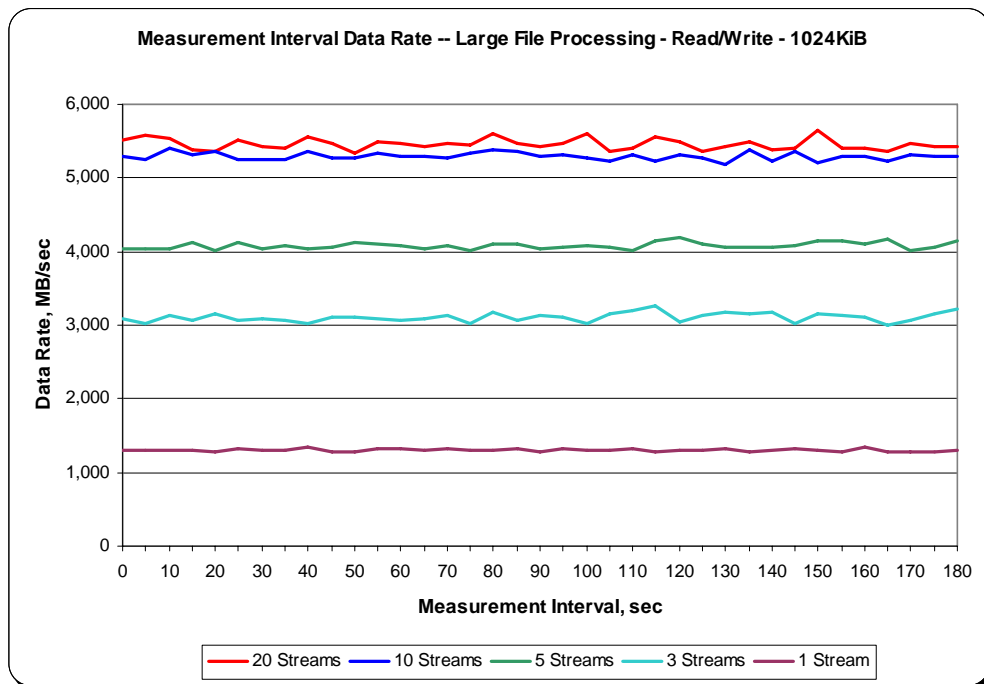Submission Identifier: B00054

Texas Memory Systems RamSan-630

SPC-2 "Large File Processing/READ-WRITE/256 KiB Transfer Size" Test Run Data
Measurement Interval, Run-Out, and Ramp-Down Periods

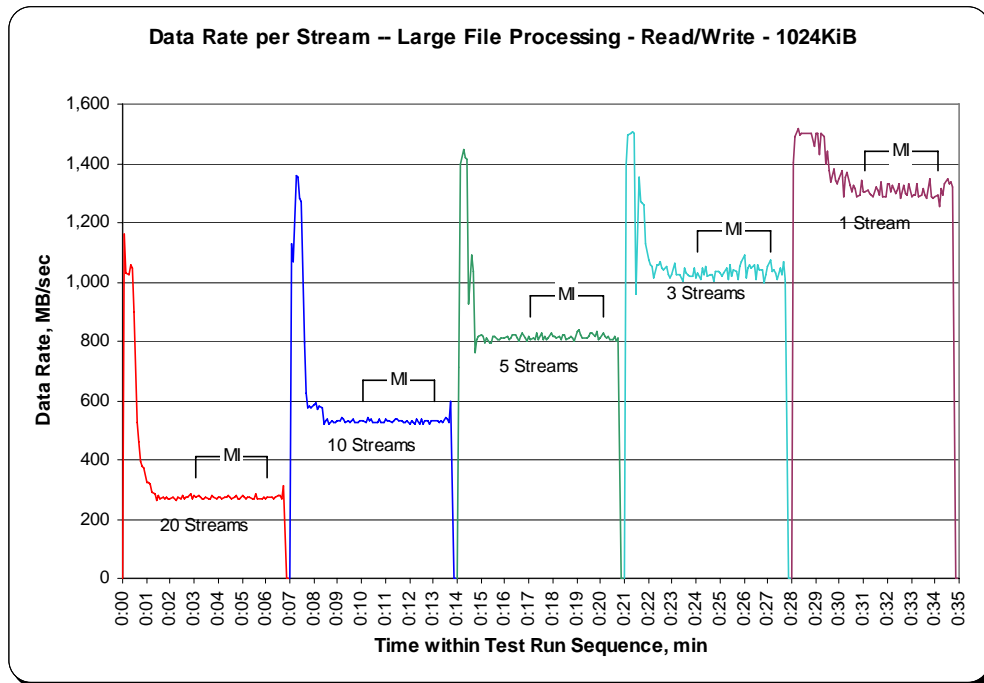| TR16 Test Run Sequence Time	20 Streams Data Rate, MB/sec	Data Rate / Stream, MB/sec	Response Time, ms	TR17 Test Run Sequence Time	10 Streams Data Rate, MB/sec	Data Rate / Stream, MB/sec	Response Time, ms	TR18 Test Run Sequence Time	5 Streams Data Rate, MB/sec	Data Rate / Stream, MB/sec	Response Time, ms	TR19 Test Run Sequence Time	3 Streams Data Rate, MB/sec	Data Rate / Stream, MB/sec	Response Time, ms	TR20 Test Run Sequence Time	1 Stream Data Rate, MB/sec	Data Rate / Stream, MB/sec	Response Time, ms
0:03:05	4,991.75	249.59	1.05	0:10:05	3,618.22	361.82	0.72	0:17:05	2,537.29	507.46	0.51	0:24:05	1,862.69	620.90	0.42	0:31:05	664.64	664.64	0.39
0:03:10	4,972.14	248.61	1.05	0:10:10	3,659.48	365.95	0.71	0:17:10	2,465.04	493.01	0.53	0:24:10	1,853.10	617.70	0.42	0:31:10	658.30	658.30	0.39
0:03:15	4,972.61	248.63	1.05	0:10:15	3,596.41	359.64	0.72	0:17:15	2,523.77	504.75	0.51	0:24:15	1,821.95	607.32	0.42	0:31:15	664.95	664.95	0.39
0:03:20	4,912.05	245.60	1.06	0:10:20	3,572.29	357.23	0.72	0:17:20	2,537.71	507.54	0.51	0:24:20	1,824.84	608.28	0.42	0:31:20	641.89	641.89	0.40
0:03:25	4,999.66	249.98	1.04	0:10:25	3,632.16	363.22	0.72	0:17:25	2,467.61	493.52	0.53	0:24:25	1,848.74	616.25	0.42	0:31:25	657.25	657.25	0.39
0:03:30	4,983.30	249.17	1.04	0:10:30	3,650.98	365.10	0.71	0:17:30	2,475.90	495.18	0.52	0:24:30	1,879.52	626.51	0.42	0:31:30	660.24	660.24	0.39
0:03:35	4,985.45	249.27	1.05	0:10:35	3,638.61	363.86	0.71	0:17:35	2,510.19	502.04	0.52	0:24:35	1,790.81	596.94	0.43	0:31:35	665.64	665.64	0.39
0:03:40	4,890.93	244.55	1.06	0:10:40	3,680.55	368.06	0.71	0:17:40	2,494.72	498.94	0.52	0:24:40	1,837.26	612.42	0.42	0:31:40	662.12	662.12	0.39
0:03:45	4,945.82	247.29	1.06	0:10:45	3,691.14	369.11	0.71	0:17:45	2,460.12	492.02	0.53	0:24:45	1,826.83	608.94	0.43	0:31:45	667.21	667.21	0.39
0:03:50	5,008.52	250.43	1.04	0:10:50	3,665.87	366.59	0.71	0:17:50	2,519.68	503.94	0.51	0:24:50	1,819.17	606.39	0.43	0:31:50	663.70	663.70	0.39
0:03:55	4,983.30	249.17	1.05	0:10:55	3,599.50	359.95	0.72	0:17:55	2,394.32	478.86	0.54	0:24:55	1,815.82	605.27	0.43	0:31:55	655.57	655.57	0.39
0:04:00	4,946.13	247.31	1.05	0:11:00	3,668.60	366.86	0.71	0:18:00	2,448.27	489.65	0.53	0:25:00	1,831.55	610.52	0.42	0:32:00	658.77	658.77	0.39
0:04:05	4,812.54	240.63	1.08	0:11:05	3,672.59	367.26	0.71	0:18:05	2,414.08	482.82	0.54	0:25:05	1,832.02	610.67	0.43	0:32:05	658.77	658.77	0.39
0:04:10	4,947.44	247.37	1.05	0:11:10	3,651.72	365.17	0.71	0:18:10	2,538.60	507.72	0.51	0:25:10	1,781.95	593.98	0.43	0:32:10	660.24	660.24	0.39
0:04:15	4,892.50	244.62	1.06	0:11:15	3,641.55	364.15	0.72	0:18:15	2,414.82	482.96	0.54	0:25:15	1,857.34	619.11	0.42	0:32:15	644.14	644.14	0.40
0:04:20	4,967.10	248.36	1.05	0:11:20	3,595.30	359.53	0.72	0:18:20	2,462.06	492.41	0.53	0:25:20	1,827.56	609.19	0.43	0:32:20	666.37	666.37	0.39
0:04:25	4,968.00	248.40	1.05	0:11:25	3,621.99	362.20	0.72	0:18:25	2,333.76	466.75	0.55	0:25:25	1,811.42	603.81	0.43	0:32:25	657.14	657.14	0.39
0:04:30	4,839.70	241.99	1.08	0:11:30	3,583.77	358.38	0.73	0:18:30	2,531.31	506.26	0.51	0:25:30	1,814.61	604.87	0.43	0:32:30	661.60	661.60	0.39
0:04:35	4,883.80	244.19	1.06	0:11:35	3,685.85	368.58	0.71	0:18:35	2,477.63	495.53	0.52	0:25:35	1,811.05	603.68	0.43	0:32:35	657.82	657.82	0.39
0:04:40	4,919.55	245.98	1.06	0:11:40	3,630.85	363.09	0.72	0:18:40	2,374.40	474.88	0.55	0:25:40	1,820.59	606.86	0.43	0:32:40	650.33	650.33	0.40
0:04:45	4,918.45	245.92	1.06	0:11:45	3,590.01	359.00	0.72	0:18:45	2,441.61	488.32	0.53	0:25:45	1,836.37	612.12	0.42	0:32:45	663.54	663.54	0.39
0:04:50	4,962.28	248.11	1.05	0:11:50	3,615.33	361.53	0.72	0:18:50	2,395.52	479.10	0.54	0:25:50	1,819.91	606.64	0.43	0:32:50	659.97	659.97	0.39
0:04:55	4,972.61	248.63	1.05	0:11:55	3,546.91	354.69	0.73	0:18:55	2,401.92	480.38	0.54	0:25:55	1,850.42	616.81	0.42	0:32:55	660.29	660.29	0.39
0:05:00	4,897.58	244.88	1.06	0:12:00	3,609.04	360.90	0.72	0:19:00	2,331.09	466.22	0.55	0:26:00	1,784.78	594.93	0.43	0:33:00	660.50	660.50	0.39
0:05:05	4,924.43	246.22	1.06	0:12:05	3,602.23	360.22	0.72	0:19:05	2,367.42	473.48	0.55	0:26:05	1,818.76	606.25	0.43	0:33:05	664.69	664.69	0.39
0:05:10	4,923.43	246.17	1.06	0:12:10	3,597.66	359.77	0.72	0:19:10	2,405.70	481.14	0.54	0:26:10	1,810.79	603.60	0.43	0:33:10	659.66	659.66	0.39
0:05:15	4,909.80	245.49	1.06	0:12:15	3,516.14	351.61	0.74	0:19:15	2,371.25	474.25	0.55	0:26:15	1,832.23	610.74	0.43	0:33:15	628.52	628.52	0.41
0:05:20	4,817.89	240.89	1.08	0:12:20	3,618.58	361.86	0.72	0:19:20	2,414.61	482.92	0.54	0:26:20	1,796.53	598.84	0.43	0:33:20	660.87	660.87	0.39
0:05:25	4,855.54	242.78	1.07	0:12:25	3,661.16	366.12	0.71	0:19:25	2,312.74	462.55	0.56	0:26:25	1,824.47	608.16	0.43	0:33:25	662.65	662.65	0.39
0:05:30	4,948.33	247.42	1.06	0:12:30	3,603.12	360.31	0.72	0:19:30	2,451.73	490.35	0.53	0:26:30	1,803.76	601.25	0.43	0:33:30	661.91	661.91	0.39
0:05:35	4,868.43	243.42	1.07	0:12:35	3,638.66	363.87	0.72	0:19:35	2,339.11	467.82	0.56	0:26:35	1,789.39	596.46	0.43	0:33:35	659.45	659.45	0.39
0:05:40	4,889.35	244.47	1.06	0:12:40	3,561.65	356.16	0.73	0:19:40	2,443.02	488.60	0.53	0:26:40	1,768.74	589.58	0.44	0:33:40	659.40	659.40	0.39
0:05:45	4,968.31	248.42	1.05	0:12:45	3,581.78	358.18	0.72	0:19:45	2,393.27	478.65	0.54	0:26:45	1,835.37	611.79	0.42	0:33:45	663.17	663.17	0.39
0:05:50	4,880.49	244.02	1.07	0:12:50	3,638.87	363.89	0.72	0:19:50	2,662.12	532.42	0.49	0:26:50	1,846.02	615.34	0.43	0:33:50	664.22	664.22	0.39
0:05:55	4,931.51	246.58	1.06	0:12:55	3,556.61	355.66	0.73	0:19:55	2,378.48	475.70	0.55	0:26:55	1,755.63	585.21	0.44	0:33:55	664.80	664.80	0.39
0:06:00	4,910.59	245.53	1.05	0:13:00	3,595.83	359.58	0.73	0:20:00	2,429.29	485.86	0.53	0:27:00	1,803.34	601.11	0.43	0:34:00	659.03	659.03	0.39
0:06:05	4,953.05	247.65	1.06	0:13:05	3,611.72	361.17	0.72	0:20:05	2,361.03	472.21	0.55	0:27:05	1,759.72	586.57	0.44	0:34:05	668.41	668.41	0.39
0:06:10	4,940.68	247.03	1.05	0:13:10	3,609.04	360.90	0.72	0:20:10	2,448.79	489.76	0.53	0:27:10	1,825.31	608.44	0.43	0:34:10	652.32	652.32	0.40
0:06:15	4,914.05	245.70	1.06	0:13:15	3,618.85	361.88	0.72	0:20:15	2,425.67	485.13	0.53	0:27:15	1,820.75	606.92	0.42	0:34:15	657.67	657.67	0.39
0:06:20	4,961.34	248.07	1.05	0:13:20	3,599.34	359.93	0.72	0:20:20	2,276.98	455.40	0.57	0:27:20	1,821.95	607.32	0.43	0:34:20	663.28	663.28	0.39
0:06:25	4,938.64	246.93	1.05	0:13:25	3,669.39	366.94	0.72	0:20:25	2,361.92	472.38	0.55	0:27:25	1,848.80	616.27	0.42	0:34:25	661.34	661.34	0.39
0:06:30	4,905.71	245.29	1.07	0:13:30	3,515.72	351.57	0.73	0:20:30	2,428.71	485.74	0.54	0:27:30	1,739.17	579.72	0.45	0:34:30	664.85	664.85	0.39
0:06:35	4,948.65	247.43	1.06	0:13:35	3,634.26	363.43	0.72	0:20:35	2,366.32	473.26	0.55	0:27:35	1,706.14	568.71	0.45	0:34:35	636.70	636.70	0.41
0:06:40	4,816.00	240.80	1.08	0:13:40	3,595.51	359.55	0.73	0:20:40	2,430.07	486.01	0.53	0:27:40	1,795.21	598.40	0.43	0:34:40	657.30	657.30	0.39
0:06:45	4,840.91	268.94	1.07	0:13:45	3,582.56	358.26	0.72	0:20:45	2,467.61	493.52	0.52	0:27:45	1,837.11	612.37	0.42	0:34:45	656.62	656.62	0.39
0:06:50	344.51	0.00	0.80	0:13:50	218.10	0.00	0.67	0:20:50	93.11	0.00	0.44	0:27:50	31.93	0.00	0.41	0:34:50	2.25	0.00	0.39
0:06:55	0.00	0.00	0.00	0:13:55	0.00	0.00	0.00	0:20:55	0.00	0.00	0.00	0:27:55	0.00	0.00	0.00	0:34:55	0.00	0.00	0.00

SPC-2 "Large File Processing/Read-Write/256 KiB Transfer Size" Average Data Rate Graph – Complete Test Run

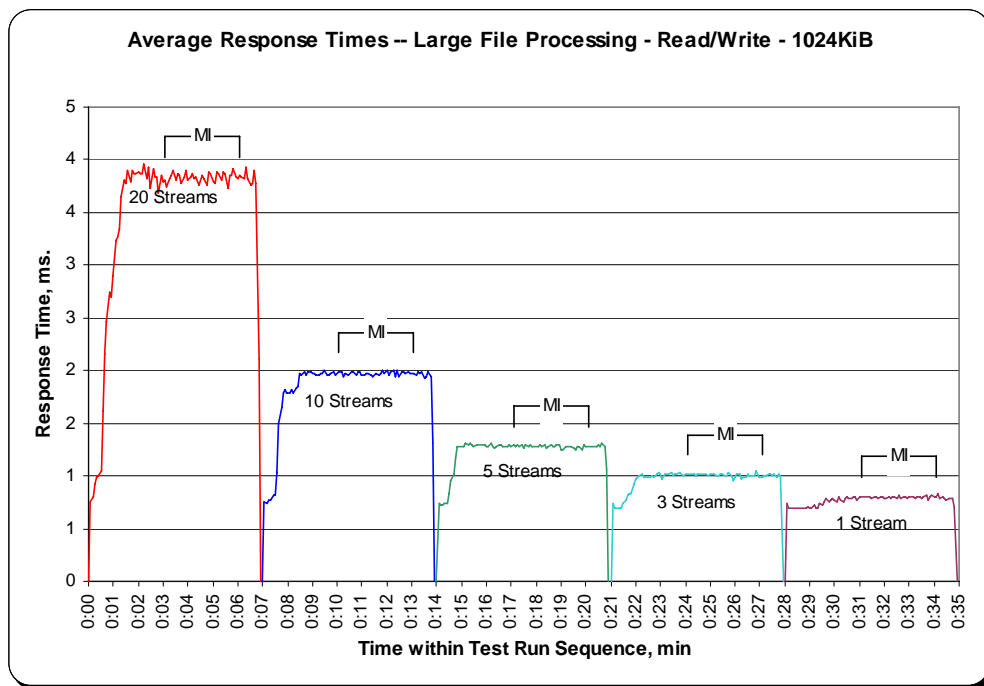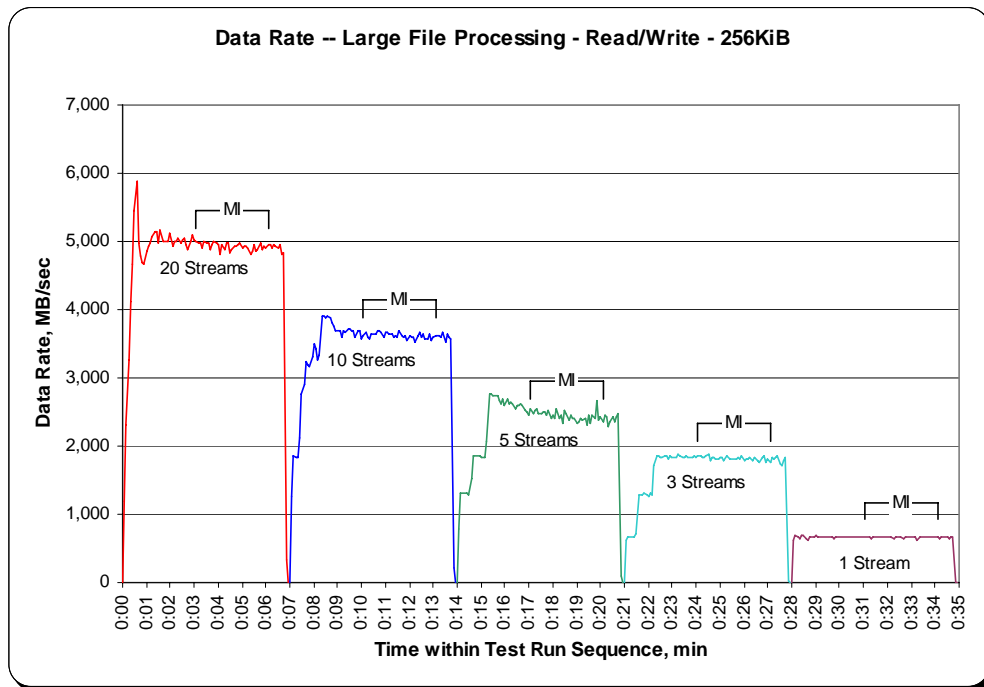## SPC-2 "Large File Processing/Read-Write/256 KiB Transfer Size" Average Data Rate Graph – Measurement Interval (MI) Only

SPC-2 "Large File Processing/READ-WRITE/256 KiB Transfer Size" Average Data Rate per Stream Graph

SPC-2 "Large File Processing/READ-WRITE/256 KiB Transfer Size" Average Response Time Graph

Large File Processing Test – READ ONLY Test Phase

Clause 10.6.8.1.3

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 (intervals), Average Data Rate per Stream (intervals), and Average Response Time (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 (intervals), Average Data Rate per Stream (intervals), and Average Response Time (intervals) graphs for the "READ ONLY, 256 KiB Transfer Size" Test Runs as specified in Clauses 10.1.4 – 10.1.6.*

The SPC-2 "Large File Processing/READ ONLY/1024 KiB Transfer Size" Test Run data is contained in the table that appears on the next page. That table is followed by 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 SPC-2 "Large File Processing/READ ONLY/1024 KiB Transfer Size" table and graphs will be the SPC-2 "Large File Processing/READ ONLY/64 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 – Ramp Up Period

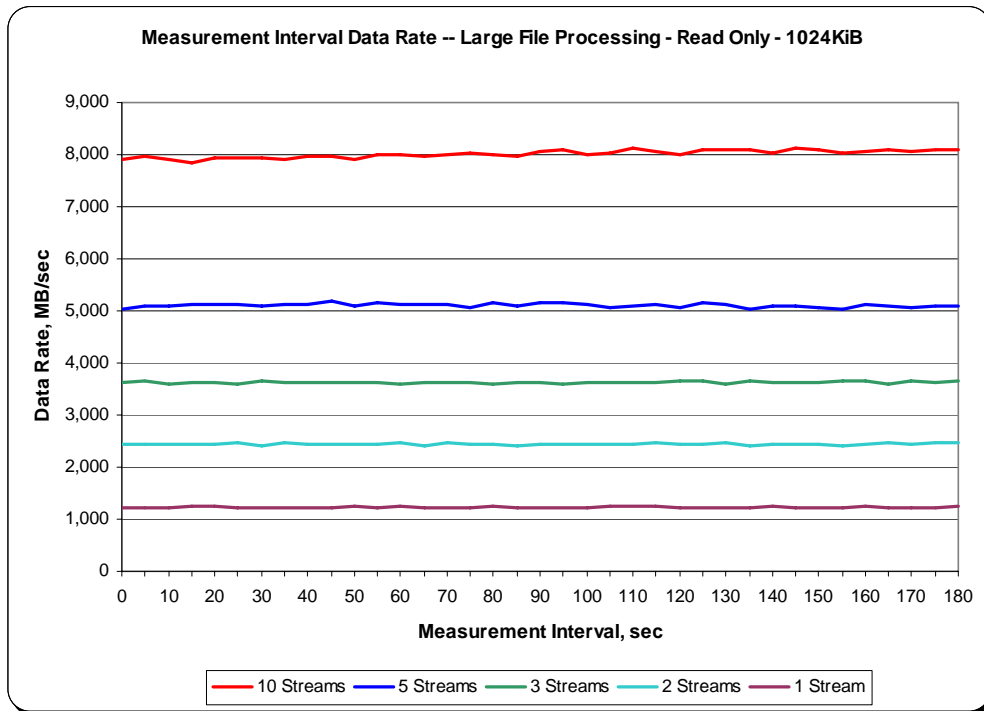| TR21 Test Run Sequence Time	10 Streams Data Rate, MB/sec	Data Rate / Stream, MB/sec	Response Time, ms	TR22 Test Run Sequence Time	5 Streams Data Rate, MB/sec	Data Rate / Stream, MB/sec	Response Time, ms	TR23 Test Run Sequence Time	3 Streams Data Rate, MB/sec	Data Rate / Stream, MB/sec	Response Time, ms	TR24 Test Run Sequence Time	2 Streams Data Rate, MB/sec	Data Rate / Stream, MB/sec	Response Time, ms	TR25 Test Run Sequence Time	1 Stream Data Rate, MB/sec	Data Rate / Stream, MB/sec	Response Time, ms
0:00:00	0.00	0.00	0.00	0:07:00	0.00	0.00	0.00	0:14:00	0.00	0.00	0.00	0:21:00	0.00	0.00	0.00	0:28:00	0.00	0.00	0.00
0:00:05	2,548.46	849.49	0.88	0:07:05	1,481.85	740.92	0.91	0:14:05	1,138.96	1,138.96	0.92	0:21:05	1,140.43	1,140.43	0.91	0:28:05	1,126.38	1,126.38	0.92
0:00:10	3,668.76	1,222.92	0.85	0:07:10	2,450.10	1,225.05	0.85	0:14:10	1,226.83	1,226.83	0.85	0:21:10	1,220.12	1,220.12	0.85	0:28:10	1,217.61	1,217.61	0.85
0:00:15	3,684.49	1,228.16	0.85	0:07:15	2,470.65	1,235.33	0.85	0:14:15	1,248.02	1,248.02	0.84	0:21:15	1,227.04	1,227.04	0.85	0:28:15	1,234.59	1,234.59	0.85
0:00:20	3,702.94	1,234.31	0.85	0:07:20	2,420.53	1,210.27	0.86	0:14:20	1,243.40	1,243.40	0.84	0:21:20	1,235.85	1,235.85	0.85	0:28:20	1,232.50	1,232.50	0.85
0:00:25	4,070.99	814.20	0.92	0:07:25	2,436.68	1,218.34	0.85	0:14:25	1,235.64	1,235.64	0.85	0:21:25	1,246.97	1,246.97	0.84	0:28:25	1,231.45	1,231.45	0.85
0:00:30	5,037.15	1,007.43	1.04	0:07:30	2,471.49	1,235.75	0.85	0:14:30	1,336.72	668.36	0.85	0:21:30	1,234.59	1,234.59	0.85	0:28:30	1,226.20	1,226.20	0.85
0:00:35	5,267.84	877.97	1.05	0:07:35	2,959.50	986.50	0.85	0:14:35	2,446.75	1,223.37	0.86	0:21:35	1,239.42	1,239.42	0.84	0:28:35	1,226.41	1,226.41	0.85
0:00:40	5,824.42	970.74	1.07	0:07:40	3,661.84	1,220.61	0.85	0:14:40	2,421.16	1,210.58	0.86	0:21:40	1,231.03	1,231.03	0.85	0:28:40	1,231.24	1,231.24	0.85
0:00:45	5,832.60	972.10	1.07	0:07:45	3,702.94	1,234.31	0.85	0:14:45	2,424.94	1,212.47	0.86	0:21:45	2,020.61	1,010.30	0.85	0:28:45	1,228.30	1,228.30	0.85
0:00:50	5,805.34	967.56	1.07	0:07:50	3,688.47	1,229.49	0.85	0:14:50	2,498.13	1,249.06	0.85	0:21:50	2,443.81	1,221.91	0.86	0:28:50	1,232.08	1,232.08	0.85
0:00:55	6,112.78	873.25	1.12	0:07:55	3,688.68	1,229.56	0.85	0:14:55	2,462.48	1,231.24	0.85	0:21:55	2,453.04	1,226.52	0.85	0:28:55	1,232.08	1,232.08	0.85
0:01:00	6,361.08	908.73	1.14	0:08:00	3,647.79	1,215.93	0.85	0:15:00	2,419.27	1,209.64	0.86	0:22:00	2,418.65	1,209.32	0.86	0:29:00	1,233.13	1,233.13	0.85
0:01:05	6,419.38	917.05	1.15	0:08:05	3,693.71	1,231.24	0.85	0:15:05	2,460.80	1,230.40	0.85	0:22:05	2,417.60	1,208.80	0.86	0:29:05	1,228.93	1,228.93	0.85
0:01:10	6,302.99	900.43	1.17	0:08:10	3,696.86	1,232.29	0.85	0:15:10	2,455.76	1,227.88	0.85	0:22:10	2,467.09	1,233.54	0.86	0:29:10	1,246.34	1,246.34	0.84
0:01:15	6,653.00	739.22	1.16	0:08:15	4,018.77	803.75	0.89	0:15:15	3,331.33	1,110.44	0.86	0:22:15	2,457.02	1,228.51	0.85	0:29:15	1,239.21	1,239.21	0.84
0:01:20	7,586.03	758.60	1.29	0:08:20	5,156.90	1,031.38	1.02	0:15:20	3,592.42	1,197.47	0.87	0:22:20	2,417.39	1,208.69	0.86	0:29:20	1,231.87	1,231.87	0.85
0:01:25	7,821.33	782.13	1.33	0:08:25	5,108.87	1,021.77	1.02	0:15:25	3,648.42	1,216.14	0.87	0:22:25	2,435.84	1,217.92	0.86	0:29:25	1,230.82	1,230.82	0.85
0:01:30	7,863.06	786.31	1.33	0:08:30	5,121.25	1,024.25	1.02	0:15:30	3,588.65	1,196.22	0.87	0:22:30	2,440.67	1,220.33	0.86	0:29:30	1,222.43	1,222.43	0.85
0:01:35	7,803.92	780.39	1.33	0:08:35	5,069.86	1,013.97	1.02	0:15:35	3,627.02	1,209.01	0.86	0:22:35	2,415.29	1,207.64	0.86	0:29:35	1,233.96	1,233.96	0.85
0:01:40	7,911.30	791.13	1.32	0:08:40	5,146.83	1,029.37	1.02	0:15:40	3,639.82	1,213.27	0.86	0:22:40	2,418.02	1,209.01	0.86	0:29:40	1,234.59	1,234.59	0.85
0:01:45	7,938.35	793.83	1.32	0:08:45	5,106.57	1,021.31	1.02	0:15:45	3,635.20	1,211.73	0.87	0:22:45	2,470.24	1,235.12	0.86	0:29:45	1,231.45	1,231.45	0.85
0:01:50	7,880.68	788.07	1.32	0:08:50	5,113.49	1,022.70	1.02	0:15:50	3,587.18	1,195.73	0.86	0:22:50	2,451.78	1,225.89	0.86	0:29:50	1,233.75	1,233.75	0.85
0:01:55	7,886.55	788.65	1.33	0:08:55	5,135.72	1,027.14	1.02	0:15:55	3,615.70	1,205.23	0.86	0:22:55	2,414.45	1,207.23	0.86	0:29:55	1,225.58	1,225.58	0.85
0:02:00	7,867.68	786.77	1.32	0:09:00	5,132.15	1,026.43	1.02	0:16:00	3,659.74	1,219.91	0.87	0:23:00	2,448.84	1,224.42	0.86	0:30:00	1,230.40	1,230.40	0.85
0:02:05	7,992.67	799.27	1.31	0:09:05	5,113.91	1,022.78	1.02	0:16:05	3,624.30	1,208.10	0.86	0:23:05	2,449.05	1,224.53	0.86	0:30:05	1,222.43	1,222.43	0.85
0:02:10	7,832.02	783.20	1.33	0:09:10	5,084.13	1,016.83	1.02	0:16:10	3,603.54	1,201.18	0.87	0:23:10	2,420.11	1,210.06	0.86	0:30:10	1,230.61	1,230.61	0.85
0:02:15	7,937.09	793.71	1.32	0:09:15	5,150.82	1,030.16	1.02	0:16:15	3,629.54	1,209.85	0.87	0:23:15	2,433.33	1,216.66	0.85	0:30:15	1,239.21	1,239.21	0.84
0:02:20	7,940.03	794.00	1.32	0:09:20	5,136.97	1,027.39	1.02	0:16:20	3,642.12	1,214.04	0.86	0:23:20	2,472.12	1,236.06	0.86	0:30:20	1,234.59	1,234.59	0.85
0:02:25	7,897.25	789.72	1.32	0:09:25	5,081.19	1,016.24	1.02	0:16:25	3,570.82	1,190.27	0.87	0:23:25	2,445.91	1,222.95	0.86	0:30:25	1,212.15	1,212.15	0.86
0:02:30	7,879.21	787.92	1.33	0:09:30	5,129.63	1,025.93	1.02	0:16:30	3,623.88	1,207.96	0.86	0:23:30	2,427.03	1,213.52	0.85	0:30:30	1,218.66	1,218.66	0.86
0:02:35	7,905.21	790.52	1.31	0:09:35	5,055.60	1,011.12	1.03	0:16:35	3,672.11	1,224.04	0.86	0:23:35	2,460.59	1,230.29	0.85	0:30:35	1,239.84	1,239.84	0.84
0:02:40	7,940.66	794.07	1.32	0:09:40	5,078.88	1,015.78	1.03	0:16:40	3,615.91	1,205.30	0.86	0:23:40	2,471.28	1,235.64	0.85	0:30:40	1,235.01	1,235.01	0.85
0:02:45	7,845.66	784.57	1.32	0:09:45	5,012.61	1,002.52	1.03	0:16:45	3,610.25	1,203.42	0.87	0:23:45	2,427.87	1,213.94	0.85	0:30:45	1,236.06	1,236.06	0.85
0:02:50	7,989.94	798.99	1.32	0:09:50	5,120.41	1,024.08	1.03	0:16:50	3,629.33	1,209.78	0.87	0:23:50	2,418.86	1,209.43	0.86	0:30:50	1,222.22	1,222.22	0.85
0:02:55	7,956.18	795.62	1.32	0:09:55	4,998.35	999.67	1.04	0:16:55	3,648.00	1,216.00	0.86	0:23:55	2,481.56	1,240.78	0.85	0:30:55	1,233.96	1,233.96	0.85
0:03:00	7,828.88	782.89	1.33	0:10:00	4,981.37	996.27	1.04	0:17:00	3,579.84	1,193.28	0.87	0:24:00	2,416.13	1,208.06	0.86	0:31:00	1,230.19	1,230.19	0.85

SPC-2 "Large File Processing/READ ONLY/1024 KiB Transfer Size" Test Run Data
Measurement Interval, Run-Out, and Ramp-Down Periods

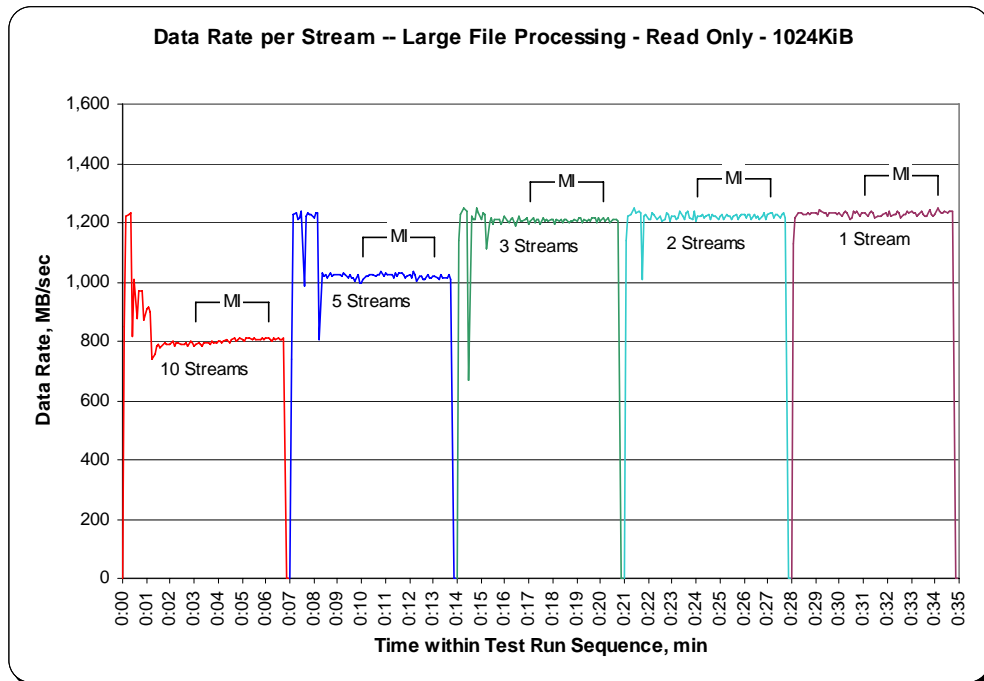| TR21 Test Run Sequence Time	10 Streams Data Rate, MB/sec	Data Rate / Stream, MB/sec	Response Time, ms	TR22 Test Run Sequence Time	5 Streams Data Rate, MB/sec	Data Rate / Stream, MB/sec	Response Time, ms	TR23 Test Run Sequence Time	3 Streams Data Rate, MB/sec	Data Rate / Stream, MB/sec	Response Time, ms	TR24 Test Run Sequence Time	2 Streams Data Rate, MB/sec	Data Rate / Stream, MB/sec	Response Time, ms	TR25 Test Run Sequence Time	1 Stream Data Rate, MB/sec	Data Rate / Stream, MB/sec	Response Time, ms
0:03:05	7,895.99	789.60	1.32	0:10:05	5,040.30	1,008.06	1.04	0:17:05	3,619.89	1,206.63	0.86	0:24:05	2,441.92	1,220.96	0.86	0:31:05	1,234.17	1,234.17	0.85
0:03:10	7,968.76	796.88	1.32	0:10:10	5,101.11	1,020.22	1.02	0:17:10	3,646.74	1,215.58	0.86	0:24:10	2,449.05	1,224.53	0.86	0:31:10	1,222.43	1,222.43	0.85
0:03:15	7,896.41	789.64	1.32	0:10:15	5,103.63	1,020.73	1.02	0:17:15	3,597.24	1,199.08	0.87	0:24:15	2,450.10	1,225.05	0.86	0:31:15	1,233.54	1,233.54	0.85
0:03:20	7,855.09	785.51	1.32	0:10:20	5,134.88	1,026.98	1.02	0:17:20	3,628.91	1,209.64	0.87	0:24:20	2,429.55	1,214.78	0.85	0:31:20	1,237.32	1,237.32	0.84
0:03:25	7,926.40	792.64	1.32	0:10:25	5,126.28	1,025.26	1.02	0:17:25	3,630.17	1,210.06	0.87	0:24:25	2,442.34	1,221.17	0.86	0:31:25	1,234.59	1,234.59	0.85
0:03:30	7,949.04	794.90	1.32	0:10:30	5,126.91	1,025.38	1.02	0:17:30	3,587.39	1,195.80	0.86	0:24:30	2,455.14	1,227.57	0.85	0:31:30	1,217.40	1,217.40	0.86
0:03:35	7,926.61	792.66	1.32	0:10:35	5,082.24	1,016.45	1.02	0:17:35	3,649.04	1,216.35	0.86	0:24:35	2,419.90	1,209.95	0.86	0:31:35	1,224.53	1,224.53	0.85
0:03:40	7,894.94	789.49	1.32	0:10:40	5,118.94	1,023.79	1.02	0:17:40	3,623.04	1,207.68	0.86	0:24:40	2,454.51	1,227.25	0.85	0:31:40	1,223.90	1,223.90	0.85
0:03:45	7,983.65	798.36	1.31	0:10:45	5,122.50	1,024.50	1.02	0:17:45	3,636.67	1,212.22	0.87	0:24:45	2,441.92	1,220.96	0.86	0:31:45	1,224.11	1,224.11	0.85
0:03:50	7,954.71	795.47	1.31	0:10:50	5,172.42	1,034.48	1.02	0:17:50	3,612.34	1,204.11	0.87	0:24:50	2,445.49	1,222.74	0.86	0:31:50	1,227.04	1,227.04	0.85
0:03:55	7,920.10	792.01	1.31	0:10:55	5,102.58	1,020.52	1.02	0:17:55	3,632.69	1,210.90	0.87	0:24:55	2,423.68	1,211.84	0.86	0:31:55	1,234.80	1,234.80	0.85
0:04:00	7,989.31	798.93	1.31	0:11:00	5,151.44	1,030.29	1.02	0:18:00	3,625.14	1,208.38	0.87	0:25:00	2,443.18	1,221.59	0.86	0:32:00	1,220.12	1,220.12	0.86
0:04:05	8,007.14	800.71	1.31	0:11:05	5,117.26	1,023.45	1.02	0:18:05	3,580.05	1,193.35	0.87	0:25:05	2,459.54	1,229.77	0.85	0:32:05	1,241.09	1,241.09	0.84
0:04:10	7,959.74	795.97	1.31	0:11:10	5,111.60	1,022.32	1.02	0:18:10	3,635.83	1,211.94	0.87	0:25:10	2,421.16	1,210.58	0.86	0:32:10	1,224.32	1,224.32	0.85
0:04:15	7,990.99	799.10	1.31	0:11:15	5,126.28	1,025.26	1.02	0:18:15	3,613.81	1,204.60	0.86	0:25:15	2,456.39	1,228.20	0.85	0:32:15	1,224.74	1,224.74	0.85
0:04:20	8,033.35	803.34	1.30	0:11:20	5,076.16	1,015.23	1.02	0:18:20	3,640.45	1,213.48	0.86	0:25:20	2,444.86	1,222.43	0.86	0:32:20	1,229.35	1,229.35	0.85
0:04:25	8,005.88	800.59	1.31	0:11:25	5,155.22	1,031.04	1.02	0:18:25	3,602.07	1,200.69	0.87	0:25:25	2,440.04	1,220.02	0.86	0:32:25	1,236.27	1,236.27	0.85
0:04:30	7,965.40	796.54	1.30	0:11:30	5,102.37	1,020.47	1.02	0:18:30	3,636.88	1,212.29	0.87	0:25:30	2,417.39	1,208.69	0.86	0:32:30	1,230.82	1,230.82	0.85
0:04:35	8,054.53	805.45	1.30	0:11:35	5,150.82	1,030.16	1.02	0:18:35	3,635.20	1,211.73	0.87	0:25:35	2,440.67	1,220.33	0.86	0:32:35	1,218.03	1,218.03	0.86
0:04:40	8,089.13	808.91	1.30	0:11:40	5,145.78	1,029.16	1.02	0:18:40	3,602.49	1,200.83	0.86	0:25:40	2,452.41	1,226.20	0.85	0:32:40	1,227.46	1,227.46	0.85
0:04:45	8,011.96	801.20	1.30	0:11:45	5,117.26	1,023.45	1.02	0:18:45	3,618.85	1,206.28	0.87	0:25:45	2,423.26	1,211.63	0.86	0:32:45	1,227.25	1,227.25	0.85
0:04:50	8,043.84	804.38	1.30	0:11:50	5,065.04	1,013.01	1.03	0:18:50	3,611.09	1,203.70	0.87	0:25:50	2,445.07	1,222.53	0.86	0:32:50	1,236.06	1,236.06	0.85
0:04:55	8,136.11	813.61	1.29	0:11:55	5,095.03	1,019.01	1.03	0:18:55	3,635.83	1,211.94	0.87	0:25:55	2,449.68	1,224.84	0.86	0:32:55	1,235.01	1,235.01	0.85
0:05:00	8,077.18	807.72	1.29	0:12:00	5,116.42	1,023.28	1.02	0:19:00	3,613.18	1,204.39	0.86	0:26:00	2,454.30	1,227.15	0.85	0:33:00	1,237.11	1,237.11	0.84
0:05:05	7,987.42	798.74	1.30	0:12:05	5,075.32	1,015.06	1.03	0:19:05	3,650.51	1,216.84	0.86	0:26:05	2,431.65	1,215.82	0.85	0:33:05	1,231.45	1,231.45	0.85
0:05:10	8,105.07	810.51	1.29	0:12:10	5,166.12	1,033.22	1.02	0:19:10	3,657.22	1,219.07	0.86	0:26:10	2,451.78	1,225.89	0.86	0:33:10	1,230.19	1,230.19	0.85
0:05:15	8,097.52	809.75	1.29	0:12:15	5,111.18	1,022.24	1.03	0:19:15	3,597.04	1,199.01	0.86	0:26:15	2,456.60	1,228.30	0.85	0:33:15	1,224.32	1,224.32	0.85
0:05:20	8,090.18	809.02	1.29	0:12:20	5,023.10	1,004.62	1.03	0:19:20	3,641.08	1,213.69	0.86	0:26:20	2,420.11	1,210.06	0.86	0:33:20	1,226.83	1,226.83	0.85
0:05:25	8,028.95	802.89	1.30	0:12:25	5,104.68	1,020.94	1.02	0:19:25	3,615.28	1,205.09	0.86	0:26:25	2,452.62	1,226.31	0.85	0:33:25	1,236.69	1,236.69	0.84
0:05:30	8,124.79	812.48	1.29	0:12:30	5,102.79	1,020.56	1.02	0:19:30	3,637.93	1,212.64	0.87	0:26:30	2,437.73	1,218.86	0.86	0:33:30	1,226.00	1,226.00	0.85
0:05:35	8,078.44	807.84	1.29	0:12:35	5,053.30	1,010.66	1.03	0:19:35	3,614.44	1,204.81	0.86	0:26:35	2,438.99	1,219.49	0.86	0:33:35	1,223.69	1,223.69	0.85
0:05:40	8,027.90	802.79	1.29	0:12:40	5,041.55	1,008.31	1.03	0:19:40	3,654.08	1,218.03	0.86	0:26:40	2,419.06	1,209.53	0.86	0:33:40	1,222.22	1,222.22	0.86
0:05:45	8,061.03	806.10	1.30	0:12:45	5,116.42	1,023.28	1.03	0:19:45	3,651.77	1,217.26	0.86	0:26:45	2,443.18	1,221.59	0.86	0:33:45	1,241.93	1,241.93	0.84
0:05:50	8,098.15	809.82	1.30	0:12:50	5,081.82	1,016.36	1.03	0:19:50	3,593.68	1,197.89	0.86	0:26:50	2,461.85	1,230.92	0.85	0:33:50	1,229.14	1,229.14	0.85
0:05:55	8,055.79	805.58	1.30	0:12:55	5,060.01	1,012.00	1.03	0:19:55	3,648.83	1,216.28	0.86	0:26:55	2,426.61	1,213.31	0.85	0:33:55	1,224.32	1,224.32	0.85
0:06:00	8,088.72	808.87	1.29	0:13:00	5,082.24	1,016.45	1.03	0:20:00	3,612.55	1,204.18	0.86	0:27:00	2,457.86	1,228.93	0.85	0:34:00	1,227.88	1,227.88	0.85
0:06:05	8,101.09	810.11	1.29	0:13:05	5,098.81	1,019.76	1.03	0:20:05	3,644.01	1,214.67	0.86	0:27:05	2,462.90	1,231.45	0.85	0:34:05	1,249.48	1,249.48	0.84
0:06:10	8,038.59	803.86	1.30	0:13:10	5,060.22	1,012.04	1.03	0:20:10	3,619.68	1,206.56	0.86	0:27:10	2,464.15	1,232.08	0.85	0:34:10	1,238.37	1,238.37	0.84
0:06:15	8,025.38	802.54	1.30	0:13:15	5,052.88	1,010.58	1.03	0:20:15	3,637.93	1,212.64	0.87	0:27:15	2,430.81	1,215.40	0.85	0:34:15	1,233.54	1,233.54	0.85
0:06:20	8,086.83	808.68	1.30	0:13:20	5,133.83	1,026.77	1.03	0:20:20	3,652.19	1,217.40	0.86	0:27:20	2,459.96	1,229.98	0.85	0:34:20	1,233.54	1,233.54	0.85
0:06:25	8,079.28	807.93	1.29	0:13:25	5,077.41	1,015.48	1.02	0:20:25	3,602.28	1,200.76	0.86	0:27:25	2,450.52	1,225.26	0.86	0:34:25	1,237.74	1,237.74	0.84
0:06:30	8,082.42	808.24	1.29	0:13:30	5,071.54	1,014.31	1.03	0:20:30	3,635.83	1,211.94	0.87	0:27:30	2,436.05	1,218.03	0.85	0:34:30	1,231.45	1,231.45	0.85
0:06:35	8,049.71	804.97	1.29	0:13:35	5,061.69	1,012.34	1.03	0:20:35	3,635.20	1,211.73	0.87	0:27:35	2,460.17	1,230.08	0.85	0:34:35	1,237.32	1,237.32	0.84
0:06:40	8,075.08	807.51	1.30	0:13:40	5,110.55	1,022.11	1.03	0:20:40	3,625.98	1,208.66	0.86	0:27:40	2,468.35	1,234.17	0.85	0:34:40	1,240.26	1,240.26	0.84
0:06:45	8,083.26	808.33	1.29	0:13:45	5,044.49	1,008.90	1.03	0:20:45	3,617.59	1,205.86	0.86	0:27:45	2,431.23	1,215.61	0.85	0:34:45	1,241.09	1,241.09	0.84
0:06:50	677.59	0.00	1.06	0:13:50	190.42	0.00	0.89	0:20:50	69.21	0.00	0.86	0:27:50	49.91	0.00	0.86	0:34:50	4.40	0.00	0.81
0:06:55	0.00	0.00	0.00	0:13:55	0.00	0.00	0.00	0:20:55	0.00	0.00	0.00	0:27:55	0.00	0.00	0.00	0:34:55	0.00	0.00	0.00

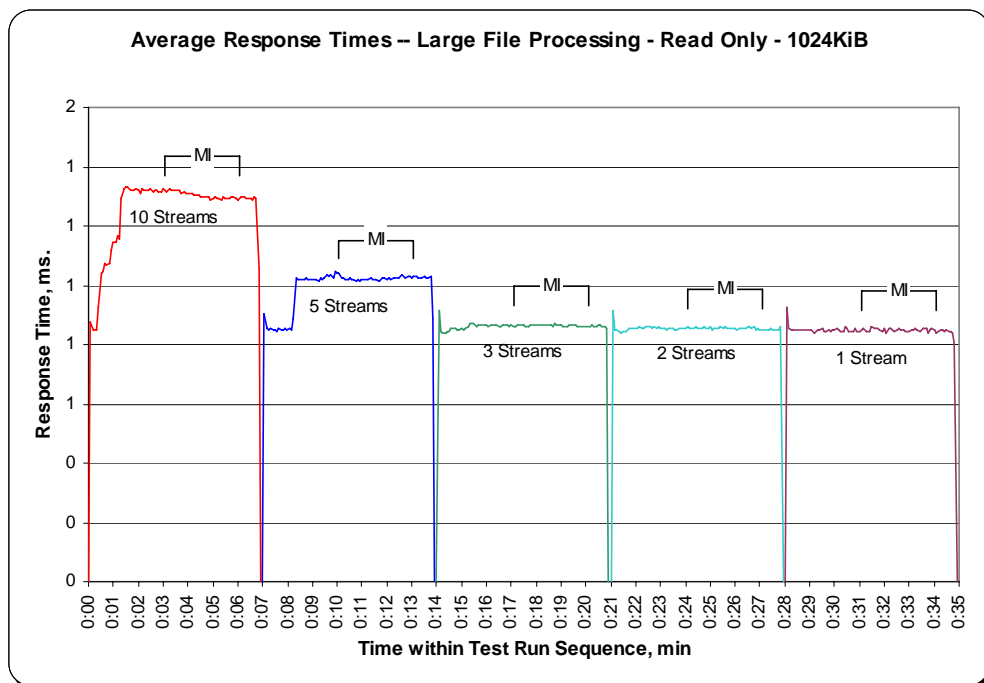## SPC-2 "Large File Processing/READ ONLY/1024 KiB Transfer Size" Average Data Rate Graph – Complete Test Run

SPC-2 "Large File Processing/READ ONLY/1024 KiB Transfer Size" Average Data Rate Graph – Measurement Interval (MI) Only

SPC-2 "Large File Processing/READ ONLY/1024 KiB Transfer Size" Average Data Rate per Stream Graph

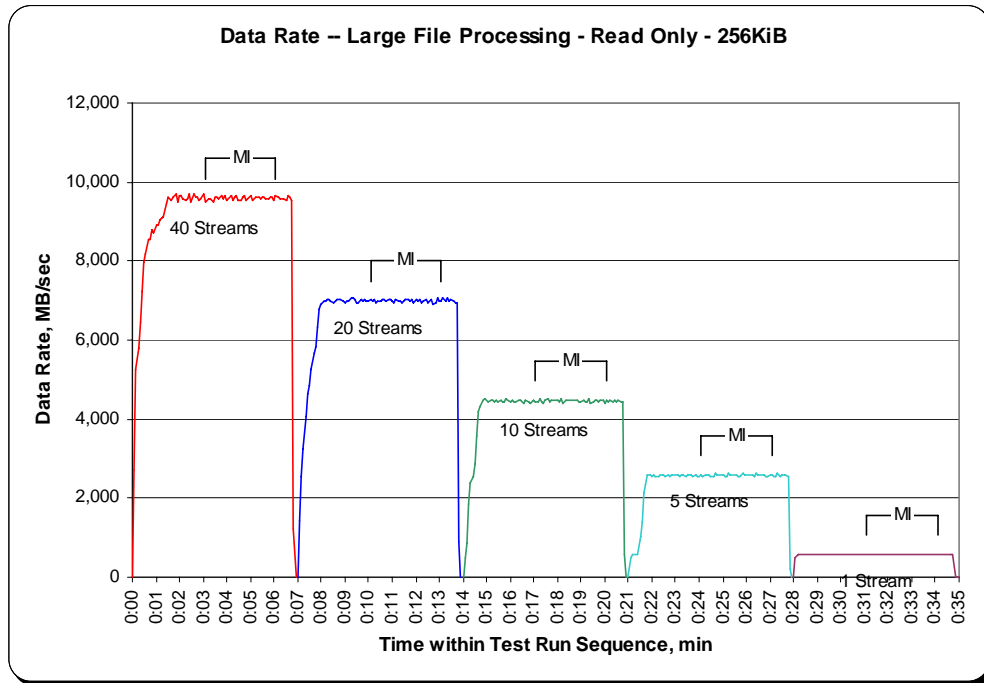## SPC-2 "Large File Processing/READ ONLY/1024 KiB Transfer Size" Average Response Time Graph

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

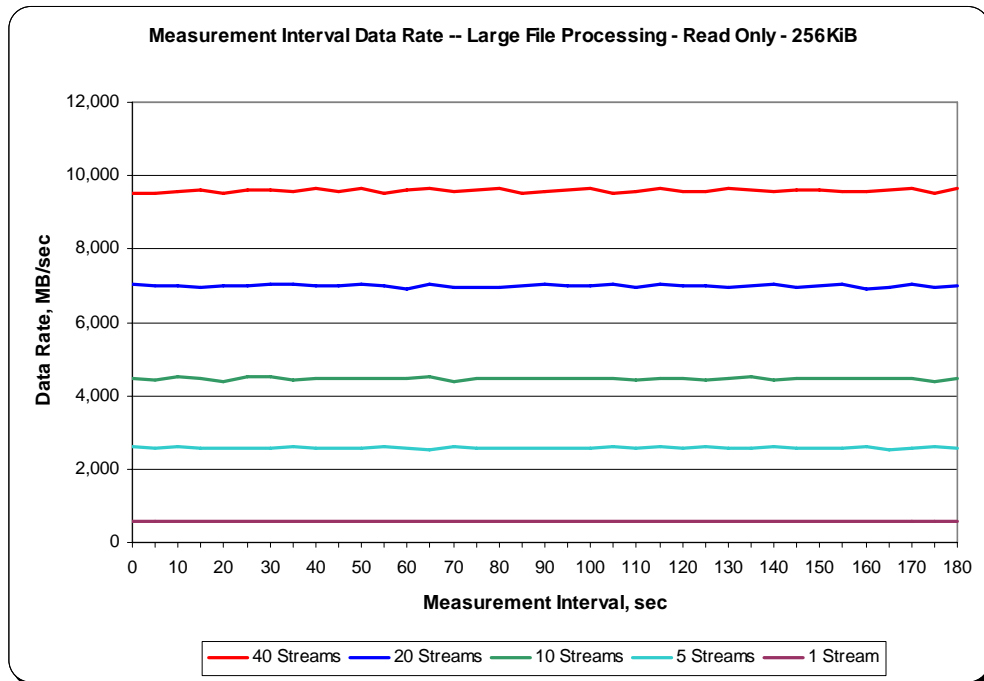| TR26 Test Run Sequence Time	40 Streams Data Rate, MB/sec	Data Rate / Stream, MB/sec	Response Time, ms	TR27 Test Run Sequence Time	20 Streams Data Rate, MB/sec	Data Rate / Stream, MB/sec	Response Time, ms	TR28 Test Run Sequence Time	10 Streams Data Rate, MB/sec	Data Rate / Stream, MB/sec	Response Time, ms	TR29 Test Run Sequence Time	5 Streams Data Rate, MB/sec	Data Rate / Stream, MB/sec	Response Time, ms	TR30 Test Run Sequence Time	1 Stream Data Rate, MB/sec	Data Rate / Stream, MB/sec	Response Time, ms
0:00:00	0.00	0.00	0.00	0:07:00	0.00	0.00	0.00	0:14:00	0.00	0.00	0.00	0:21:00	0.00	0.00	0.00	0:28:00	0.00	0.00	0.00
0:00:05	2,695.21	245.02	0.54	0:07:05	1,450.13	290.03	0.50	0:14:05	510.97	510.97	0.51	0:21:05	504.89	504.89	0.51	0:28:05	502.11	502.11	0.52
0:00:10	5,243.67	403.36	0.62	0:07:10	2,529.38	505.88	0.51	0:14:10	843.00	421.50	0.46	0:21:10	568.43	568.43	0.46	0:28:10	568.01	568.01	0.46
0:00:15	5,808.85	387.26	0.66	0:07:15	3,238.32	404.79	0.53	0:14:15	1,857.66	464.41	0.48	0:21:15	567.65	567.65	0.46	0:28:15	568.12	568.12	0.46
0:00:20	6,455.24	339.75	0.70	0:07:20	4,064.80	451.64	0.56	0:14:20	2,370.25	474.05	0.50	0:21:20	567.12	567.12	0.46	0:28:20	568.22	568.22	0.46
0:00:25	7,250.43	302.10	0.77	0:07:25	4,630.04	420.91	0.59	0:14:25	2,567.07	513.41	0.51	0:21:25	567.44	567.44	0.46	0:28:25	567.86	567.86	0.46
0:00:30	7,967.40	306.44	0.83	0:07:30	4,845.84	403.82	0.60	0:14:30	2,872.42	410.35	0.51	0:21:30	1,009.36	504.68	0.46	0:28:30	567.80	567.80	0.46
0:00:35	8,177.79	292.06	0.86	0:07:35	5,263.27	404.87	0.62	0:14:35	3,584.82	448.10	0.54	0:21:35	1,393.71	348.43	0.46	0:28:35	568.22	568.22	0.46
0:00:40	8,552.19	285.07	0.89	0:07:40	5,686.69	379.11	0.65	0:14:40	4,183.56	464.84	0.56	0:21:40	2,129.92	532.48	0.49	0:28:40	568.22	568.22	0.46
0:00:45	8,562.41	276.21	0.92	0:07:45	5,817.45	387.83	0.67	0:14:45	4,308.97	430.90	0.56	0:21:45	2,350.23	470.05	0.49	0:28:45	567.96	567.96	0.46
0:00:50	8,783.55	283.34	0.92	0:07:50	6,325.06	332.90	0.70	0:14:50	4,499.44	449.94	0.57	0:21:50	2,570.95	514.19	0.50	0:28:50	567.59	567.59	0.46
0:00:55	8,724.36	264.37	0.93	0:07:55	6,782.50	356.97	0.73	0:14:55	4,514.85	451.49	0.58	0:21:55	2,607.18	521.44	0.50	0:28:55	568.07	568.07	0.46
0:01:00	8,923.96	270.42	0.96	0:08:00	6,915.46	345.77	0.74	0:15:00	4,499.02	449.90	0.58	0:22:00	2,558.79	511.76	0.50	0:29:00	568.70	568.70	0.46
0:01:05	8,928.47	262.60	0.98	0:08:05	6,982.68	349.13	0.74	0:15:05	4,430.29	443.03	0.58	0:22:05	2,584.74	516.95	0.50	0:29:05	568.28	568.28	0.46
0:01:10	9,047.64	266.11	0.98	0:08:10	6,992.95	349.65	0.74	0:15:10	4,484.81	448.48	0.58	0:22:10	2,566.02	513.20	0.50	0:29:10	567.96	567.96	0.46
0:01:15	9,073.17	266.86	0.98	0:08:15	7,019.69	350.98	0.74	0:15:15	4,497.24	449.72	0.58	0:22:15	2,565.76	513.15	0.50	0:29:15	567.54	567.54	0.46
0:01:20	9,118.52	246.45	1.02	0:08:20	7,023.36	351.17	0.74	0:15:20	4,457.55	445.75	0.58	0:22:20	2,604.19	520.84	0.50	0:29:20	567.54	567.54	0.46
0:01:25	9,455.53	242.45	1.06	0:08:25	6,995.52	349.78	0.74	0:15:25	4,472.44	447.24	0.58	0:22:25	2,570.01	514.00	0.50	0:29:25	568.90	568.90	0.46
0:01:30	9,600.60	240.02	1.08	0:08:30	6,954.42	347.72	0.75	0:15:30	4,458.28	445.83	0.58	0:22:30	2,591.08	518.22	0.50	0:29:30	568.54	568.54	0.46
0:01:35	9,591.17	239.78	1.09	0:08:35	6,984.36	349.22	0.74	0:15:35	4,495.09	449.51	0.58	0:22:35	2,563.45	512.69	0.50	0:29:35	567.86	567.86	0.46
0:01:40	9,542.83	238.57	1.09	0:08:40	7,013.82	350.69	0.74	0:15:40	4,424.52	442.45	0.58	0:22:40	2,579.55	515.91	0.50	0:29:40	568.07	568.07	0.46
0:01:45	9,596.04	239.90	1.08	0:08:45	7,018.96	350.95	0.74	0:15:45	4,454.19	445.42	0.58	0:22:45	2,560.52	512.10	0.50	0:29:45	568.17	568.17	0.46
0:01:50	9,689.37	242.23	1.08	0:08:50	7,034.27	351.71	0.74	0:15:50	4,520.67	452.07	0.58	0:22:50	2,572.42	514.48	0.50	0:29:50	566.23	566.23	0.46
0:01:55	9,506.13	237.65	1.08	0:08:55	6,992.17	349.61	0.74	0:15:55	4,462.27	446.23	0.58	0:22:55	2,602.41	520.48	0.50	0:29:55	567.70	567.70	0.46
0:02:00	9,643.07	241.08	1.09	0:09:00	6,925.32	346.27	0.74	0:16:00	4,430.08	443.01	0.58	0:23:00	2,571.11	514.22	0.50	0:30:00	567.23	567.23	0.46
0:02:05	9,651.67	241.29	1.08	0:09:05	6,993.53	349.68	0.74	0:16:05	4,462.63	446.26	0.58	0:23:05	2,592.60	518.52	0.50	0:30:05	567.49	567.49	0.46
0:02:10	9,577.64	239.44	1.09	0:09:10	7,003.12	350.16	0.74	0:16:10	4,455.14	445.51	0.59	0:23:10	2,565.87	513.17	0.50	0:30:10	566.97	566.97	0.46
0:02:15	9,545.40	238.63	1.09	0:09:15	7,081.03	354.05	0.74	0:16:15	4,443.18	444.32	0.58	0:23:15	2,580.55	516.11	0.50	0:30:15	567.07	567.07	0.46
0:02:20	9,564.17	239.10	1.09	0:09:20	7,058.28	352.91	0.74	0:16:20	4,465.52	446.55	0.58	0:23:20	2,590.19	518.04	0.50	0:30:20	566.60	566.60	0.46
0:02:25	9,692.51	242.31	1.09	0:09:25	7,019.43	350.97	0.74	0:16:25	4,477.63	447.76	0.59	0:23:25	2,556.48	511.30	0.50	0:30:25	566.97	566.97	0.46
0:02:30	9,482.85	237.07	1.09	0:09:30	6,952.53	347.63	0.75	0:16:30	4,427.45	442.75	0.58	0:23:30	2,602.09	520.42	0.50	0:30:30	566.76	566.76	0.46
0:02:35	9,680.72	242.02	1.08	0:09:35	6,962.54	348.13	0.74	0:16:35	4,414.19	441.42	0.59	0:23:35	2,579.08	515.82	0.50	0:30:35	567.80	567.80	0.46
0:02:40	9,621.68	240.54	1.09	0:09:40	7,041.50	352.08	0.74	0:16:40	4,459.91	445.99	0.58	0:23:40	2,598.32	519.66	0.50	0:30:40	567.54	567.54	0.46
0:02:45	9,596.36	239.91	1.09	0:09:45	6,992.11	349.61	0.74	0:16:45	4,451.52	445.15	0.59	0:23:45	2,557.00	511.40	0.50	0:30:45	567.75	567.75	0.46
0:02:50	9,516.93	237.92	1.09	0:09:50	7,030.39	351.52	0.74	0:16:50	4,412.04	441.20	0.59	0:23:50	2,579.39	515.88	0.50	0:30:50	566.70	566.70	0.46
0:02:55	9,564.95	239.12	1.09	0:09:55	6,978.12	348.91	0.75	0:16:55	4,423.99	442.40	0.59	0:23:55	2,565.81	513.16	0.50	0:30:55	568.28	568.28	0.46
0:03:00	9,679.56	241.99	1.08	0:10:00	6,969.10	348.45	0.74	0:17:00	4,459.59	445.96	0.58	0:24:00	2,561.99	512.40	0.50	0:31:00	566.39	566.39	0.46

SPC-2 "Large File Processing/READ ONLY/256 KiB Transfer Size" Test Run Data
Measurement Interval, Run-Out, and Ramp-Down Periods

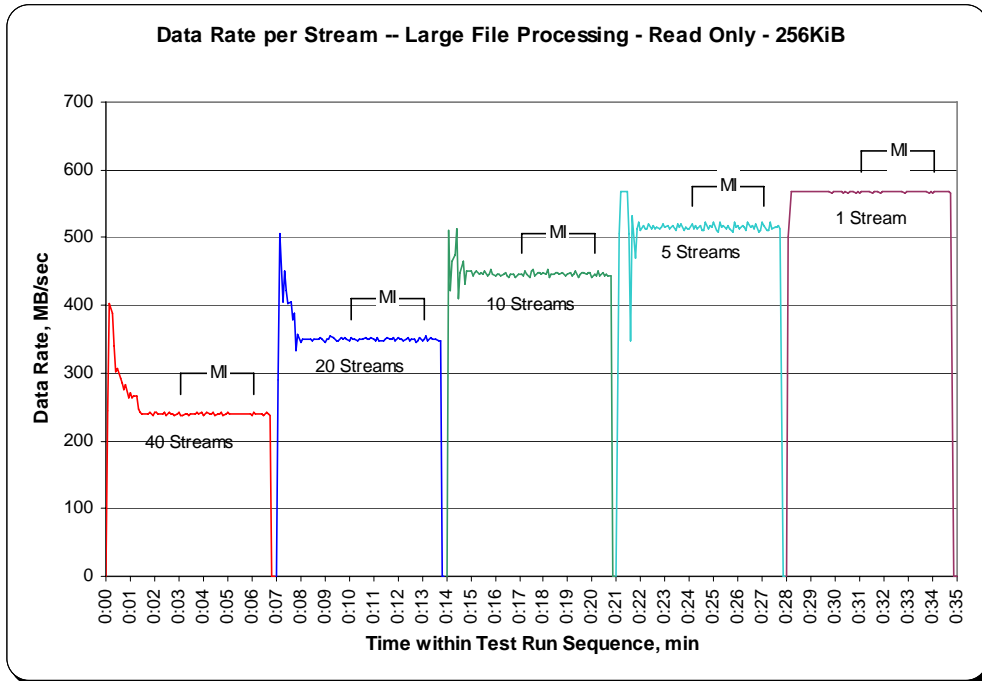| TR26 Test Run Sequence Time	40 Streams Data Rate, MB/sec	Data Rate / Stream, MB/sec	Response Time, ms	TR27 Test Run Sequence Time	20 Streams Data Rate, MB/sec	Data Rate / Stream, MB/sec	Response Time, ms	TR28 Test Run Sequence Time	10 Streams Data Rate, MB/sec	Data Rate / Stream, MB/sec	Response Time, ms	TR29 Test Run Sequence Time	5 Streams Data Rate, MB/sec	Data Rate / Stream, MB/sec	Response Time, ms	TR30 Test Run Sequence Time	1 Stream Data Rate, MB/sec	Data Rate / Stream, MB/sec	Response Time, ms
0:03:05	9,504.29	237.61	1.09	0:10:05	7,028.92	351.45	0.74	0:17:05	4,454.04	445.40	0.58	0:24:05	2,602.46	520.49	0.50	0:31:05	568.80	568.80	0.46
0:03:10	9,514.99	237.87	1.09	0:10:10	7,006.43	350.32	0.74	0:17:10	4,430.65	443.07	0.58	0:24:10	2,562.67	512.53	0.50	0:31:10	567.70	567.70	0.46
0:03:15	9,575.39	239.38	1.09	0:10:15	7,007.06	350.35	0.74	0:17:15	4,507.51	450.75	0.58	0:24:15	2,593.60	518.72	0.50	0:31:15	568.28	568.28	0.46
0:03:20	9,594.47	239.86	1.09	0:10:20	6,960.71	348.04	0.75	0:17:20	4,453.04	445.30	0.58	0:24:20	2,568.59	513.72	0.50	0:31:20	568.12	568.12	0.46
0:03:25	9,509.80	237.74	1.09	0:10:25	7,002.65	350.13	0.74	0:17:25	4,405.75	440.57	0.58	0:24:25	2,589.41	517.88	0.50	0:31:25	567.91	567.91	0.46
0:03:30	9,615.65	240.39	1.08	0:10:30	6,982.10	349.11	0.74	0:17:30	4,497.08	449.71	0.58	0:24:30	2,556.85	511.37	0.50	0:31:30	566.91	566.91	0.46
0:03:35	9,604.22	240.11	1.09	0:10:35	7,022.58	351.13	0.74	0:17:35	4,532.21	453.22	0.58	0:24:35	2,553.81	510.76	0.50	0:31:35	567.91	567.91	0.46
0:03:40	9,578.90	239.47	1.08	0:10:40	7,036.84	351.84	0.74	0:17:40	4,431.23	443.12	0.58	0:24:40	2,616.20	523.24	0.50	0:31:40	566.97	566.97	0.46
0:03:45	9,640.19	241.00	1.08	0:10:45	6,989.60	349.48	0.74	0:17:45	4,481.35	448.14	0.58	0:24:45	2,570.27	514.05	0.50	0:31:45	567.70	567.70	0.46
0:03:50	9,559.40	238.98	1.09	0:10:50	7,010.05	350.50	0.74	0:17:50	4,483.50	448.35	0.58	0:24:50	2,585.74	517.15	0.50	0:31:50	566.76	566.76	0.46
0:03:55	9,649.42	241.24	1.09	0:10:55	7,027.87	351.39	0.74	0:17:55	4,463.79	446.38	0.58	0:24:55	2,572.73	514.55	0.50	0:31:55	567.54	567.54	0.46
0:04:00	9,522.33	238.06	1.09	0:11:00	6,993.53	349.68	0.74	0:18:00	4,491.63	449.16	0.58	0:25:00	2,607.39	521.48	0.50	0:32:00	567.49	567.49	0.46
0:04:05	9,587.55	239.69	1.08	0:11:05	6,929.15	346.46	0.75	0:18:05	4,455.40	445.54	0.58	0:25:05	2,558.21	511.64	0.50	0:32:05	568.22	568.22	0.46
0:04:10	9,660.90	241.52	1.08	0:11:10	7,036.26	351.81	0.74	0:18:10	4,537.82	453.78	0.58	0:25:10	2,540.39	508.08	0.50	0:32:10	568.49	568.49	0.46
0:04:15	9,543.72	238.59	1.09	0:11:15	6,971.46	348.57	0.75	0:18:15	4,398.99	439.90	0.58	0:25:15	2,613.26	522.65	0.50	0:32:15	568.38	568.38	0.46
0:04:20	9,602.07	240.05	1.08	0:11:20	6,969.62	348.48	0.74	0:18:20	4,465.99	446.60	0.58	0:25:20	2,572.42	514.48	0.50	0:32:20	568.17	568.17	0.46
0:04:25	9,652.40	241.31	1.08	0:11:25	6,964.22	348.21	0.75	0:18:25	4,461.90	446.19	0.58	0:25:25	2,586.31	517.26	0.50	0:32:25	567.91	567.91	0.46
0:04:30	9,539.58	238.49	1.09	0:11:30	7,005.85	350.29	0.74	0:18:30	4,478.31	447.83	0.58	0:25:30	2,569.90	513.98	0.50	0:32:30	567.91	567.91	0.46
0:04:35	9,552.27	238.81	1.09	0:11:35	7,024.41	351.22	0.74	0:18:35	4,475.74	447.57	0.58	0:25:35	2,589.09	517.82	0.50	0:32:35	568.01	568.01	0.46
0:04:40	9,597.62	239.94	1.09	0:11:40	7,012.04	350.60	0.74	0:18:40	4,466.88	446.69	0.58	0:25:40	2,568.38	513.68	0.50	0:32:40	567.70	567.70	0.46
0:04:45	9,642.02	241.05	1.09	0:11:45	7,001.39	350.07	0.74	0:18:45	4,485.44	448.54	0.58	0:25:45	2,546.78	509.36	0.50	0:32:45	568.01	568.01	0.46
0:04:50	9,539.47	238.49	1.09	0:11:50	7,047.90	352.39	0.74	0:18:50	4,463.11	446.31	0.58	0:25:50	2,617.72	523.54	0.50	0:32:50	566.76	566.76	0.46
0:04:55	9,578.79	239.47	1.09	0:11:55	6,965.27	348.26	0.74	0:18:55	4,440.25	444.02	0.58	0:25:55	2,572.37	514.47	0.50	0:32:55	568.07	568.07	0.46
0:05:00	9,640.45	241.01	1.08	0:12:00	7,026.72	351.34	0.74	0:19:00	4,457.39	445.74	0.58	0:26:00	2,591.40	518.28	0.50	0:33:00	568.33	568.33	0.46
0:05:05	9,548.80	238.72	1.09	0:12:05	6,976.54	348.83	0.75	0:19:05	4,475.64	447.56	0.58	0:26:05	2,570.90	514.18	0.50	0:33:05	568.17	568.17	0.46
0:05:10	9,565.95	239.15	1.09	0:12:10	7,008.05	350.40	0.74	0:19:10	4,444.76	444.48	0.58	0:26:10	2,593.18	518.64	0.50	0:33:10	568.22	568.22	0.46
0:05:15	9,635.84	240.90	1.08	0:12:15	6,947.76	347.39	0.74	0:19:15	4,456.55	445.66	0.58	0:26:15	2,571.84	514.37	0.50	0:33:15	568.43	568.43	0.46
0:05:20	9,621.26	240.53	1.09	0:12:20	7,006.79	350.34	0.74	0:19:20	4,517.00	451.70	0.58	0:26:20	2,550.03	510.01	0.50	0:33:20	567.38	567.38	0.46
0:05:25	9,573.66	239.34	1.09	0:12:25	7,025.93	351.30	0.74	0:19:25	4,410.05	441.00	0.58	0:26:25	2,612.68	522.54	0.50	0:33:25	568.17	568.17	0.46
0:05:30	9,608.52	240.21	1.08	0:12:30	6,960.76	348.04	0.75	0:19:30	4,453.62	445.36	0.58	0:26:30	2,573.52	514.70	0.50	0:33:30	568.28	568.28	0.46
0:05:35	9,617.85	240.45	1.08	0:12:35	6,978.38	348.92	0.74	0:19:35	4,487.22	448.72	0.58	0:26:35	2,586.26	517.25	0.50	0:33:35	567.91	567.91	0.46
0:05:40	9,564.74	239.12	1.09	0:12:40	7,021.79	351.09	0.74	0:19:40	4,482.71	448.27	0.58	0:26:40	2,569.54	513.91	0.50	0:33:40	567.96	567.96	0.46
0:05:45	9,562.17	239.05	1.09	0:12:45	6,912.00	345.60	0.75	0:19:45	4,453.20	445.32	0.58	0:26:45	2,602.20	520.44	0.50	0:33:45	568.43	568.43	0.46
0:05:50	9,611.51	240.29	1.08	0:12:50	6,942.94	347.15	0.74	0:19:50	4,473.28	447.33	0.58	0:26:50	2,541.96	508.39	0.50	0:33:50	566.81	566.81	0.46
0:05:55	9,633.79	240.84	1.08	0:12:55	7,052.93	352.65	0.74	0:19:55	4,483.40	448.34	0.58	0:26:55	2,552.92	510.58	0.50	0:33:55	568.33	568.33	0.46
0:06:00	9,532.03	238.30	1.09	0:13:00	6,970.93	348.55	0.74	0:20:00	4,404.44	440.44	0.58	0:27:00	2,608.02	521.60	0.50	0:34:00	566.23	566.23	0.46
0:06:05	9,649.68	241.24	1.08	0:13:05	6,997.10	349.85	0.74	0:20:05	4,470.66	447.07	0.59	0:27:05	2,589.30	517.86	0.50	0:34:05	569.22	569.22	0.46
0:06:10	9,610.36	240.26	1.09	0:13:10	7,072.59	353.63	0.74	0:20:10	4,423.31	442.33	0.59	0:27:10	2,557.95	511.59	0.50	0:34:10	567.86	567.86	0.46
0:06:15	9,566.00	239.15	1.09	0:13:15	6,971.98	348.60	0.74	0:20:15	4,497.45	449.74	0.58	0:27:15	2,555.69	511.14	0.50	0:34:15	568.85	568.85	0.46
0:06:20	9,578.01	239.45	1.09	0:13:20	7,052.93	352.65	0.74	0:20:20	4,423.89	442.39	0.58	0:27:20	2,610.06	522.01	0.50	0:34:20	568.70	568.70	0.46
0:06:25	9,581.57	239.54	1.09	0:13:25	6,994.16	349.71	0.74	0:20:25	4,485.86	448.59	0.58	0:27:25	2,563.77	512.75	0.50	0:34:25	567.91	567.91	0.46
0:06:30	9,524.27	238.11	1.09	0:13:30	7,012.61	350.63	0.74	0:20:30	4,445.28	444.53	0.59	0:27:30	2,577.50	515.50	0.50	0:34:30	568.12	568.12	0.46
0:06:35	9,638.04	240.95	1.08	0:13:35	6,991.01	349.55	0.75	0:20:35	4,463.32	446.33	0.58	0:27:35	2,578.03	515.61	0.50	0:34:35	567.02	567.02	0.46
0:06:40	9,614.45	240.36	1.09	0:13:40	6,957.41	347.87	0.75	0:20:40	4,446.91	444.69	0.58	0:27:40	2,591.50	518.30	0.50	0:34:40	568.22	568.22	0.46
0:06:45	9,536.64	238.42	1.09	0:13:45	6,931.98	346.60	0.75	0:20:45	4,432.44	443.24	0.58	0:27:45	2,564.87	512.97	0.50	0:34:45	566.23	566.23	0.46
0:06:50	1,234.49	0.00	0.92	0:13:50	897.37	0.00	0.65	0:20:50	587.88	0.00	0.54	0:27:50	194.98	0.00	0.48	0:34:50	1.94	0.00	0.46
0:06:55	0.00	0.00	0.00	0:13:55	0.00	0.00	0.00	0:20:55	0.00	0.00	0.00	0:27:55	0.00	0.00	0.00	0:34:55	0.00	0.00	0.00
																0:35:00	0.00	0.00	0.00

SPC-2 "Large File Processing/Read Only/256 KiB Transfer Size" Average Data Rate Graph – Complete Test Run
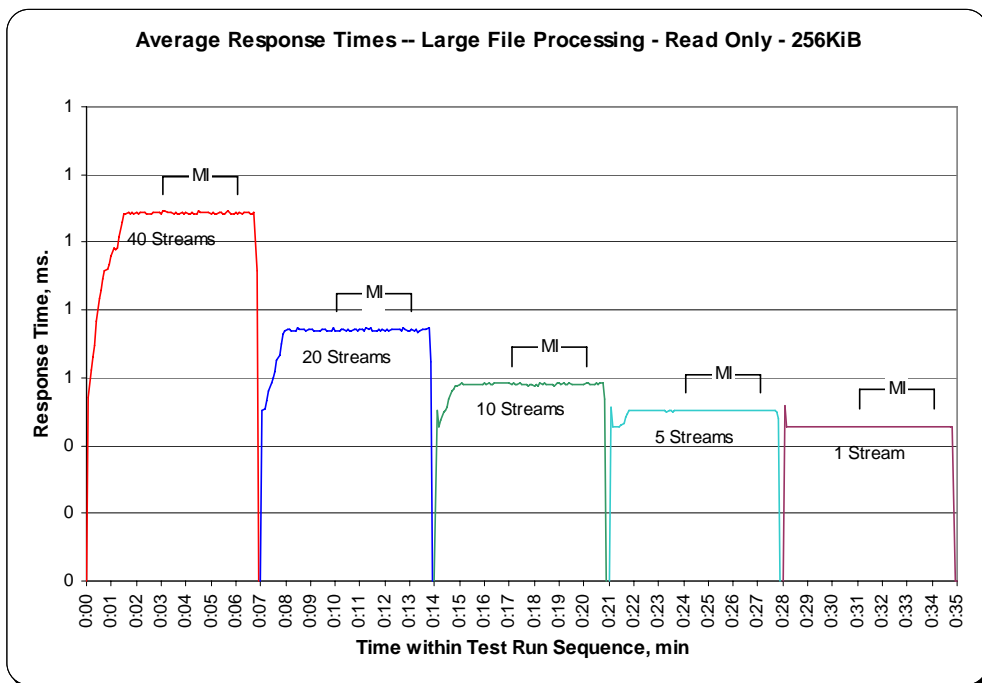

SPC-2 "Large File Processing/Read Only/256 KiB Transfer Size" Average Data Rate Graph – Measurement Interval (MI) Only

SPC-2 "Large File Processing/READ ONLY/256 KiB Transfer Size" Average Data Rate per Stream Graph

SPC-2 "Large File Processing/READ ONLY/256 KiB Transfer Size" Average Response Time Graph

Large Database Query Test

Clause 6.4.3.1

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 6.4.3.2

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 10.6.8.2

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:*

   - *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. *Average Data Rate and Average Data Rate per Stream graphs as defined in Clauses 10.1.1 and 10.1.2.*

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 108.

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.
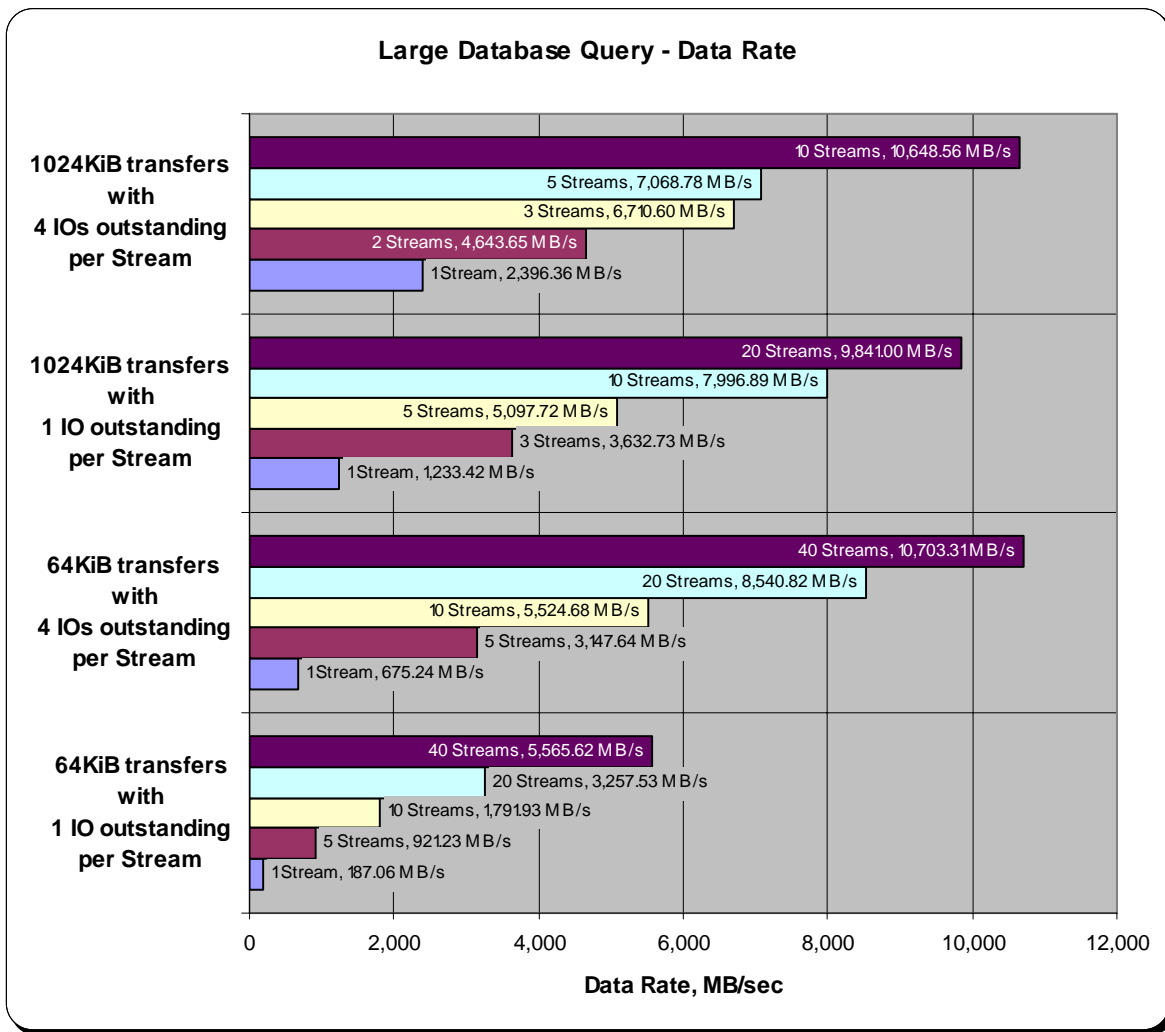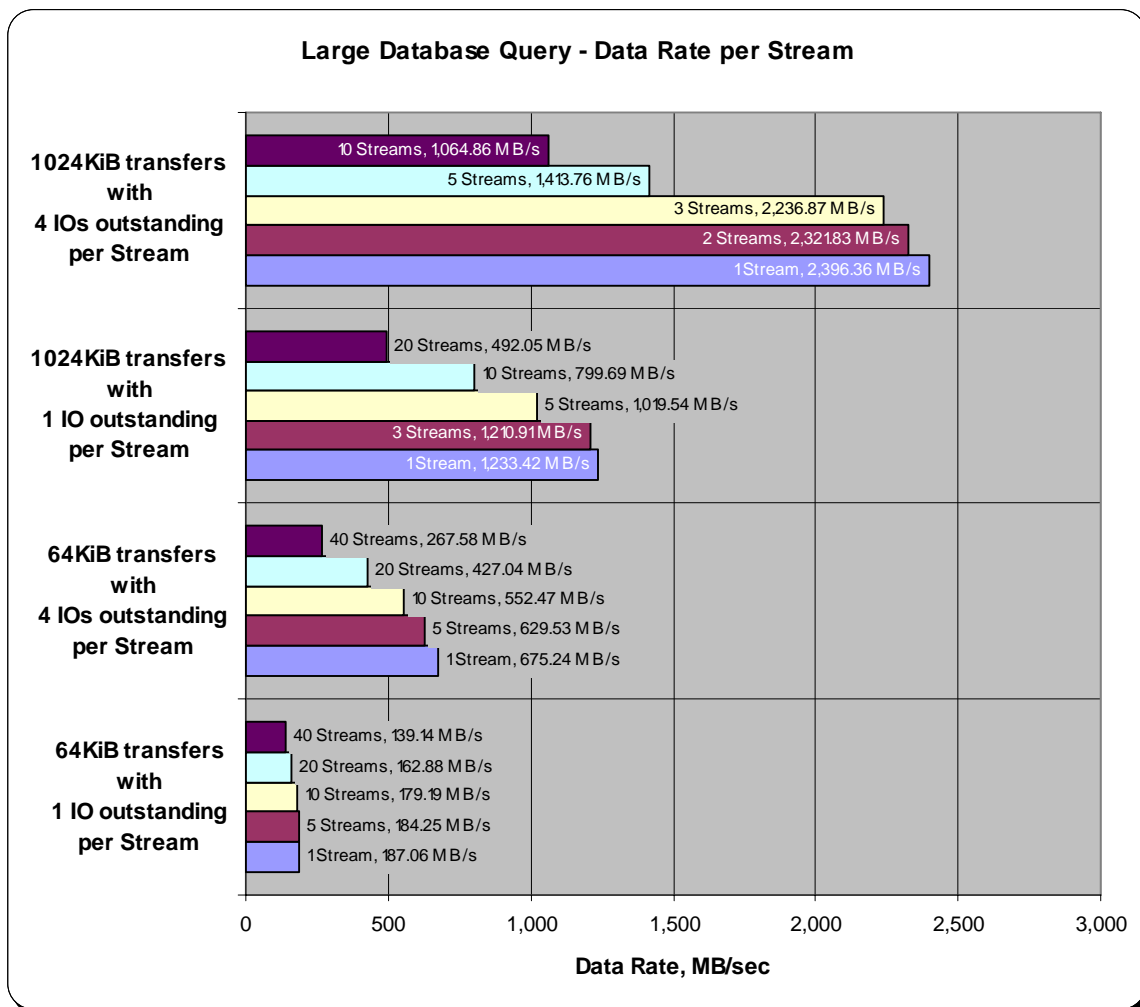
SPC-2 Large Database Query Test Results File

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	2 Streams	3 Streams	5 Streams	10 Streams
1024KiB w/ 4 IOs/Stream	2,396.36	4,643.65	6,710.60	7,068.78	10,648.56
Test Run Sequence	1 Stream	3 Streams	5 Streams	10 Streams	20 Streams
1024KiB w/ 1 IO/Stream	1,233.42	3,632.73	5,097.72	7,996.89	9,841.00
Test Run Sequence	1 Stream	5 Streams	10 Streams	20 Streams	40 Streams
64KiB w/ 4 IOs/Stream	675.24	3,147.64	5,524.68	8,540.82	10,703.31
Test Run Sequence	1 Stream	5 Streams	10 Streams	20 Streams	40 Streams
64KiB w/ 1 IO/Stream	187.06	921.23	1,791.93	3,257.53	5,565.62

SPC-2 Large Database Query Average Data Rates Graph

Large Database Query - Data Rate

1024KiB transfers with 4 IOs outstanding per Stream
- 10 Streams, 10,648.56 MB/s
- 5 Streams, 7,068.78 MB/s
- 3 Streams, 6,710.60 MB/s
- 2 Streams, 4,643.65 MB/s
- 1 Stream, 2,396.36 MB/s

1024KiB transfers with 1 IO outstanding per Stream
- 20 Streams, 9,841.00 MB/s
- 10 Streams, 7,996.89 MB/s
- 5 Streams, 5,097.72 MB/s
- 3 Streams, 3,632.73 MB/s
- 1 Stream, 1,233.42 MB/s

64KiB transfers with 4 IOs outstanding per Stream
- 40 Streams, 10,703.31 MB/s
- 20 Streams, 8,540.82 MB/s
- 10 Streams, 5,524.68 MB/s
- 5 Streams, 3,147.64 MB/s
- 1 Stream, 675.24 MB/s

64KiB transfers with 1 IO outstanding per Stream
- 40 Streams, 5,565.62 MB/s
- 20 Streams, 3,257.53 MB/s
- 10 Streams, 1,791.93 MB/s
- 5 Streams, 921.23 MB/s
- 1 Stream, 187.06 MB/s

Data Rate, MB/sec (0, 2,000, 4,000, 6,000, 8,000, 10,000, 12,000)

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	2 Streams	3 Streams	5 Streams	10 Streams
1024KiB w/ 4 IOs/Stream	2,396.36	2,321.83	2,236.87	1,413.76	1,064.86
Test Run Sequence	1 Stream	3 Streams	5 Streams	10 Streams	20 Streams
1024KiB w/ 1 IO/Stream	1,233.42	1,210.91	1,019.54	799.69	492.05
Test Run Sequence	1 Stream	5 Streams	10 Streams	20 Streams	40 Streams
64KiB w/ 4 IOs/Stream	675.24	629.53	552.47	427.04	267.58
Test Run Sequence	1 Stream	5 Streams	10 Streams	20 Streams	40 Streams
64KiB w/ 1 IO/Stream	187.06	184.25	179.19	162.88	139.14

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	2 Streams	3 Streams	5 Streams	10 Streams
1024KiB w/ 4 IOs/Stream	1.74	1.80	1.87	2.96	3.93
Test Run Sequence	**1 Stream**	**3 Streams**	**5 Streams**	**10 Streams**	**20 Streams**
1024KiB w/ 1 IO/Stream	0.85	0.86	1.02	1.31	2.12
Test Run Sequence	**1 Stream**	**5 Streams**	**10 Streams**	**20 Streams**	**40 Streams**
64KiB w/ 4 IOs/Stream	0.38	0.41	0.46	0.60	0.97
Test Run Sequence	**1 Stream**	**5 Streams**	**10 Streams**	**20 Streams**	**40 Streams**
64KiB w/ 1 IO/Stream	0.34	0.35	0.36	0.39	0.46

SPC-2 Large Database Query Average Response Time Graph

Large Database Query - Average Response Time

1024KiB transfers with 4 IOs outstanding per Stream
- 10 Streams, 3.93 ms
- 5 Streams, 2.96 ms
- 3 Streams, 1.87 ms
- 2 Streams, 1.80 ms
- 1 Stream, 1.74 ms

1024KiB transfers with 1 IO outstanding per Stream
- 20 Streams, 2.12 ms
- 10 Streams, 1.31 ms
- 5 Streams, 1.02 ms
- 3 Streams, 0.86 ms
- 1 Stream, 0.85 ms

64KiB transfers with 4 IOs outstanding per Stream
- 40 Streams, 0.97 ms
- 20 Streams, 0.60 ms
- 10 Streams, 0.46 ms
- 5 Streams, 0.41 ms
- 1 Stream, 0.38 ms

64KiB transfers with 1 IO outstanding per Stream
- 40 Streams, 0.46 ms
- 20 Streams, 0.39 ms
- 10 Streams, 0.36 ms
- 5 Streams, 0.35 ms
- 1 Stream, 0.34 ms

Response Time, ms

Large Database Query Test – 1024 KIB TRANSFER SIZE Test Phase

Clause 10.6.8.2.1

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 (intervals), Average Data Rate per Stream (intervals), and Average Response Time (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 (intervals), Average Data Rate per Stream (intervals), and Average Response Time (intervals) graphs for the "1024 KiB Transfer Size, 1 Outstanding I/O" Test Runs as specified in Clauses 10.1.4 – 10.1.6.*

The SPC-2 "Large DatabaseQuery/1024 KIB TRANSFER SIZE/4 Outstanding I/Os" Test Run data is contained in the table that appears on the next page. That table is followed by 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 SPC-2 "Large DatabaseQuery/1024 KIB TRANSFER SIZE/4 Outstanding I/Os" table and graphs will be the SPC-2 "Large DatabaseQuery/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.
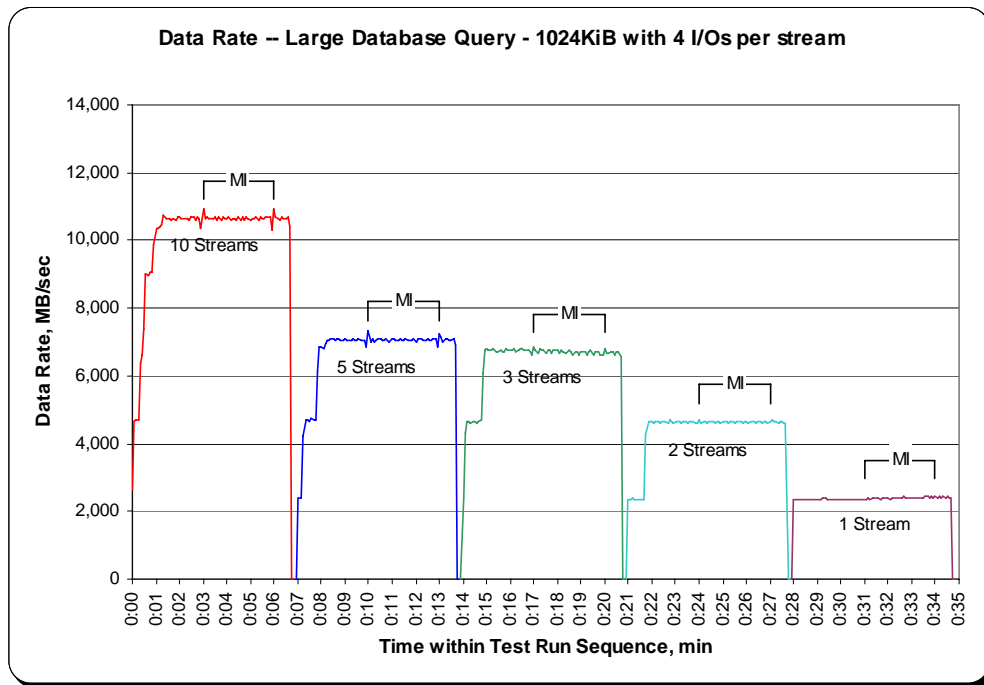
SPC-2 "Large Database Query/1024 KiB Transfer Size/4 Outstanding I/Os" Test Run Data – Ramp-Up Period

TR1 Test Run Sequence Time	10 Streams Data Rate, MB/sec	Data Rate / Stream, MB/sec	Response Time, ms	TR2 Test Run Sequence Time	5 Streams Data Rate, MB/sec	Data Rate / Stream, MB/sec	Response Time, ms	TR3 Test Run Sequence Time	3 Streams Data Rate, MB/sec	Data Rate / Stream, MB/sec	Response Time, ms	TR4 Test Run Sequence Time	2 Streams Data Rate, MB/sec	Data Rate / Stream, MB/sec	Response Time, ms	TR5 Test Run Sequence Time	1 Stream Data Rate, MB/sec	Data Rate / Stream, MB/sec	Response Time, ms
0:00:00	2,617.46	1,308.73	1.73	0:06:55	0.00	0.00	0.00	0:13:55	0.00	0.00	0.00	0:20:55	0.00	0.00	0.00	0:27:55	0.00	0.00	0.00
0:00:05	4,673.71	2,336.86	1.77	0:07:00	2,387.61	2,387.61	1.75	0:14:00	2,373.35	2,373.35	1.76	0:21:00	2,344.20	2,344.20	1.78	0:28:00	2,355.73	2,355.73	1.77
0:00:10	4,687.55	2,343.78	1.78	0:07:05	2,387.61	2,387.61	1.75	0:14:05	4,304.19	2,152.10	1.79	0:21:05	2,361.39	2,361.39	1.77	0:28:05	2,339.37	2,339.37	1.78
0:00:15	4,689.23	2,344.62	1.79	0:07:10	2,378.80	2,378.80	1.76	0:14:10	4,644.98	2,322.49	1.81	0:21:10	2,396.63	2,396.63	1.74	0:28:10	2,372.72	2,372.72	1.77
0:00:20	6,368.00	2,122.67	1.87	0:07:15	4,211.08	2,105.54	1.78	0:14:15	4,661.13	2,330.57	1.80	0:21:15	2,361.18	2,361.18	1.77	0:28:15	2,347.76	2,347.76	1.78
0:00:25	6,616.30	2,205.43	1.89	0:07:20	4,684.41	2,342.20	1.79	0:14:20	4,598.84	2,299.42	1.80	0:21:20	2,348.18	2,348.18	1.78	0:28:20	2,353.21	2,353.21	1.78
0:00:30	7,380.30	1,054.33	2.63	0:07:25	4,685.88	2,342.94	1.79	0:14:25	4,654.21	2,327.10	1.80	0:21:25	2,362.23	2,362.23	1.77	0:28:25	2,362.23	2,362.23	1.77
0:00:35	9,033.48	1,290.50	3.25	0:07:30	4,661.97	2,330.98	1.78	0:14:30	4,648.34	2,324.17	1.80	0:21:30	2,354.89	2,354.89	1.78	0:28:30	2,357.83	2,357.83	1.77
0:00:40	8,951.48	1,278.78	3.25	0:07:35	4,728.24	2,364.12	1.77	0:14:35	4,605.97	2,302.99	1.80	0:21:35	2,372.72	2,372.72	1.76	0:28:35	2,372.72	2,372.72	1.76
0:00:45	9,069.55	1,295.65	3.25	0:07:40	4,712.72	2,356.36	1.78	0:14:40	4,669.94	2,334.97	1.80	0:21:40	2,354.26	2,354.26	1.78	0:28:40	2,364.96	2,364.96	1.77
0:00:50	9,043.55	1,291.94	3.24	0:07:45	4,711.67	2,355.84	1.78	0:14:45	4,678.54	2,339.27	1.79	0:21:45	4,254.28	2,127.14	1.80	0:28:45	2,360.34	2,360.34	1.77
0:00:55	9,861.44	1,095.72	3.44	0:07:50	6,124.10	1,531.03	2.05	0:14:50	6,101.66	2,033.89	1.84	0:21:50	4,666.16	2,333.08	1.80	0:28:50	2,353.63	2,353.63	1.78
0:01:00	10,335.60	1,148.40	3.64	0:07:55	6,833.15	1,708.29	2.45	0:14:55	6,756.81	2,252.27	1.85	0:21:55	4,643.51	2,321.76	1.81	0:28:55	2,363.70	2,363.70	1.77
0:01:05	10,336.23	1,148.47	3.64	0:08:00	6,852.44	1,713.11	2.44	0:15:00	6,788.48	2,262.83	1.86	0:22:00	4,659.66	2,329.83	1.80	0:29:00	2,355.73	2,355.73	1.77
0:01:10	10,402.50	1,155.83	3.62	0:08:05	6,820.57	1,705.14	2.45	0:15:05	6,755.14	2,251.71	1.85	0:22:05	4,590.04	2,295.02	1.81	0:29:05	2,358.25	2,358.25	1.77
0:01:15	10,461.64	1,046.16	3.75	0:08:10	6,966.32	1,393.26	2.64	0:15:10	6,747.80	2,249.27	1.85	0:22:10	4,654.42	2,327.21	1.80	0:29:10	2,359.09	2,359.09	1.77
0:01:20	10,731.97	1,073.20	3.92	0:08:15	7,053.98	1,410.80	2.95	0:15:15	6,788.69	2,262.90	1.85	0:22:15	4,657.15	2,328.57	1.80	0:29:15	2,373.56	2,373.56	1.76
0:01:25	10,644.72	1,064.47	3.94	0:08:20	7,042.45	1,408.49	2.96	0:15:20	6,783.45	2,261.15	1.86	0:22:20	4,608.07	2,304.04	1.80	0:29:20	2,377.96	2,377.96	1.76
0:01:30	10,655.00	1,065.50	3.92	0:08:25	7,104.52	1,420.90	2.96	0:15:25	6,733.33	2,244.44	1.86	0:22:25	4,648.76	2,324.38	1.80	0:29:25	2,345.25	2,345.25	1.78
0:01:35	10,646.61	1,064.66	3.94	0:08:30	7,087.12	1,417.42	2.95	0:15:30	6,731.86	2,243.95	1.86	0:22:30	4,658.82	2,329.41	1.80	0:29:30	2,358.67	2,358.67	1.77
0:01:40	10,612.64	1,061.26	3.93	0:08:35	7,056.08	1,411.22	2.95	0:15:35	6,768.98	2,256.33	1.86	0:22:35	4,646.03	2,323.02	1.80	0:29:35	2,340.84	2,340.84	1.79
0:01:45	10,640.11	1,064.01	3.93	0:08:40	7,075.58	1,415.12	2.96	0:15:40	6,729.13	2,243.04	1.86	0:22:40	4,601.57	2,300.79	1.80	0:29:40	2,371.46	2,371.46	1.76
0:01:50	10,596.70	1,059.67	3.94	0:08:45	7,113.96	1,422.79	2.96	0:15:45	6,702.92	2,234.31	1.87	0:22:45	4,677.49	2,338.74	1.79	0:29:45	2,351.54	2,351.54	1.78
0:01:55	10,668.42	1,066.84	3.94	0:08:50	7,054.82	1,410.96	2.95	0:15:50	6,786.59	2,262.20	1.86	0:22:50	4,654.84	2,327.42	1.80	0:29:50	2,353.63	2,353.63	1.78
0:02:00	10,694.85	1,069.48	3.93	0:08:55	7,059.85	1,411.97	2.95	0:15:55	6,773.80	2,257.93	1.86	0:22:55	4,604.51	2,302.25	1.80	0:29:55	2,341.05	2,341.05	1.79
0:02:05	10,642.00	1,064.20	3.93	0:09:00	7,102.84	1,420.57	2.96	0:16:00	6,744.86	2,248.29	1.85	0:23:00	4,643.72	2,321.86	1.81	0:30:00	2,362.02	2,362.02	1.77
0:02:10	10,650.81	1,065.08	3.93	0:09:05	7,065.72	1,413.14	2.96	0:16:05	6,747.59	2,249.20	1.85	0:23:05	4,653.58	2,326.79	1.80	0:30:05	2,358.67	2,358.67	1.77
0:02:15	10,639.48	1,063.95	3.93	0:09:10	7,052.93	1,410.59	2.96	0:16:10	6,807.15	2,269.05	1.85	0:23:10	4,653.79	2,326.89	1.80	0:30:10	2,327.00	2,327.00	1.80
0:02:20	10,622.28	1,062.23	3.94	0:09:15	7,049.79	1,409.96	2.97	0:16:15	6,717.39	2,239.13	1.86	0:23:15	4,604.93	2,302.46	1.80	0:30:15	2,364.96	2,364.96	1.77
0:02:25	10,617.04	1,061.70	3.93	0:09:20	7,102.42	1,420.48	2.96	0:16:20	6,744.86	2,248.29	1.85	0:23:20	4,649.39	2,324.69	1.80	0:30:20	2,352.59	2,352.59	1.78
0:02:30	10,700.51	1,070.05	3.93	0:09:25	7,051.88	1,410.38	2.96	0:16:25	6,784.29	2,261.43	1.86	0:23:25	4,654.84	2,327.42	1.80	0:30:25	2,361.60	2,361.60	1.76
0:02:35	10,693.80	1,069.38	3.93	0:09:30	7,051.25	1,410.25	2.96	0:16:30	6,795.61	2,265.20	1.85	0:23:30	4,603.46	2,301.73	1.80	0:30:30	2,371.46	2,371.46	1.76
0:02:40	10,610.12	1,061.01	3.93	0:09:35	7,092.57	1,418.51	2.96	0:16:35	6,754.30	2,251.43	1.85	0:23:35	4,655.26	2,327.63	1.80	0:30:35	2,358.88	2,358.88	1.77
0:02:45	10,698.62	1,069.86	3.92	0:09:40	7,068.87	1,413.77	2.96	0:16:40	6,738.57	2,246.19	1.86	0:23:40	4,641.84	2,320.92	1.81	0:30:40	2,356.36	2,356.36	1.77
0:02:50	10,639.90	1,063.99	3.92	0:09:45	7,060.48	1,412.10	2.95	0:16:45	6,783.03	2,261.01	1.86	0:23:45	4,650.22	2,325.11	1.80	0:30:45	2,343.57	2,343.57	1.78
0:02:55	10,376.71	1,037.67	3.93	0:09:50	7,065.10	1,413.02	2.96	0:16:50	6,711.52	2,237.17	1.86	0:23:50	4,610.59	2,305.29	1.80	0:30:50	2,361.39	2,361.39	1.77
				0:09:55	6,873.84	1,374.77	2.96	0:16:55	6,602.04	2,200.68	1.87	0:23:55	4,595.91	2,297.95	1.81	0:30:55	2,339.79	2,339.79	1.78

SPC BENCHMARK 2™ V1.3

FULL DISCLOSURE REPORT

Submitted for Review: MAY 10, 2011

Texas Memory Systems, Inc.
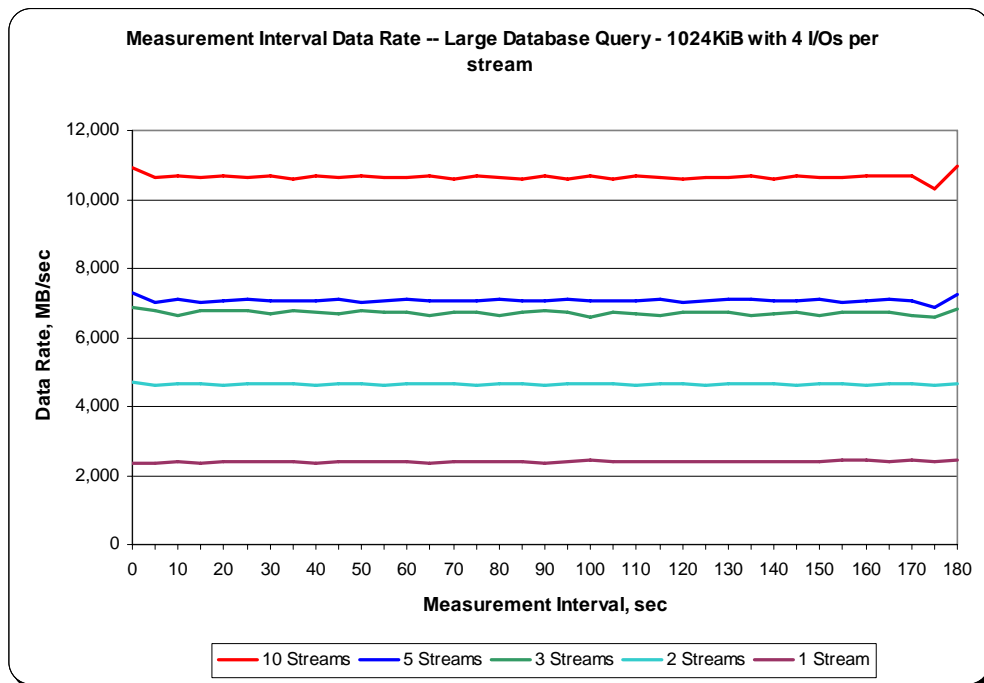Texas Memory Systems RamSan-630

Submission Identifier: B00054

SPC-2 "Large Database Query/1024 KiB Transfer Size/4 Outstanding I/Os" Test Run Data
Measurement Interval, Run-Out, and Ramp-Down Periods

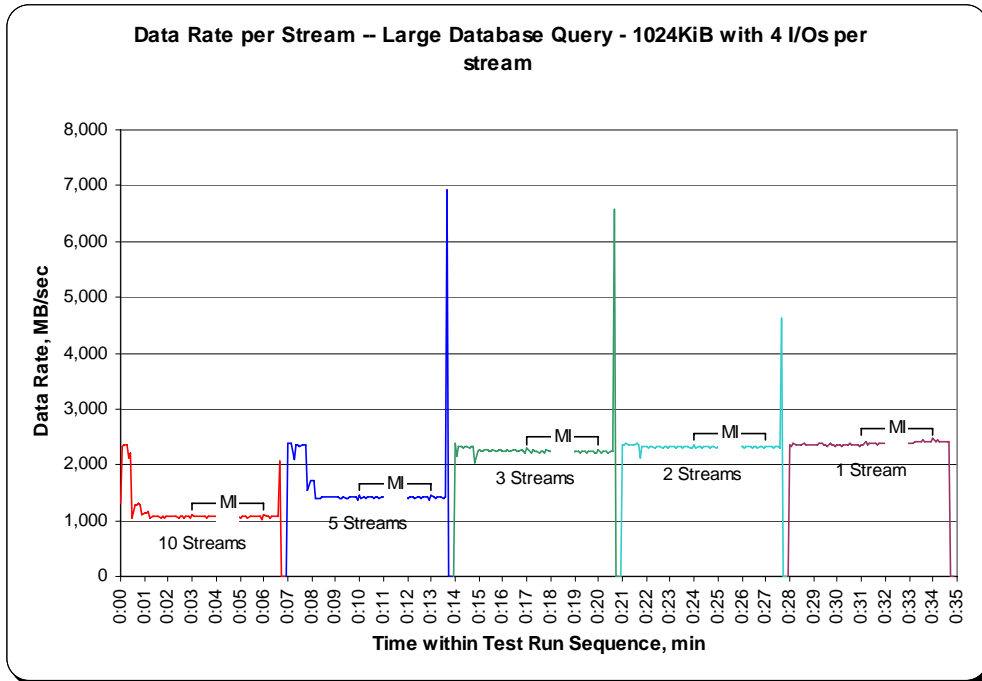| TR1 Test Run Sequence Time	10 Streams Data Rate, MB/sec	Data Rate / Stream, MB/sec	Response Time, ms	TR2 Test Run Sequence Time	5 Streams Data Rate, MB/sec	Data Rate / Stream, MB/sec	Response Time, ms	TR3 Test Run Sequence Time	3 Streams Data Rate, MB/sec	Data Rate / Stream, MB/sec	Response Time, ms	TR4 Test Run Sequence Time	2 Streams Data Rate, MB/sec	Data Rate / Stream, MB/sec	Response Time, ms	TR5 Test Run Sequence Time	1 Stream Data Rate, MB/sec	Data Rate / Stream, MB/sec	Response Time, ms
0:03:00	10,910.85	1,091.09	3.94	0:10:00	7,314.45	1,462.89	2.95	0:17:00	6,851.19	2,283.73	1.86	0:24:00	4,713.98	2,356.99	1.80	0:31:00	2,366.64	2,366.64	1.77
0:03:05	10,645.77	1,064.58	3.93	0:10:05	7,018.75	1,403.75	2.95	0:17:05	6,773.38	2,257.79	1.86	0:24:05	4,600.94	2,300.47	1.80	0:31:05	2,352.79	2,352.79	1.78
0:03:10	10,687.30	1,068.73	3.92	0:10:10	7,093.20	1,418.64	2.96	0:17:10	6,655.52	2,218.51	1.86	0:24:10	4,669.73	2,334.86	1.80	0:31:10	2,407.32	2,407.32	1.74
0:03:15	10,651.43	1,065.14	3.93	0:10:15	7,020.43	1,404.09	2.96	0:17:15	6,789.53	2,263.18	1.85	0:24:15	4,643.09	2,321.55	1.81	0:31:15	2,362.44	2,362.44	1.77
0:03:20	10,666.95	1,066.70	3.93	0:10:20	7,068.87	1,413.77	2.96	0:17:20	6,760.80	2,253.60	1.86	0:24:20	4,608.91	2,304.46	1.80	0:31:20	2,391.80	2,391.80	1.75
0:03:25	10,656.47	1,065.65	3.93	0:10:25	7,085.02	1,417.00	2.97	0:17:25	6,759.12	2,253.04	1.86	0:24:25	4,661.97	2,330.98	1.80	0:31:25	2,388.24	2,388.24	1.75
0:03:30	10,692.33	1,069.23	3.93	0:10:30	7,074.11	1,414.82	2.96	0:17:30	6,674.19	2,224.73	1.86	0:24:30	4,666.37	2,333.19	1.80	0:31:30	2,398.93	2,398.93	1.74
0:03:35	10,607.81	1,060.78	3.92	0:10:35	7,035.94	1,407.19	2.96	0:17:35	6,758.91	2,252.97	1.86	0:24:35	4,665.53	2,332.77	1.80	0:31:35	2,398.30	2,398.30	1.74
0:03:40	10,688.97	1,068.90	3.93	0:10:40	7,063.63	1,412.73	2.96	0:17:40	6,738.78	2,246.26	1.87	0:24:40	4,609.75	2,304.87	1.80	0:31:40	2,366.43	2,366.43	1.77
0:03:45	10,618.72	1,061.87	3.93	0:10:45	7,092.57	1,418.51	2.96	0:17:45	6,659.93	2,219.98	1.86	0:24:45	4,648.13	2,324.06	1.80	0:31:45	2,388.87	2,388.87	1.75
0:03:50	10,694.22	1,069.42	3.92	0:10:50	7,022.52	1,404.50	2.96	0:17:50	6,768.98	2,256.33	1.86	0:24:50	4,667.42	2,333.71	1.80	0:31:50	2,395.79	2,395.79	1.75
0:03:55	10,642.00	1,064.20	3.94	0:10:55	7,069.29	1,413.86	2.96	0:17:55	6,741.92	2,247.31	1.87	0:24:55	4,611.43	2,305.71	1.80	0:31:55	2,389.70	2,389.70	1.75
0:04:00	10,646.82	1,064.68	3.93	0:11:00	7,095.50	1,419.10	2.96	0:18:00	6,736.47	2,245.49	1.87	0:25:00	4,663.86	2,331.93	1.80	0:32:00	2,398.09	2,398.09	1.74
0:04:05	10,668.63	1,066.86	3.93	0:11:05	7,072.85	1,414.57	2.96	0:18:05	6,657.41	2,219.14	1.86	0:25:05	4,652.53	2,326.27	1.80	0:32:05	2,372.09	2,372.09	1.76
0:04:10	10,610.12	1,061.01	3.93	0:11:10	7,038.88	1,407.78	2.96	0:18:10	6,748.01	2,249.34	1.87	0:25:10	4,666.58	2,333.29	1.80	0:32:10	2,390.96	2,390.96	1.75
0:04:15	10,659.19	1,065.92	3.93	0:11:15	7,067.87	1,413.77	2.96	0:18:15	6,734.79	2,244.93	1.87	0:25:15	4,598.43	2,299.21	1.80	0:32:15	2,390.33	2,390.33	1.75
0:04:20	10,651.43	1,065.14	3.93	0:11:20	7,106.83	1,421.37	2.96	0:18:20	6,644.83	2,214.94	1.87	0:25:20	4,659.03	2,329.52	1.80	0:32:20	2,392.64	2,392.64	1.75
0:04:25	10,608.65	1,060.87	3.93	0:11:25	7,037.41	1,407.48	2.95	0:18:25	6,728.29	2,242.76	1.87	0:25:25	4,648.97	2,324.48	1.80	0:32:25	2,379.01	2,379.01	1.76
0:04:30	10,695.48	1,069.55	3.93	0:11:30	7,067.61	1,413.52	2.96	0:18:30	6,756.81	2,252.27	1.86	0:25:30	4,613.11	2,306.55	1.80	0:32:30	2,376.07	2,376.07	1.76
0:04:35	10,596.49	1,059.65	3.95	0:11:35	7,096.13	1,419.23	2.96	0:18:35	6,723.89	2,241.30	1.87	0:25:35	4,660.50	2,330.25	1.80	0:32:35	2,416.76	2,416.76	1.73
0:04:40	10,696.73	1,069.67	3.93	0:11:40	7,062.37	1,412.47	2.96	0:18:40	6,599.74	2,199.91	1.88	0:25:40	4,660.50	2,330.25	1.80	0:32:40	2,423.68	2,423.68	1.72
0:04:45	10,583.49	1,058.35	3.93	0:11:45	7,048.74	1,409.75	2.96	0:18:45	6,730.81	2,243.60	1.87	0:25:45	4,656.94	2,328.47	1.80	0:32:45	2,400.82	2,400.82	1.74
0:04:50	10,683.94	1,068.39	3.93	0:11:50	7,070.76	1,414.15	2.96	0:18:50	6,699.14	2,233.05	1.88	0:25:50	4,613.94	2,306.97	1.80	0:32:50	2,396.00	2,396.00	1.74
0:04:55	10,632.56	1,063.26	3.93	0:11:55	7,113.96	1,422.79	2.96	0:18:55	6,619.24	2,206.41	1.87	0:25:55	4,667.00	2,333.50	1.80	0:32:55	2,397.25	2,397.25	1.74
0:05:00	10,602.78	1,060.28	3.94	0:12:00	7,021.89	1,404.38	2.96	0:19:00	6,716.13	2,238.71	1.88	0:26:00	4,650.85	2,325.43	1.80	0:33:00	2,390.12	2,390.12	1.75
0:05:05	10,634.03	1,063.40	3.94	0:12:05	7,081.45	1,416.29	2.96	0:19:05	6,727.45	2,242.48	1.87	0:26:05	4,610.17	2,305.08	1.80	0:33:05	2,391.80	2,391.80	1.75
0:05:10	10,655.21	1,065.52	3.93	0:12:10	7,107.04	1,421.41	2.96	0:19:10	6,707.74	2,235.91	1.88	0:26:10	4,655.47	2,327.73	1.80	0:33:10	2,393.69	2,393.69	1.74
0:05:15	10,685.62	1,068.56	3.92	0:12:15	7,088.79	1,417.76	2.95	0:19:15	6,636.23	2,212.08	1.87	0:26:15	4,653.79	2,326.89	1.80	0:33:15	2,406.06	2,406.06	1.74
0:05:20	10,598.59	1,059.86	3.93	0:12:20	7,045.59	1,409.12	2.96	0:19:20	6,704.18	2,234.73	1.88	0:26:20	4,661.13	2,330.57	1.80	0:33:20	2,411.93	2,411.93	1.73
0:05:25	10,676.60	1,067.66	3.93	0:12:25	7,070.55	1,414.11	2.96	0:19:25	6,740.25	2,246.75	1.87	0:26:25	4,589.83	2,294.91	1.81	0:33:25	2,403.55	2,403.55	1.74
0:05:30	10,652.69	1,065.27	3.93	0:12:30	7,087.33	1,417.47	2.97	0:19:30	6,627.42	2,209.14	1.87	0:26:30	4,645.82	2,322.91	1.81	0:33:30	2,417.60	2,417.60	1.73
0:05:35	10,625.22	1,062.52	3.93	0:12:35	7,029.44	1,405.89	2.95	0:19:35	6,732.70	2,244.23	1.87	0:26:35	4,661.13	2,330.57	1.80	0:33:35	2,432.91	2,432.91	1.72
0:05:40	10,677.44	1,067.74	3.93	0:12:40	7,057.13	1,411.43	2.97	0:19:40	6,713.61	2,237.87	1.88	0:26:40	4,602.20	2,301.10	1.80	0:33:40	2,427.87	2,427.87	1.72
0:05:45	10,671.57	1,067.16	3.93	0:12:45	7,112.28	1,422.46	2.96	0:19:45	6,719.69	2,239.90	1.87	0:26:45	4,653.16	2,326.58	1.80	0:33:45	2,403.97	2,403.97	1.74
0:05:50	10,683.94	1,068.39	3.93	0:12:50	7,080.82	1,416.16	2.96	0:19:50	6,633.08	2,211.03	1.87	0:26:50	4,665.53	2,332.77	1.80	0:33:50	2,427.45	2,427.45	1.72
0:05:55	10,288.21	1,028.82	3.94	0:12:55	6,855.17	1,371.03	2.96	0:19:55	6,611.48	2,203.83	1.87	0:26:55	4,593.81	2,296.91	1.80	0:33:55	2,421.16	2,421.16	1.72
0:06:00	10,952.17	1,095.22	3.92	0:13:00	7,229.93	1,445.99	2.95	0:20:00	6,809.66	2,269.89	1.87	0:27:00	4,667.42	2,333.71	1.80	0:34:00	2,460.80	2,460.80	1.70
0:06:05	10,714.77	1,071.48	3.92	0:13:05	7,125.28	1,425.06	2.96	0:20:05	6,660.97	2,220.32	1.88	0:27:05	4,676.02	2,338.01	1.79	0:34:05	2,411.93	2,411.93	1.73
0:06:10	10,626.06	1,062.61	3.94	0:13:10	7,023.15	1,404.63	2.96	0:20:10	6,680.48	2,226.83	1.87	0:27:10	4,653.58	2,326.79	1.80	0:34:10	2,433.33	2,433.33	1.72
0:06:15	10,590.20	1,059.02	3.94	0:13:15	7,075.58	1,415.12	2.96	0:20:15	6,734.58	2,244.86	1.87	0:27:15	4,660.08	2,330.04	1.80	0:34:15	2,416.55	2,416.55	1.73
0:06:20	10,688.14	1,068.81	3.93	0:13:20	7,101.17	1,420.23	2.96	0:20:20	6,718.86	2,239.62	1.87	0:27:20	4,598.63	2,299.32	1.80	0:34:20	2,423.26	2,423.26	1.73
0:06:25	10,632.77	1,063.28	3.93	0:13:25	7,058.17	1,411.63	2.95	0:20:25	6,626.37	2,208.79	1.87	0:27:25	4,643.93	2,321.97	1.81	0:34:25	2,408.37	2,408.37	1.74
0:06:30	10,626.06	1,062.61	3.94	0:13:30	7,037.20	1,407.44	2.96	0:20:30	6,714.03	2,238.01	1.88	0:27:30	4,647.08	2,323.54	1.80	0:34:30	2,427.87	2,427.87	1.72
0:06:35	10,677.23	1,067.72	3.93	0:13:35	7,113.33	1,422.67	2.96	0:20:35	6,714.87	2,238.29	1.88	0:27:35	4,607.65	2,303.83	1.80	0:34:35	2,413.82	2,413.82	1.73
0:06:40	10,390.55	2,078.11	3.91	0:13:40	6,926.26	6,926.26	2.94	0:20:40	6,563.67	6,563.67	1.88	0:27:40	4,624.22	4,624.22	1.80	0:34:40	2,409.00	2,409.00	1.73
0:06:45	9.65	0.00	2.53	0:13:45	7.76	0.00	2.65	0:20:45	8.81	0.00	1.99	0:27:45	8.81	0.00	1.79	0:34:45	9.23	0.00	1.60
0:06:50	0.00	0.00	0.00	0:13:50	0.00	0.00	0.00	0:20:50	0.00	0.00	0.00	0:27:50	0.00	0.00	0.00	0:34:50	0.00	0.00	0.00

SPC-2 "Large Database Query/1024 KiB Transfer Size/4 Outstanding I/Os" Average Data Rate Graph – Complete Test Run
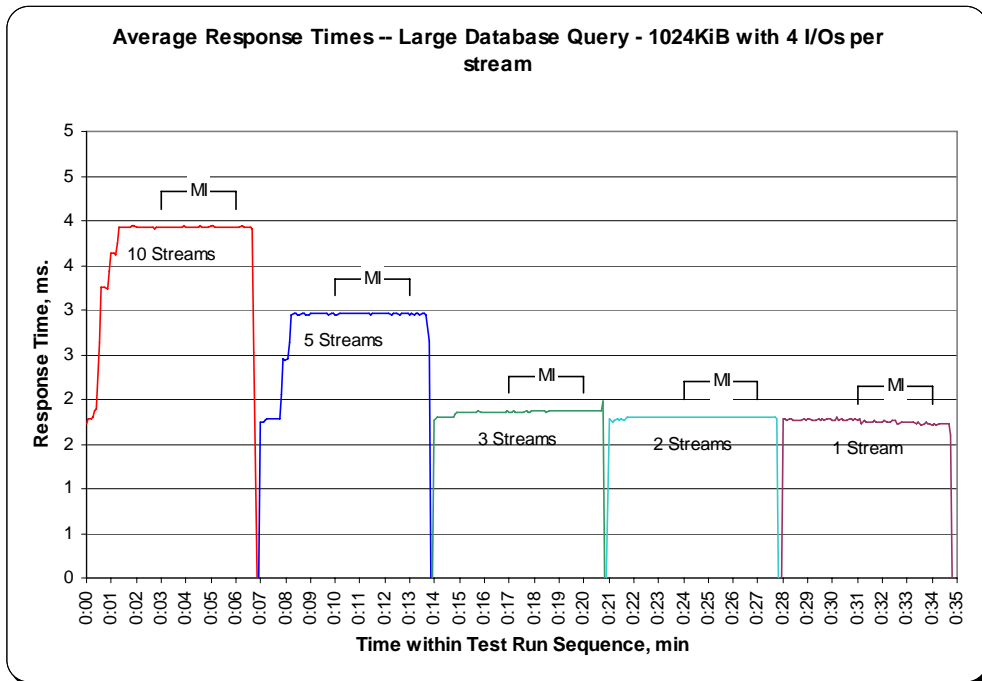

SPC-2 "Large Database Query/1024 KiB Transfer Size/4 Outstanding I/Os" Average Data Rate Graph – Measurement Interval (MI) Only

SPC-2 "Large Database Query/1024 KiB Transfer Size/4 Outstanding I/Os" Average Data Rate per Stream Graph

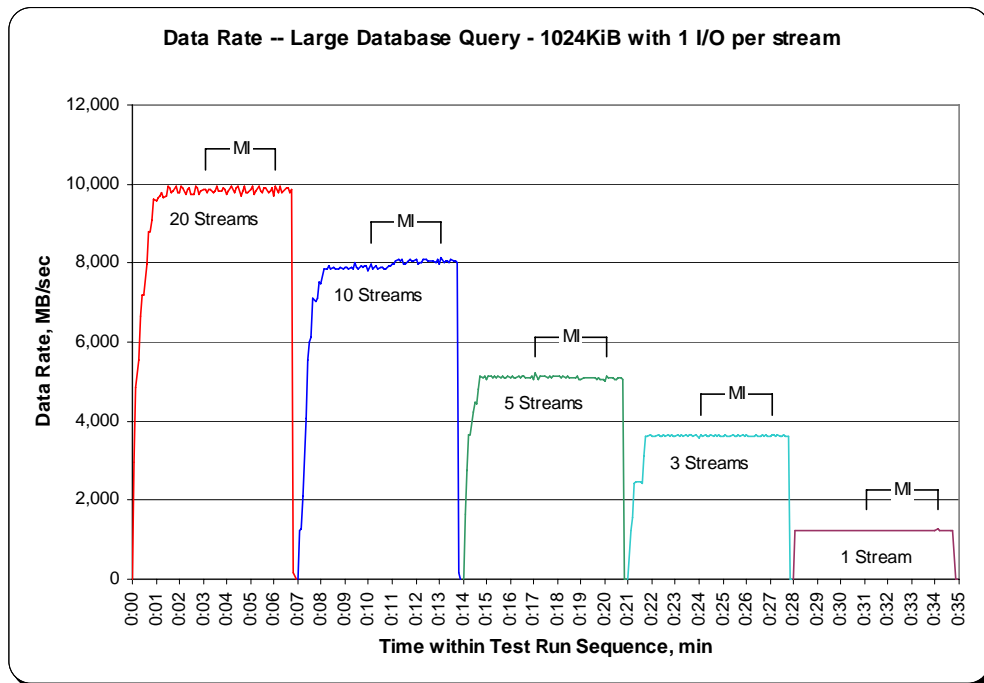## SPC-2 "Large Database Query/1024 KiB Transfer Size/4 Outstanding I/Os" Average Response Time Graph

SPC-2 "Large Database Query/1024 KiB Transfer Size/1 Outstanding I/O" Test Run Data – Ramp-Up Period

TR6 Test Run Sequence Time	20 Streams Data Rate, MB/sec	Data Rate / Stream, MB/sec	Response Time, ms	TR7 Test Run Sequence Time	10 Streams Data Rate, MB/sec	Data Rate / Stream, MB/sec	Response Time, ms	TR8 Test Run Sequence Time	5 Streams Data Rate, MB/sec	Data Rate / Stream, MB/sec	Response Time, ms	TR9 Test Run Sequence Time	3 Streams Data Rate, MB/sec	Data Rate / Stream, MB/sec	Response Time, ms	TR10 Test Run Sequence Time	1 Stream Data Rate, MB/sec	Data Rate / Stream, MB/sec	Response Time, ms
0:00:00	0.00	0.00	0.00	0:07:00	0.00	0.00	0.00	0:14:00	0.00	0.00	0.00	0:21:00	0.00	0.00	0.00	0:28:00	0.00	0.00	0.00
0:00:05	2,940.21	735.05	0.89	0:07:05	1,228.09	1,228.09	0.85	0:14:05	1,647.52	823.76	0.85	0:21:05	1,246.97	1,246.97	0.83	0:28:05	1,232.29	1,232.29	0.85
0:00:10	4,830.16	966.03	1.00	0:07:10	1,274.02	1,274.02	0.82	0:14:10	2,768.45	922.82	0.85	0:21:10	1,581.04	790.52	0.84	0:28:10	1,223.48	1,223.48	0.85
0:00:15	5,568.36	928.06	1.04	0:07:15	2,085.41	1,042.70	0.83	0:14:15	3,651.14	1,217.05	0.86	0:21:15	2,441.92	1,220.96	0.85	0:28:15	1,239.84	1,239.84	0.84
0:00:20	6,671.67	833.96	1.12	0:07:20	4,074.98	1,018.74	0.91	0:14:20	3,641.70	1,213.90	0.86	0:21:20	2,467.51	1,233.75	0.85	0:28:20	1,237.32	1,237.32	0.84
0:00:25	7,182.54	897.82	1.16	0:07:25	5,563.53	927.26	1.04	0:14:25	4,235.41	1,058.85	0.91	0:21:25	2,470.86	1,235.43	0.85	0:28:25	1,236.06	1,236.06	0.85
0:00:30	7,187.15	798.57	1.16	0:07:30	5,995.13	999.19	1.05	0:14:30	4,494.83	1,123.71	0.93	0:21:30	2,476.53	1,238.26	0.85	0:28:30	1,232.92	1,232.92	0.85
0:00:35	7,961.21	723.75	1.29	0:07:35	6,134.80	766.85	1.09	0:14:35	4,457.71	1,114.43	0.94	0:21:35	2,435.84	1,217.92	0.85	0:28:35	1,234.17	1,234.17	0.85
0:00:40	8,792.73	628.05	1.59	0:07:40	7,105.15	888.14	1.18	0:14:40	4,812.54	962.51	0.98	0:21:40	3,132.52	1,044.17	0.86	0:28:40	1,237.32	1,237.32	0.84
0:00:45	8,796.50	628.32	1.66	0:07:45	7,033.22	879.15	1.19	0:14:45	5,133.83	1,026.77	1.02	0:21:45	3,622.20	1,207.40	0.86	0:28:45	1,232.29	1,232.29	0.85
0:00:50	9,097.24	535.13	1.82	0:07:50	7,092.15	788.02	1.20	0:14:50	5,095.03	1,019.01	1.03	0:21:50	3,613.60	1,204.53	0.86	0:28:50	1,236.90	1,236.90	0.84
0:00:55	9,604.33	533.57	1.92	0:07:55	7,534.23	837.14	1.25	0:14:55	5,129.00	1,025.80	1.02	0:21:55	3,642.12	1,214.04	0.86	0:28:55	1,238.16	1,238.16	0.84
0:01:00	9,595.73	533.10	1.96	0:08:00	7,497.74	749.77	1.28	0:15:00	5,071.75	1,014.35	1.03	0:22:00	3,613.81	1,204.60	0.86	0:29:00	1,237.74	1,237.74	0.84
0:01:05	9,639.98	507.37	2.02	0:08:05	7,859.71	785.97	1.33	0:15:05	5,118.31	1,023.66	1.02	0:22:05	3,636.04	1,212.01	0.87	0:29:05	1,233.54	1,233.54	0.85
0:01:10	9,696.18	510.33	2.04	0:08:10	7,848.80	784.88	1.33	0:15:10	5,122.71	1,024.54	1.02	0:22:10	3,609.20	1,203.07	0.87	0:29:10	1,250.53	1,250.53	0.84
0:01:15	9,770.63	514.24	2.05	0:08:15	7,868.51	786.85	1.33	0:15:15	5,109.92	1,021.98	1.02	0:22:15	3,646.32	1,215.44	0.86	0:29:15	1,243.82	1,243.82	0.84
0:01:20	9,645.85	507.68	2.05	0:08:20	7,925.77	792.58	1.32	0:15:20	5,136.76	1,027.35	1.02	0:22:20	3,612.97	1,204.32	0.86	0:29:20	1,237.32	1,237.32	0.84
0:01:25	9,708.14	485.41	2.09	0:08:25	7,860.96	786.10	1.32	0:15:25	5,116.00	1,023.20	1.02	0:22:25	3,618.22	1,206.07	0.86	0:29:25	1,233.34	1,233.34	0.85
0:01:30	9,958.12	497.91	2.13	0:08:30	7,880.26	788.03	1.33	0:15:30	5,116.84	1,023.37	1.02	0:22:30	3,643.17	1,214.39	0.86	0:29:30	1,231.45	1,231.45	0.85
0:01:35	9,907.78	495.39	2.12	0:08:35	7,850.06	785.01	1.33	0:15:35	5,093.56	1,018.71	1.02	0:22:35	3,628.91	1,209.64	0.86	0:29:35	1,235.43	1,235.43	0.85
0:01:40	9,767.49	488.37	2.12	0:08:40	7,834.33	783.43	1.33	0:15:40	5,125.02	1,025.00	1.02	0:22:40	3,645.90	1,215.30	0.86	0:29:40	1,237.32	1,237.32	0.84
0:01:45	9,803.98	490.20	2.13	0:08:45	7,833.28	783.33	1.33	0:15:45	5,112.86	1,022.57	1.02	0:22:45	3,633.32	1,211.11	0.86	0:29:45	1,236.90	1,236.90	0.84
0:01:50	9,930.64	496.53	2.12	0:08:50	7,904.80	790.48	1.33	0:15:50	5,114.74	1,022.95	1.02	0:22:50	3,653.66	1,217.89	0.86	0:29:50	1,236.06	1,236.06	0.85
0:01:55	9,786.99	489.35	2.12	0:08:55	7,830.77	783.08	1.33	0:15:55	5,137.60	1,027.52	1.02	0:22:55	3,612.97	1,204.32	0.86	0:29:55	1,230.61	1,230.61	0.85
0:02:00	9,772.94	488.65	2.12	0:09:00	7,884.24	788.42	1.32	0:16:00	5,098.18	1,019.64	1.02	0:23:00	3,629.96	1,209.99	0.86	0:30:00	1,234.59	1,234.59	0.85
0:02:05	9,965.04	498.25	2.12	0:09:05	7,908.78	790.88	1.32	0:16:05	5,136.55	1,027.31	1.02	0:23:05	3,640.87	1,213.62	0.86	0:30:05	1,227.46	1,227.46	0.85
0:02:10	9,924.14	496.21	2.12	0:09:10	7,847.12	784.71	1.33	0:16:10	5,109.71	1,021.94	1.02	0:23:10	3,629.33	1,209.78	0.86	0:30:10	1,236.48	1,236.48	0.84
0:02:15	9,725.96	486.30	2.13	0:09:15	7,904.80	790.48	1.32	0:16:15	5,112.23	1,022.45	1.02	0:23:15	3,638.77	1,212.92	0.86	0:30:15	1,242.35	1,242.35	0.84
0:02:20	9,867.10	493.36	2.12	0:09:20	7,856.56	785.66	1.32	0:16:20	5,124.60	1,024.92	1.02	0:23:20	3,615.91	1,205.30	0.86	0:30:20	1,240.47	1,240.47	0.84
0:02:25	9,908.20	495.41	2.13	0:09:25	7,995.18	799.52	1.31	0:16:25	5,082.24	1,016.45	1.02	0:23:25	3,649.25	1,216.42	0.86	0:30:25	1,237.74	1,237.74	0.84
0:02:30	9,741.90	487.10	2.13	0:09:30	7,892.42	789.24	1.32	0:16:30	5,144.10	1,028.82	1.02	0:23:30	3,609.62	1,203.21	0.87	0:30:30	1,233.13	1,233.13	0.85
0:02:35	9,754.69	487.73	2.13	0:09:35	7,859.08	785.91	1.32	0:16:35	5,133.20	1,026.64	1.02	0:23:35	3,642.75	1,214.25	0.86	0:30:35	1,236.27	1,236.27	0.85
0:02:40	9,924.77	496.24	2.13	0:09:40	7,931.43	793.14	1.32	0:16:40	5,091.47	1,018.29	1.03	0:23:40	3,640.66	1,213.55	0.86	0:30:40	1,238.58	1,238.58	0.84
0:02:45	9,911.56	495.58	2.12	0:09:45	7,893.89	789.39	1.32	0:16:45	5,108.03	1,021.61	1.02	0:23:45	3,618.64	1,206.21	0.86	0:30:45	1,235.01	1,235.01	0.85
0:02:50	9,755.11	487.76	2.12	0:09:50	7,924.93	792.49	1.32	0:16:50	5,109.71	1,021.94	1.02	0:23:50	3,642.75	1,214.25	0.86	0:30:50	1,229.14	1,229.14	0.85
0:02:55	9,801.88	490.09	2.13	0:09:55	7,931.64	793.16	1.32	0:16:55	5,123.97	1,024.79	1.02	0:23:55	3,618.22	1,206.07	0.86	0:30:55	1,234.59	1,234.59	0.85
0:03:00	9,857.03	492.85	2.12	0:10:00	7,811.05	781.11	1.33	0:17:00	5,042.60	1,008.52	1.02	0:24:00	3,593.68	1,197.89	0.86	0:31:00	1,240.05	1,240.05	0.84

SPC BENCHMARK 2™ V1.3

Texas Memory Systems, Inc.
Texas Memory Systems RamSan-630

FULL DISCLOSURE REPORT

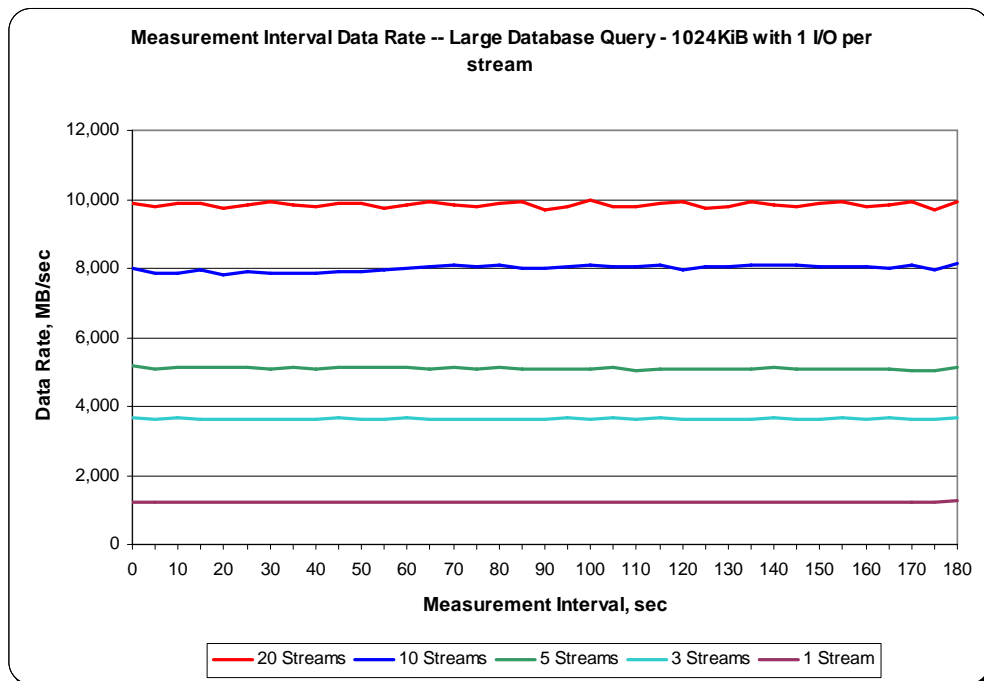Submitted for Review: MAY 10, 2011

Submission Identifier: B00054

SPC-2 "Large Database Query/1024 KiB Transfer Size/1 Outstanding I/O" Test Run Data Measurement Interval, Run-Out, and Ramp-Down Periods

TR6 Test Run Sequence Time	20 Streams Data Rate, MB/sec	Data Rate / Stream, MB/sec	Response Time, ms	TR7 Test Run Sequence Time	10 Streams Data Rate, MB/sec	Data Rate / Stream, MB/sec	Response Time, ms	TR8 Test Run Sequence Time	5 Streams Data Rate, MB/sec	Data Rate / Stream, MB/sec	Response Time, ms	TR9 Test Run Sequence Time	3 Streams Data Rate, MB/sec	Data Rate / Stream, MB/sec	Response Time, ms	TR10 Test Run Sequence Time	1 Stream Data Rate, MB/sec	Data Rate / Stream, MB/sec	Response Time, ms
0:03:05	9,882.41	494.12	2.12	0:10:05	7,976.73	797.67	1.32	0:17:05	5,198.84	1,039.77	1.02	0:24:05	3,671.90	1,223.97	0.86	0:31:05	1,233.96	1,233.96	0.85
0:03:10	9,793.49	489.67	2.12	0:10:10	7,851.53	785.15	1.33	0:17:10	5,067.35	1,013.47	1.03	0:24:10	3,632.69	1,210.90	0.86	0:31:10	1,232.50	1,232.50	0.85
0:03:15	9,862.49	493.12	2.13	0:10:15	7,881.52	788.15	1.32	0:17:15	5,126.28	1,025.26	1.02	0:24:15	3,647.79	1,215.93	0.86	0:31:15	1,240.47	1,240.47	0.84
0:03:20	9,868.36	493.42	2.13	0:10:20	7,943.59	794.36	1.32	0:17:20	5,118.73	1,023.75	1.02	0:24:20	3,618.64	1,206.21	0.86	0:31:20	1,241.93	1,241.93	0.84
0:03:25	9,763.08	488.15	2.12	0:10:25	7,832.23	783.22	1.33	0:17:25	5,116.63	1,023.33	1.02	0:24:25	3,616.33	1,205.44	0.86	0:31:25	1,238.79	1,238.79	0.84
0:03:30	9,825.16	491.26	2.12	0:10:30	7,896.62	789.66	1.32	0:17:30	5,119.78	1,023.96	1.02	0:24:30	3,639.61	1,213.20	0.86	0:31:30	1,225.16	1,225.16	0.85
0:03:35	9,944.28	497.21	2.12	0:10:35	7,875.02	787.50	1.33	0:17:35	5,083.71	1,016.74	1.02	0:24:35	3,613.39	1,204.46	0.86	0:31:35	1,224.32	1,224.32	0.85
0:03:40	9,823.27	491.16	2.12	0:10:40	7,864.55	786.49	1.33	0:17:40	5,148.09	1,029.62	1.02	0:24:40	3,639.19	1,213.06	0.86	0:31:40	1,229.56	1,229.56	0.85
0:03:45	9,809.43	490.47	2.12	0:10:45	7,844.61	784.46	1.33	0:17:45	5,091.68	1,018.34	1.02	0:24:45	3,624.09	1,208.03	0.86	0:31:45	1,229.56	1,229.56	0.85
0:03:50	9,897.72	494.89	2.12	0:10:50	7,924.30	792.43	1.32	0:17:50	5,131.94	1,026.39	1.02	0:24:50	3,649.67	1,216.56	0.86	0:31:50	1,224.74	1,224.74	0.85
0:03:55	9,867.52	493.38	2.13	0:10:55	7,928.07	792.81	1.32	0:17:55	5,123.13	1,024.63	1.02	0:24:55	3,622.62	1,207.54	0.86	0:31:55	1,244.45	1,244.45	0.84
0:04:00	9,723.45	486.17	2.12	0:11:00	7,969.60	796.96	1.31	0:18:00	5,121.66	1,024.33	1.02	0:25:00	3,614.44	1,204.81	0.86	0:32:00	1,226.00	1,226.00	0.85
0:04:05	9,828.09	491.40	2.13	0:11:05	7,979.66	797.97	1.31	0:18:05	5,127.96	1,025.59	1.02	0:25:05	3,649.46	1,216.49	0.86	0:32:05	1,246.55	1,246.55	0.84
0:04:10	9,930.85	496.54	2.12	0:11:10	8,034.40	803.44	1.30	0:18:10	5,087.27	1,017.45	1.02	0:25:10	3,614.44	1,204.81	0.86	0:32:10	1,228.51	1,228.51	0.85
0:04:15	9,847.60	492.38	2.12	0:11:15	8,088.92	808.89	1.29	0:18:15	5,121.45	1,024.29	1.02	0:25:15	3,633.32	1,211.11	0.87	0:32:15	1,226.00	1,226.00	0.85
0:04:20	9,790.97	489.55	2.12	0:11:20	8,065.44	806.54	1.29	0:18:20	5,078.88	1,015.78	1.02	0:25:20	3,634.57	1,211.52	0.86	0:32:20	1,230.82	1,230.82	0.85
0:04:25	9,904.64	495.23	2.12	0:11:25	8,084.31	808.43	1.29	0:18:25	5,134.88	1,026.98	1.02	0:25:25	3,637.09	1,212.36	0.86	0:32:25	1,236.90	1,236.90	0.84
0:04:30	9,935.26	496.76	2.12	0:11:30	7,977.99	797.80	1.31	0:18:30	5,091.05	1,018.21	1.03	0:25:30	3,607.73	1,202.58	0.87	0:32:30	1,238.37	1,238.37	0.84
0:04:35	9,704.36	485.22	2.13	0:11:35	7,983.86	798.39	1.31	0:18:35	5,092.72	1,018.54	1.03	0:25:35	3,625.77	1,208.59	0.86	0:32:35	1,229.98	1,229.98	0.85
0:04:40	9,806.49	490.32	2.13	0:11:40	8,045.09	804.51	1.30	0:18:40	5,088.32	1,017.66	1.03	0:25:40	3,664.56	1,221.52	0.86	0:32:40	1,230.82	1,230.82	0.85
0:04:45	9,959.37	497.97	2.12	0:11:45	8,094.17	809.42	1.29	0:18:45	5,077.41	1,015.48	1.02	0:25:45	3,611.72	1,203.91	0.86	0:32:45	1,229.56	1,229.56	0.85
0:04:50	9,794.96	489.75	2.13	0:11:50	8,065.86	806.59	1.29	0:18:50	5,134.67	1,026.93	1.02	0:25:50	3,647.79	1,215.93	0.86	0:32:50	1,240.26	1,240.26	0.84
0:04:55	9,778.60	488.93	2.13	0:11:55	8,067.11	806.71	1.29	0:18:55	5,048.26	1,009.65	1.03	0:25:55	3,622.62	1,207.54	0.86	0:32:55	1,241.72	1,241.72	0.84
0:05:00	9,875.70	493.78	2.13	0:12:00	8,103.61	810.36	1.29	0:19:00	5,065.46	1,013.09	1.03	0:26:00	3,651.56	1,217.19	0.86	0:33:00	1,246.76	1,246.76	0.84
0:05:05	9,927.92	496.40	2.12	0:12:05	7,966.24	796.62	1.31	0:19:05	5,082.45	1,016.49	1.03	0:26:05	3,619.89	1,206.63	0.86	0:33:05	1,233.96	1,233.96	0.85
0:05:10	9,736.87	486.84	2.13	0:12:10	8,026.01	802.60	1.30	0:19:10	5,085.38	1,017.08	1.03	0:26:10	3,634.57	1,211.52	0.86	0:33:10	1,236.27	1,236.27	0.85
0:05:15	9,808.59	490.43	2.12	0:12:15	8,026.22	802.62	1.30	0:19:15	5,077.41	1,015.48	1.03	0:26:15	3,633.94	1,211.31	0.87	0:33:15	1,228.72	1,228.72	0.85
0:05:20	9,952.87	497.64	2.13	0:12:20	8,105.70	810.57	1.30	0:19:20	5,085.59	1,017.12	1.02	0:26:20	3,616.96	1,205.65	0.86	0:33:20	1,226.20	1,226.20	0.85
0:05:25	9,812.15	490.61	2.12	0:12:25	8,090.18	809.02	1.29	0:19:25	5,108.87	1,021.77	1.03	0:26:25	3,651.98	1,217.33	0.86	0:33:25	1,237.11	1,237.11	0.84
0:05:30	9,785.31	489.27	2.13	0:12:30	8,074.24	807.42	1.29	0:19:30	5,087.27	1,017.45	1.02	0:26:30	3,631.43	1,210.48	0.86	0:33:30	1,240.05	1,240.05	0.84
0:05:35	9,901.28	495.06	2.12	0:12:35	8,038.59	803.86	1.30	0:19:35	5,089.58	1,017.92	1.03	0:26:35	3,622.20	1,207.40	0.86	0:33:35	1,226.62	1,226.62	0.85
0:05:40	9,915.12	495.76	2.12	0:12:40	8,054.53	805.45	1.30	0:19:40	5,068.82	1,013.76	1.03	0:26:40	3,648.00	1,216.00	0.86	0:33:40	1,226.20	1,226.20	0.85
0:05:45	9,793.70	489.68	2.11	0:12:45	8,066.07	806.61	1.29	0:19:45	5,083.08	1,016.62	1.03	0:26:45	3,622.62	1,207.54	0.86	0:33:45	1,244.66	1,244.66	0.84
0:05:50	9,831.87	491.59	2.12	0:12:50	7,999.80	799.98	1.30	0:19:50	5,072.80	1,014.56	1.03	0:26:50	3,664.56	1,221.52	0.86	0:33:50	1,234.38	1,234.38	0.85
0:05:55	9,912.19	495.61	2.13	0:12:55	8,093.96	809.40	1.29	0:19:55	5,050.78	1,010.16	1.03	0:26:55	3,634.57	1,211.52	0.86	0:33:55	1,223.27	1,223.27	0.85
0:06:00	9,680.66	484.03	2.13	0:13:00	7,967.50	796.75	1.30	0:20:00	5,029.60	1,005.92	1.03	0:27:00	3,606.68	1,202.23	0.86	0:34:00	1,228.09	1,228.09	0.85
0:06:05	9,933.16	496.66	2.13	0:13:05	8,127.30	812.73	1.30	0:20:05	5,131.10	1,026.22	1.03	0:27:05	3,659.53	1,219.84	0.86	0:34:05	1,253.89	1,253.89	0.84
0:06:10	9,796.64	489.83	2.13	0:13:10	8,018.88	801.89	1.30	0:20:10	5,075.95	1,015.19	1.03	0:27:10	3,654.71	1,218.24	0.86	0:34:10	1,242.77	1,242.77	0.84
0:06:15	9,927.29	496.36	2.12	0:13:15	8,044.47	804.45	1.30	0:20:15	5,095.45	1,019.09	1.03	0:27:15	3,613.60	1,204.53	0.86	0:34:15	1,242.77	1,242.77	0.84
0:06:20	9,772.52	488.63	2.13	0:13:20	8,055.79	805.58	1.30	0:20:20	5,085.80	1,017.16	1.03	0:27:20	3,659.32	1,219.77	0.86	0:34:20	1,236.69	1,236.69	0.84
0:06:25	9,811.95	490.60	2.12	0:13:25	8,000.84	800.08	1.30	0:20:25	5,073.01	1,014.60	1.03	0:27:25	3,616.96	1,205.65	0.86	0:34:25	1,242.56	1,242.56	0.84
0:06:30	9,907.16	495.36	2.13	0:13:30	8,081.58	808.16	1.30	0:20:30	5,051.62	1,010.32	1.03	0:27:30	3,613.39	1,204.46	0.86	0:34:30	1,237.32	1,237.32	0.84
0:06:35	9,895.62	494.78	2.12	0:13:35	8,048.47	804.05	1.29	0:20:35	5,106.36	1,021.27	1.03	0:27:35	3,637.09	1,212.36	0.86	0:34:35	1,236.27	1,236.27	0.84
0:06:40	9,781.75	489.09	2.13	0:13:40	8,048.03	804.80	1.29	0:20:40	5,087.27	1,017.45	1.02	0:27:40	3,621.15	1,207.05	0.86	0:34:40	1,245.08	1,245.08	0.84
0:06:45	9,843.82	703.13	2.11	0:13:45	7,995.39	1,142.20	1.29	0:20:45	5,055.81	2,527.91	1.02	0:27:45	3,632.48	3,632.48	0.86	0:34:45	1,247.39	1,247.39	0.83
0:06:50	172.18	0.00	1.22	0:13:50	146.17	0.00	0.94	0:20:50	19.92	0.00	0.88	0:27:50	4.40	0.00	0.86	0:34:50	4.19	0.00	0.85
0:06:55	0.00	0.00	0.00	0:13:55	0.00	0.00	0.00	0:20:55	0.00	0.00	0.00	0:27:55	0.00	0.00	0.00	0:34:55	0.00	0.00	0.00

SPC BENCHMARK 2™ V1.3

Texas Memory Systems, Inc.
Texas Memory Systems RamSan-630

FULL DISCLOSURE REPORT

Submitted for Review: MAY 10, 2011

Submission Identifier: B00054

SPC-2 "Large Database Query/1024 KiB Transfer Size/1 Outstanding I/O" Average Data Rate Graph – Complete Test Run
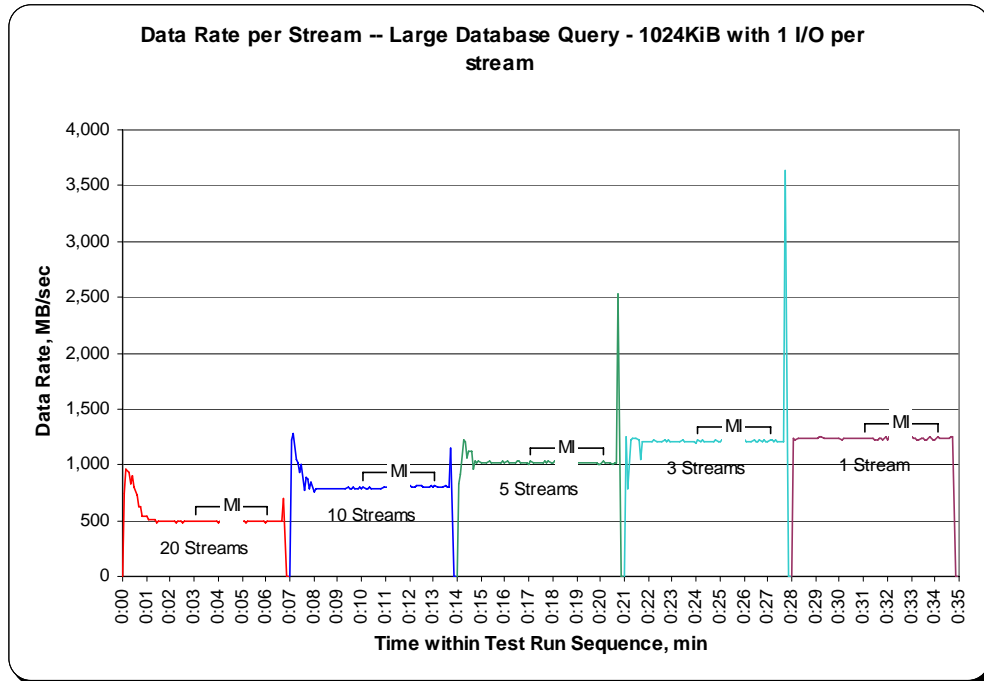

SPC-2 "Large Database Query/1024 KiB Transfer Size/1 Outstanding I/O" Average Data Rate Graph – Measurement Interval (MI) Only
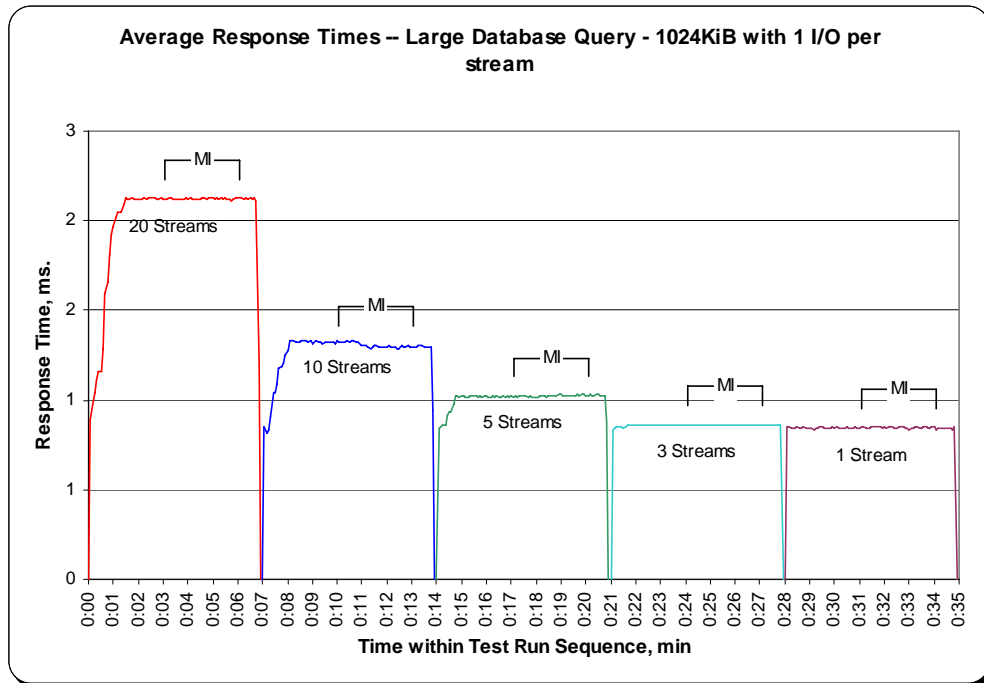
SPC-2 "Large Database Query/1024 KiB Transfer Size/1 Outstanding I/O" Average Data Rate per Stream Graph

SPC-2 "Large Database Query/1024 KiB Transfer Size/1 Outstanding I/O" Average Response Time Graph

Large Database Query Test – 64 KIB TRANSFER SIZE Test Phase

Clause 10.6.8.2.1

5. *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.*

6. *Average Data Rate (intervals), Average Data Rate per Stream (intervals), and Average Response Time (intervals) graphs for the "64 KiB Transfer Size, 4 Outstanding I/Os" Test Runs as specified in Clauses 10.1.4 – 10.1.6.*

7. *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.*

8. *Average Data Rate (intervals), Average Data Rate per Stream (intervals), and Average Response Time (intervals) graphs for the "64 KiB Transfer Size, 1 Outstanding I/O" Test Runs as specified in Clauses 10.1.4 – 10.1.6.*

The SPC-2 "Large DatabaseQuery/64 KIB TRANSFER SIZE/4 Outstanding I/Os" Test Run data is contained in the table that appears on the next page. That table is followed by 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 SPC-2 "Large DatabaseQuery/64 KIB TRANSFER SIZE/4 Outstanding I/Os" table and graphs will be the SPC-2 "Large DatabaseQuery/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 – Ramp-Up Period

TR11	40 Streams			TR12	20 Streams			TR13	10 Streams			TR14	5 Streams			TR15	1 Stream		
Test Run Sequence Time	Data Rate, MB/sec	Data Rate / Stream, MB/sec	Response Time, ms	Test Run Sequence Time	Data Rate, MB/sec	Data Rate / Stream, MB/sec	Response Time, ms	Test Run Sequence Time	Data Rate, MB/sec	Data Rate / Stream, MB/sec	Response Time, ms	Test Run Sequence Time	Data Rate, MB/sec	Data Rate / Stream, MB/sec	Response Time, ms	Test Run Sequence Time	Data Rate, MB/sec	Data Rate / Stream, MB/sec	Response Time, ms
0:00:00	0.00	0.00	0.00	0:07:00	0.00	0.00	0.00	0:14:00	0.00	0.00	0.00	0:21:00	0.00	0.00	0.00	0:28:00	0.00	0.00	0.00
0:00:05	1,850.36	462.59	0.39	0:07:05	1,820.38	606.79	0.39	0:14:05	1,250.99	625.50	0.38	0:21:05	675.45	675.45	0.38	0:28:05	675.71	675.71	0.38
0:00:10	3,440.71	491.53	0.42	0:07:10	1,981.07	495.27	0.39	0:14:10	1,328.00	664.00	0.38	0:21:10	676.53	676.53	0.38	0:28:10	670.06	670.06	0.38
0:00:15	4,577.18	508.58	0.44	0:07:15	2,846.38	406.63	0.40	0:14:15	1,499.79	374.95	0.38	0:21:15	765.44	382.72	0.38	0:28:15	677.86	677.86	0.38
0:00:20	6,185.17	475.78	0.49	0:07:20	4,192.98	524.12	0.43	0:14:20	2,668.60	533.72	0.40	0:21:20	1,461.00	487.00	0.38	0:28:20	674.96	674.96	0.38
0:00:25	6,894.89	459.66	0.52	0:07:25	5,139.86	467.26	0.45	0:14:25	3,504.05	500.58	0.41	0:21:25	2,097.25	524.31	0.39	0:28:25	674.80	674.80	0.38
0:00:30	8,264.18	393.53	0.59	0:07:30	5,905.84	536.89	0.47	0:14:30	4,208.50	601.21	0.43	0:21:30	2,572.67	643.17	0.40	0:28:30	674.78	674.78	0.38
0:00:35	8,897.04	404.41	0.63	0:07:35	6,316.53	485.89	0.49	0:14:35	4,251.72	531.47	0.43	0:21:35	2,582.76	645.69	0.40	0:28:35	675.27	675.27	0.38
0:00:40	9,243.14	355.51	0.68	0:07:40	6,622.11	509.39	0.51	0:14:40	4,697.43	587.18	0.44	0:21:40	2,612.84	653.21	0.40	0:28:40	675.17	675.17	0.38
0:00:45	9,808.42	350.30	0.72	0:07:45	6,832.88	488.06	0.52	0:14:45	4,695.62	586.95	0.44	0:21:45	2,580.57	645.14	0.40	0:28:45	673.62	673.62	0.38
0:00:50	10,132.41	337.75	0.75	0:07:50	7,057.69	441.11	0.53	0:14:50	4,711.89	588.99	0.44	0:21:50	2,569.63	642.41	0.40	0:28:50	675.50	675.50	0.38
0:00:55	10,112.27	316.01	0.80	0:07:55	7,742.10	455.42	0.56	0:14:55	5,040.36	560.04	0.45	0:21:55	2,600.52	650.13	0.40	0:28:55	674.53	674.53	0.38
0:01:00	10,316.02	312.61	0.82	0:08:00	8,001.58	444.53	0.58	0:15:00	5,471.39	547.14	0.47	0:22:00	3,127.80	625.56	0.41	0:29:00	674.92	674.92	0.38
0:01:05	10,436.10	298.17	0.85	0:08:05	8,154.23	429.17	0.58	0:15:05	5,524.13	552.41	0.46	0:22:05	3,137.88	627.58	0.41	0:29:05	675.18	675.18	0.38
0:01:10	10,346.47	287.40	0.88	0:08:10	8,302.08	415.10	0.59	0:15:10	5,541.61	554.16	0.46	0:22:10	3,143.02	628.60	0.41	0:29:10	675.65	675.65	0.38
0:01:15	10,671.03	280.82	0.90	0:08:15	8,570.53	428.53	0.60	0:15:15	5,540.40	554.04	0.46	0:22:15	3,178.71	635.74	0.41	0:29:15	676.32	676.32	0.38
0:01:20	10,697.83	274.30	0.94	0:08:20	8,442.40	422.12	0.61	0:15:20	5,498.84	549.88	0.47	0:22:20	3,150.67	630.13	0.41	0:29:20	675.32	675.32	0.38
0:01:25	10,581.69	271.33	0.95	0:08:25	8,523.77	426.19	0.61	0:15:25	5,513.05	551.30	0.47	0:22:25	3,119.42	623.88	0.41	0:29:25	675.55	675.55	0.38
0:01:30	10,723.39	268.08	0.97	0:08:30	8,593.03	429.65	0.61	0:15:30	5,526.67	552.67	0.47	0:22:30	3,162.92	632.58	0.41	0:29:30	675.39	675.39	0.38
0:01:35	10,691.62	267.29	0.97	0:08:35	8,524.66	426.23	0.60	0:15:35	5,512.53	551.25	0.47	0:22:35	3,154.11	630.82	0.41	0:29:35	676.00	676.00	0.38
0:01:40	10,755.18	268.88	0.97	0:08:40	8,547.30	427.36	0.61	0:15:40	5,506.30	550.63	0.47	0:22:40	3,134.51	626.90	0.41	0:29:40	675.51	675.51	0.38
0:01:45	10,641.21	266.03	0.97	0:08:45	8,574.01	428.70	0.60	0:15:45	5,514.55	551.45	0.47	0:22:45	3,133.45	626.69	0.41	0:29:45	674.56	674.56	0.38
0:01:50	10,726.01	268.15	0.97	0:08:50	8,576.11	428.81	0.60	0:15:50	5,535.29	553.53	0.46	0:22:50	3,182.18	636.44	0.41	0:29:50	672.86	672.86	0.38
0:01:55	10,765.42	269.14	0.97	0:08:55	8,498.87	424.94	0.60	0:15:55	5,523.49	552.35	0.46	0:22:55	3,147.63	629.53	0.41	0:29:55	675.53	675.53	0.38
0:02:00	10,608.23	265.21	0.97	0:09:00	8,582.69	429.13	0.60	0:16:00	5,509.38	550.94	0.47	0:23:00	3,123.27	624.65	0.41	0:30:00	675.86	675.86	0.38
0:02:05	10,772.46	269.31	0.97	0:09:05	8,623.08	431.15	0.60	0:16:05	5,511.56	551.16	0.47	0:23:05	3,160.53	632.11	0.41	0:30:05	675.98	675.98	0.38
0:02:10	10,707.84	267.70	0.97	0:09:10	8,544.07	427.20	0.60	0:16:10	5,468.47	546.85	0.47	0:23:10	3,153.27	630.65	0.41	0:30:10	676.53	676.53	0.38
0:02:15	10,714.97	267.87	0.97	0:09:15	8,607.04	430.35	0.60	0:16:15	5,498.10	549.81	0.47	0:23:15	3,139.13	627.83	0.41	0:30:15	676.37	676.37	0.38
0:02:20	10,666.89	266.67	0.97	0:09:20	8,508.03	425.40	0.61	0:16:20	5,497.67	549.77	0.47	0:23:20	3,135.35	627.07	0.41	0:30:20	676.64	676.64	0.38
0:02:25	10,712.41	267.81	0.97	0:09:25	8,587.54	429.38	0.60	0:16:25	5,487.28	548.73	0.47	0:23:25	3,178.34	635.67	0.41	0:30:25	674.87	674.87	0.38
0:02:30	10,753.65	268.84	0.97	0:09:30	8,477.12	423.86	0.60	0:16:30	5,491.10	549.11	0.47	0:23:30	3,137.49	627.50	0.41	0:30:30	675.23	675.23	0.38
0:02:35	10,597.58	264.94	0.97	0:09:35	8,552.06	427.60	0.60	0:16:35	5,528.28	552.83	0.47	0:23:35	3,134.36	626.87	0.41	0:30:35	674.87	674.87	0.38
0:02:40	10,727.88	268.20	0.97	0:09:40	8,629.74	431.49	0.60	0:16:40	5,514.13	551.41	0.47	0:23:40	3,162.55	632.51	0.41	0:30:40	674.88	674.88	0.38
0:02:45	10,694.32	267.36	0.97	0:09:45	8,525.41	426.27	0.60	0:16:45	5,515.18	551.52	0.47	0:23:45	3,145.36	629.07	0.41	0:30:45	674.12	674.12	0.38
0:02:50	10,720.72	268.02	0.97	0:09:50	8,561.60	428.08	0.60	0:16:50	5,515.92	551.59	0.46	0:23:50	3,137.39	627.48	0.41	0:30:50	674.81	674.81	0.38
0:02:55	10,652.70	266.32	0.97	0:09:55	8,577.25	428.86	0.60	0:16:55	5,528.04	552.80	0.46	0:23:55	3,134.53	626.91	0.41	0:30:55	674.45	674.45	0.38
0:03:00	10,698.85	267.47	0.97	0:10:00	8,522.87	426.14	0.60	0:17:00	5,527.78	552.78	0.46	0:24:00	3,154.68	630.94	0.41	0:31:00	672.66	672.66	0.38

SPC BENCHMARK 2™ V1.3

Texas Memory Systems, Inc.
Texas Memory Systems RamSan-630

FULL DISCLOSURE REPORT

Submitted for Review: MAY 10, 2011
Submission Identifier: B00054

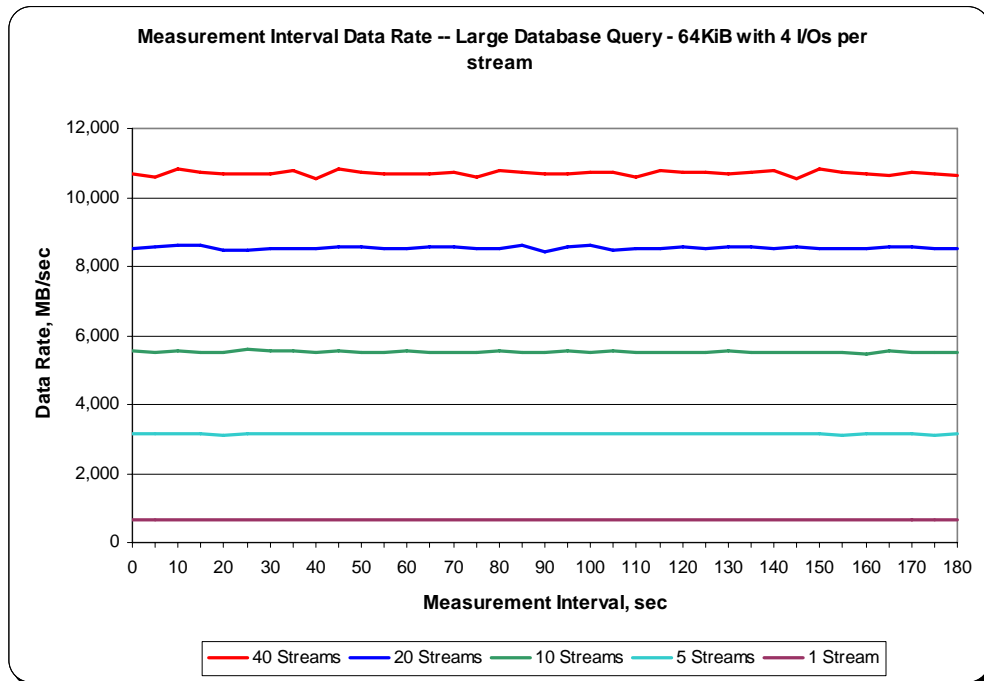## SPC-2 "Large Database Query/64 KiB Transfer Size/4 Outstanding I/Os" Test Run Data
Measurement Interval, Run-Out, and Ramp-Down Periods

TR11 Test Run Sequence Time	40 Streams Data Rate, MB/sec	Data Rate / Stream, MB/sec	Response Time, ms	TR12 Test Run Sequence Time	20 Streams Data Rate, MB/sec	Data Rate / Stream, MB/sec	Response Time, ms	TR13 Test Run Sequence Time	10 Streams Data Rate, MB/sec	Data Rate / Stream, MB/sec	Response Time, ms	TR14 Test Run Sequence Time	5 Streams Data Rate, MB/sec	Data Rate / Stream, MB/sec	Response Time, ms	TR15 Test Run Sequence Time	1 Stream Data Rate, MB/sec	Data Rate / Stream, MB/sec	Response Time, ms
0:03:05	10,685.25	267.13	0.97	0:10:05	8,532.07	426.60	0.61	0:17:05	5,561.85	556.18	0.46	0:24:05	3,156.11	631.22	0.41	0:31:05	676.27	676.27	0.38
0:03:10	10,577.04	264.43	0.97	0:10:10	8,565.07	428.25	0.60	0:17:10	5,525.48	552.55	0.46	0:24:10	3,135.44	627.09	0.41	0:31:10	675.45	675.45	0.38
0:03:15	10,802.89	270.07	0.97	0:10:15	8,602.54	430.13	0.60	0:17:15	5,529.76	552.98	0.47	0:24:15	3,168.05	633.61	0.41	0:31:15	676.25	676.25	0.38
0:03:20	10,722.93	268.07	0.97	0:10:20	8,596.53	429.83	0.60	0:17:20	5,507.28	550.73	0.47	0:24:20	3,139.49	627.90	0.41	0:31:20	675.19	675.19	0.38
0:03:25	10,685.77	267.14	0.97	0:10:25	8,483.24	424.16	0.60	0:17:25	5,513.94	551.39	0.46	0:24:25	3,129.10	625.82	0.41	0:31:25	675.61	675.61	0.38
0:03:30	10,675.12	266.88	0.97	0:10:30	8,482.87	424.14	0.61	0:17:30	5,590.37	559.04	0.46	0:24:30	3,148.97	629.79	0.41	0:31:30	675.27	675.27	0.38
0:03:35	10,701.07	267.53	0.97	0:10:35	8,539.08	426.95	0.61	0:17:35	5,537.00	553.70	0.46	0:24:35	3,162.59	632.52	0.41	0:31:35	675.75	675.75	0.38
0:03:40	10,792.27	269.81	0.97	0:10:40	8,494.18	424.71	0.61	0:17:40	5,544.81	554.49	0.46	0:24:40	3,137.07	627.41	0.41	0:31:40	677.21	677.21	0.38
0:03:45	10,549.11	263.73	0.97	0:10:45	8,513.95	425.70	0.61	0:17:45	5,495.47	549.55	0.47	0:24:45	3,150.87	630.17	0.41	0:31:45	675.01	675.01	0.38
0:03:50	10,824.62	270.62	0.97	0:10:50	8,558.46	427.92	0.60	0:17:50	5,566.53	556.65	0.46	0:24:50	3,166.90	633.38	0.41	0:31:50	676.03	676.03	0.38
0:03:55	10,724.51	268.11	0.97	0:10:55	8,551.45	427.57	0.60	0:17:55	5,523.53	552.35	0.46	0:24:55	3,145.39	629.08	0.41	0:31:55	673.67	673.67	0.38
0:04:00	10,700.50	267.51	0.97	0:11:00	8,534.65	426.73	0.60	0:18:00	5,507.07	550.71	0.46	0:25:00	3,136.00	627.20	0.41	0:32:00	675.59	675.59	0.38
0:04:05	10,689.85	267.25	0.97	0:11:05	8,538.12	426.91	0.60	0:18:05	5,548.52	554.85	0.46	0:25:05	3,152.91	630.58	0.41	0:32:05	675.80	675.80	0.38
0:04:10	10,700.99	267.52	0.97	0:11:10	8,581.94	429.10	0.61	0:18:10	5,493.57	549.36	0.47	0:25:10	3,159.17	631.83	0.41	0:32:10	675.93	675.93	0.38
0:04:15	10,743.13	268.58	0.97	0:11:15	8,583.18	429.16	0.60	0:18:15	5,521.61	552.16	0.46	0:25:15	3,134.70	626.94	0.41	0:32:15	675.41	675.41	0.38
0:04:20	10,565.98	264.15	0.97	0:11:20	8,506.28	425.31	0.61	0:18:20	5,518.95	551.89	0.46	0:25:20	3,153.27	630.65	0.41	0:32:20	674.26	674.26	0.38
0:04:25	10,776.26	269.41	0.97	0:11:25	8,537.73	426.89	0.61	0:18:25	5,550.26	555.03	0.46	0:25:25	3,170.08	634.02	0.41	0:32:25	676.34	676.34	0.38
0:04:30	10,742.77	268.57	0.97	0:11:30	8,589.64	429.48	0.60	0:18:30	5,498.78	549.88	0.47	0:25:30	3,142.00	628.40	0.41	0:32:30	674.77	674.77	0.38
0:04:35	10,689.67	267.24	0.97	0:11:35	8,442.98	422.15	0.61	0:18:35	5,505.49	550.55	0.46	0:25:35	3,135.50	627.10	0.41	0:32:35	674.40	674.40	0.38
0:04:40	10,677.61	266.94	0.97	0:11:40	8,541.62	427.08	0.60	0:18:40	5,569.72	556.97	0.46	0:25:40	3,148.99	629.80	0.41	0:32:40	675.07	675.07	0.38
0:04:45	10,720.98	268.02	0.97	0:11:45	8,618.94	430.95	0.60	0:18:45	5,529.35	552.94	0.47	0:25:45	3,167.10	633.42	0.41	0:32:45	674.91	674.91	0.38
0:04:50	10,747.88	268.70	0.97	0:11:50	8,482.64	424.13	0.61	0:18:50	5,556.11	555.61	0.46	0:25:50	3,136.21	627.24	0.41	0:32:50	675.09	675.09	0.38
0:04:55	10,585.36	264.63	0.97	0:11:55	8,538.15	426.91	0.60	0:18:55	5,485.29	548.53	0.47	0:25:55	3,146.05	629.21	0.41	0:32:55	675.66	675.66	0.38
0:05:00	10,795.73	269.89	0.97	0:12:00	8,519.66	425.98	0.61	0:19:00	5,512.79	551.28	0.47	0:26:00	3,160.21	632.04	0.41	0:33:00	674.60	674.60	0.38
0:05:05	10,717.54	267.94	0.97	0:12:05	8,579.47	428.97	0.60	0:19:05	5,504.21	550.42	0.47	0:26:05	3,130.95	626.19	0.41	0:33:05	676.31	676.31	0.38
0:05:10	10,714.58	267.86	0.97	0:12:10	8,496.72	424.84	0.60	0:19:10	5,493.53	549.35	0.47	0:26:10	3,131.56	626.31	0.41	0:33:10	674.93	674.93	0.38
0:05:15	10,667.89	266.70	0.97	0:12:15	8,586.22	429.31	0.60	0:19:15	5,532.86	553.29	0.47	0:26:15	3,149.51	629.90	0.41	0:33:15	675.45	675.45	0.38
0:05:20	10,722.80	268.07	0.97	0:12:20	8,586.89	429.34	0.60	0:19:20	5,523.79	552.38	0.47	0:26:20	3,163.11	632.62	0.41	0:33:20	676.35	676.35	0.38
0:05:25	10,776.22	269.41	0.97	0:12:25	8,503.68	425.18	0.61	0:19:25	5,519.58	551.96	0.47	0:26:25	3,132.24	626.45	0.41	0:33:25	674.19	674.19	0.38
0:05:30	10,556.25	263.91	0.97	0:12:30	8,582.01	429.10	0.60	0:19:30	5,511.80	551.18	0.46	0:26:30	3,154.65	630.93	0.41	0:33:30	674.39	674.39	0.38
0:05:35	10,822.63	270.57	0.97	0:12:35	8,534.87	426.74	0.61	0:19:35	5,518.33	551.83	0.47	0:26:35	3,167.22	633.44	0.41	0:33:35	675.44	675.44	0.38
0:05:40	10,709.58	267.74	0.97	0:12:40	8,538.65	426.93	0.61	0:19:40	5,515.01	551.50	0.47	0:26:40	3,129.14	625.83	0.41	0:33:40	674.60	674.60	0.38
0:05:45	10,699.15	267.48	0.97	0:12:45	8,503.13	425.16	0.60	0:19:45	5,473.23	547.32	0.47	0:26:45	3,140.78	628.16	0.41	0:33:45	675.34	675.34	0.38
0:05:50	10,632.36	265.81	0.97	0:12:50	8,561.90	428.09	0.60	0:19:50	5,549.32	554.93	0.46	0:26:50	3,150.43	630.09	0.41	0:33:50	674.42	674.42	0.38
0:05:55	10,744.01	268.60	0.97	0:12:55	8,563.89	428.19	0.61	0:19:55	5,525.69	552.57	0.47	0:26:55	3,165.53	633.11	0.41	0:33:55	675.19	675.19	0.38
0:06:00	10,679.00	266.98	0.97	0:13:00	8,497.09	424.85	0.61	0:20:00	5,527.63	552.76	0.46	0:27:00	3,117.62	623.52	0.41	0:34:00	672.60	672.60	0.38
0:06:05	10,620.41	265.51	0.97	0:13:05	8,513.23	425.66	0.61	0:20:05	5,506.06	550.61	0.47	0:27:05	3,163.03	632.61	0.41	0:34:05	676.64	676.64	0.38
0:06:10	10,716.23	267.91	0.97	0:13:10	8,528.60	426.43	0.60	0:20:10	5,495.94	549.59	0.47	0:27:10	3,146.84	629.37	0.41	0:34:10	675.34	675.34	0.38
0:06:15	10,777.16	269.43	0.97	0:13:15	8,602.48	430.12	0.60	0:20:15	5,526.11	552.61	0.47	0:27:15	3,162.02	632.40	0.41	0:34:15	675.41	675.41	0.38
0:06:20	10,656.24	266.41	0.97	0:13:20	8,440.47	422.02	0.61	0:20:20	5,508.01	550.80	0.46	0:27:20	3,137.70	627.54	0.41	0:34:20	675.80	675.80	0.38
0:06:25	10,663.12	266.58	0.97	0:13:25	8,520.50	426.02	0.61	0:20:25	5,524.68	552.47	0.46	0:27:25	3,149.69	629.94	0.41	0:34:25	675.41	675.41	0.38
0:06:30	10,781.47	269.54	0.97	0:13:30	8,584.61	429.23	0.61	0:20:30	5,549.91	554.99	0.46	0:27:30	3,158.84	631.77	0.41	0:34:30	675.82	675.82	0.38
0:06:35	10,720.93	268.02	0.97	0:13:35	8,516.21	425.81	0.61	0:20:35	5,490.98	549.10	0.47	0:27:35	3,130.82	626.16	0.41	0:34:35	674.59	674.59	0.38
0:06:40	10,598.31	264.96	0.97	0:13:40	8,488.31	424.42	0.61	0:20:40	5,493.74	549.37	0.47	0:27:40	3,135.88	627.18	0.41	0:34:40	675.50	675.50	0.38
0:06:45	10,741.74	268.54	0.97	0:13:45	8,449.83	422.49	0.61	0:20:45	5,563.37	556.34	0.46	0:27:45	3,143.65	628.73	0.41	0:34:45	672.54	672.54	0.38
0:06:50	601.24	0.00	0.72	0:13:50	483.08	0.00	0.51	0:20:50	261.12	0.00	0.42	0:27:50	76.44	0.00	0.39	0:34:50	2.35	0.00	0.37
0:06:55	0.00	0.00	0.00	0:13:55	0.00	0.00	0.00	0:20:55	0.00	0.00	0.00	0:27:55	0.00	0.00	0.00	0:34:55	0.00	0.00	0.00

SPC BENCHMARK 2™ V1.3

FULL DISCLOSURE REPORT

Submitted for Review: MAY 10, 2011

Texas Memory Systems, Inc.

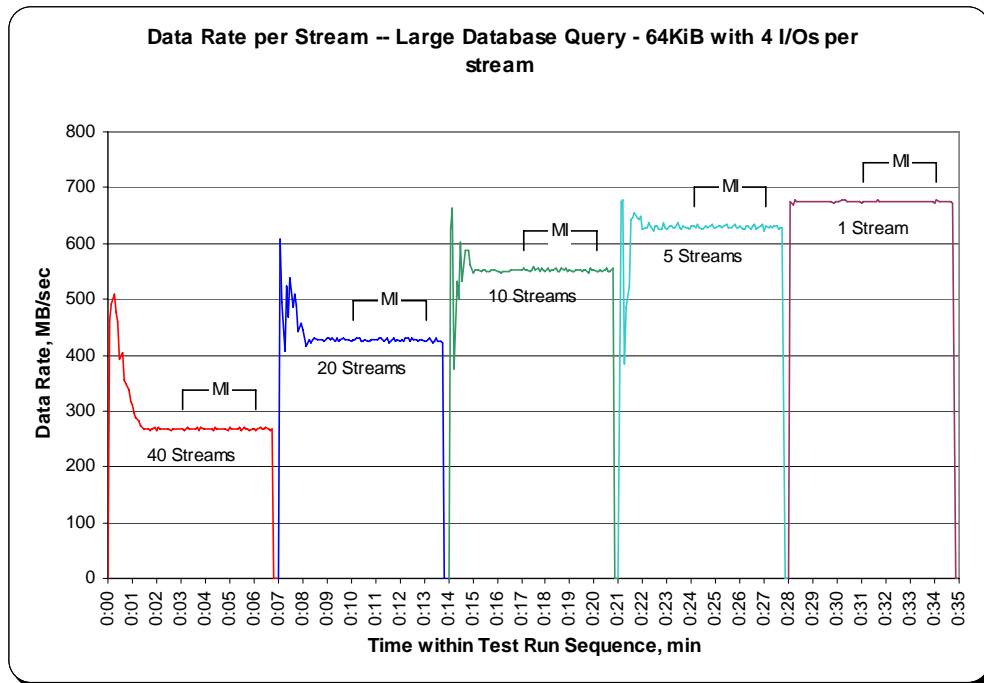Submission Identifier: B00054

Texas Memory Systems RamSan-630

SPC-2 "Large Database Query/64 KiB Transfer Size/4 Outstanding I/Os" Average Data Rate Graph – Complete Test Run
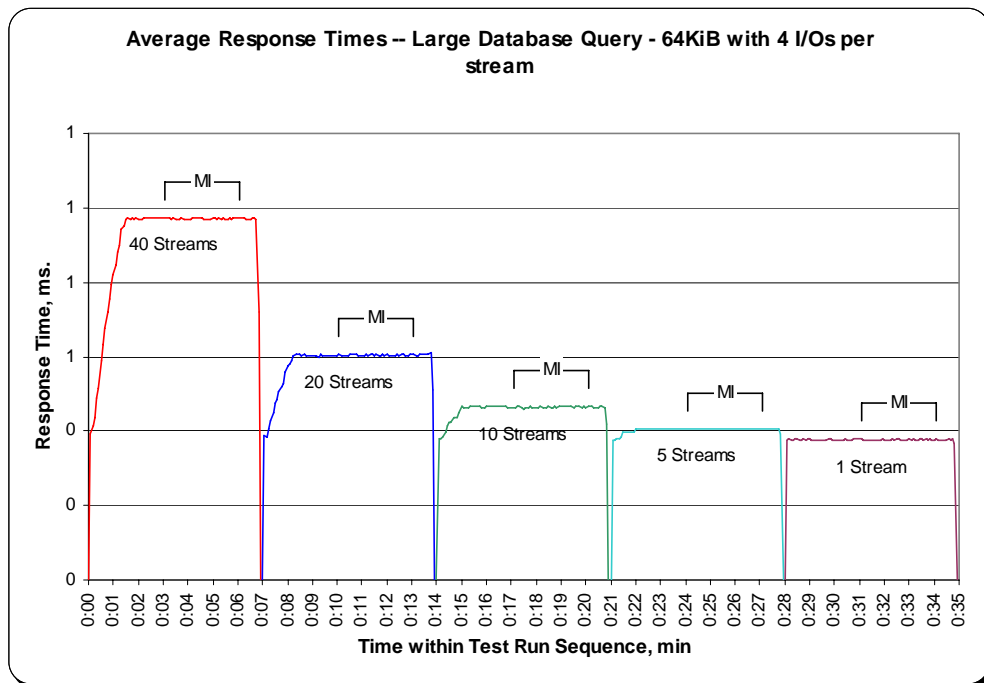

SPC-2 "Large Database Query/64 KiB Transfer Size/4 Outstanding I/Os" Average Data Rate Graph – Measurement Interval (MI) Only

SPC-2 "Large Database Query/64 KiB Transfer Size/4 Outstanding I/Os" Average Data Rate per Stream Graph

SPC-2 "Large Database Query/64 KiB Transfer Size/4 Outstanding I/Os" Average Response Time Graph

SPC-2 "Large Database Query/64 KiB Transfer Size/1 Outstanding I/O" Test Run Data – Ramp-Up Period

TR16 Test Run Sequence Time	40 Streams Data Rate, MB/sec	Data Rate / Stream, MB/sec	Response Time, ms	TR17 Test Run Sequence Time	20 Streams Data Rate, MB/sec	Data Rate / Stream, MB/sec	Response Time, ms	TR18 Test Run Sequence Time	10 Streams Data Rate, MB/sec	Data Rate / Stream, MB/sec	Response Time, ms	TR19 Test Run Sequence Time	5 Streams Data Rate, MB/sec	Data Rate / Stream, MB/sec	Response Time, ms	TR20 Test Run Sequence Time	1 Stream Data Rate, MB/sec	Data Rate / Stream, MB/sec	Response Time, ms
0:00:00	0.00	0.00	0.00	0:07:00	0.00	0.00	0.00	0:14:00	0.00	0.00	0.00	0:21:00	0.00	0.00	0.00	0:28:00	0.00	0.00	0.00
0:00:05	358.63	119.54	0.35	0:07:05	338.61	169.30	0.35	0:14:05	211.31	105.65	0.35	0:21:05	187.12	187.12	0.34	0:28:05	187.01	187.01	0.34
0:00:10	681.93	136.39	0.35	0:07:10	713.91	142.78	0.35	0:14:10	653.93	130.79	0.35	0:21:10	244.95	122.47	0.34	0:28:10	187.13	187.13	0.34
0:00:15	1,359.27	169.91	0.35	0:07:15	1,051.91	150.27	0.35	0:14:15	1,056.18	176.03	0.35	0:21:15	371.11	185.56	0.34	0:28:15	187.07	187.07	0.34
0:00:20	2,240.02	149.33	0.37	0:07:20	1,347.33	149.70	0.35	0:14:20	1,111.34	185.22	0.35	0:21:20	375.10	187.55	0.34	0:28:20	187.17	187.17	0.34
0:00:25	2,780.99	163.59	0.38	0:07:25	1,718.67	156.24	0.36	0:14:25	1,102.32	183.72	0.35	0:21:25	375.41	187.71	0.34	0:28:25	187.06	187.06	0.34
0:00:30	3,238.15	147.19	0.39	0:07:30	2,089.31	174.11	0.37	0:14:30	1,102.87	183.81	0.35	0:21:30	370.99	185.49	0.34	0:28:30	187.19	187.19	0.34
0:00:35	3,839.80	147.68	0.41	0:07:35	2,192.61	168.66	0.37	0:14:35	1,106.81	184.47	0.35	0:21:35	375.27	187.64	0.34	0:28:35	186.94	186.94	0.34
0:00:40	4,277.13	152.75	0.42	0:07:40	2,244.75	172.67	0.37	0:14:40	1,111.86	185.31	0.35	0:21:40	374.30	187.15	0.35	0:28:40	187.11	187.11	0.34
0:00:45	4,398.52	151.67	0.42	0:07:45	2,489.31	165.95	0.38	0:14:45	1,137.43	162.49	0.35	0:21:45	428.56	142.85	0.35	0:28:45	187.06	187.06	0.34
0:00:50	4,503.69	145.28	0.43	0:07:50	2,658.87	166.18	0.38	0:14:50	1,396.82	174.60	0.35	0:21:50	697.21	174.30	0.35	0:28:50	187.15	187.15	0.34
0:00:55	4,826.34	146.25	0.44	0:07:55	2,728.97	160.53	0.38	0:14:55	1,514.33	168.26	0.35	0:21:55	800.21	160.04	0.35	0:28:55	187.18	187.18	0.34
0:01:00	4,931.39	145.04	0.44	0:08:00	2,959.79	164.43	0.39	0:15:00	1,633.77	181.53	0.36	0:22:00	925.35	185.07	0.35	0:29:00	187.25	187.25	0.34
0:01:05	5,017.64	143.36	0.44	0:08:05	2,976.85	165.38	0.39	0:15:05	1,623.85	180.43	0.36	0:22:05	912.95	182.59	0.35	0:29:05	187.07	187.07	0.34
0:01:10	5,154.65	143.18	0.45	0:08:10	2,986.11	157.16	0.39	0:15:10	1,619.84	179.98	0.36	0:22:10	924.66	184.93	0.35	0:29:10	187.16	187.16	0.34
0:01:15	5,304.53	143.37	0.45	0:08:15	3,189.93	159.50	0.39	0:15:15	1,638.15	182.02	0.36	0:22:15	926.26	185.25	0.35	0:29:15	187.12	187.12	0.34
0:01:20	5,322.31	136.47	0.46	0:08:20	3,254.41	162.72	0.40	0:15:20	1,674.89	167.49	0.36	0:22:20	914.24	182.85	0.35	0:29:20	187.28	187.28	0.34
0:01:25	5,519.50	137.99	0.46	0:08:25	3,259.87	162.99	0.39	0:15:25	1,786.44	178.64	0.36	0:22:25	926.67	185.33	0.35	0:29:25	187.17	187.17	0.34
0:01:30	5,561.88	139.05	0.46	0:08:30	3,255.01	162.75	0.39	0:15:30	1,799.69	179.97	0.36	0:22:30	922.29	184.46	0.35	0:29:30	187.21	187.21	0.34
0:01:35	5,578.51	139.46	0.46	0:08:35	3,263.38	163.17	0.40	0:15:35	1,808.49	180.85	0.36	0:22:35	918.33	183.67	0.35	0:29:35	187.30	187.30	0.34
0:01:40	5,587.64	139.69	0.46	0:08:40	3,256.89	162.84	0.40	0:15:40	1,792.01	179.20	0.36	0:22:40	919.35	183.87	0.35	0:29:40	187.23	187.23	0.34
0:01:45	5,539.43	138.49	0.46	0:08:45	3,245.28	162.26	0.39	0:15:45	1,793.15	179.31	0.36	0:22:45	925.67	185.13	0.35	0:29:45	186.95	186.95	0.34
0:01:50	5,625.66	140.64	0.46	0:08:50	3,247.71	162.39	0.40	0:15:50	1,806.49	180.65	0.36	0:22:50	926.23	185.25	0.35	0:29:50	187.01	187.01	0.34
0:01:55	5,527.95	138.20	0.47	0:08:55	3,273.57	163.68	0.39	0:15:55	1,785.36	178.54	0.36	0:22:55	914.93	182.99	0.35	0:29:55	187.25	187.25	0.34
0:02:00	5,561.22	139.03	0.46	0:09:00	3,271.20	163.56	0.39	0:16:00	1,789.87	178.99	0.36	0:23:00	921.64	184.33	0.35	0:30:00	186.91	186.91	0.34
0:02:05	5,569.66	139.24	0.46	0:09:05	3,265.66	163.25	0.39	0:16:05	1,796.94	179.69	0.36	0:23:05	923.36	184.67	0.35	0:30:05	187.25	187.25	0.34
0:02:10	5,520.74	138.02	0.47	0:09:10	3,258.57	162.93	0.40	0:16:10	1,803.51	180.35	0.36	0:23:10	922.11	184.42	0.35	0:30:10	187.43	187.43	0.34
0:02:15	5,575.07	139.38	0.46	0:09:15	3,248.39	162.42	0.40	0:16:15	1,788.97	178.90	0.36	0:23:15	917.93	183.59	0.35	0:30:15	186.98	186.98	0.34
0:02:20	5,536.89	138.42	0.46	0:09:20	3,244.02	162.20	0.39	0:16:20	1,793.37	179.34	0.36	0:23:20	926.21	185.24	0.35	0:30:20	187.01	187.01	0.34
0:02:25	5,601.07	140.03	0.46	0:09:25	3,265.94	163.30	0.39	0:16:25	1,805.28	180.53	0.36	0:23:25	926.93	185.39	0.35	0:30:25	186.85	186.85	0.35
0:02:30	5,543.39	138.58	0.46	0:09:30	3,260.61	163.03	0.40	0:16:30	1,788.41	178.84	0.36	0:23:30	913.95	182.79	0.35	0:30:30	187.07	187.07	0.34
0:02:35	5,595.78	139.89	0.46	0:09:35	3,237.18	161.86	0.40	0:16:35	1,791.93	179.19	0.36	0:23:35	921.82	184.36	0.35	0:30:35	187.25	187.25	0.34
0:02:40	5,541.49	138.54	0.47	0:09:40	3,259.55	162.98	0.39	0:16:40	1,796.78	179.68	0.36	0:23:40	923.01	184.60	0.35	0:30:40	187.06	187.06	0.34
0:02:45	5,585.85	139.65	0.46	0:09:45	3,254.40	162.72	0.39	0:16:45	1,804.87	180.49	0.36	0:23:45	921.71	184.34	0.35	0:30:45	186.91	186.91	0.34
0:02:50	5,559.17	138.98	0.46	0:09:50	3,271.19	163.56	0.39	0:16:50	1,787.87	178.79	0.36	0:23:50	918.43	183.69	0.35	0:30:50	187.07	187.07	0.34
0:02:55	5,545.59	138.64	0.46	0:09:55	3,250.23	162.51	0.39	0:16:55	1,791.95	179.20	0.36	0:23:55	924.45	184.89	0.35	0:30:55	187.32	187.32	0.34
0:03:00	5,562.19	139.05	0.46	0:10:00	3,239.83	161.99	0.40	0:17:00	1,797.59	179.76	0.36	0:24:00	917.10	183.42	0.35	0:31:00	186.56	186.56	0.34

SPC-2 "Large Database Query/64 KiB Transfer Size/1 Outstanding I/O" Test Run Data Measurement Interval, Run-Out, and Ramp-Down Period
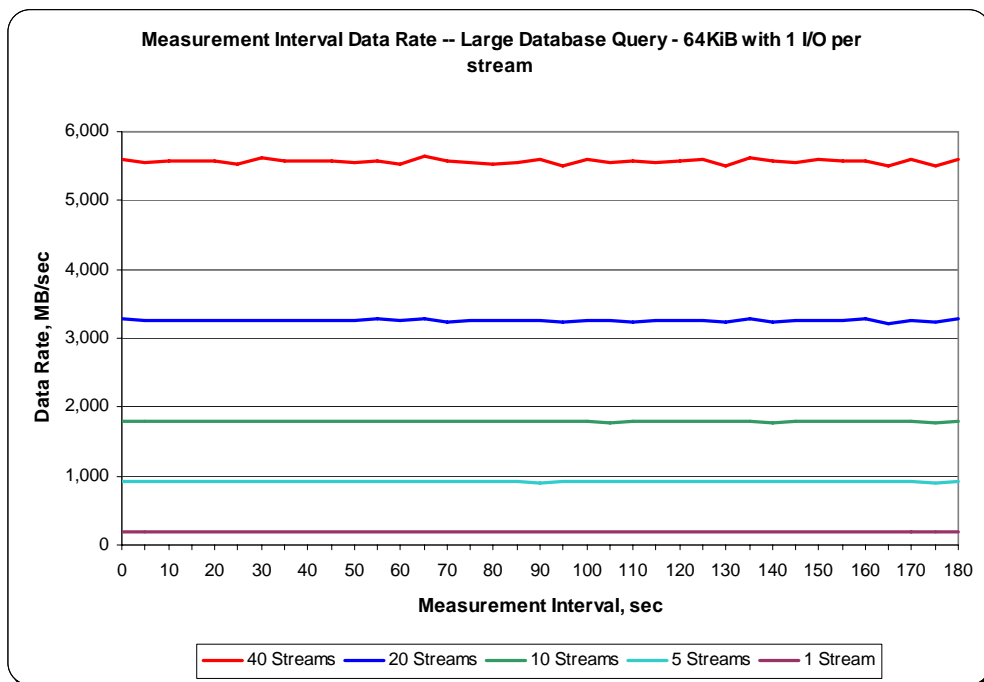
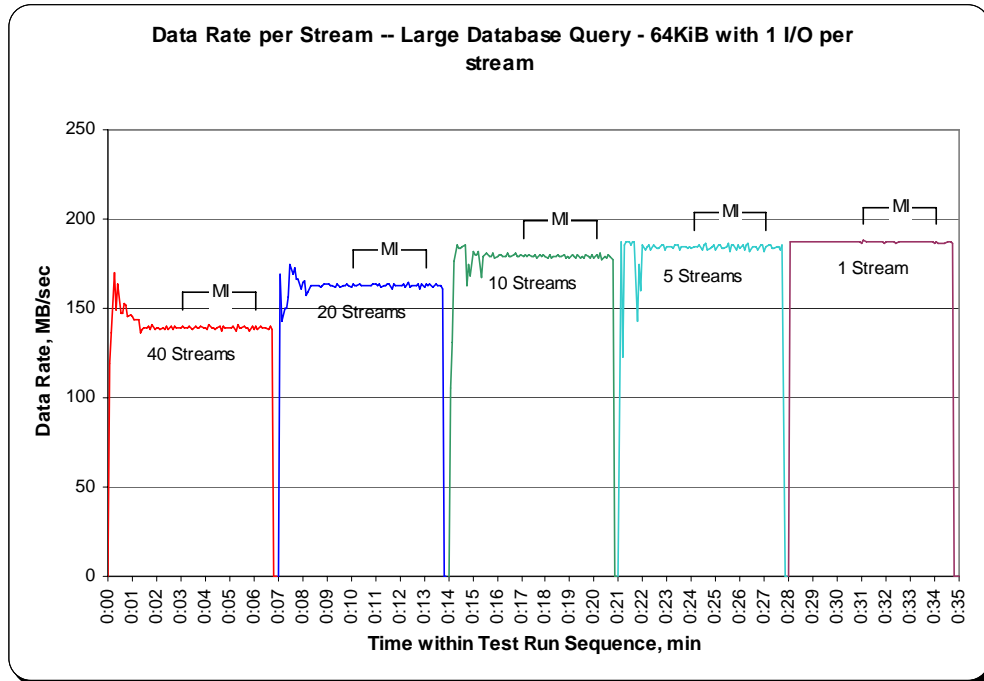| TR16 Test Run Sequence Time	40 Streams Data Rate, MB/sec	Data Rate / Stream, MB/sec	Response Time, ms	TR17 Test Run Sequence Time	20 Streams Data Rate, MB/sec	Data Rate / Stream, MB/sec	Response Time, ms	TR18 Test Run Sequence Time	10 Streams Data Rate, MB/sec	Data Rate / Stream, MB/sec	Response Time, ms	TR19 Test Run Sequence Time	5 Streams Data Rate, MB/sec	Data Rate / Stream, MB/sec	Response Time, ms	TR20 Test Run Sequence Time	1 Stream Data Rate, MB/sec	Data Rate / Stream, MB/sec	Response Time, ms
0:03:05	5,590.28	139.76	0.46	0:10:05	3,274.35	163.72	0.39	0:17:05	1,790.82	179.08	0.36	0:24:05	922.52	184.50	0.35	0:31:05	187.79	187.79	0.34
0:03:10	5,560.76	139.02	0.46	0:10:10	3,257.86	162.89	0.39	0:17:10	1,797.13	179.71	0.36	0:24:10	921.12	184.22	0.35	0:31:10	187.27	187.27	0.34
0:03:15	5,577.29	139.43	0.46	0:10:15	3,255.92	162.80	0.40	0:17:15	1,789.12	178.91	0.36	0:24:15	921.55	184.31	0.35	0:31:15	186.96	186.96	0.34
0:03:20	5,585.65	139.64	0.46	0:10:20	3,268.10	163.40	0.39	0:17:20	1,800.73	180.07	0.36	0:24:20	925.72	185.14	0.35	0:31:20	187.12	187.12	0.34
0:03:25	5,569.41	139.24	0.46	0:10:25	3,253.08	162.65	0.40	0:17:25	1,791.37	179.14	0.36	0:24:25	914.82	182.96	0.35	0:31:25	186.94	186.94	0.34
0:03:30	5,518.68	137.97	0.46	0:10:30	3,252.20	162.61	0.40	0:17:30	1,788.68	178.87	0.36	0:24:30	925.77	185.15	0.35	0:31:30	186.90	186.90	0.34
0:03:35	5,610.73	140.27	0.46	0:10:35	3,261.99	163.10	0.40	0:17:35	1,804.13	180.41	0.36	0:24:35	930.88	186.18	0.35	0:31:35	187.07	187.07	0.34
0:03:40	5,579.18	139.48	0.46	0:10:40	3,258.51	162.93	0.39	0:17:40	1,784.09	178.41	0.36	0:24:40	914.25	182.85	0.35	0:31:40	187.09	187.09	0.34
0:03:45	5,573.55	139.34	0.46	0:10:45	3,258.46	162.92	0.39	0:17:45	1,795.94	179.59	0.36	0:24:45	918.85	183.77	0.35	0:31:45	187.43	187.43	0.34
0:03:50	5,583.25	139.58	0.46	0:10:50	3,258.23	162.91	0.39	0:17:50	1,788.33	178.83	0.36	0:24:50	921.85	184.37	0.35	0:31:50	186.97	186.97	0.34
0:03:55	5,561.45	139.04	0.46	0:10:55	3,270.16	163.51	0.39	0:17:55	1,801.61	180.16	0.36	0:24:55	925.98	185.20	0.35	0:31:55	186.77	186.77	0.35
0:04:00	5,566.36	139.16	0.47	0:11:00	3,273.70	163.68	0.39	0:18:00	1,787.77	178.78	0.36	0:25:00	913.78	182.76	0.35	0:32:00	187.04	187.04	0.34
0:04:05	5,526.31	138.16	0.46	0:11:05	3,256.02	162.80	0.39	0:18:05	1,783.67	178.37	0.36	0:25:05	926.22	185.24	0.35	0:32:05	187.13	187.13	0.34
0:04:10	5,643.35	141.08	0.46	0:11:10	3,278.95	163.95	0.39	0:18:10	1,801.39	180.14	0.36	0:25:10	925.18	185.04	0.35	0:32:10	186.88	186.88	0.34
0:04:15	5,563.39	139.08	0.46	0:11:15	3,241.69	162.08	0.40	0:18:15	1,783.79	178.38	0.36	0:25:15	917.27	183.45	0.35	0:32:15	187.23	187.23	0.34
0:04:20	5,556.29	138.91	0.46	0:11:20	3,248.53	162.43	0.39	0:18:20	1,793.36	179.34	0.36	0:25:20	917.65	183.53	0.35	0:32:20	186.85	186.85	0.35
0:04:25	5,531.44	138.29	0.47	0:11:25	3,259.39	162.97	0.39	0:18:25	1,786.82	178.68	0.36	0:25:25	921.60	184.32	0.35	0:32:25	186.77	186.77	0.35
0:04:30	5,554.04	138.85	0.46	0:11:30	3,268.94	163.45	0.39	0:18:30	1,803.04	180.30	0.36	0:25:30	930.20	186.04	0.35	0:32:30	187.08	187.08	0.34
0:04:35	5,590.02	139.75	0.46	0:11:35	3,263.71	163.19	0.40	0:18:35	1,792.48	179.25	0.36	0:25:35	909.23	181.85	0.35	0:32:35	187.01	187.01	0.34
0:04:40	5,507.35	137.68	0.46	0:11:40	3,225.44	161.27	0.40	0:18:40	1,786.97	178.70	0.36	0:25:40	926.15	185.23	0.35	0:32:40	187.18	187.18	0.34
0:04:45	5,588.66	139.72	0.47	0:11:45	3,266.64	163.33	0.40	0:18:45	1,799.30	179.93	0.36	0:25:45	927.04	185.41	0.35	0:32:45	186.92	186.92	0.34
0:04:50	5,547.08	138.68	0.46	0:11:50	3,253.75	162.69	0.39	0:18:50	1,781.34	178.13	0.36	0:25:50	914.30	182.86	0.35	0:32:50	187.18	187.18	0.34
0:04:55	5,573.13	139.33	0.46	0:11:55	3,247.36	162.37	0.40	0:18:55	1,793.44	179.34	0.36	0:25:55	927.17	185.43	0.35	0:32:55	187.08	187.08	0.34
0:05:00	5,550.93	138.77	0.46	0:12:00	3,252.91	162.65	0.39	0:19:00	1,785.39	178.54	0.36	0:26:00	917.87	183.57	0.35	0:33:00	187.16	187.16	0.34
0:05:05	5,567.29	139.18	0.46	0:12:05	3,254.87	162.74	0.39	0:19:05	1,798.57	179.86	0.36	0:26:05	925.17	185.03	0.35	0:33:05	187.09	187.09	0.34
0:05:10	5,592.31	139.81	0.46	0:12:10	3,267.57	163.38	0.39	0:19:10	1,792.52	179.25	0.36	0:26:10	915.08	183.02	0.35	0:33:10	187.13	187.13	0.34
0:05:15	5,501.35	137.53	0.46	0:12:15	3,240.35	162.02	0.39	0:19:15	1,784.30	178.43	0.36	0:26:15	926.23	185.25	0.35	0:33:15	187.07	187.07	0.34
0:05:20	5,629.96	140.75	0.46	0:12:20	3,293.41	164.67	0.39	0:19:20	1,803.46	180.35	0.36	0:26:20	930.41	186.08	0.35	0:33:20	187.12	187.12	0.34
0:05:25	5,580.09	139.50	0.46	0:12:25	3,230.99	161.55	0.39	0:19:25	1,780.84	178.08	0.36	0:26:25	909.80	181.96	0.35	0:33:25	187.04	187.04	0.34
0:05:30	5,559.42	138.99	0.46	0:12:30	3,263.28	163.16	0.39	0:19:30	1,792.94	179.29	0.36	0:26:30	921.34	184.27	0.35	0:33:30	187.21	187.21	0.34
0:05:35	5,588.96	139.72	0.46	0:12:35	3,261.03	163.05	0.39	0:19:35	1,785.54	178.55	0.36	0:26:35	921.68	184.34	0.35	0:33:35	186.95	186.95	0.34
0:05:40	5,563.58	139.09	0.46	0:12:40	3,257.56	162.88	0.39	0:19:40	1,799.13	179.91	0.36	0:26:40	924.48	184.90	0.35	0:33:40	186.88	186.88	0.34
0:05:45	5,566.39	139.16	0.46	0:12:45	3,275.16	163.76	0.39	0:19:45	1,793.26	179.33	0.36	0:26:45	912.36	182.47	0.35	0:33:45	187.02	187.02	0.34
0:05:50	5,499.61	137.49	0.47	0:12:50	3,222.78	161.14	0.40	0:19:50	1,785.58	178.56	0.36	0:26:50	925.68	185.14	0.35	0:33:50	187.15	187.15	0.34
0:05:55	5,595.50	139.89	0.46	0:12:55	3,266.00	163.30	0.40	0:19:55	1,800.17	180.02	0.36	0:26:55	925.68	185.14	0.35	0:33:55	187.25	187.25	0.34
0:06:00	5,509.20	137.73	0.47	0:13:00	3,232.08	161.60	0.40	0:20:00	1,782.33	178.23	0.36	0:27:00	909.42	181.88	0.35	0:34:00	186.28	186.28	0.35
0:06:05	5,587.39	139.68	0.46	0:13:05	3,272.07	163.60	0.39	0:20:05	1,798.61	179.86	0.36	0:27:05	922.91	184.58	0.35	0:34:05	187.18	187.18	0.35
0:06:10	5,517.30	137.93	0.47	0:13:10	3,257.57	162.88	0.39	0:20:10	1,783.98	178.40	0.36	0:27:10	925.99	185.20	0.35	0:34:10	186.81	186.81	0.35
0:06:15	5,591.96	139.80	0.46	0:13:15	3,264.64	163.23	0.40	0:20:15	1,804.69	180.47	0.36	0:27:15	926.10	185.22	0.35	0:34:15	186.71	186.71	0.35
0:06:20	5,557.54	138.94	0.46	0:13:20	3,240.30	162.01	0.39	0:20:20	1,776.30	177.63	0.36	0:27:20	918.04	183.61	0.35	0:34:20	186.69	186.69	0.35
0:06:25	5,559.96	139.00	0.47	0:13:25	3,262.16	163.11	0.39	0:20:25	1,792.95	179.29	0.36	0:27:25	918.22	183.64	0.35	0:34:25	186.79	186.79	0.35
0:06:30	5,561.69	139.04	0.46	0:13:30	3,267.87	163.39	0.39	0:20:30	1,784.93	178.49	0.36	0:27:30	924.53	184.91	0.35	0:34:30	186.91	186.91	0.34
0:06:35	5,527.56	138.19	0.46	0:13:35	3,259.54	162.98	0.39	0:20:35	1,801.89	180.19	0.36	0:27:35	921.93	184.39	0.35	0:34:35	187.25	187.25	0.34
0:06:40	5,598.67	139.97	0.46	0:13:40	3,251.20	162.56	0.40	0:20:40	1,795.37	179.54	0.36	0:27:40	914.86	182.97	0.35	0:34:40	187.08	187.08	0.34
0:06:45	5,543.42	138.59	0.46	0:13:45	3,223.39	161.17	0.40	0:20:45	1,775.68	177.57	0.36	0:27:45	928.46	185.69	0.35	0:34:45	186.46	186.46	0.34
0:06:50	342.36	0.00	0.43	0:13:50	201.96	0.00	0.38	0:20:50	107.58	0.00	0.35	0:27:50	14.74	0.00	0.35	0:34:50	0.63	0.00	0.34
0:06:55	0.00	0.00	0.00	0:13:55	0.00	0.00	0.00	0:20:55	0.00	0.00	0.00	0:27:55	0.00	0.00	0.00	0:34:55	0.00	0.00	0.00
																0:35:00	0.00	0.00	0.00

SPC-2 "Large Database Query/64 KiB Transfer Size/1 Outstanding I/O" Average Data Rate Graph – Complete Test Run
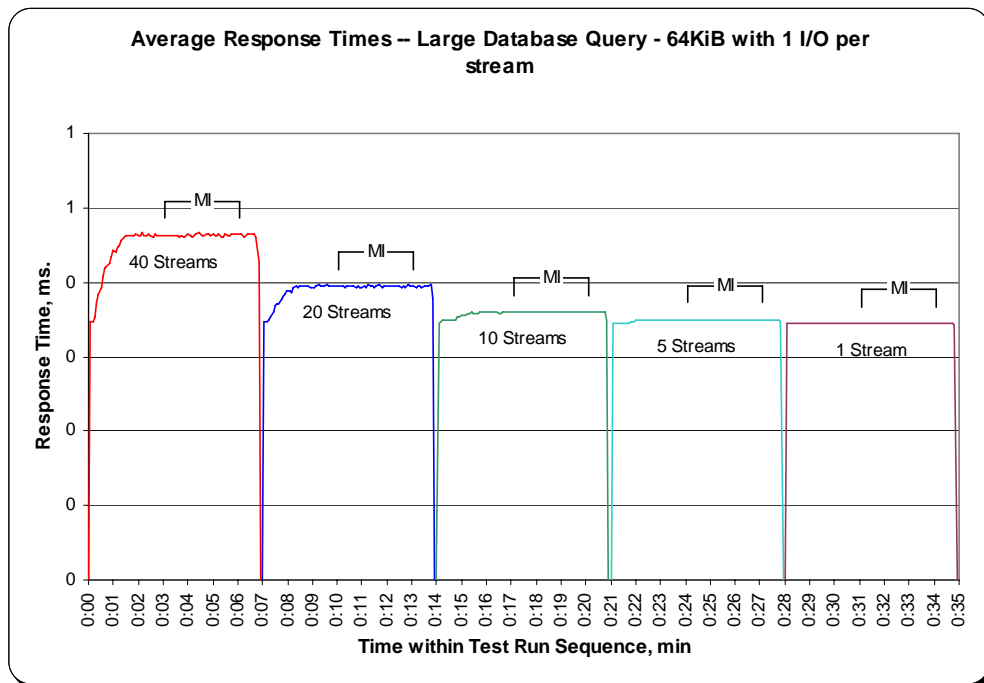

SPC-2 "Large Database Query/64 KiB Transfer Size/1 Outstanding I/O" Average Data Rate Graph – Measurement Interval (MI) Only

SPC-2 "Large Database Query/64 KiB Transfer Size/1 Outstanding I/O" Average Data Rate per Stream Graph

SPC-2 "Large Database Query/64 KiB Transfer Size/1 Outstanding I/O" Average Response Time Graph

Video on Demand Delivery Test

Clause 6.4.4.1

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 6.4.2.2

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 10.6.8.3

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 (intervals), Average Data Rate per Stream (intervals), and Average Response Time (intervals) graphs for the single Video on Demand Delivery Test Run as specified in Clauses 10.1.4-2-10.1.6.*

6. *A Maximum Response Time (intervals) graph, which will utilize the format defined in Clause 10.1.6, substituting maximum Response Time data for average Response Time data.*

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 108.

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	11000
Ramp-up Time, sec	1200
Measurement Interval, sec	7200
Average Data Rate, MB/sec	8,650.71
Per Stream Data Rate, MB/sec	0.79
Average Response Time, ms	2.61
Average Max Response Time, ms	13.90

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 on the next page. 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 Test Run Sequence Time	11000 Streams Data Rate, MB/sec	Data Rate / Stream, MB/sec	Response Time, ms	Maximum Response Time, ms	TR1 Test Run Sequence Time	11000 Streams Data Rate, MB/sec	Data Rate / Stream, MB/sec	Response Time, ms	Maximum Response Time, ms	TR1 Test Run Sequence Time	11000 Streams Data Rate, MB/sec	Data Rate / Stream, MB/sec	Response Time, ms	Maximum Response Time, ms
0:01:00	865.61	0.68	0.59	4.46	0:51:00	8,648.65	0.79	2.27	12.14	1:41:00	8,647.95	0.79	2.54	15.69
0:02:00	2,408.88	0.77	0.69	5.53	0:52:00	8,652.72	0.79	2.25	14.33	1:42:00	8,653.96	0.79	2.55	15.27
0:03:00	3,626.91	0.77	0.79	6.65	0:53:00	8,648.90	0.79	2.26	12.13	1:43:00	8,648.95	0.79	2.59	13.82
0:04:00	4,725.22	0.78	0.95	6.61	0:54:00	8,653.54	0.79	2.25	14.24	1:44:00	8,652.69	0.79	2.58	14.72
0:05:00	5,620.68	0.78	1.03	8.58	0:55:00	8,647.84	0.79	2.24	12.40	1:45:00	8,645.79	0.79	2.58	14.12
0:06:00	6,393.28	0.78	1.19	7.23	0:56:00	8,652.71	0.79	2.24	14.21	1:46:00	8,649.95	0.79	2.60	15.14
0:07:00	7,073.86	0.78	1.36	9.04	0:57:00	8,649.38	0.79	2.28	13.65	1:47:00	8,647.86	0.79	2.61	14.06
0:08:00	7,635.96	0.78	1.52	8.55	0:58:00	8,653.17	0.79	2.27	13.25	1:48:00	8,652.73	0.79	2.63	15.84
0:09:00	8,109.58	0.78	1.73	9.61	0:59:00	8,649.72	0.79	2.31	14.33	1:49:00	8,648.27	0.79	2.68	13.97
0:10:00	8,491.88	0.78	1.97	9.55	1:00:00	8,651.33	0.79	2.38	12.50	1:50:00	8,654.77	0.79	2.68	15.75
0:11:00	8,648.85	0.79	2.04	10.57	1:01:00	8,648.77	0.79	2.37	13.52	1:51:00	8,646.60	0.79	2.71	16.34
0:12:00	8,651.38	0.79	2.05	10.98	1:02:00	8,650.92	0.79	2.44	12.33	1:52:00	8,651.77	0.79	2.76	15.17
0:13:00	8,648.99	0.79	2.06	9.54	1:03:00	8,650.20	0.79	2.49	14.45	1:53:00	8,647.82	0.79	2.79	15.53
0:14:00	8,651.99	0.79	2.07	10.53	1:04:00	8,655.19	0.79	2.51	14.39	1:54:00	8,653.92	0.79	2.76	17.01
0:15:00	8,648.92	0.79	2.06	12.42	1:05:00	8,645.36	0.79	2.58	14.78	1:55:00	8,649.05	0.79	2.76	14.73
0:16:00	8,653.66	0.79	2.11	10.74	1:06:00	8,651.70	0.79	2.57	12.54	1:56:00	8,657.09	0.79	2.80	15.01
0:17:00	8,650.16	0.79	2.13	9.72	1:07:00	8,652.32	0.79	2.64	14.50	1:57:00	8,645.96	0.79	2.77	16.16
0:18:00	8,652.06	0.79	2.18	10.08	1:08:00	8,653.80	0.79	2.70	13.25	1:58:00	8,655.12	0.79	2.80	18.24
0:19:00	8,648.04	0.79	2.25	10.26	1:09:00	8,648.42	0.79	2.65	14.35	1:59:00	8,646.16	0.79	2.81	15.97
0:20:00	8,649.02	0.79	2.29	10.27	1:10:00	8,651.78	0.79	2.65	15.10	2:00:00	8,654.32	0.79	2.80	15.59
0:21:00	8,650.04	0.79	2.35	9.71	1:11:00	8,650.66	0.79	2.65	14.98	2:01:00	8,647.60	0.79	2.84	16.09
0:22:00	8,652.55	0.79	2.41	10.33	1:12:00	8,650.24	0.79	2.61	14.13	2:02:00	8,653.76	0.79	2.88	15.56
0:23:00	8,650.34	0.79	2.41	9.66	1:13:00	8,647.71	0.79	2.59	15.66	2:03:00	8,644.29	0.79	2.91	15.63
0:24:00	8,652.55	0.79	2.44	10.07	1:14:00	8,652.67	0.79	2.56	14.70	2:04:00	8,653.74	0.79	2.96	14.42
0:25:00	8,646.55	0.79	2.42	9.60	1:15:00	8,649.71	0.79	2.59	14.38	2:05:00	8,648.49	0.79	3.00	16.67
0:26:00	8,653.14	0.79	2.41	10.12	1:16:00	8,653.42	0.79	2.60	16.63	2:06:00	8,654.03	0.79	3.04	13.92
0:27:00	8,648.86	0.79	2.41	10.23	1:17:00	8,647.88	0.79	2.60	14.11	2:07:00	8,649.18	0.79	3.05	17.27
0:28:00	8,652.04	0.79	2.38	9.75	1:18:00	8,653.42	0.79	2.62	15.51	2:08:00	8,653.64	0.79	2.98	14.04
0:29:00	8,652.44	0.79	2.39	11.81	1:19:00	8,646.98	0.79	2.66	13.99	2:09:00	8,645.56	0.79	2.97	15.53
0:30:00	8,651.68	0.79	2.38	10.67	1:20:00	8,653.94	0.79	2.67	16.27	2:10:00	8,653.33	0.79	2.92	14.36
0:31:00	8,649.38	0.79	2.38	9.92	1:21:00	8,647.16	0.79	2.68	13.78	2:11:00	8,650.81	0.79	2.92	14.21
0:32:00	8,651.08	0.79	2.41	10.51	1:22:00	8,651.75	0.79	2.72	15.71	2:12:00	8,654.62	0.79	2.91	13.51
0:33:00	8,649.40	0.79	2.39	10.72	1:23:00	8,646.63	0.79	2.74	13.30	2:13:00	8,647.71	0.79	2.87	15.18
0:34:00	8,650.91	0.79	2.42	10.97	1:24:00	8,655.19	0.79	2.78	16.37	2:14:00	8,653.85	0.79	2.88	13.73
0:35:00	8,649.22	0.79	2.44	12.71	1:25:00	8,646.97	0.79	2.83	16.60	2:15:00	8,650.94	0.79	2.88	14.83
0:36:00	8,650.36	0.79	2.44	11.12	1:26:00	8,655.22	0.79	2.84	15.78	2:16:00	8,652.81	0.79	2.88	14.84
0:37:00	8,653.77	0.79	2.49	11.55	1:27:00	8,645.24	0.79	2.84	15.27	2:17:00	8,647.30	0.79	2.92	14.88
0:38:00	8,651.35	0.79	2.50	11.99	1:28:00	8,653.83	0.79	2.82	13.73	2:18:00	8,654.18	0.79	2.90	13.85
0:39:00	8,646.69	0.79	2.48	12.82	1:29:00	8,647.91	0.79	2.76	16.69	2:19:00	8,647.42	0.79	2.81	13.86
0:40:00	8,653.76	0.79	2.51	12.58	1:30:00	8,653.73	0.79	2.75	14.28	2:20:00	8,650.70	0.79	2.77	14.69
0:41:00	8,649.07	0.79	2.51	13.18	1:31:00	8,650.60	0.79	2.72	14.82					
0:42:00	8,651.06	0.79	2.53	13.18	1:32:00	8,655.32	0.79	2.69	13.87					
0:43:00	8,647.73	0.79	2.49	13.22	1:33:00	8,647.04	0.79	2.67	16.01					
0:44:00	8,651.38	0.79	2.46	13.47	1:34:00	8,652.16	0.79	2.61	13.97					
0:45:00	8,648.01	0.79	2.46	12.66	1:35:00	8,646.00	0.79	2.59	16.55					
0:46:00	8,649.24	0.79	2.42	14.04	1:36:00	8,652.45	0.79	2.59	12.50					
0:47:00	8,648.70	0.79	2.38	13.22	1:37:00	8,653.93	0.79	2.55	16.36					
0:48:00	8,652.33	0.79	2.36	13.31	1:38:00	8,652.04	0.79	2.55	13.96					
0:49:00	8,646.37	0.79	2.33	12.45	1:39:00	8,647.30	0.79	2.53	16.62					
0:50:00	8,653.33	0.79	2.30	13.45	1:40:00	8,653.16	0.79	2.53	14.50					

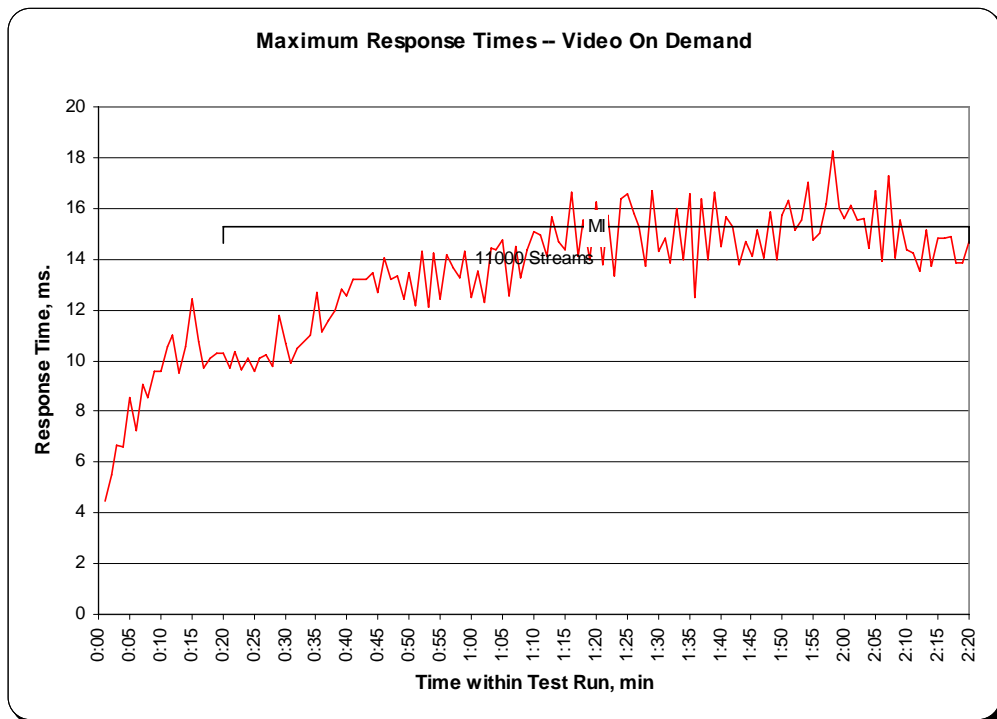## SPC-2 Video on Demand Delivery Average Data Rate Graph
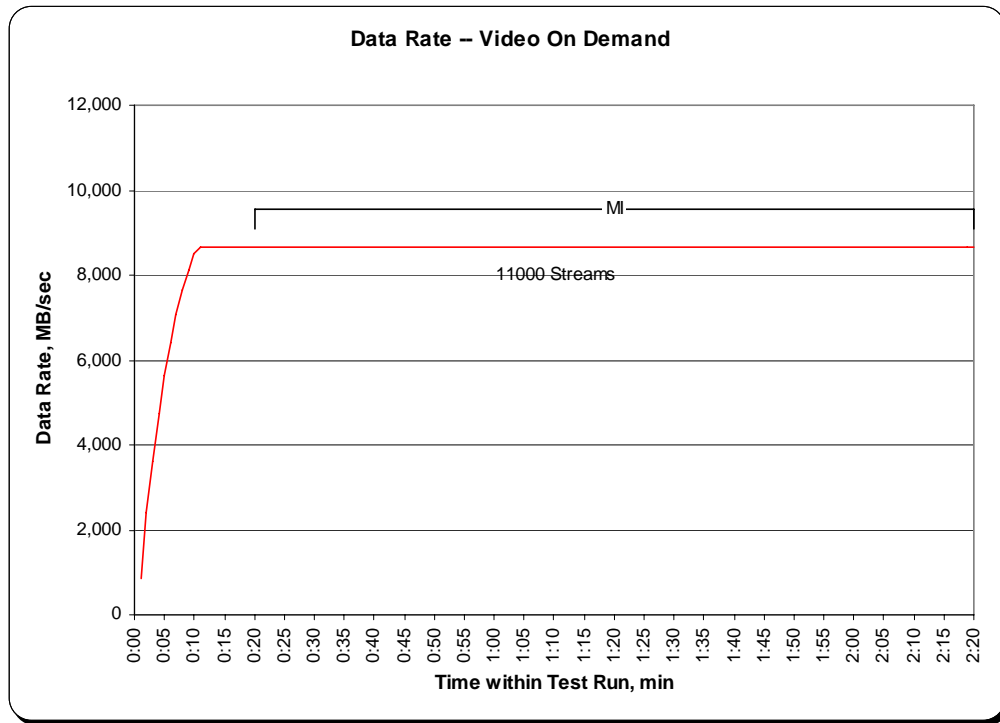
SPC-2 Video on Demand Delivery Average Data Rate per Stream Graph
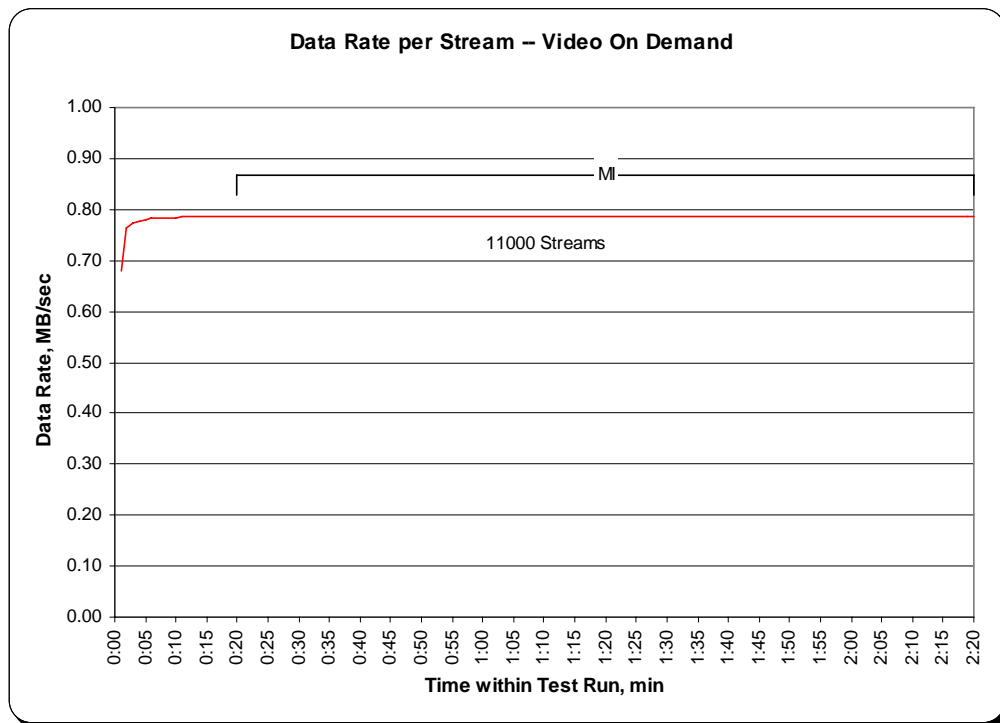
SPC-2 Video on Demand Delivery Average Response Time Graph
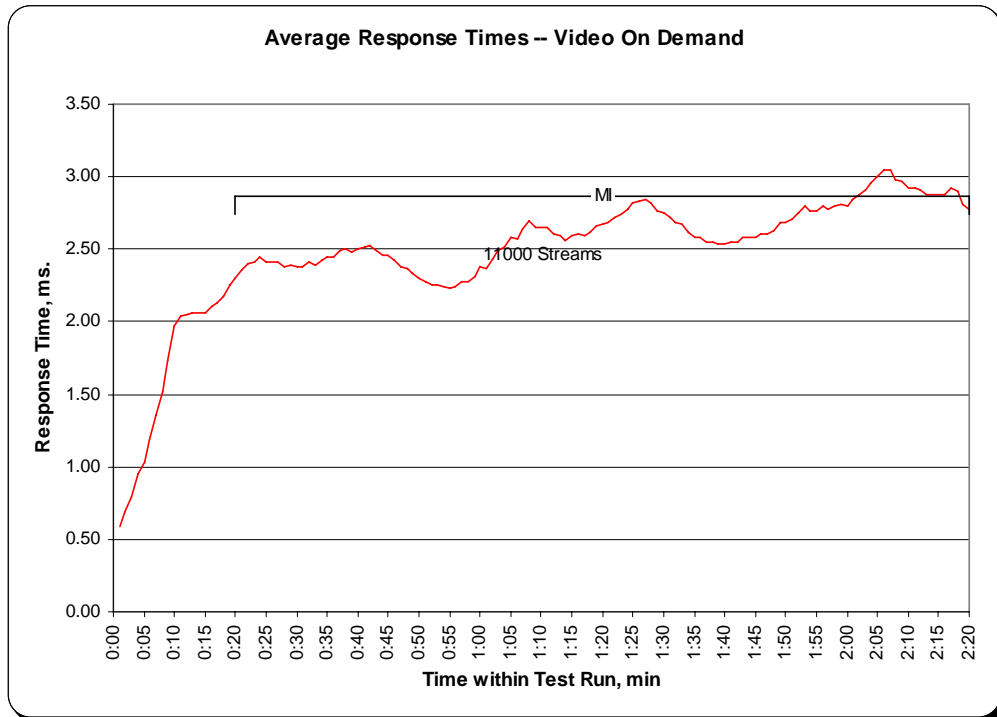
SPC-2 Video on Demand Delivery Maximum Response Time Graph

Data Persistence Test

Clause 6

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 10.6.8.4

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 108.

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 Results File
Persistence 2 Test Run Results File

Data Persistence Test Results

Data Persistence Test Results	
Data Persistence Test Number: 1	
Total Number of Logical Blocks Written	502,917
Total Number of Logical Blocks Re-referenced	16,299
Total Number of Logical Blocks Verified	486,618
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 FDR shall state: "The **Priced Storage Configuration**, as documented in this Full Disclosure Report will be available for shipment to customers on MMMM DD, YYYY." Where **Priced Storage Configuration** is the Priced Storage Configuration Name as described in Clause 10.6.5.3, #1 and MM is month, DD is the day, and YY is the year of the date that the Priced Storage Configuration, as documented, is available for shipment to customers as described above.*

The Texas Memory Systems RamSan-630, as documented in this SPC-2 Full Disclosure Report, is currently available for customer purchase and shipment.

ANOMALIES OR IRREGULARITIES

Clause 10.6.11

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 Texas Memory Systems RamSan-630.

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

RAID5: User data is distributed across the disks in the array. Check data corresponding to user data is distributed across multiple disks in the form of bit-by-bit parity.

Mirroring: Two or more identical copies of user data are maintained on separate disks.

Other Protection Level: Any data protection other than **RAID5** or **Mirroring**.

Unprotected: There is no data protection provided.

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
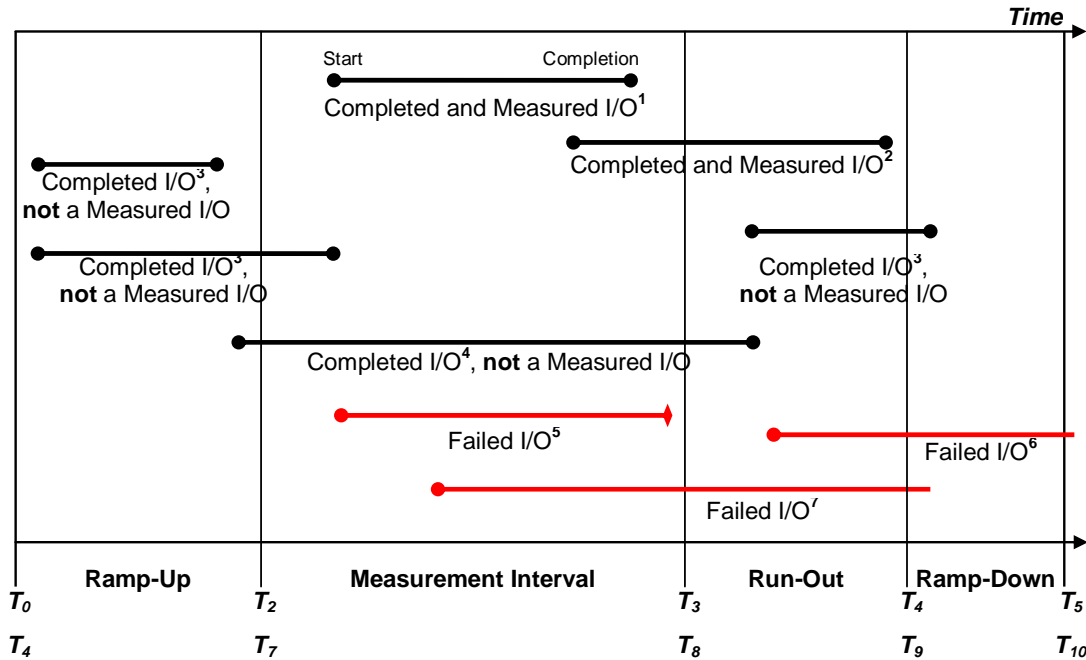
Completed and Measured I/O[1]: *I/O started and completed within the Measurement Interval.*

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
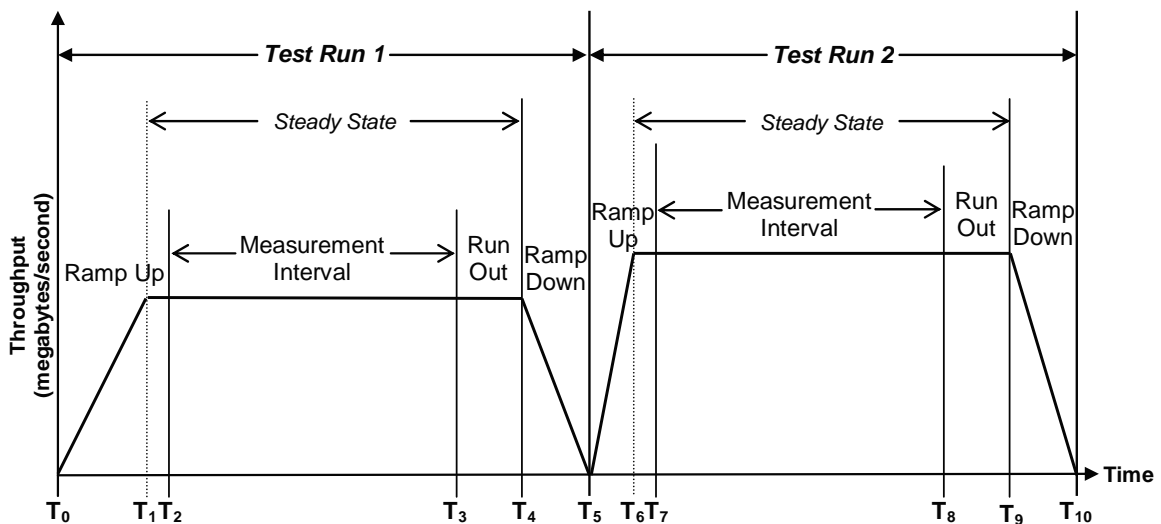
APPENDIX B: CUSTOMER TUNABLE PARAMETERS AND OPTIONS

There were no customer tunable parameters or options changed from their default values.

APPENDIX C: TESTED STORAGE CONFIGURATION (TSC) CREATION

ASU Pre-Fill

The following command was issued in a Windows command session to invoke the script listed below. The script will fill the Total Application Storage Unit (ASU) Capacity with random data using Vdbench 5.03 Beta.

> ***vdbench –f prepssd.txt –o ssdprep***

prepssd.txt

```
 *
 * This will produce a random data pattern of the entire LBA range using LSFR 32bit
 *
 pattern=random


 sd=sd1,lun=\\.\PhysicalDrive1,threads=32

 wd=wd1,sd=sd*,rdpct=0,seek=-1,xfersize=1m



 *=================================
 * Use 10 hours as a max elapse time
 *=================================
 *
 rd=PREPSSD,wd=wd*,iorate=max,elapsed=36000,interval=10
```

Create the SPC-1 Logical Volumes

The SPC-1 Logical Volumes are created by using either the Web GUI on the RamSan-630 for wizard-based configuration or by logging into the CLI through Serial, Telnet, or SSH protocols.

Using the CLI, the SPC-1 Logical Volumes are created by the following command:

> ***lu create asu1 7740558M 0***

Configure Access Policies

After the SPC-1 Logical Volumes have been created, access policies are used to grant access through each of the 10 available QDR IB ports. These access policies are applied with the following CLI commands:

> ***lu access add asu_1_1 asu1 ib-1a open***
> ***lu access add asu_1_2 asu1 ib-2a open***
> ***lu access add asu_1_3 asu1 ib-3a open***
> ***lu access add asu_1_4 asu1 ib-4a open***
> ***lu access add asu_1_5 asu1 ib-5a open***
> ***lu access add asu_1_6 asu1 ib-1b open***

lu access add asu_1_7 asu1 ib-2b open
lu access add asu_1_8 asu1 ib-3b open
lu access add asu_1_9 asu1 ib-4b open
lu access add asu_1_10 asu1 ib-5b open

APPENDIX D: SPC-2 WORKLOAD GENERATOR STORAGE COMMANDS AND PARAMETERS

Large File Processing Test *(LFP)*

```
* Master Host Definition Parameter
host=localhost,java=("C:\java\bin\java.exe","-Xmx256m -Xms32m"),jvms=1,maxstreams=4

* drx-g01 *
host=(drx-g01),
java=("C:\Program Files\Java\jre6\bin\java.exe","-Xmx256m -Xms32m"),
spc2="c:/spc2/",
shell=spc2,
jvms=1,
maxstreams=4

* drx-g02 *
host=(drx-g02),
java=("C:\Program Files\Java\jdk1.6.0_24\bin\java.exe","-Xmx256m -Xms32m"),
spc2="c:/spc2/",
shell=spc2,
jvms=1,
maxstreams=4

* drx-g03 *
host=(drx-g03),
java=("C:\Program Files\Java\jdk1.6.0_24\bin\java.exe","-Xmx256m -Xms32m"),
spc2="c:/spc2/",
shell=spc2,
jvms=1,
maxstreams=4

* drx-g04 *
host=(drx-g04),
java=("C:\java\bin\java.exe","-Xmx256m -Xms32m"),
spc2="c:/spc2/",
shell=spc2,
jvms=1,
maxstreams=4

* drx-g05 *
host=(drx-g05),
java=("C:\Program Files\Java\jdk1.6.0_24\bin\java.exe","-Xmx256m -Xms32m"),
spc2="c:/spc2/",
shell=spc2,
jvms=1,
maxstreams=4

* drx-g06 *
host=(drx-g06),
java=("C:\Program Files\Java\jdk1.6.0_24\bin\java.exe","-Xmx256m -Xms32m"),
spc2="c:/spc2/",
shell=spc2,
jvms=1,
maxstreams=4

* drx-g07 *
host=(drx-g07),
java=("C:\Program Files\Java\jdk1.6.0_24\bin\java.exe","-Xmx256m -Xms32m"),
spc2="c:/spc2/",
```

```
 shell=spc2,
 jvms=1,
 maxstreams=4

 * drx-g08 *
 host=(drx-g08),
 java=("C:\Program Files\Java\jdk1.6.0_24\bin\java.exe","-Xmx256m -Xms32m"),
 spc2="c:/spc2/",
 shell=spc2,
 jvms=1,
 maxstreams=4

 * drx-g09 *
 host=(drx-g09),
 java=("C:\Program Files\Java\jdk1.6.0_24\bin\java.exe","-Xmx256m -Xms32m"),
 spc2="c:/spc2/",
 shell=spc2,
 jvms=1,
 maxstreams=4

 * Master *
 sd=default,host=localhost,size=7559.142g
 sd=sd1,lun=\\.\PHYSICALDRIVE1


 * drx-g01 *
 sd=default,host=drx-g01
 sd=sd1,lun=\\.\PHYSICALDRIVE1


 * drx-g02 *
 sd=default,host=drx-g02
 sd=sd1,lun=\\.\PHYSICALDRIVE1


 * drx-g03 *
 sd=default,host=drx-g03
 sd=sd1,lun=\\.\PHYSICALDRIVE1

 * drx-g04 *
 sd=default,host=drx-g04
 sd=sd1,lun=\\.\PHYSICALDRIVE1

 * drx-g05 *
 sd=default,host=drx-g05
 sd=sd1,lun=\\.\PHYSICALDRIVE1

 * drx-g06 *
 sd=default,host=drx-g06
 sd=sd1,lun=\\.\PHYSICALDRIVE1


 * drx-g07 *
 sd=default,host=drx-g07
 sd=sd1,lun=\\.\PHYSICALDRIVE1


 * drx-g08 *
 sd=default,host=drx-g08
 sd=sd1,lun=\\.\PHYSICALDRIVE1


 * drx-g09 *
```

```
sd=default,host=drx-g09
sd=sd1,lun=\\.\PHYSICALDRIVE1


maxlatestart=1000
reportinginterval=5
segmentlength=512m
rd=default,rampup=180,periods=90,measurement=180,runout=45,rampdown=15,buffers=1


* LFP, "write" Test Phase
* Test Run Sequence 1
rd=default,rdpct=0,xfersize=1024k
rd=TR1-s16_SPC-2-FP,streams=10
rd=TR2-s8_SPC-2-FP,streams=5
rd=TR3-s4_SPC-2-FP,streams=3
rd=TR4-s2_SPC-2-FP,streams=2
rd=TR5-s1_SPC-2-FP,streams=1

* Test Run Sequence 2
rd=default,xfersize=256k
rd=TR6-s14_SPC-2-FP,streams=10
rd=TR7-s7_SPC-2-FP,streams=5
rd=TR8-s3_SPC-2-FP,streams=3
rd=TR9-s2_SPC-2-FP,streams=2
rd=TR10-s1_SPC-2-FP,streams=1

* LFP, "read-write" Test Phase
* Test Run Sequence 3

rd=default,rdpct=50,xfersize=1024k
rd=TR11-s15_SPC-2-FP,streams=20
rd=TR12-s7_SPC-2-FP,streams=10
rd=TR13-s3_SPC-2-FP,streams=5
rd=TR14-s2_SPC-2-FP,streams=3
rd=TR15-s1_SPC-2-FP,streams=1

* Test Run Sequence 4
rd=default,xfersize=256k
rd=TR16-s14_SPC-2-FP,streams=20
rd=TR17-s7_SPC-2-FP,streams=10
rd=TR18-s3_SPC-2-FP,streams=5
rd=TR19-s2_SPC-2-FP,streams=3
rd=TR20-s1_SPC-2-FP,streams=1

* LFP, "read" Test Phase
* Test Run Sequence 5
rd=default,rdpct=100,xfersize=1024k
rd=TR21-s18_SPC-2-FP,streams=10
rd=TR22-s9_SPC-2-FP,streams=5
rd=TR23-s4_SPC-2-FP,streams=3
rd=TR24-s2_SPC-2-FP,streams=2
rd=TR25-s1_SPC-2-FP,streams=1

* Test Run Sequence 6
rd=default,xfersize=256k
rd=TR26-s16_SPC-2-FP,streams=40
rd=TR27-s8_SPC-2-FP,streams=20
rd=TR28-s4_SPC-2-FP,streams=10
rd=TR29-s2_SPC-2-FP,streams=5
rd=TR30-s1_SPC-2-FP,streams=1
```

Large Database Query Test *(LDQ)*

```
* Master Host Definition Parameter
host=localhost,java=("C:\java\bin\java.exe","-Xmx256m -Xms32m"),jvms=1,maxstreams=4

* drx-g01 *
host=(drx-g01),
java=("C:\Program Files\Java\jre6\bin\java.exe","-Xmx256m -Xms32m"),
spc2="c:/spc2/",
shell=spc2,
jvms=1,
maxstreams=4

* drx-g02 *
host=(drx-g02),
java=("C:\Program Files\Java\jdk1.6.0_24\bin\java.exe","-Xmx256m -Xms32m"),
spc2="c:/spc2/",
shell=spc2,
jvms=1,
maxstreams=4

* drx-g03 *
host=(drx-g03),
java=("C:\Program Files\Java\jdk1.6.0_24\bin\java.exe","-Xmx256m -Xms32m"),
spc2="c:/spc2/",
shell=spc2,
jvms=1,
maxstreams=4

* drx-g04 *
host=(drx-g04),
java=("C:\java\bin\java.exe","-Xmx256m -Xms32m"),
spc2="c:/spc2/",
shell=spc2,
jvms=1,
maxstreams=4

* drx-g05 *
host=(drx-g05),
java=("C:\Program Files\Java\jdk1.6.0_24\bin\java.exe","-Xmx256m -Xms32m"),
spc2="c:/spc2/",
shell=spc2,
jvms=1,
maxstreams=4

* drx-g06 *
host=(drx-g06),
java=("C:\Program Files\Java\jdk1.6.0_24\bin\java.exe","-Xmx256m -Xms32m"),
spc2="c:/spc2/",
shell=spc2,
jvms=1,
maxstreams=4

* drx-g07 *
host=(drx-g07),
java=("C:\Program Files\Java\jdk1.6.0_24\bin\java.exe","-Xmx256m -Xms32m"),
spc2="c:/spc2/",
shell=spc2,
jvms=1,
maxstreams=4

* drx-g08 *
host=(drx-g08),
```

```
java=("C:\Program Files\Java\jdk1.6.0_24\bin\java.exe","-Xmx256m -Xms32m"),
spc2="c:/spc2/",
shell=spc2,
jvms=1,
maxstreams=4

* drx-g09 *
host=(drx-g09),
java=("C:\Program Files\Java\jdk1.6.0_24\bin\java.exe","-Xmx256m -Xms32m"),
spc2="c:/spc2/",
shell=spc2,
jvms=1,
maxstreams=4

* Master *
sd=default,host=localhost,size=7559.142g
sd=sd1,lun=\\.\PHYSICALDRIVE1


* drx-g01 *
sd=default,host=drx-g01
sd=sd1,lun=\\.\PHYSICALDRIVE1


* drx-g02 *
sd=default,host=drx-g02
sd=sd1,lun=\\.\PHYSICALDRIVE1


* drx-g03 *
sd=default,host=drx-g03
sd=sd1,lun=\\.\PHYSICALDRIVE1

* drx-g04 *
sd=default,host=drx-g04
sd=sd1,lun=\\.\PHYSICALDRIVE1

* drx-g05 *
sd=default,host=drx-g05
sd=sd1,lun=\\.\PHYSICALDRIVE1

* drx-g06 *
sd=default,host=drx-g06
sd=sd1,lun=\\.\PHYSICALDRIVE1


* drx-g07 *
sd=default,host=drx-g07
sd=sd1,lun=\\.\PHYSICALDRIVE1


* drx-g08 *
sd=default,host=drx-g08
sd=sd1,lun=\\.\PHYSICALDRIVE1


* drx-g09 *
sd=default,host=drx-g09
sd=sd1,lun=\\.\PHYSICALDRIVE1


maxlatestart=1000
reportinginterval=5
```

```
segmentlength=512m
rd=default,rdpct=99,rampup=180,periods=90,measurement=180,runout=45,rampdown=15


* LDQ, 1024 KiB Test Phase
* Test Run Sequence 1
rd=default,xfersize=1024k,buffers=4
rd=TR1-s5_SPC-2-DQ,streams=10
rd=TR2-s4_SPC-2-DQ,streams=5
rd=TR3-s3_SPC-2-DQ,streams=3
rd=TR4-s2_SPC-2-DQ,streams=2
rd=TR5-s1_SPC-2-DQ,streams=1

* Test Run Sequence 2
rd=default,buffers=1
rd=TR6-s5_SPC-2-DQ,streams=20
rd=TR7-s4_SPC-2-DQ,streams=10
rd=TR8-s3_SPC-2-DQ,streams=5
rd=TR9-s2_SPC-2-DQ,streams=3
rd=TR10-s1_SPC-2-DQ,streams=1

* LDQ, 64 KiB Test Phase
* Test Run Sequence 3
rd=default,xfersize=64k,buffers=4
rd=TR11-s5_SPC-2-DQ,streams=40
rd=TR12-s4_SPC-2-DQ,streams=20
rd=TR13-s3_SPC-2-DQ,streams=10
rd=TR14-s2_SPC-2-DQ,streams=5
rd=TR15-s1_SPC-2-DQ,streams=1

* Test Run Sequence 4
rd=default,buffers=1
rd=TR16-s5_SPC-2-DQ,streams=40
rd=TR17-s4_SPC-2-DQ,streams=20
rd=TR18-s3_SPC-2-DQ,streams=10
rd=TR19-s2_SPC-2-DQ,streams=5
rd=TR20-s1_SPC-2-DQ,streams=1
```

Video on Demand Delivery Test *(VOD)*

```
* Master Host Definition Parameter
host=localhost,java=("C:\java\bin\java.exe","-Xmx256m –
Xms32m"),jvms=10,maxstreams=110

* drx-g01 *
host=(drx-g01),
java=("C:\Program Files\Java\jre6\bin\java.exe","-Xmx256m -Xms32m"),
spc2="c:/spc2/",
shell=spc2,
jvms=10,
maxstreams=110

* drx-g02 *
host=(drx-g02),
java=("C:\Program Files\Java\jdk1.6.0_24\bin\java.exe","-Xmx256m -Xms32m"),
spc2="c:/spc2/",
shell=spc2,
jvms=10,
maxstreams=110

* drx-g03 *
host=(drx-g03),
```

```
java=("C:\Program Files\Java\jdk1.6.0_24\bin\java.exe","-Xmx256m -Xms32m"),
spc2="c:/spc2/",
shell=spc2,
jvms=10,
maxstreams=110

* drx-g04 *
host=(drx-g04),
java=("C:\java\bin\java.exe","-Xmx256m -Xms32m"),
spc2="c:/spc2/",
shell=spc2,
jvms=10,
maxstreams=110

* drx-g05 *
host=(drx-g05),
java=("C:\Program Files\Java\jdk1.6.0_24\bin\java.exe","-Xmx256m -Xms32m"),
spc2="c:/spc2/",
shell=spc2,
jvms=10,
maxstreams=110

* drx-g06 *
host=(drx-g06),
java=("C:\Program Files\Java\jdk1.6.0_24\bin\java.exe","-Xmx256m -Xms32m"),
spc2="c:/spc2/",
shell=spc2,
jvms=10,
maxstreams=110

* drx-g07 *
host=(drx-g07),
java=("C:\Program Files\Java\jdk1.6.0_24\bin\java.exe","-Xmx256m -Xms32m"),
spc2="c:/spc2/",
shell=spc2,
jvms=10,
maxstreams=110

* drx-g08 *
host=(drx-g08),
java=("C:\Program Files\Java\jdk1.6.0_24\bin\java.exe","-Xmx256m -Xms32m"),
spc2="c:/spc2/",
shell=spc2,
jvms=10,
maxstreams=110

* drx-g09 *
host=(drx-g09),
java=("C:\Program Files\Java\jdk1.6.0_24\bin\java.exe","-Xmx256m -Xms32m"),
spc2="c:/spc2/",
shell=spc2,
jvms=10,
maxstreams=110

* Master *
sd=default,host=localhost,size=7559.142g
sd=sd1,lun=\\.\PHYSICALDRIVE1


* drx-g01 *
sd=default,host=drx-g01
sd=sd1,lun=\\.\PHYSICALDRIVE1
```

```
* drx-g02 *
sd=default,host=drx-g02
sd=sd1,lun=\\.\PHYSICALDRIVE1


* drx-g03 *
sd=default,host=drx-g03
sd=sd1,lun=\\.\PHYSICALDRIVE1

* drx-g04 *
sd=default,host=drx-g04
sd=sd1,lun=\\.\PHYSICALDRIVE1

* drx-g05 *
sd=default,host=drx-g05
sd=sd1,lun=\\.\PHYSICALDRIVE1

* drx-g06 *
sd=default,host=drx-g06
sd=sd1,lun=\\.\PHYSICALDRIVE1


* drx-g07 *
sd=default,host=drx-g07
sd=sd1,lun=\\.\PHYSICALDRIVE1


* drx-g08 *
sd=default,host=drx-g08
sd=sd1,lun=\\.\PHYSICALDRIVE1


* drx-g09 *
sd=default,host=drx-g09
sd=sd1,lun=\\.\PHYSICALDRIVE1


maxlatestart=1000
videosegmentduration=1200
maxlatevod=0
reportinginterval=5


rd=default,rampup=1200,periods=600,measurement=7200,runout=45,rampdown=15,buffers=8
rd=TR1-s255_SPC-2-VOD,streams=11000
```

Persistence Test Run 1 *(write phase)*

```
host=localhost,jvms=1,maxstreams=100
sd=sd1,lun=\\.\PHYSICALDRIVE1,size=8116563345408
maxlatestart=1
reportinginterval=5
segmentlength=512m
rd=default,rampup=180,periods=90,measurement=300,runout=0,rampdown=0,buffers=1
rd=default,rdpct=0,xfersize=1024k
rd=TR1-248s_SPC-2-persist-w,streams=10
```

Persistence Test Run 2 *(read phase)*

```
host=localhost,jvms=1,maxstreams=100
sd=sd1,lun=\\.\PHYSICALDRIVE1,size=8116563345408
maxlatestart=1
reportinginterval=5
segmentlength=512m
maxpersistenceerrors=10
rd=default,buffers=1,rdpct=100,xfersize=1024k
rd=TR1-248s_SPC-2-persist-r
```

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

Video on Demand Delivery, Large File Processing Test, Large Database Query Tests, and Persistence Test Run 1

The following script was used to execute the Video on Demand Delivery, Large File Processing and Large Database Query Tests, as well as, Persistence Test Run 1.

```
cd c:\spc2\
call spc2.bat -f spc2_conf_lfp.txt -o c:/spc2/lfp_results/ -init
call spc2.bat -f spc2_conf_lfp.txt -o c:/spc2/lfp_results/
call spc2.bat -f spc2_conf_ldq.txt -o c:/spc2/ldq_results/
call spc2.bat -f spc2_conf_vod.txt -o c:/spc2/vod_results/
call spc2.bat -f spc2_persist_WRITE.conf -o spc2_persist_write
```

Persistence Test Run 2

The following script was used to execute Persistence Test Run 2.

```
cd c:\spc2\
call spc2.bat -f spc2_persist_READ.conf -o spc2_persist_read
```

APPENDIX F: THIRD PARTY QUOTATION

Mellanox MHQH19B HCAs

HP X242 SFP+ SFP+ 1m Direct Attach Cable