



SPC BENCHMARK 2™
FULL DISCLOSURE REPORT

IBM CORPORATION
IBM TOTALSTORAGE®
SAN VOLUME CONTROLLER 3.1

SPC-2™ V1.0

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AUDIT CERTIFICATION



Bruce McNutt
IBM Corporation
KBV/9062-2
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December 6, 2005

The SPC Benchmark 2™ results listed below for the IBM TotalStorage® SAN Volume Controller 3.1 were produced in compliance with the SPC Benchmark 2™ V1.0 Onsite Audit requirements.

SPC Benchmark 2™ V1.0 Results	
Tested Storage Configuration (TSC) Name: IBM TotalStorage® SAN Volume Controller 3.1	
Metric	Reported Result
SPC-2 MBPS™	3,517.75
SPC-2 Price-Performance	\$563.93/SPC-2 MBPS™
Total ASU Capacity	20,615.843 GB
Data Protection Level	Mirroring
Total Price (including three-year maintenance)	\$1,983.784.74

The following SPC Benchmark 2™ Onsite Audit requirements were reviewed and found compliant with V1.0 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 information supplied by IBM Corporation:
 - ✓ 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.
- An appropriate diagram of the Benchmark Configuration (BC)/Tested Storage Configuration (TSC).
- Physical verification of the components to match the above diagram.

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AUDIT CERTIFICATION *(continued)*

IBM TotalStorage® SAN Volume Controller 3.1
SPC-2 Audit Certification

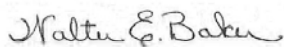
Page 2

- Listings and commands to create and configure the Benchmark Configuration/Tested Storage Configuration, including each customer tunable parameter or option that was changed from its default value.
- The following Host System items were verified by physical inspection and information supplied by IBM Corporation:
 - ✓ Required Host System configuration information.
 - ✓ The TSC boundary within each Host System.
- The following SPC-2 Workload Generator information was verified by physical inspection and information supplied by IBM Corporation:
 - ✓ 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 5 and 6 of the SPC-2 Benchmark Specification.
- The Test Results Files and resultant Summary Results Files received for each of the following were authentic, accurate, and compliant with all of the requirements and constraints of Clauses 5 and 6 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 (TSC) used for the benchmark and Priced Storage Configuration.
- The final version of the pricing spreadsheet 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.

Audit Notes:

There were no additional audit notes or exceptions.

Respectfully,



Walter E. Baker
SPC Auditor

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LETTER OF GOOD FAITH



Vice President, TotalStorage Products and Solutions
IBM Technology & Systems Group
11301 Burnet Road, Austin TX 78758

November 18, 2005

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

Subject: SPC-2 Letter of Good Faith for the IBM TotalStorage SAN Volume Controller Release 3.1

IBM Corporation is the SPC-2 Test Sponsor for the above listed product. To the best of our knowledge and belief, the required SPC-2 benchmark results and materials we have submitted for that product are complete, accurate, and in full compliance with Version 1.0 of the SPC-2 benchmark specification.

Our disclosure of the Benchmark configuration and execution of the benchmark includes all items that, to the best of our knowledge and belief, materially affect the reported results, regardless of whether such items are explicitly required to be disclosed by the SPC-2 benchmark specification.

Sincerely,

A handwritten signature in cursive script that reads "Laura W. Sanders".

Laura Sanders

EXECUTIVE SUMMARY**Test Sponsor and Contact Information**

Test Sponsor and Contact Information	
Test Sponsor Primary Contact	IBM Corporation – http://www.ibm.com Peter Leung – leungp@us.ibm.com 65S/9062-2 9000 South Rita Road Tucson, AZ 85744 Phone: (520) 799-2853 FAX: (520) 799-5530
Test Sponsor Alternate Contact	IBM Corporation – http://www.ibm.com Bruce McNutt – bmcnutt@us.ibm.com KBV/9062-2 9000 South Rita Road Tucson, AZ 85744 Phone: (520) 799-2460 FAX: (520) 799-5530
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	V1.0
SPC-2 Workload Generator revision number	spc2rc8j
Date Results were first used publicly	January 16, 2006
Date FDR was submitted to the SPC	January 16, 2006
Date the TSC will be available for shipment to customers	November 18, 2005
Date the TSC completed audit certification	December 5 2005

SPC-2 Reported Data

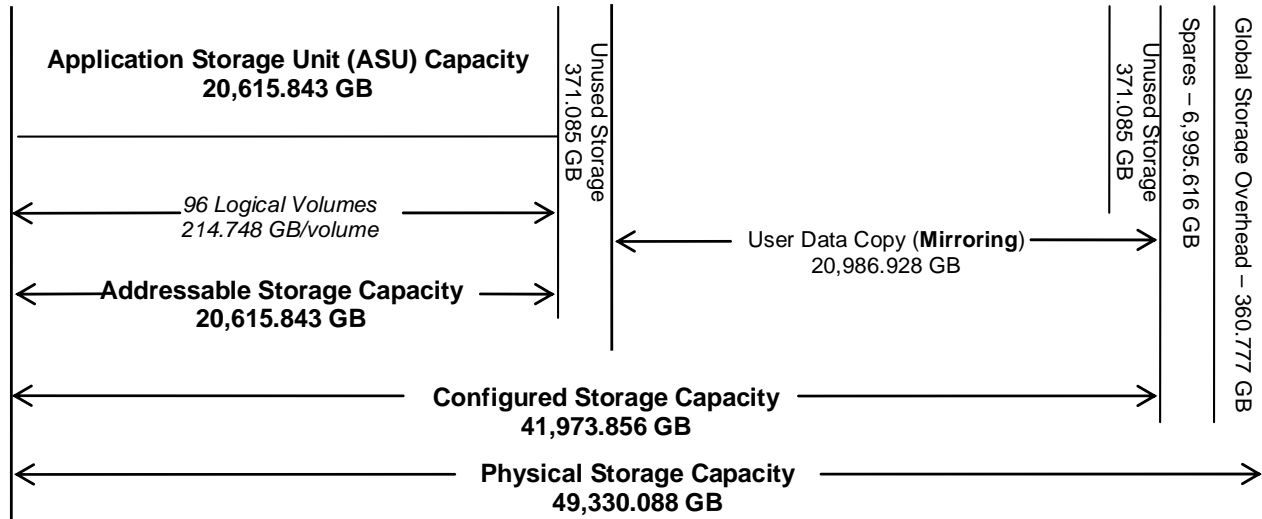
SPC-2 Reported Data consists of three groups of information:

- 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				
IBM TotalStorage™ SAN Volume Controller 3.1				
SPC-2 MBPS™	SPC-2 Price-Performance	ASU Capacity (GB)	Total Price	Data Protection Level
3,517.75	\$563.93	20,615.843	\$1,983,784.74	Mirroring
<i>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)</i>				
SPC-2 Large File Processing (LFP) Reported Data				
	Data Rate (MB/second)	Number of Streams	Data Rate per Stream	Price-Performance
LFP Composite	2,707.28			\$732.76
Write Only:				
1024 KiB Transfer	1,295.21	96	13.49	
256 KiB Transfer	1,414.87	96	14.74	
Read-Write:				
1024 KiB Transfer	2,366.74	96	24.65	
256 KiB Transfer	2,502.02	96	26.06	
Read Only:				
1024 KiB Transfer	4,259.25	96	44.37	
256 KiB Transfer	4,405.58	96	45.89	
<i>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).</i>				
SPC-2 Large Database Query (LDQ) Reported Data				
	Data Rate (MB/second)	Number of Streams	Data Rate per Stream	Price-Performance
LDQ Composite	4,385.76			\$452.32
1024 KiB Transfer Size				
4 I/Os Outstanding	4,257.44	96	44.35	
1 I/O Outstanding	4,394.06	96	45.77	
64 KiB Transfer Size				
4 I/Os Outstanding	4,455.87	96	46.42	
1 I/O Outstanding	4,435.66	96	46.20	
<i>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).</i>				
SPC-2 Video On Demand (VOD) Reported Data				
	Data Rate (MB/second)	Number of Streams	Data Rate per Stream	Price-Performance
	3,460.23	4,400	0.79	\$573.31

Storage Capacities and Relationships

The following diagram (*not to scale*) documents the various storage capacities and their relationships, used in this SPC-2 benchmark measurement.



Tested Storage Configuration Pricing (*Priced Storage Configuration*)

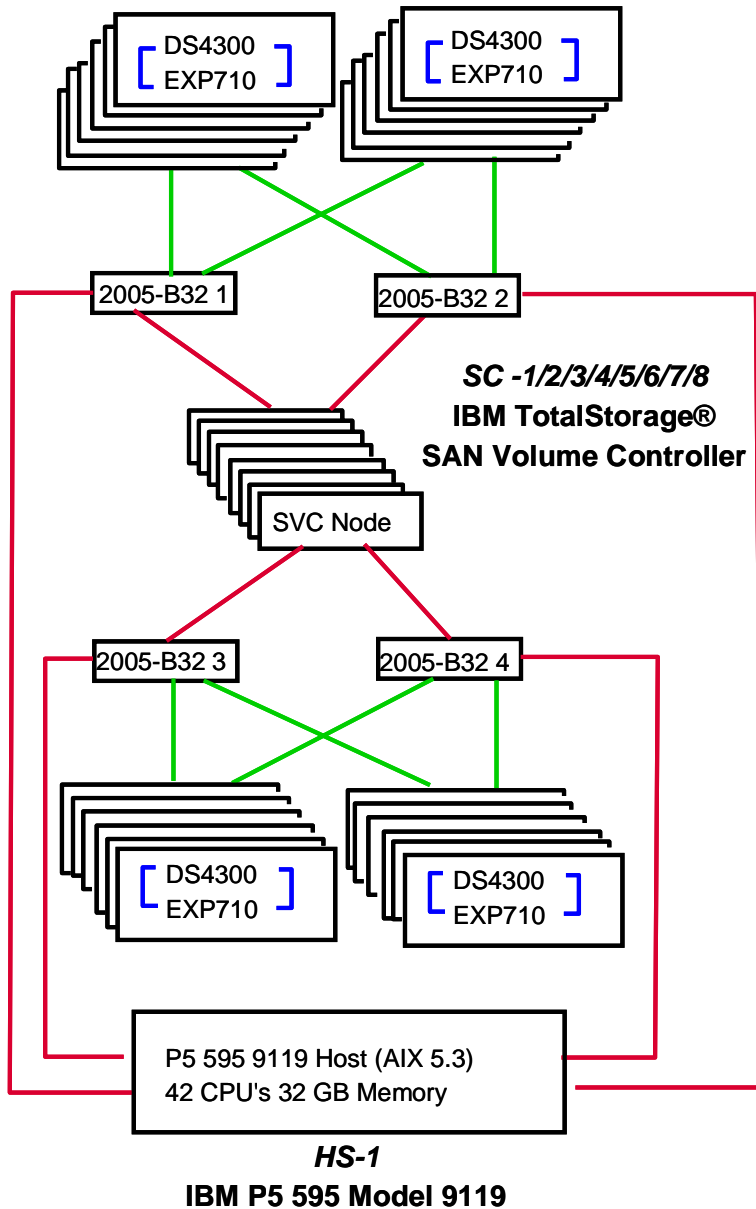
Component	Comments	Quantity	Unit Price	Unit Maint	List w/ Maint	% discount	Total Price
SVC Storage Engine		8	13,750.00	3,564.00	138,512.00	30	96,958.40
UPS		8	1,250.00	2,268.00	28,144.00	30	19,700.80
Master Console		1	7,499.00	3,312.00	10,811.00	30	7,567.70
SVC Software license	up to 48 virtualized TB	1	212,000.00	84,800.00	296,800.00	10	267,120.00
19 inch rack (7014-T42)		5	8,660.00	888.00	47,740.00	50	23,870.00
32 port fibre channel switch (2005-B32)	32 of 32 ports enabled	4	36,475.00	4,200.00	162,700.00	20	130,160.00
Ethernet switch (22P-8743)		3	380.00	100.00	1,440.00	42	835.20
DS4300 with 14 15K RPM drives (73 GB)	w/ 6 SFP, 4 5m cables	24	47,895.00	2,499.00	1,209,456.00	37	761,957.28
EXP710 with 14 15K RPM drives (73 GB)	w/ 4 SFP, 2 1m cables	24	37,640.00	760.00	921,600.00	37	580,608.00
SFP (4 pack)		4	550.00		2,200.00	20	1,760.00
Short wave 2Gbit fibre channel cable (25 m)		32	210.00		6,720.00	20	5,376.00
Ethernet cable (7 feet)		16	6.99		111.84	0	111.84
Ethernet cable (25 feet)		48	14.99		719.52	0	719.52
2 Gbit P5 595 adapter (5716)		32	2,720.00		87,040.00	0	87,040.00
Total Price							\$ 1,983,784.74

The above pricing provides maintenance/support for 24 hours per day, 7 days per week for three years with four hour acknowledgement and four hour subsequent response (support engineer onsite or customer replaceable part available). The discount applied to the above pricing is the IBM "field delegation" discount.

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

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

Benchmark Configuration/Tested Storage Configuration Diagram



Notes:

All storage is managed by each node (single image).

Each DS4300 and EXP710 has 14 disks (total of 672). Disks are 73 GB, 15K RPM.

Each switch has one zone for node-to-storage traffic, two zones for node-to-host traffic (even nodes to even fcs's, odd nodes to odd fcs's).

- 1 FC path per line drawn
- 6 FC paths per line drawn
- 8 FC paths per line drawn

Host System(s) and Tested Storage Configuration Components

Host Systems:	Tested Storage Configuration (TSC):
UID=HS-1	32 – 2 Gbit P5 595 HBAs
IBM P5 595 Model 9119	UID=SC-1/2/3/4/5/6/7/8:
42 – 1.9 GHz CPUs – 2 CPUs/POWER5 chip 32 KB L1 cache, 960 KB L2 cache, and 18 MB L3 cache per CPU	8 – TotalStorage® SAN Volume Controllers
32 GB main memory	Per controller:
AIX 5.3	xSeries 335 processor which contains:
PCI-X/RIO	2 – 3.0 GHz Intel P4 CPUs
WG	8 GB memory/cache
	4 – 2 Gbit FC ports
	4 – 32 port FC switches
	3 – Ethernet switch
	24 – DS4300 enclosures
	24 – EXP710 enclosures
	14 – 73 GB, 15K RPM disk drives per enclosure
	5 – 19 inch racks
	8 – UPS

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 10.6.5.7

The Executive Summary 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 16 (*Benchmark Configuration/Tested Storage Configuration Diagram*).

Storage Network Configuration

Clause 9.2.4.4.2

If a storage network was configured as a part of the Tested Storage Configuration and the Benchmark Configuration described in Clause 10.6.5.7 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 10.8.

The storage network configured as a part of the Tested Storage Configuration is illustrated on page 16 (*Benchmark Configuration/Tested Storage Configuration Diagram*).

Host System and Tested Storage Configuration Table

Clause 10.6.5.9

The Executive Summary 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 16 (*Host System(s) and Tested Storage Configuration Components*).

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 88 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 (Clause 10.6.6.1), 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 89 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 89.

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 83 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)	20,615.843
Addressable Storage Capacity	Gigabytes (GB)	20,615.843
Configured Storage Capacity	Gigabytes (GB)	41,973.856
Physical Storage Capacity	Gigabytes (GB)	49,330.088
Data Protection Overhead (mirror)	Gigabytes (GB)	20,986.928
Required Storage/Spares	Gigabytes (GB)	6,995.616
Global Storage Overhead	Gigabytes (GB)	360.777
Total Unused Storage	Gigabytes (GB)	742.17

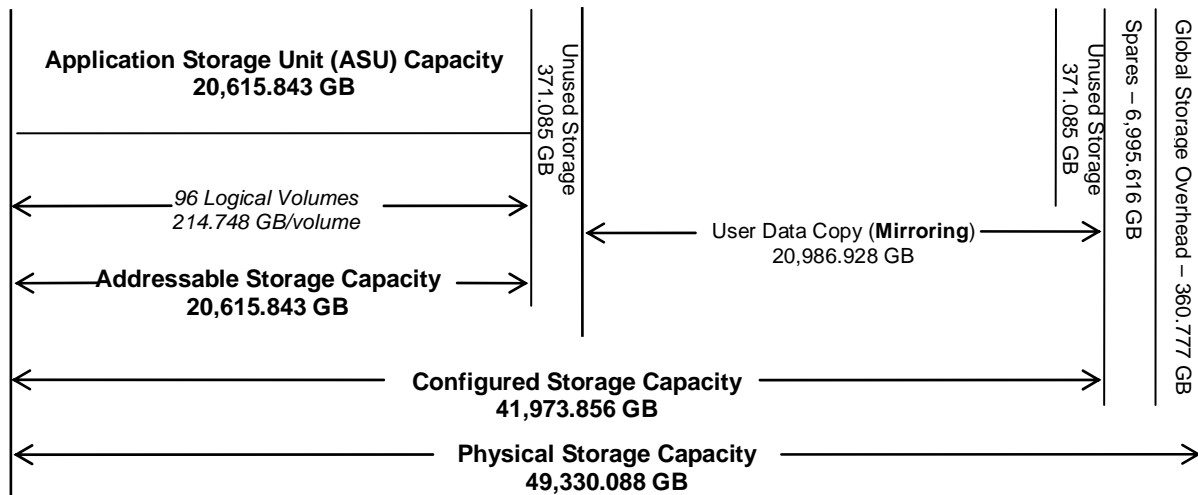
SPC-2 Storage Hierarchy Ratios

	Addressable Storage Capacity	Configured Storage Capacity	Physical Storage Capacity
Total ASU Capacity	100.00%	49.12%	41.79%
Required for Data Protection (Mirroring)		50.00%	42.54%
Addressable Storage Capacity		49.12%	41.79%
Required Storage/Spares		16.67%	14.18%
Configured Storage Capacity			85.09%
Global Storage Overhead			0.73%
Unused Storage:			
Addressable	0.00%		
Configured		1.77%	
Physical			0.00%

The Physical Storage Capacity consisted of 49,330.088 GB distributed over 672 disk drives each with a formatted capacity of 73.408 GB. There was 0.000 GB (0.00%) of Unused Storage within the Physical Storage Capacity. Global Storage Overhead consisted of 360.777 GB (0.73%) of Physical Storage Capacity. There was 742.170 GB (1.77%) of Unused Storage within the Configured Storage Capacity. The Total ASU Capacity utilized 100.00% of the Addressable Storage Capacity resulting in 0.000 GB (0.00%) of Unused Storage within the Addressable Storage Capacity.

SPC-2 Storage Capacities and Relationships Illustration

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



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 (20,615.843 GB)			
	Total Capacity (GB)	Capacity Used (GB)	Capacity Unused (GB)
Logical Volumes 1-96	214.748 per LV	214.748 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 89 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 84 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

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 106.

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.

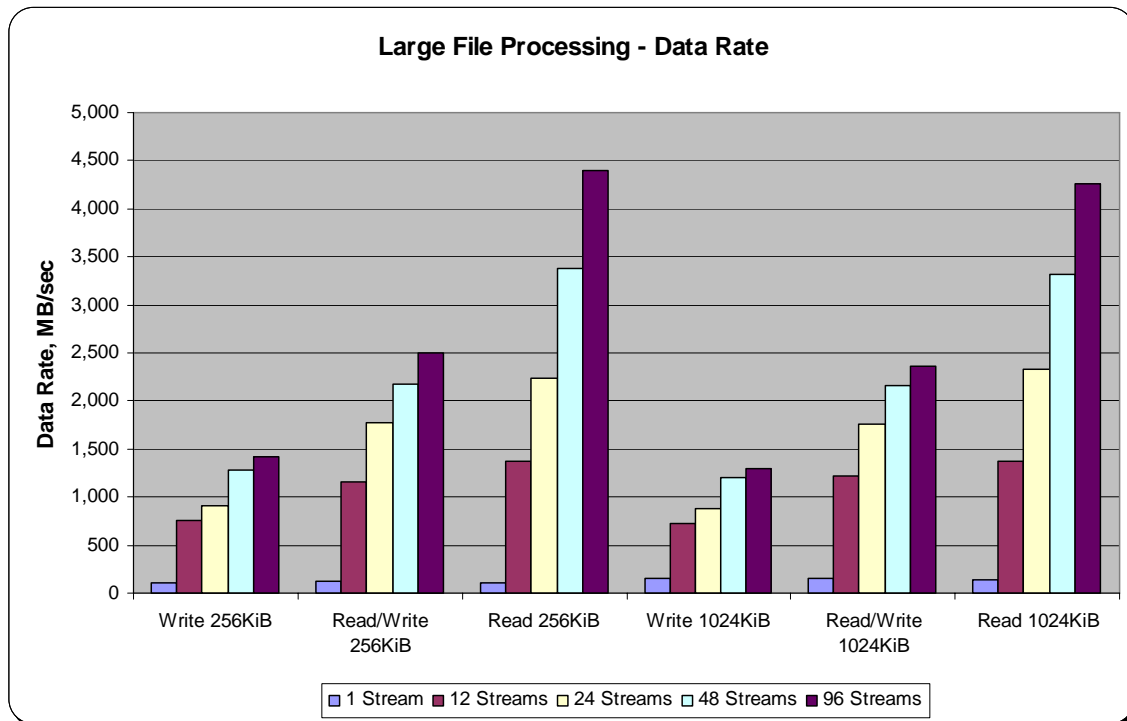
[SPC-2 Large File Processing Test Results File](#)

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	12 Streams	24 Streams	48 Streams	96 Streams
Write 256KiB	108.49	757.33	908.58	1,276.45	1,414.87
Read/Write 256KiB	127.16	1,162.16	1,781.84	2,169.53	2,502.02
Read 256KiB	105.55	1,379.69	2,231.73	3,386.23	4,405.58
Write 1024KiB	154.82	721.65	885.95	1,202.24	1,295.21
Read/Write 1024KiB	158.40	1,216.53	1,765.47	2,160.27	2,366.74
Read 1024KiB	141.66	1,375.13	2,336.78	3,324.23	4,259.25

SPC-2 Large File Processing Average Data Rates Graph

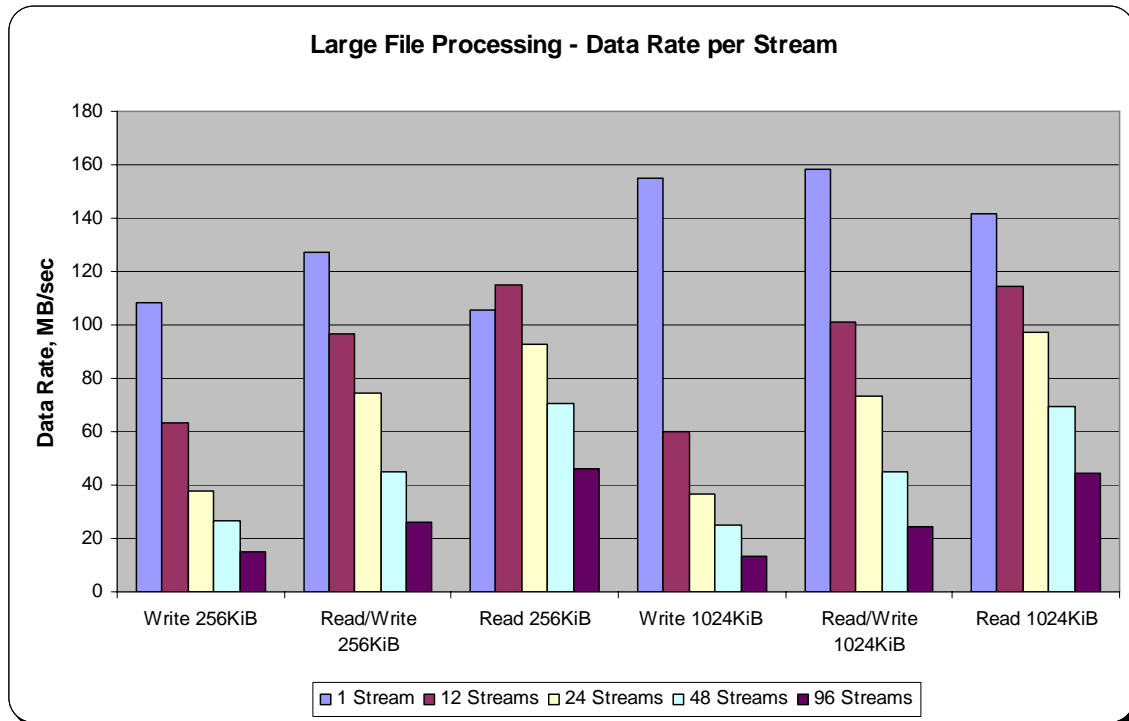


SPC-2 Large File Processing Average Data Rate per Stream

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

Test Run Sequence	1 Stream	12 Streams	24 Streams	48 Streams	96 Streams
Write 256KiB	108.49	63.11	37.86	26.59	14.74
Read/Write 256KiB	127.16	96.85	74.24	45.20	26.06
Read 256KiB	105.55	114.97	92.99	70.55	45.89
Write 1024KiB	154.82	60.14	36.91	25.05	13.49
Read/Write 1024KiB	158.40	101.38	73.56	45.01	24.65
Read 1024KiB	141.66	114.59	97.37	69.25	44.37

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



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 Test Run Sequence Time	96 Streams			TR2 Test Run Sequence Time	48 Streams			TR3 Test Run Sequence Time	24 Streams			TR4 Test Run Sequence Time	12 Streams			TR5 Test Run Sequence Time	1 Stream		
	Data Rate, MB/sec	Data Rate / Stream, MB/sec	Response Time, ms		Data Rate, MB/sec	Data Rate / Stream, MB/sec	Response Time, ms		Data Rate, MB/sec	Data Rate / Stream, MB/sec	Response Time, ms		Data Rate, MB/sec	Data Rate / Stream, MB/sec	Response Time, ms		Data Rate, MB/sec	Data Rate / Stream, MB/sec	Response Time, ms
0:00:00	435.58	29.04	13.47	0:07:00	296.33	49.39	12.98	0:14:00	272.84	136.42	6.56	0:21:00	205.31	102.66	5.99	0:28:00	165.05	165.05	6.01
0:00:05	1,088.84	37.55	20.57	0:07:05	582.80	83.26	11.42	0:14:05	456.76	65.25	9.29	0:21:05	567.28	141.82	6.85	0:28:05	176.37	176.37	5.94
0:00:10	1,594.25	41.95	20.83	0:07:10	763.78	58.75	13.58	0:14:10	974.76	97.48	8.45	0:21:10	608.17	152.04	6.89	0:28:10	173.02	173.02	6.05
0:00:15	2,119.80	48.18	19.98	0:07:15	1,077.52	71.83	13.60	0:14:15	1,114.01	101.27	10.33	0:21:15	748.26	149.65	6.50	0:28:15	154.77	154.77	6.77
0:00:20	2,116.87	42.34	23.12	0:07:20	1,285.76	67.67	14.23	0:14:20	1,363.15	97.37	10.00	0:21:20	706.53	141.31	7.41	0:28:20	171.55	171.55	6.11
0:00:25	1,100.38	20.01	50.22	0:07:25	1,432.98	62.30	15.82	0:14:25	1,506.38	100.43	10.08	0:21:25	840.54	120.08	7.84	0:28:25	174.27	174.27	6.01
0:00:30	1,194.54	20.25	50.01	0:07:30	731.28	28.13	34.61	0:14:30	1,195.38	79.69	12.94	0:21:30	851.02	121.57	8.69	0:28:30	166.93	166.93	6.27
0:00:35	1,194.75	18.10	52.74	0:07:35	595.80	19.86	49.75	0:14:35	682.83	42.68	23.18	0:21:35	917.29	114.66	8.13	0:28:35	154.77	154.77	6.78
0:00:40	1,282.62	18.32	56.61	0:07:40	664.59	20.77	48.51	0:14:40	830.26	46.13	21.44	0:21:40	1,020.68	127.59	8.21	0:28:40	178.26	178.26	5.87
0:00:45	1,303.80	18.11	57.69	0:07:45	614.68	17.56	56.30	0:14:45	744.07	39.16	25.96	0:21:45	606.50	75.81	13.79	0:28:45	174.27	174.27	6.03
0:00:50	1,323.72	17.19	60.47	0:07:50	678.01	18.83	54.53	0:14:50	786.64	41.40	25.42	0:21:50	485.07	60.63	17.24	0:28:50	177.42	177.42	5.90
0:00:55	1,312.40	16.40	60.23	0:07:55	763.78	20.64	49.55	0:14:55	789.79	39.49	25.30	0:21:55	635.44	63.54	14.31	0:28:55	178.47	178.47	5.87
0:01:00	1,367.13	15.90	63.20	0:08:00	825.65	20.14	49.44	0:15:00	774.48	36.88	27.97	0:22:00	982.94	89.36	11.54	0:29:00	136.73	136.73	7.66
0:01:05	1,460.88	16.60	63.51	0:08:05	907.44	21.10	47.99	0:15:05	748.89	34.04	29.66	0:22:05	611.74	55.61	18.83	0:29:05	177.42	177.42	5.91
0:01:10	1,287.86	14.15	72.53	0:08:10	1,036.41	23.55	44.24	0:15:10	768.61	34.94	30.16	0:22:10	707.16	64.29	16.26	0:29:10	177.21	177.21	5.92
0:01:15	1,297.30	13.80	72.35	0:08:15	1,062.21	23.09	44.24	0:15:15	680.32	29.58	34.46	0:22:15	807.19	73.38	14.35	0:29:15	174.06	174.06	6.00
0:01:20	1,369.23	14.26	73.21	0:08:20	1,240.05	26.96	38.96	0:15:20	664.59	28.90	36.83	0:22:20	644.25	58.57	17.87	0:29:20	173.64	173.64	6.06
0:01:25	1,351.20	14.07	74.11	0:08:25	1,262.28	26.30	39.49	0:15:25	768.40	32.02	32.71	0:22:25	670.04	55.84	17.44	0:29:25	150.99	150.99	6.89
0:01:30	1,368.18	14.25	74.24	0:08:30	1,299.81	27.08	38.72	0:15:30	910.16	37.92	27.62	0:22:30	692.27	57.69	17.68	0:29:30	128.77	128.77	8.15
0:01:35	1,392.09	14.50	72.20	0:08:35	1,234.59	25.72	40.74	0:15:35	826.91	34.45	30.54	0:22:35	552.18	46.02	22.84	0:29:35	169.87	169.87	6.16
0:01:40	1,396.49	14.55	72.50	0:08:40	1,227.88	25.58	42.15	0:15:40	860.46	35.85	29.24	0:22:40	568.33	47.36	22.11	0:29:40	162.11	162.11	6.46
0:01:45	1,376.78	14.34	73.05	0:08:45	1,099.75	22.91	43.92	0:15:45	995.52	41.48	25.22	0:22:45	411.67	34.31	30.46	0:29:45	178.26	178.26	5.87
0:01:50	1,409.29	14.68	71.27	0:08:50	1,184.68	24.68	42.60	0:15:50	933.44	38.89	26.96	0:22:50	654.94	54.58	19.32	0:29:50	177.00	177.00	5.92
0:01:55	1,340.29	13.96	74.86	0:08:55	1,141.06	23.77	43.99	0:15:55	931.35	38.81	27.07	0:22:55	977.27	81.44	12.84	0:29:55	174.48	174.48	6.01
0:02:00	1,288.28	13.42	78.64	0:09:00	1,190.76	24.81	42.72	0:16:00	826.91	34.45	30.40	0:23:00	833.83	69.49	15.10	0:30:00	169.66	169.66	6.17
0:02:05	1,355.39	14.12	74.92	0:09:05	1,260.39	26.26	40.43	0:16:05	675.70	28.15	37.26	0:23:05	881.22	73.44	14.29	0:30:05	177.42	177.42	5.91
0:02:10	1,348.47	14.05	74.76	0:09:10	1,272.13	26.50	39.71	0:16:10	788.74	32.86	31.93	0:23:10	763.15	63.60	16.49	0:30:10	144.70	144.70	7.21
0:02:15	1,377.62	14.35	73.59	0:09:15	1,262.28	26.30	40.18	0:16:15	993.21	41.38	25.28	0:23:15	829.21	69.10	15.15	0:30:15	145.54	145.54	7.22
0:02:20	1,294.57	13.49	75.37	0:09:20	1,172.52	24.43	41.54	0:16:20	890.45	37.10	28.25	0:23:20	779.30	64.94	16.13	0:30:20	154.35	154.35	6.78
0:02:25	1,398.59	14.57	73.13	0:09:25	1,289.75	26.87	39.06	0:16:25	1,058.43	44.10	23.77	0:23:25	593.91	49.49	21.16	0:30:25	170.08	170.08	6.16
0:02:30	1,390.62	14.49	72.62	0:09:30	1,220.75	25.43	41.22	0:16:30	1,013.76	42.24	24.97	0:23:30	606.29	50.52	20.75	0:30:30	171.76	171.76	6.10
0:02:35	1,384.96	14.43	72.83	0:09:35	1,172.52	24.43	43.37	0:16:35	722.26	30.09	34.85	0:23:35	723.10	60.26	17.40	0:30:35	157.29	157.29	6.66
0:02:40	1,348.05	14.04	74.81	0:09:40	1,160.35	24.17	43.50	0:16:40	715.34	29.81	35.14	0:23:40	560.57	46.71	22.31	0:30:40	155.40	155.40	6.74
0:02:45	1,359.37	14.16	73.66	0:09:45	1,188.25	24.76	42.36	0:16:45	773.22	32.22	32.76	0:23:45	633.55	52.80	19.86	0:30:45	153.09	153.09	6.84
0:02:50	1,356.86	14.13	74.39	0:09:50	1,084.44	22.59	46.37	0:16:50	766.72	31.95	32.73	0:23:50	754.14	62.84	16.75	0:30:50	173.64	173.64	6.02
0:02:55	1,318.90	13.74	76.64	0:09:55	945.82	19.70	53.04	0:16:55	881.85	36.74	28.62	0:23:55	730.02	60.83	17.18	0:30:55	127.30	127.30	8.25

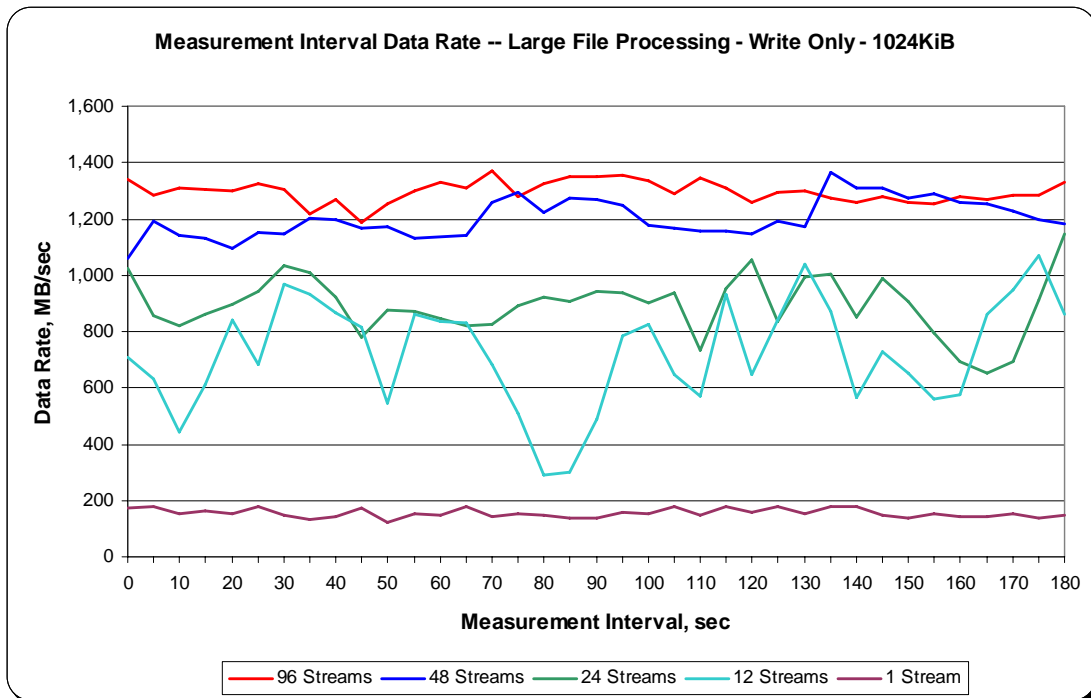
SPC-2 “Large File Processing/WRITE ONLY/1024 KiB Transfer Size” Test Run Data Measurement Interval, Run-Out, and Ramp-Down Periods

96 Streams				48 Streams				24 Streams				12 Streams				1 Stream			
TR1	Data Rate			TR2	Data Rate			TR3	Data Rate			TR4	Data Rate			TR5	Data Rate		
Test Run Sequence Time	Data Rate, MB/sec	/ Stream, MB/sec	Response Time, ms	Test Run Sequence Time	Data Rate, MB/sec	/ Stream, MB/sec	Response Time, ms	Test Run Sequence Time	Data Rate, MB/sec	/ Stream, MB/sec	Response Time, ms	Test Run Sequence Time	Data Rate, MB/sec	/ Stream, MB/sec	Response Time, ms	Test Run Sequence Time	Data Rate, MB/sec	/ Stream, MB/sec	Response Time, ms
0:03:00	1,339.24	13.95	75.15	0:10:00	1,058.64	22.06	47.75	0:17:00	1,025.72	42.74	24.56	0:24:00	708.00	59.00	17.81	0:31:00	175.74	175.74	5.96
0:03:05	1,281.99	13.35	78.32	0:10:05	1,193.49	24.86	42.26	0:17:05	856.06	35.67	29.31	0:24:05	633.55	52.80	19.82	0:31:05	177.63	177.63	5.89
0:03:10	1,311.35	13.66	76.71	0:10:10	1,142.53	23.80	43.16	0:17:10	822.08	34.25	30.52	0:24:10	444.18	37.01	28.35	0:31:10	150.37	150.37	6.97
0:03:15	1,304.85	13.59	76.97	0:10:15	1,133.72	23.62	44.36	0:17:15	858.78	35.78	29.51	0:24:15	613.84	51.15	20.56	0:31:15	162.95	162.95	6.42
0:03:20	1,297.93	13.52	77.71	0:10:20	1,095.13	22.82	46.17	0:17:20	897.79	37.41	27.94	0:24:20	840.96	70.08	14.94	0:31:20	152.46	152.46	6.87
0:03:25	1,327.29	13.83	76.05	0:10:25	1,150.08	23.96	44.27	0:17:25	944.98	39.37	25.91	0:24:25	683.88	56.99	17.99	0:31:25	176.16	176.16	5.94
0:03:30	1,302.75	13.57	77.05	0:10:30	1,144.42	23.84	43.93	0:17:30	1,036.20	43.18	24.39	0:24:30	969.51	80.79	13.29	0:31:30	148.69	148.69	7.04
0:03:35	1,216.56	12.67	83.63	0:10:35	1,201.88	25.04	42.52	0:17:35	1,006.42	41.93	24.94	0:24:35	930.72	77.56	13.48	0:31:35	131.70	131.70	7.95
0:03:40	1,270.04	13.23	79.77	0:10:40	1,196.22	24.92	42.00	0:17:40	923.17	38.47	27.29	0:24:40	863.82	71.98	14.57	0:31:40	144.70	144.70	7.24
0:03:45	1,187.41	12.37	81.15	0:10:45	1,164.97	24.27	43.24	0:17:45	780.98	32.54	32.50	0:24:45	816.84	68.07	15.48	0:31:45	172.18	172.18	6.08
0:03:50	1,254.94	13.07	80.21	0:10:50	1,171.26	24.40	43.06	0:17:50	876.40	36.52	28.64	0:24:50	546.31	45.53	23.04	0:31:50	121.84	121.84	8.60
0:03:55	1,301.28	13.56	77.67	0:10:55	1,129.95	23.54	43.17	0:17:55	871.79	36.32	29.30	0:24:55	861.72	71.81	14.80	0:31:55	154.35	154.35	6.79
0:04:00	1,331.48	13.87	76.83	0:11:00	1,137.29	23.69	44.15	0:18:00	847.88	35.33	28.73	0:25:00	833.20	69.43	15.08	0:32:00	149.11	149.11	7.03
0:04:05	1,307.78	13.62	77.08	0:11:05	1,143.37	23.82	44.21	0:18:05	818.94	34.12	30.68	0:25:05	832.78	69.40	15.10	0:32:05	175.95	175.95	5.95
0:04:10	1,369.65	14.27	74.25	0:11:10	1,260.18	26.25	39.96	0:18:10	823.76	34.32	30.65	0:25:10	682.41	56.87	18.45	0:32:10	144.49	144.49	7.25
0:04:15	1,278.00	13.31	76.70	0:11:15	1,292.47	26.93	38.99	0:18:15	890.87	37.12	28.25	0:25:15	510.03	42.50	24.48	0:32:15	153.09	153.09	6.86
0:04:20	1,322.67	13.78	76.28	0:11:20	1,222.85	25.48	41.13	0:18:20	920.23	38.34	27.37	0:25:20	290.04	24.17	43.62	0:32:20	146.59	146.59	7.15
0:04:25	1,349.31	14.06	75.70	0:11:25	1,271.92	26.50	39.51	0:18:25	907.86	37.83	27.82	0:25:25	300.73	25.06	41.15	0:32:25	137.36	137.36	7.61
0:04:30	1,348.05	14.04	74.65	0:11:30	1,266.68	26.39	39.93	0:18:30	944.98	39.37	26.64	0:25:30	490.31	40.86	26.14	0:32:30	139.88	139.88	7.50
0:04:35	1,355.60	14.12	74.53	0:11:35	1,248.64	26.01	40.46	0:18:35	935.96	39.00	26.94	0:25:35	786.64	65.55	15.97	0:32:35	156.24	156.24	6.70
0:04:40	1,335.26	13.91	75.30	0:11:40	1,178.39	24.55	42.57	0:18:40	901.36	37.56	27.85	0:25:40	826.28	68.86	15.21	0:32:40	151.83	151.83	6.91
0:04:45	1,289.12	13.43	76.26	0:11:45	1,167.27	24.32	43.10	0:18:45	935.12	38.96	26.90	0:25:45	646.55	53.88	19.41	0:32:45	176.16	176.16	5.95
0:04:50	1,343.23	13.99	76.02	0:11:50	1,157.00	24.10	43.74	0:18:50	736.10	30.67	34.10	0:25:50	570.84	47.57	22.13	0:32:50	145.96	145.96	7.17
0:04:55	1,307.78	13.62	77.03	0:11:55	1,154.69	24.06	43.02	0:18:55	952.11	39.67	26.44	0:25:55	934.07	77.84	13.46	0:32:55	177.84	177.84	5.89
0:05:00	1,258.50	13.11	80.02	0:12:00	1,149.03	23.94	44.38	0:19:00	1,053.82	43.91	23.95	0:26:00	646.76	53.90	19.02	0:33:00	156.45	156.45	6.70
0:05:05	1,294.15	13.48	77.96	0:12:05	1,194.75	24.89	42.82	0:19:05	834.67	34.78	30.08	0:26:05	839.49	69.96	15.23	0:33:05	177.42	177.42	5.90
0:05:10	1,299.61	13.54	77.49	0:12:10	1,173.15	24.44	41.64	0:19:10	993.42	41.39	25.40	0:26:10	1,039.14	86.59	12.16	0:33:10	151.20	151.20	6.93
0:05:15	1,274.86	13.28	78.94	0:12:15	1,363.36	28.40	37.03	0:19:15	1,004.54	41.86	24.99	0:26:15	870.11	72.51	14.57	0:33:15	176.58	176.58	5.93
0:05:20	1,257.66	13.10	80.44	0:12:20	1,311.35	27.32	38.55	0:19:20	849.77	35.41	29.70	0:26:20	567.91	47.33	22.13	0:33:20	175.95	175.95	5.95
0:05:25	1,277.79	13.31	78.74	0:12:25	1,307.78	27.25	39.09	0:19:25	990.07	41.25	25.39	0:26:25	729.60	60.80	17.22	0:33:25	145.54	145.54	7.20
0:05:30	1,257.24	13.10	79.74	0:12:30	1,275.49	26.57	38.94	0:19:30	908.91	37.87	27.42	0:26:30	654.31	54.53	19.19	0:33:30	137.15	137.15	7.64
0:05:35	1,255.36	13.08	78.21	0:12:35	1,288.07	26.83	39.18	0:19:35	795.24	33.14	31.69	0:26:35	562.25	46.85	22.44	0:33:35	153.93	153.93	6.81
0:05:40	1,280.94	13.34	79.61	0:12:40	1,258.71	26.22	40.72	0:19:40	691.64	28.82	36.30	0:26:40	573.36	47.78	21.90	0:33:40	143.24	143.24	7.30
0:05:45	1,267.73	13.21	79.77	0:12:45	1,252.84	26.10	40.15	0:19:45	652.63	27.19	39.02	0:26:45	861.30	71.78	14.65	0:33:45	142.82	142.82	7.34
0:05:50	1,285.76	13.39	78.40	0:12:50	1,227.25	25.57	41.00	0:19:50	691.64	28.82	36.44	0:26:50	945.40	78.78	12.94	0:33:50	153.09	153.09	6.84
0:05:55	1,284.51	13.38	78.75	0:12:55	1,196.01	24.92	41.88	0:19:55	912.47	38.02	27.60	0:26:55	1,072.48	89.37	11.81	0:33:55	136.73	136.73	7.65
0:06:00	1,332.11	13.88	75.40	0:13:00	1,180.49	24.59	41.46	0:20:00	1,146.09	47.75	22.10	0:27:00	860.04	71.67	14.69	0:34:00	149.95	149.95	7.00
0:06:05	1,300.02	13.54	77.68	0:13:05	1,234.59	25.72	41.01	0:20:05	999.29	41.64	25.10	0:27:05	896.32	74.69	13.81	0:34:05	168.82	168.82	6.20
0:06:10	1,297.51	13.52	77.81	0:13:10	1,198.73	24.97	42.66	0:20:10	864.66	36.03	29.23	0:27:10	794.82	66.24	15.88	0:34:10	130.86	130.86	8.01
0:06:15	1,316.17	13.71	76.55	0:13:15	1,230.61	25.64	40.80	0:20:15	781.82	32.58	32.15	0:27:15	800.06	66.67	15.72	0:34:15	148.48	148.48	7.05
0:06:20	1,297.30	13.51	77.40	0:13:20	1,276.96	26.60	39.60	0:20:20	797.97	33.25	31.70	0:27:20	719.32	59.94	17.59	0:34:20	153.30	153.30	6.84
0:06:25	1,289.96	13.44	78.00	0:13:25	1,256.82	26.18	39.13	0:20:25	834.25	34.76	30.14	0:27:25	682.41	56.87	18.85	0:34:25	153.30	153.30	6.84
0:06:30	1,289.12	13.43	78.39	0:13:30	1,284.72	26.76	39.25	0:20:30	771.54	32.15	31.55	0:27:30	613.21	51.10	19.98	0:34:30	166.51	166.51	6.28
0:06:35	1,244.03	12.96	78.69	0:13:35	1,319.11	27.48	38.86	0:20:35	827.75	34.49	30.44	0:27:35	694.79	57.90	18.11	0:34:35	164.00	164.00	6.40
0:06:40	1,338.19	13.94	77.27	0:13:40	1,211.11	25.23	40.67	0:20:40	860.25	35.84	29.21	0:27:40	697.30	58.11	18.17	0:34:40	147.85	147.85	7.08
0:06:45	93.53	0.00	88.20	0:13:45	100.87	0.00	40.37	0:20:45	68.79	0.00	31.26	0:27:45	25.38	0.00	32.14	0:34:45	3.77	0.00	11.53
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
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				

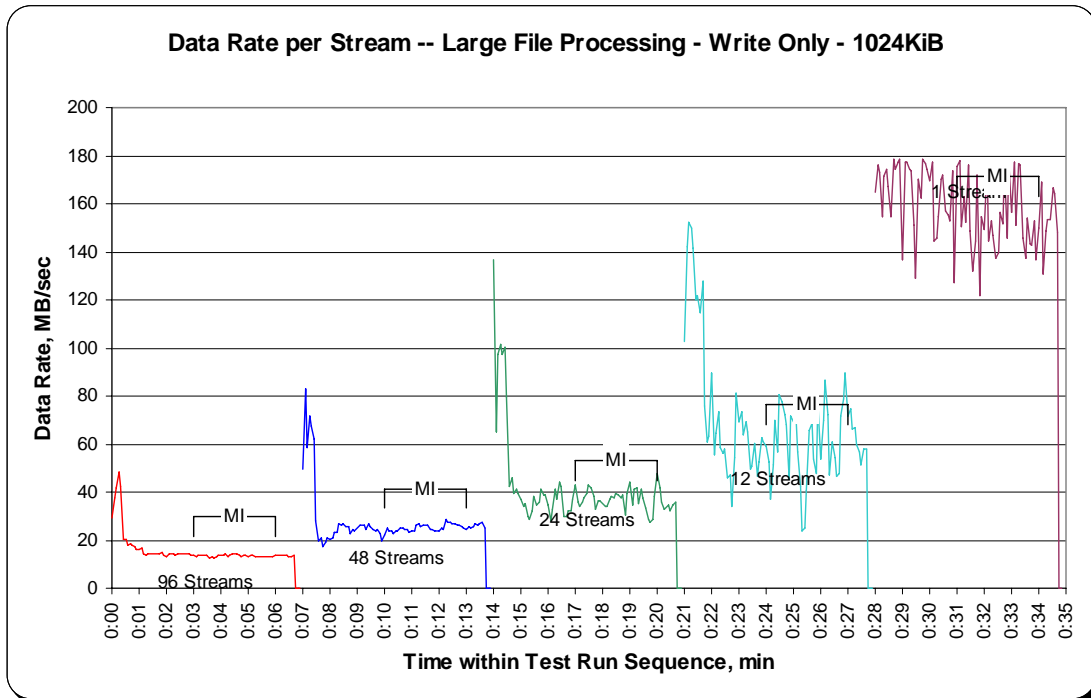
SPC-2 “Large File Processing/WRITE ONLY/1024 KiB Transfer Size” Average Data Rate Graph – Complete Test Run



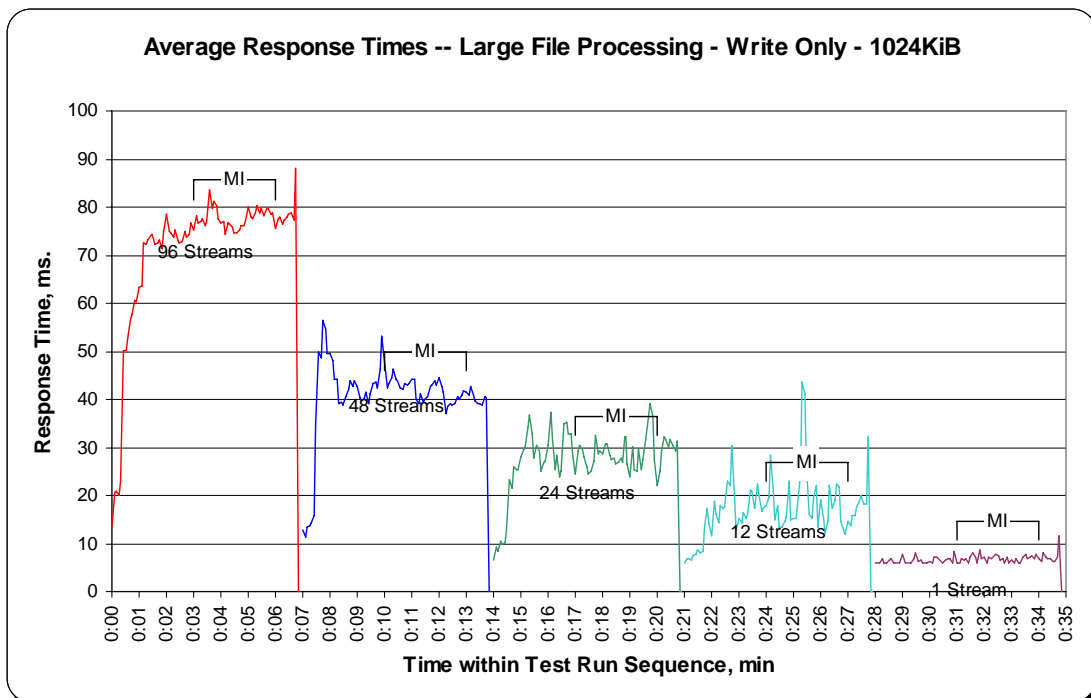
SPC-2 “Large File Processing/ WRITE ONLY /1024 KiB Transfer Size” Average Data Rate Graph – Measurement Interval (MI) Only



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



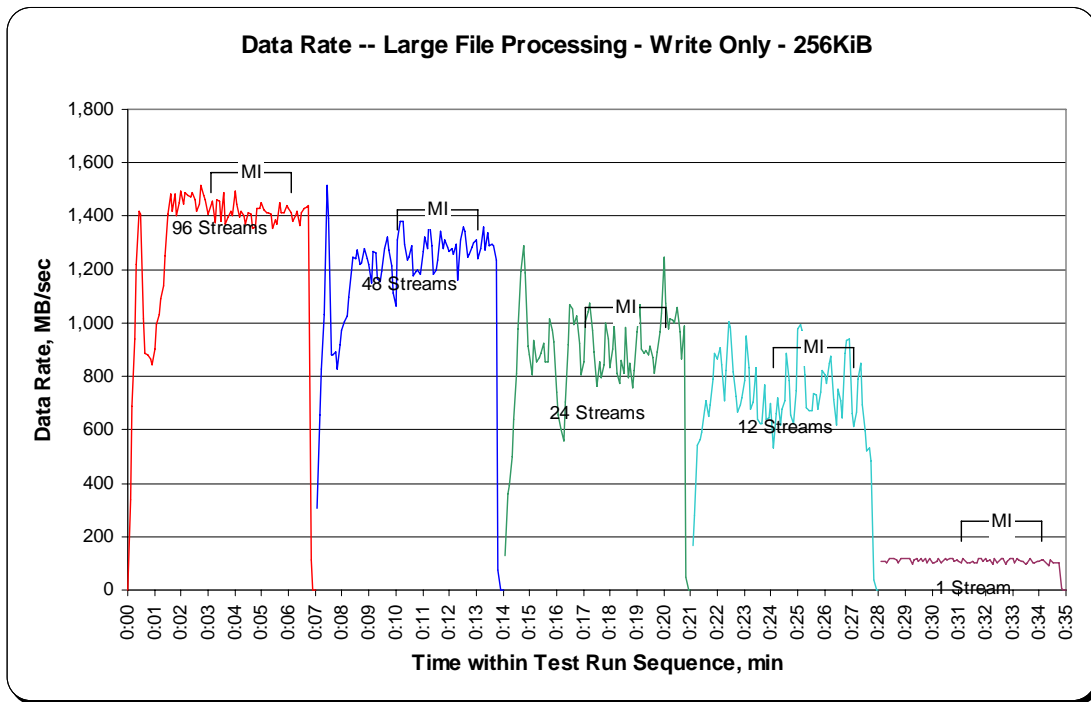
SPC-2 “Large File Processing/ WRITE ONLY /256 KiB Transfer Size” Test Run Data – Ramp-Up Period

TR6				TR7				TR8				TR9				TR10			
Test Run Sequence Time	96 Streams		Response Time, ms	Test Run Sequence Time	48 Streams		Response Time, ms	Test Run Sequence Time	24 Streams		Response Time, ms	Test Run Sequence Time	12 Streams		Response Time, ms	Test Run Sequence Time	1 Stream		
	Data Rate, MB/sec	Data Rate / Stream, MB/sec			Data Rate, MB/sec	Data Rate / Stream, MB/sec			Data Rate, MB/sec	Data Rate / Stream, MB/sec			Data Rate, MB/sec	Data Rate / Stream, MB/sec			Data Rate, MB/sec	Data Rate / Stream, MB/sec	
0:00:00	0.00	0.00	0.00	0:07:05	307.49	51.25	3.56	0:14:05	126.67	63.33	2.36	0:21:05	165.52	82.76	2.42	0:28:05	109.00	109.00	2.22
0:00:05	339.74	37.75	4.01	0:07:10	656.67	65.67	3.65	0:14:10	360.29	90.07	2.70	0:21:10	281.23	93.74	2.46	0:28:10	107.53	107.53	2.43
0:00:10	689.28	45.95	4.46	0:07:15	825.18	58.94	3.86	0:14:15	390.44	78.09	2.70	0:21:15	544.74	90.79	2.59	0:28:15	106.69	106.69	2.45
0:00:15	940.83	47.04	5.11	0:07:20	1,033.63	49.22	3.87	0:14:20	499.70	83.28	2.92	0:21:20	566.23	94.37	2.77	0:28:20	104.02	104.02	2.51
0:00:20	1,221.38	38.17	5.97	0:07:25	1,515.93	63.16	3.93	0:14:25	638.43	79.80	3.01	0:21:25	592.29	98.71	2.65	0:28:25	118.07	118.07	2.21
0:00:25	1,418.36	38.33	6.33	0:07:30	1,390.57	53.48	4.64	0:14:30	809.87	73.62	2.94	0:21:30	672.45	96.06	2.70	0:28:30	116.13	116.13	2.25
0:00:30	1,409.81	35.25	7.25	0:07:35	882.69	32.69	7.84	0:14:35	976.33	75.10	3.11	0:21:35	710.88	101.55	2.57	0:28:35	118.80	118.80	2.20
0:00:35	1,017.70	21.20	11.60	0:07:40	878.86	32.55	8.08	0:14:40	1,194.90	79.66	3.14	0:21:40	650.27	92.90	2.81	0:28:40	110.62	110.62	2.36
0:00:40	886.41	17.73	14.34	0:07:45	890.56	28.73	8.63	0:14:45	1,289.64	71.65	3.27	0:21:45	693.32	86.66	2.97	0:28:45	102.92	102.92	2.54
0:00:45	879.07	15.70	15.93	0:07:50	827.75	25.08	10.18	0:14:50	1,187.25	65.96	4.00	0:21:50	788.11	78.81	2.75	0:28:50	118.75	118.75	2.20
0:00:50	865.49	14.19	17.67	0:07:55	920.39	24.88	9.88	0:14:55	914.25	45.71	5.45	0:21:55	885.52	80.50	3.17	0:28:55	120.38	120.38	2.17
0:00:55	845.10	12.61	19.80	0:08:00	972.76	24.32	10.38	0:15:00	880.80	44.04	5.93	0:22:00	865.81	78.71	3.33	0:29:00	120.85	120.85	2.16
0:01:00	904.92	13.11	19.66	0:08:05	1,004.22	24.49	10.67	0:15:05	807.77	40.39	6.59	0:22:05	906.34	82.39	3.17	0:29:05	118.86	118.86	2.20
0:01:05	992.06	13.05	19.52	0:08:10	1,024.51	23.83	10.84	0:15:10	936.12	46.81	5.60	0:22:10	845.83	76.89	3.40	0:29:10	119.07	119.07	2.19
0:01:10	1,032.69	12.91	19.84	0:08:15	1,093.82	24.86	10.49	0:15:15	854.07	38.82	6.56	0:22:15	711.09	59.26	4.18	0:29:15	99.25	99.25	2.63
0:01:15	1,091.15	13.15	19.36	0:08:20	1,195.90	26.58	9.69	0:15:20	868.33	37.75	6.75	0:22:20	823.81	68.65	3.75	0:29:20	114.61	114.61	2.28
0:01:20	1,136.81	13.07	19.49	0:08:25	1,245.18	27.07	9.72	0:15:25	887.99	37.00	6.82	0:22:25	1,005.06	83.76	3.15	0:29:25	119.64	119.64	2.18
0:01:25	1,250.90	13.90	18.52	0:08:30	1,239.00	25.81	9.62	0:15:30	924.01	38.50	7.03	0:22:30	983.35	81.95	3.18	0:29:30	107.27	107.27	2.44
0:01:30	1,410.07	14.69	16.93	0:08:35	1,276.12	26.59	9.85	0:15:35	855.69	35.65	7.38	0:22:35	817.89	68.16	3.88	0:29:35	116.97	116.97	2.23
0:01:35	1,485.10	15.47	17.22	0:08:40	1,219.34	25.40	10.39	0:15:40	855.48	35.65	7.20	0:22:40	727.50	60.63	4.32	0:29:40	107.53	107.53	2.43
0:01:40	1,415.84	14.75	17.76	0:08:45	1,223.01	25.48	10.28	0:15:45	1,013.40	42.22	6.26	0:22:45	663.70	55.31	4.73	0:29:45	119.96	119.96	2.18
0:01:45	1,482.90	15.45	16.95	0:08:50	1,281.15	26.69	9.90	0:15:50	973.71	40.57	6.46	0:22:50	692.90	57.74	4.53	0:29:50	102.60	102.60	2.55
0:01:50	1,405.04	14.64	17.60	0:08:55	1,240.68	25.85	10.14	0:15:55	928.46	38.69	6.78	0:22:55	721.16	60.10	4.36	0:29:55	118.17	118.17	2.21
0:01:55	1,450.34	15.11	17.39	0:09:00	1,218.86	25.39	10.48	0:16:00	740.29	30.85	8.28	0:23:00	785.44	65.45	4.00	0:30:00	101.82	101.82	2.57
0:02:00	1,493.28	15.55	17.33	0:09:05	1,150.34	23.97	10.51	0:16:05	655.15	27.30	9.60	0:23:05	950.95	79.25	3.27	0:30:05	102.08	102.08	2.56
0:02:05	1,446.25	15.07	17.03	0:09:10	1,265.53	26.37	9.96	0:16:10	601.78	25.07	10.45	0:23:10	833.51	69.46	3.80	0:30:10	106.27	106.27	2.46
0:02:10	1,487.51	15.49	17.03	0:09:15	1,265.37	26.36	9.96	0:16:15	558.05	23.25	11.26	0:23:15	677.07	56.42	4.63	0:30:15	117.86	117.86	2.22
0:02:15	1,475.92	15.37	17.14	0:09:20	1,168.48	24.34	10.75	0:16:20	702.91	29.29	8.94	0:23:20	703.80	58.65	4.46	0:30:20	99.77	99.77	2.62
0:02:20	1,472.78	15.34	17.08	0:09:25	1,155.11	24.06	10.90	0:16:25	917.61	38.23	6.85	0:23:25	834.72	69.56	3.76	0:30:25	105.22	105.22	2.47
0:02:25	1,489.97	15.52	16.90	0:09:30	1,194.12	24.88	10.53	0:16:30	1,067.03	44.46	5.89	0:23:30	640.84	53.40	4.95	0:30:30	118.65	118.65	2.20
0:02:30	1,461.30	15.22	17.22	0:09:35	1,279.37	26.65	9.83	0:16:35	1,053.77	43.91	5.96	0:23:35	625.37	52.11	5.02	0:30:35	112.98	112.98	2.31
0:02:35	1,417.05	14.76	17.22	0:09:40	1,320.21	27.50	9.57	0:16:40	992.11	41.34	6.34	0:23:40	623.12	51.93	4.86	0:30:40	118.28	118.28	2.21
0:02:40	1,444.05	15.04	17.42	0:09:45	1,273.65	26.53	9.95	0:16:45	1,026.03	42.75	6.13	0:23:45	771.02	64.25	4.08	0:30:45	119.01	119.01	2.20
0:02:45	1,517.18	15.80	16.88	0:09:50	1,216.87	25.35	10.34	0:16:50	923.01	38.46	6.93	0:23:50	641.62	53.47	4.90	0:30:50	104.81	104.81	2.49
0:02:50	1,474.98	15.36	17.04	0:09:55	1,110.55	23.14	11.42	0:16:55	808.03	33.67	7.59	0:23:55	643.09	53.59	4.88	0:30:55	113.82	113.82	2.30
0:02:55	1,462.82	15.24	17.40	0:10:00	1,064.57	22.18	11.50	0:17:00	855.38	35.64	7.42	0:24:00	697.30	58.11	4.50	0:31:00	104.91	104.91	2.49
0:03:00	1,409.86	14.69	17.55																

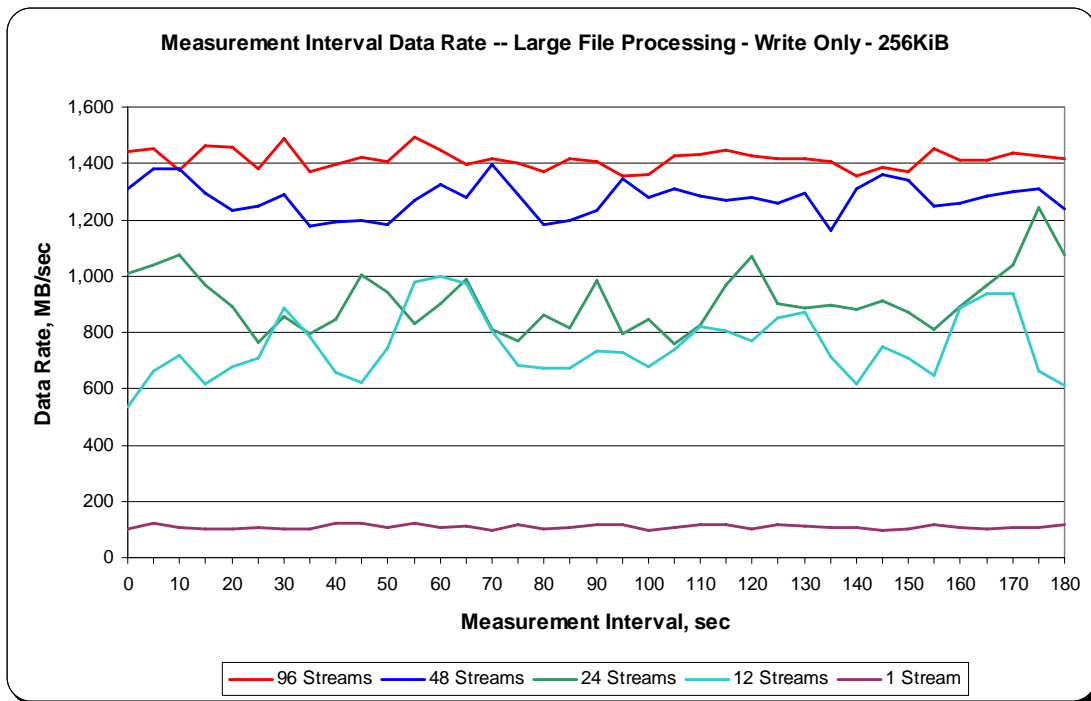
SPC-2 “Large File Processing/ WRITE ONLY /256 KiB Transfer Size” Test Run Data
Measurement Interval, Run-Out, and Ramp-Down Periods

96 Streams				48 Streams				24 Streams				12 Streams				1 Stream			
TR6	96 Streams			TR7	48 Streams			TR8	24 Streams			TR9	12 Streams			TR10	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
0:03:05	1,441.01	15.01	17.68	0:10:05	1,310.14	27.29	9.65	0:17:05	1,007.16	41.96	6.31	0:24:05	534.62	44.55	5.87	0:31:05	102.08	102.08	2.56
0:03:10	1,454.69	15.15	17.63	0:10:10	1,382.44	28.80	9.09	0:17:10	1,041.50	43.40	6.05	0:24:10	661.55	55.13	4.76	0:31:10	120.32	120.32	2.17
0:03:15	1,373.53	14.31	17.64	0:10:15	1,380.29	28.76	9.19	0:17:15	1,076.31	44.85	5.84	0:24:15	719.32	59.94	4.37	0:31:15	105.43	105.43	2.48
0:03:20	1,462.87	15.24	17.55	0:10:20	1,294.00	26.96	9.82	0:17:20	970.19	40.42	6.49	0:24:20	618.03	51.50	5.08	0:31:20	103.86	103.86	2.52
0:03:25	1,455.74	15.16	17.28	0:10:25	1,233.86	25.71	10.28	0:17:25	889.77	37.07	7.07	0:24:25	678.53	56.54	4.63	0:31:25	99.77	99.77	2.62
0:03:30	1,379.35	14.37	17.65	0:10:30	1,247.91	26.00	10.08	0:17:30	764.67	31.86	8.22	0:24:30	709.89	59.16	4.43	0:31:30	107.22	107.22	2.44
0:03:35	1,486.30	15.48	17.63	0:10:35	1,288.23	26.84	9.77	0:17:35	855.27	35.64	7.28	0:24:35	888.98	74.08	3.53	0:31:35	104.28	104.28	2.51
0:03:40	1,368.34	14.25	17.71	0:10:40	1,175.51	24.49	10.43	0:17:40	795.82	33.16	7.90	0:24:40	785.38	65.45	4.00	0:31:40	102.29	102.29	2.55
0:03:45	1,398.22	14.56	18.03	0:10:45	1,193.54	24.87	10.79	0:17:45	844.52	35.19	7.45	0:24:45	657.51	54.79	4.77	0:31:45	119.90	119.90	2.18
0:03:50	1,420.03	14.79	17.71	0:10:50	1,197.32	24.94	10.51	0:17:50	1,001.81	41.74	6.27	0:24:50	623.43	51.95	5.05	0:31:50	120.11	120.11	2.17
0:03:55	1,403.83	14.62	18.03	0:10:55	1,183.69	24.66	10.32	0:17:55	941.25	39.22	6.68	0:24:55	745.90	62.16	4.29	0:31:55	105.33	105.33	2.48
0:04:00	1,492.49	15.55	17.16	0:11:00	1,266.57	26.39	9.93	0:18:00	833.04	34.71	7.55	0:25:00	980.26	81.69	3.24	0:32:00	120.53	120.53	2.17
0:04:05	1,445.99	15.06	17.44	0:11:05	1,323.20	27.57	9.71	0:18:05	900.25	37.51	6.98	0:25:05	996.46	83.04	3.15	0:32:05	105.33	105.33	2.48
0:04:10	1,394.50	14.53	18.06	0:11:10	1,279.52	26.66	9.69	0:18:10	988.44	41.19	7.36	0:25:10	970.77	80.90	3.23	0:32:10	111.15	111.15	2.35
0:04:15	1,418.62	14.78	17.77	0:11:15	1,395.39	29.07	9.02	0:18:15	810.65	33.78	7.75	0:25:15	805.88	67.16	3.90	0:32:15	98.88	98.88	2.64
0:04:20	1,403.78	14.62	17.90	0:11:20	1,289.49	26.86	9.75	0:18:20	771.59	32.15	8.17	0:25:20	680.53	56.71	4.62	0:32:20	117.96	117.96	2.21
0:04:25	1,372.38	14.30	17.96	0:11:25	1,183.37	24.65	10.77	0:18:25	860.30	35.85	7.31	0:25:25	670.51	55.88	4.68	0:32:25	103.70	103.70	2.52
0:04:30	1,415.11	14.74	18.02	0:11:30	1,196.32	24.92	10.53	0:18:30	812.86	33.87	7.74	0:25:30	670.25	55.85	4.68	0:32:30	105.43	105.43	2.48
0:04:35	1,406.25	14.65	18.04	0:11:35	1,234.49	25.72	10.23	0:18:35	981.68	40.90	6.40	0:25:35	734.21	61.18	4.28	0:32:35	119.17	119.17	2.19
0:04:40	1,355.23	14.12	17.93	0:11:40	1,343.75	27.99	9.54	0:18:40	793.82	33.08	7.93	0:25:40	730.23	60.85	4.30	0:32:40	117.65	117.65	2.22
0:04:45	1,360.27	14.17	18.52	0:11:45	1,276.54	26.59	9.61	0:18:45	847.35	35.31	7.26	0:25:45	679.48	56.62	4.46	0:32:45	96.31	96.31	2.71
0:04:50	1,429.21	14.89	17.88	0:11:50	1,310.93	27.31	9.32	0:18:50	757.07	31.54	8.30	0:25:50	741.34	61.78	4.24	0:32:50	105.33	105.33	2.48
0:04:55	1,430.68	14.90	17.70	0:11:55	1,285.29	26.78	9.78	0:18:55	823.71	34.32	7.82	0:25:55	819.78	68.31	3.84	0:32:55	116.81	116.81	2.24
0:05:00	1,449.13	15.10	17.50	0:12:00	1,266.57	26.39	10.01	0:19:00	968.15	40.34	6.49	0:26:00	806.51	67.21	3.89	0:33:00	117.91	117.91	2.22
0:05:05	1,426.38	14.86	17.66	0:12:05	1,277.11	26.61	9.85	0:19:05	1,069.44	44.56	5.89	0:26:05	771.54	64.30	4.07	0:33:05	103.34	103.34	2.53
0:05:10	1,415.63	14.75	17.51	0:12:10	1,259.34	26.24	10.03	0:19:10	901.51	37.56	6.97	0:26:10	849.61	70.80	3.70	0:33:10	115.66	115.66	2.26
0:05:15	1,414.95	14.74	17.94	0:12:15	1,295.57	26.99	9.78	0:19:15	886.41	36.93	7.10	0:26:15	873.46	72.79	3.59	0:33:15	111.10	111.10	2.35
0:05:20	1,406.40	14.65	17.90	0:12:20	1,162.92	24.23	10.62	0:19:20	897.21	37.38	7.03	0:26:20	714.81	59.57	4.39	0:33:20	106.90	106.90	2.45
0:05:25	1,354.66	14.11	18.57	0:12:25	1,311.61	27.33	9.61	0:19:25	880.44	36.68	7.16	0:26:25	617.45	51.45	5.09	0:33:25	106.64	106.64	2.45
0:05:30	1,384.23	14.42	18.19	0:12:30	1,361.52	28.37	9.36	0:19:30	911.37	37.97	6.89	0:26:30	750.20	62.52	4.16	0:33:30	95.16	95.16	2.75
0:05:35	1,370.91	14.28	17.85	0:12:35	1,340.60	27.93	9.40	0:19:35	871.37	36.31	7.08	0:26:35	710.36	59.20	4.52	0:33:35	103.65	103.65	2.52
0:05:40	1,450.81	15.11	17.44	0:12:40	1,248.75	26.02	10.11	0:19:40	809.92	33.75	7.60	0:26:40	646.34	53.86	4.88	0:33:40	119.49	119.49	2.19
0:05:45	1,413.85	14.73	17.78	0:12:45	1,259.18	26.23	9.98	0:19:45	892.81	37.20	7.05	0:26:45	886.05	73.84	3.47	0:33:45	104.49	104.49	2.50
0:05:50	1,413.74	14.73	17.81	0:12:50	1,283.88	26.75	9.72	0:19:50	967.36	40.31	6.62	0:26:50	935.85	77.99	3.41	0:33:50	102.24	102.24	2.56
0:05:55	1,439.22	14.99	17.89	0:12:55	1,301.75	27.12	9.54	0:19:55	1,039.56	43.31	6.08	0:26:55	938.79	78.23	3.38	0:33:55	104.96	104.96	2.49
0:06:00	1,427.01	14.86	17.46	0:13:00	1,311.56	27.32	9.67	0:20:00	1,244.08	51.84	5.21	0:27:00	660.13	55.01	4.76	0:34:00	105.07	105.07	2.49
0:06:05	1,414.21	14.73	17.77	0:13:05	1,239.26	25.82	10.15	0:20:05	1,076.42	44.85	5.65	0:27:05	613.21	51.10	5.13	0:34:05	115.40	115.40	2.26
0:06:10	1,382.18	14.40	18.20	0:13:10	1,279.73	26.66	9.84	0:20:10	980.58	40.86	6.30	0:27:10	666.63	55.55	4.71	0:34:10	112.93	112.93	2.31
0:06:15	1,402.26	14.61	18.04	0:13:15	1,357.49	28.28	9.41	0:20:15	1,015.02	42.29	6.18	0:27:15	789.37	65.78	3.90	0:34:15	101.82	101.82	2.57
0:06:20	1,418.88	14.78	17.77	0:13:20	1,270.87	26.48	9.59	0:20:20	1,007.58	41.98	6.25	0:27:20	848.56	70.71	3.70	0:34:20	91.70	91.70	2.85
0:06:25	1,366.61	14.24	17.97	0:13:25	1,337.77	27.87	9.60	0:20:25	1,000.76	41.70	6.28	0:27:25	695.36	57.95	4.52	0:34:25	114.92	114.92	2.27
0:06:30	1,413.17	14.72	17.85	0:13:30	1,289.91	26.87	9.62	0:20:30	1,056.23	44.01	5.95	0:27:30	596.43	49.70	5.25	0:34:30	102.60	102.60	2.55
0:06:35	1,428.32	14.88	17.68	0:13:35	1,294.05	26.96	9.72	0:20:35	964.48	40.19	6.51	0:27:35	519.99	43.33	6.06	0:34:35	100.14	100.14	2.61
0:06:40	1,436.44	14.96	17.51	0:13:40	1,289.33	26.86	9.81	0:20:40	866.18	36.09	7.26	0:27:40	531.52	44.29	5.80	0:34:40	104.54	104.54	2.50
0:06:45	1,437.86	14.98	17.47	0:13:45	1,234.23	25.71	10.23	0:20:45	988.44	41.19	6.51	0:27:45	481.30	40.11	6.53	0:34:45	100.03	100.03	2.61
0:06:50	112.93	0.00	15.56	0:13:50	73.92	0.00	9.25	0:20:50	50.86	0.00	5.65	0:27:50	37.43	0.00	6.37	0:34:50	7.97	0.00	2.15
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
0:07:00	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	0:35:00	0.00	0.00	0.00

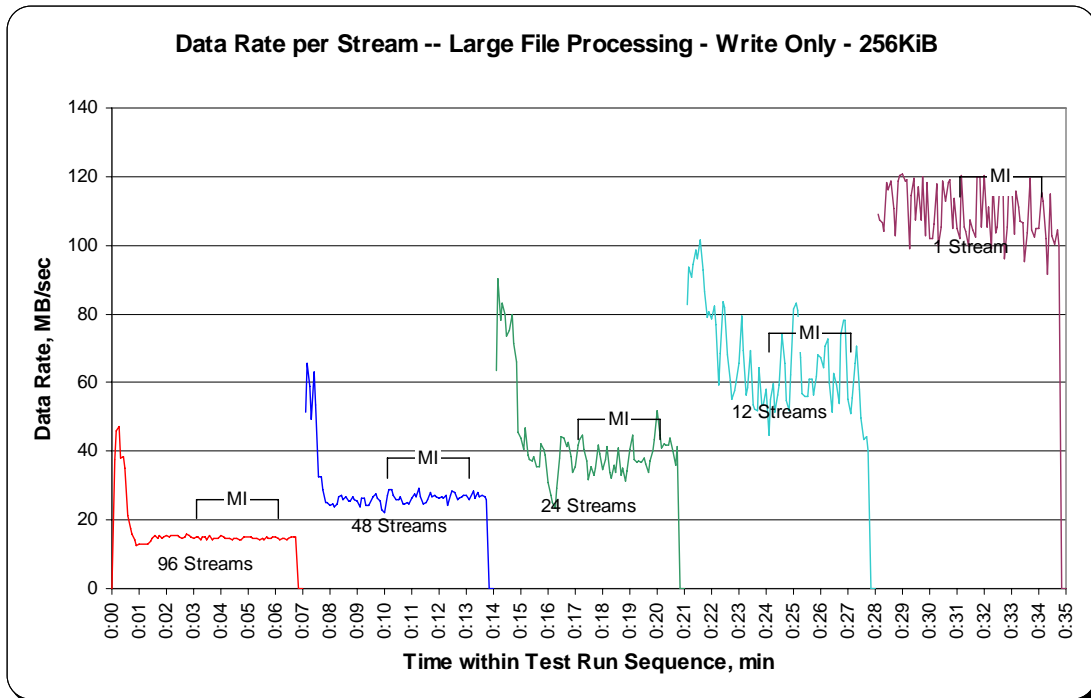
SPC-2 “Large File Processing/ WRITE ONLY /256 KiB Transfer Size” Average Data Rate Graph – Complete Test Run



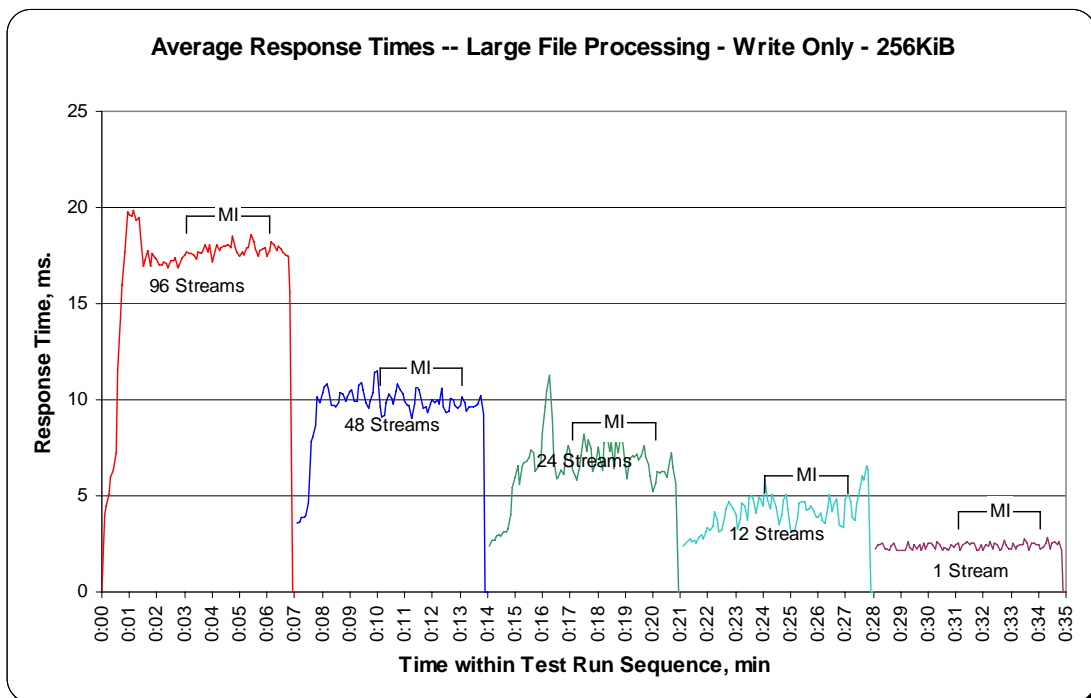
SPC-2 “Large File Processing/ WRITE ONLY /256 KiB Transfer Size” Average Data Rate Graph – Measurement Interval (MI) Only



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.

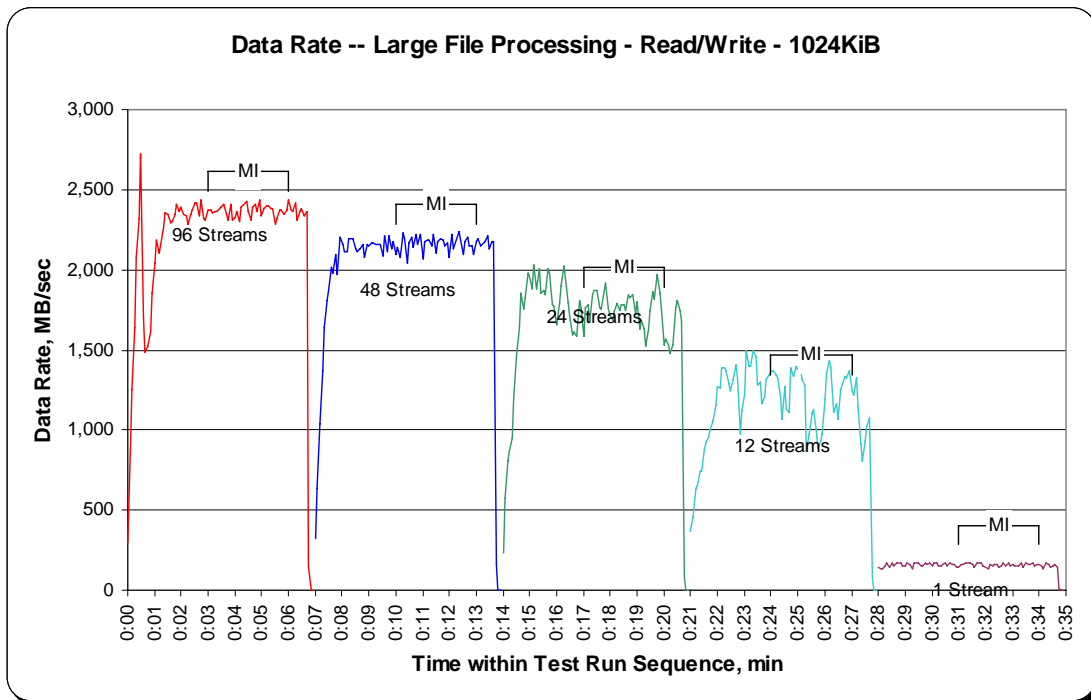
SPC-2 “Large File Processing/READ-WRITE/1024 KiB Transfer Size” Test Run Data – Ramp-Up Period

TR11 Test Run Sequence Time	96 Streams			TR12 Test Run Sequence Time	48 Streams			TR13 Test Run Sequence Time	24 Streams			TR14 Test Run Sequence Time	12 Streams			TR15 Test Run Sequence Time	1 Stream		
	Data Rate, MB/sec	/ Stream, MB/sec	Response Time, ms		Data Rate, MB/sec	/ Stream, MB/sec	Response Time, ms		Data Rate, MB/sec	/ Stream, MB/sec	Response Time, ms		Data Rate, MB/sec	/ Stream, MB/sec	Response Time, ms		Data Rate, MB/sec	/ Stream, MB/sec	Response Time, ms
0:00:00	294.86	29.49	12.30	0:07:00	320.24	64.05	10.37	0:14:00	235.09	58.77	8.36	0:21:00	363.86	121.29	7.91	0:28:00	144.49	144.49	6.78
0:00:05	930.51	48.97	15.03	0:07:05	637.11	53.09	12.61	0:14:05	577.14	82.45	9.14	0:21:05	454.87	90.97	8.67	0:28:05	133.80	133.80	7.83
0:00:10	1,250.11	50.00	18.00	0:07:10	1,041.03	57.83	15.20	0:14:10	805.31	115.04	9.11	0:21:10	633.13	126.63	8.31	0:28:10	135.48	135.48	7.73
0:00:15	1,636.20	49.58	19.11	0:07:15	1,368.39	68.42	14.84	0:14:15	870.95	96.77	9.53	0:21:15	649.49	129.90	8.07	0:28:15	149.95	149.95	6.98
0:00:20	2,077.23	50.66	18.96	0:07:20	1,635.15	65.41	14.57	0:14:20	947.91	105.32	9.95	0:21:20	744.07	148.81	7.04	0:28:20	169.45	169.45	6.19
0:00:25	2,319.66	47.34	19.79	0:07:25	1,805.23	64.47	15.31	0:14:25	1,198.31	99.86	8.92	0:21:25	739.04	123.17	7.16	0:28:25	143.65	143.65	7.29
0:00:30	2,720.01	50.37	20.26	0:07:30	1,867.72	62.26	15.92	0:14:30	1,472.83	122.74	8.56	0:21:30	883.53	126.22	7.44	0:28:30	169.87	169.87	6.18
0:00:35	1,709.39	29.47	34.29	0:07:35	2,017.67	59.34	17.07	0:14:35	1,637.88	96.35	9.68	0:21:35	919.39	131.34	8.05	0:28:35	151.41	151.41	6.90
0:00:40	1,487.93	23.62	42.75	0:07:40	1,983.28	55.09	18.51	0:14:40	1,855.98	109.18	9.61	0:21:40	954.20	136.31	7.50	0:28:40	166.93	166.93	6.27
0:00:45	1,520.64	23.39	43.96	0:07:45	2,097.36	58.26	18.38	0:14:45	1,754.48	103.20	10.15	0:21:45	1,002.86	143.27	7.31	0:28:45	166.30	166.30	6.30
0:00:50	1,610.40	22.06	43.66	0:07:50	1,970.06	50.51	18.94	0:14:50	1,829.14	91.46	10.64	0:21:50	1,053.61	117.07	8.05	0:28:50	170.71	170.71	6.14
0:00:55	1,855.35	23.79	42.79	0:07:55	2,201.80	55.04	19.45	0:14:55	1,977.61	98.88	10.64	0:21:55	1,154.69	128.30	8.16	0:28:55	155.82	155.82	6.72
0:01:00	2,042.00	24.90	40.73	0:08:00	2,158.60	52.65	19.85	0:15:00	1,957.90	93.23	11.08	0:22:00	1,275.91	127.59	8.10	0:29:00	155.40	155.40	6.74
0:01:05	2,185.44	25.12	41.46	0:08:05	2,109.11	51.44	20.46	0:15:05	1,881.77	85.54	11.56	0:22:05	1,263.53	126.35	8.30	0:29:05	168.61	168.61	6.21
0:01:10	2,101.56	23.61	43.04	0:08:10	2,117.07	48.12	20.34	0:15:10	2,036.12	92.55	11.32	0:22:10	1,384.12	125.83	8.09	0:29:10	161.48	161.48	6.49
0:01:15	2,160.91	24.01	42.52	0:08:15	2,195.93	47.74	21.61	0:15:15	1,884.92	85.68	12.23	0:22:15	1,387.48	126.13	8.31	0:29:15	134.64	134.64	7.78
0:01:20	2,261.99	24.32	42.57	0:08:20	2,198.03	46.77	22.21	0:15:20	2,001.94	87.04	11.93	0:22:20	1,366.08	113.84	9.20	0:29:20	167.35	167.35	6.26
0:01:25	2,353.63	24.52	42.47	0:08:25	2,192.57	45.68	23.25	0:15:25	1,851.37	77.14	13.19	0:22:25	1,290.80	107.57	9.74	0:29:25	167.14	167.14	6.26
0:01:30	2,343.78	24.41	43.45	0:08:30	2,128.19	44.34	23.68	0:15:30	1,874.02	78.08	13.42	0:22:30	1,245.50	103.79	10.09	0:29:30	165.68	165.68	6.32
0:01:35	2,291.56	23.87	43.92	0:08:35	2,111.83	44.00	23.87	0:15:35	1,847.38	76.97	13.74	0:22:35	1,312.82	109.40	9.58	0:29:35	153.72	153.72	6.81
0:01:40	2,303.30	23.99	43.04	0:08:40	2,131.96	44.42	23.61	0:15:40	2,004.46	83.52	12.56	0:22:40	1,408.24	117.35	8.93	0:29:40	153.93	153.93	6.81
0:01:45	2,348.60	24.46	42.91	0:08:45	2,155.03	44.90	23.38	0:15:45	1,979.29	82.47	12.71	0:22:45	1,329.59	110.80	9.45	0:29:45	166.30	166.30	6.30
0:01:50	2,410.89	25.11	41.90	0:08:50	2,077.02	43.27	23.45	0:15:50	1,785.93	74.41	14.09	0:22:50	977.27	81.44	12.81	0:29:50	157.71	157.71	6.64
0:01:55	2,366.01	24.65	42.90	0:08:55	2,154.19	44.88	23.46	0:15:55	1,773.35	73.89	14.20	0:22:55	1,123.65	93.64	11.22	0:29:55	171.55	171.55	6.10
0:02:00	2,390.96	24.91	42.31	0:09:00	2,149.58	44.78	23.38	0:16:00	1,653.60	68.90	15.20	0:23:00	1,229.35	102.45	10.26	0:30:00	154.98	154.98	6.76
0:02:05	2,349.44	24.47	42.80	0:09:05	2,163.21	45.07	23.37	0:16:05	1,787.61	74.48	14.10	0:23:05	1,494.43	124.54	8.59	0:30:05	170.29	170.29	6.15
0:02:10	2,337.70	24.35	43.04	0:09:10	2,170.13	45.21	23.18	0:16:10	1,894.15	78.92	13.32	0:23:10	1,396.70	116.39	8.73	0:30:10	166.51	166.51	6.32
0:02:15	2,281.28	23.76	43.02	0:09:15	2,156.71	44.93	23.37	0:16:15	2,025.43	84.39	12.44	0:23:15	1,399.85	116.65	8.98	0:30:15	150.99	150.99	6.91
0:02:20	2,345.66	24.43	43.00	0:09:20	2,160.07	45.00	23.47	0:16:20	1,955.38	81.47	12.86	0:23:20	1,491.70	124.31	8.48	0:30:20	149.74	149.74	7.00
0:02:25	2,374.19	24.73	42.03	0:09:25	2,157.13	44.94	23.22	0:16:25	1,786.77	74.45	14.08	0:23:25	1,455.63	121.30	8.59	0:30:25	158.54	158.54	6.60
0:02:30	2,414.24	25.15	42.19	0:09:30	2,089.18	43.52	23.90	0:16:30	1,710.44	71.27	14.73	0:23:30	1,280.73	106.73	9.95	0:30:30	168.82	168.82	6.21
0:02:35	2,416.34	25.17	41.98	0:09:35	2,212.08	46.08	22.76	0:16:35	1,592.58	66.36	16.02	0:23:35	1,294.15	107.85	9.91	0:30:35	153.72	153.72	6.81
0:02:40	2,337.07	24.34	42.52	0:09:40	2,112.88	44.02	24.08	0:16:40	1,614.81	67.28	15.58	0:23:40	1,162.03	96.84	10.82	0:30:40	169.24	169.24	6.18
0:02:45	2,440.04	25.42	43.03	0:09:45	2,208.93	46.02	22.83	0:16:45	1,581.04	65.88	15.30	0:23:45	1,210.48	100.87	10.05	0:30:45	160.01	160.01	6.55
0:02:50	2,316.93	24.13	42.05	0:09:50	2,127.35	44.32	23.66	0:16:50	1,809.42	75.39	14.44	0:23:50	1,313.24	109.44	9.61	0:30:50	165.26	165.26	6.34
0:02:55	2,314.21	24.11	42.87	0:09:55	2,178.94	45.39	23.17	0:16:55	1,759.93	73.33	14.30	0:23:55	1,340.50	111.71	9.38	0:30:55	144.28	144.28	7.26

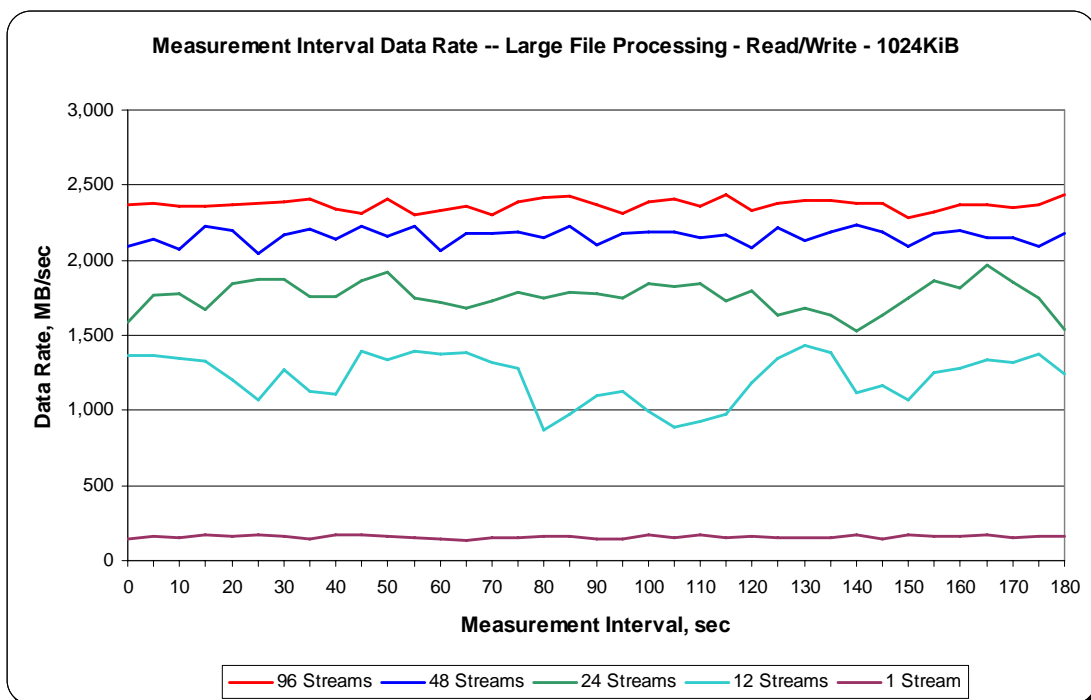
**SPC-2 “Large File Processing/READ-WRITE/1024 KiB Transfer Size” Test Run Data
Measurement Interval, Run-Out, and Ramp-Down Periods**

96 Streams				48 Streams				24 Streams				12 Streams				1 Stream			
TR11 Test Run	Data Rate	/ Stream	Response	TR12 Test Run	Data Rate	/ Stream	Response	TR13 Test Run	Data Rate	/ Stream	Response	TR14 Test Run	Data Rate	/ Stream	Response	TR15 Test Run	Data Rate	/ Stream	Response
Sequence Time	MB/sec	MB/sec	Time, ms	Sequence Time	MB/sec	MB/sec	Time, ms	Sequence Time	MB/sec	MB/sec	Time, ms	Sequence Time	MB/sec	MB/sec	Time, ms	Sequence Time	MB/sec	MB/sec	Time, ms
0:03:00	2,371.25	24.70	43.03	0:10:00	2,093.80	43.62	24.08	0:17:00	1,585.24	66.05	15.55	0:24:00	1,364.20	113.68	9.21	0:31:00	139.67	139.67	7.49
0:03:05	2,377.12	24.76	42.49	0:10:05	2,144.55	44.68	22.95	0:17:05	1,764.54	73.52	14.30	0:24:05	1,367.34	113.95	9.22	0:31:05	158.33	158.33	6.62
0:03:10	2,355.31	24.53	42.69	0:10:10	2,077.44	43.28	24.56	0:17:10	1,780.06	74.17	14.34	0:24:10	1,347.00	112.25	9.34	0:31:10	157.08	157.08	6.66
0:03:15	2,364.12	24.63	42.64	0:10:15	2,225.71	46.37	22.66	0:17:15	1,672.48	69.69	14.46	0:24:15	1,328.97	110.75	9.46	0:31:15	168.82	168.82	6.20
0:03:20	2,366.43	24.65	42.64	0:10:20	2,193.83	45.70	23.00	0:17:20	1,841.09	76.71	13.91	0:24:20	1,207.33	100.61	10.40	0:31:20	166.72	166.72	6.28
0:03:25	2,381.53	24.81	42.15	0:10:25	2,045.98	42.62	23.82	0:17:25	1,870.66	77.94	13.39	0:24:25	1,066.61	88.88	11.80	0:31:25	170.29	170.29	6.16
0:03:30	2,390.33	24.90	42.29	0:10:30	2,169.50	45.20	23.19	0:17:30	1,868.35	77.85	13.56	0:24:30	1,271.08	105.92	9.89	0:31:30	160.22	160.22	6.54
0:03:35	2,409.42	25.10	42.20	0:10:35	2,204.32	45.92	23.01	0:17:35	1,761.40	73.39	14.20	0:24:35	1,131.41	94.28	11.12	0:31:35	144.91	144.91	7.23
0:03:40	2,343.15	24.41	43.09	0:10:40	2,139.30	44.57	23.56	0:17:40	1,753.85	73.08	14.64	0:24:40	1,106.25	92.19	11.37	0:31:40	171.76	171.76	6.10
0:03:45	2,307.92	24.04	42.55	0:10:45	2,222.35	46.30	23.00	0:17:45	1,862.48	77.60	13.53	0:24:45	1,390.62	115.89	9.04	0:31:45	169.45	169.45	6.18
0:03:50	2,406.48	25.07	42.70	0:10:50	2,157.13	44.94	23.09	0:17:50	1,920.15	80.01	13.09	0:24:50	1,336.51	111.38	9.39	0:31:50	167.14	167.14	6.27
0:03:55	2,307.08	24.03	42.93	0:10:55	2,221.51	46.28	23.19	0:17:55	1,753.01	73.04	14.27	0:24:55	1,397.75	116.48	9.01	0:31:55	151.20	151.20	6.93
0:04:00	2,330.36	24.27	43.01	0:11:00	2,066.74	43.06	23.47	0:18:00	1,720.50	71.69	14.70	0:25:00	1,376.57	114.71	9.13	0:32:00	145.54	145.54	7.19
0:04:05	2,359.93	24.58	42.83	0:11:05	2,174.33	45.30	23.17	0:18:05	1,680.45	70.02	14.64	0:25:05	1,385.38	115.45	9.26	0:32:05	138.41	138.41	7.57
0:04:10	2,299.74	23.96	43.57	0:11:10	2,181.67	45.45	23.08	0:18:10	1,732.88	72.20	14.52	0:25:10	1,315.96	109.66	9.56	0:32:10	157.29	157.29	6.66
0:04:15	2,388.45	24.88	42.31	0:11:15	2,184.39	45.51	23.07	0:18:15	1,786.98	74.46	14.04	0:25:15	1,276.75	106.40	9.84	0:32:15	154.98	154.98	6.77
0:04:20	2,413.40	25.14	42.10	0:11:20	2,148.11	44.75	23.61	0:18:20	1,744.62	72.69	14.67	0:25:20	872.62	72.72	14.42	0:32:20	162.53	162.53	6.45
0:04:25	2,431.02	25.32	41.58	0:11:25	2,224.87	46.35	23.03	0:18:25	1,785.31	74.39	14.09	0:25:25	975.39	81.28	12.88	0:32:25	159.38	159.38	6.57
0:04:30	2,365.38	24.64	42.63	0:11:30	2,100.93	43.77	23.56	0:18:30	1,779.64	74.15	14.22	0:25:30	1,098.70	91.56	11.47	0:32:30	146.38	146.38	7.15
0:04:35	2,311.90	24.08	42.36	0:11:35	2,179.99	45.42	23.21	0:18:35	1,748.40	72.85	13.86	0:25:35	1,125.54	93.80	11.18	0:32:35	148.06	148.06	7.07
0:04:40	2,389.49	24.89	42.16	0:11:40	2,190.89	45.64	22.97	0:18:40	1,840.46	76.69	13.67	0:25:40	990.90	82.58	12.65	0:32:40	168.61	168.61	6.21
0:04:45	2,404.80	25.05	41.80	0:11:45	2,189.22	45.61	22.98	0:18:45	1,827.67	76.15	13.79	0:25:45	888.98	74.08	14.19	0:32:45	155.19	155.19	6.75
0:04:50	2,363.07	24.62	42.49	0:11:50	2,150.63	44.80	23.58	0:18:50	1,848.43	77.02	13.87	0:25:50	928.62	77.38	13.51	0:32:50	169.24	169.24	6.19
0:04:55	2,436.68	25.38	42.29	0:11:55	2,170.97	45.23	23.22	0:18:55	1,728.26	72.01	14.64	0:25:55	974.55	81.21	12.93	0:32:55	153.72	153.72	6.81
0:05:00	2,333.71	24.31	42.44	0:12:00	2,080.37	43.34	23.60	0:19:00	1,799.15	74.96	14.04	0:26:00	1,186.99	98.92	10.60	0:33:00	160.85	160.85	6.52
0:05:05	2,379.64	24.79	42.73	0:12:05	2,216.48	46.18	23.09	0:19:05	1,630.75	67.95	15.47	0:26:05	1,350.36	112.53	8.99	0:33:05	156.03	156.03	6.71
0:05:10	2,398.09	24.98	42.07	0:12:10	2,133.85	44.46	23.24	0:19:10	1,682.75	70.11	14.94	0:26:10	1,432.56	119.38	8.77	0:33:10	153.51	153.51	6.82
0:05:15	2,395.58	24.95	42.12	0:12:15	2,185.65	45.53	23.01	0:19:15	1,629.70	67.90	15.43	0:26:15	1,388.52	115.71	9.07	0:33:15	154.56	154.56	6.78
0:05:20	2,380.90	24.80	42.31	0:12:20	2,237.03	46.60	23.03	0:19:20	1,524.00	63.50	15.89	0:26:20	1,114.64	92.89	11.22	0:33:20	171.76	171.76	6.10
0:05:25	2,381.11	24.80	42.23	0:12:25	2,189.01	45.60	23.07	0:19:25	1,633.47	68.06	15.45	0:26:25	1,162.03	96.84	10.88	0:33:25	144.49	144.49	7.25
0:05:30	2,280.23	23.75	43.23	0:12:30	2,092.75	43.60	23.07	0:19:30	1,745.04	72.71	14.42	0:26:30	1,067.03	88.92	11.78	0:33:30	167.56	167.56	6.25
0:05:35	2,321.13	24.18	43.34	0:12:35	2,180.41	45.43	23.07	0:19:35	1,859.54	77.48	13.49	0:26:35	1,251.16	104.26	10.06	0:33:35	162.32	162.32	6.44
0:05:40	2,372.09	24.71	42.43	0:12:40	2,201.38	45.86	22.94	0:19:40	1,816.97	75.71	13.86	0:26:40	1,281.78	106.81	9.81	0:33:40	163.16	163.16	6.43
0:05:45	2,369.57	24.68	42.81	0:12:45	2,150.42	44.80	23.55	0:19:45	1,972.79	82.20	13.32	0:26:45	1,338.61	111.55	9.39	0:33:45	168.82	168.82	6.20
0:05:50	2,346.08	24.44	42.94	0:12:50	2,152.10	44.84	23.36	0:19:50	1,855.56	77.32	13.00	0:26:50	1,322.04	110.17	9.57	0:33:50	153.09	153.09	6.84
0:05:55	2,369.99	24.69	42.05	0:12:55	2,092.12	43.59	24.07	0:19:55	1,750.28	72.93	14.40	0:26:55	1,374.47	114.54	9.15	0:33:55	161.27	161.27	6.49
0:06:00	2,434.79	25.36	41.79	0:13:00	2,173.91	45.29	23.22	0:20:00	1,535.53	63.98	16.52	0:27:00	1,246.13	103.84	10.08	0:34:00	165.26	165.26	6.34
0:06:05	2,371.04	24.70	42.45	0:13:05	2,194.88	45.73	23.01	0:20:05	1,569.72	65.40	16.27	0:27:05	1,221.59	101.80	10.31	0:34:05	147.85	147.85	7.09
0:06:10	2,363.91	24.62	42.11	0:13:10	2,152.52	44.84	23.07	0:20:10	1,535.12	63.96	16.38	0:27:10	1,327.71	110.64	9.46	0:34:10	133.38	133.38	7.84
0:06:15	2,419.48	25.20	42.65	0:13:15	2,168.46	45.18	23.19	0:20:15	1,479.75	61.66	16.40	0:27:15	1,150.50	95.87	10.92	0:34:15	168.40	168.40	6.23
0:06:20	2,307.29	24.03	42.96	0:13:20	2,179.36	45.40	23.18	0:20:20	1,531.13	63.80	16.74	0:27:20	914.78	76.23	13.73	0:34:20	160.43	160.43	6.53
0:06:25	2,360.76	24.59	42.57	0:13:25	2,207.67	45.99	23.43	0:20:25	1,762.24	73.43	14.05	0:27:25	806.77	67.23	15.52	0:34:25	140.30	140.30	7.46
0:06:30	2,381.74	24.81	42.38	0:13:30	2,127.77	44.33	23.06	0:20:30	1,811.10	75.46	14.21	0:27:30	933.44	77.79	13.55	0:34:30	153.72	153.72	6.82
0:06:35	2,336.44	24.34	43.10	0:13:35	2,175.38	45.32	23.14	0:20:35	1,741.89	72.58	14.42	0:27:35	1,025.30	85.44	12.27	0:34:35	157.71	157.71	6.64
0:06:40	2,359.93	24.58	42.86	0:13:40	2,179.99	45.42	23.06	0:20:40	1,681.71	70.07	14.98	0:27:40	1,076.26	89.69	11.69	0:34:40	144.70	144.70	7.24
0:06:45	150.37	0.00	42.61	0:13:45	158.75	0.00	22.61	0:20:45	82.21	0.00	18.14	0:27:45	78.22	0.00	11.06	0:34:45	9.65	0.00	6.31
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
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

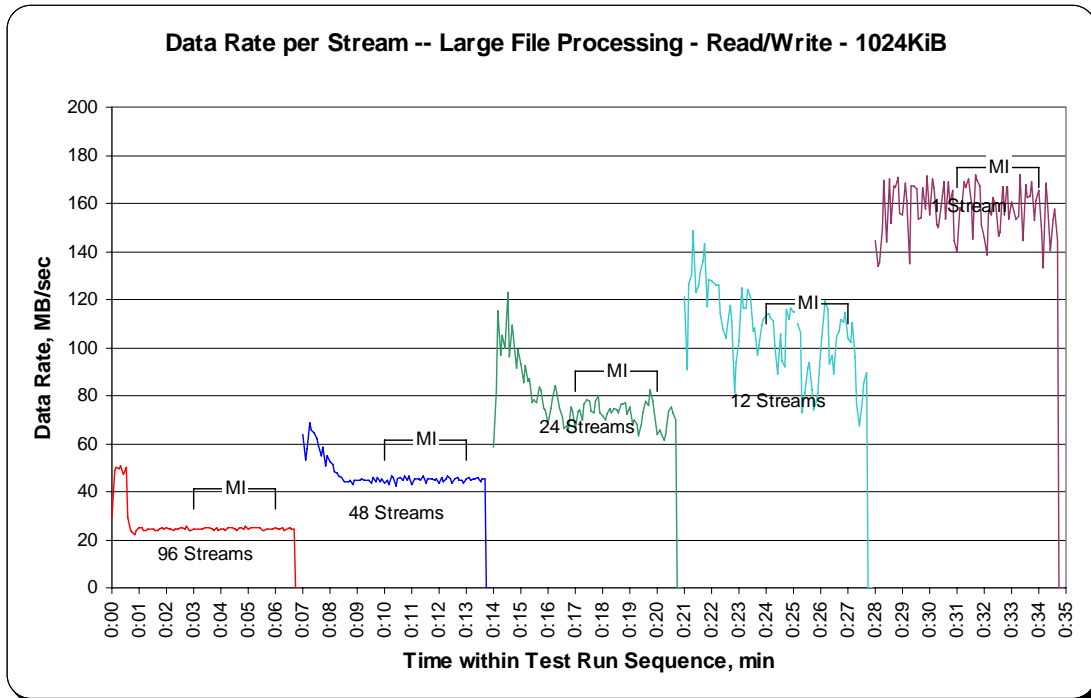
SPC-2 “Large File Processing/ READ-WRITE/1024 KiB Transfer Size” Average Data Rate Graph – Complete Test Run



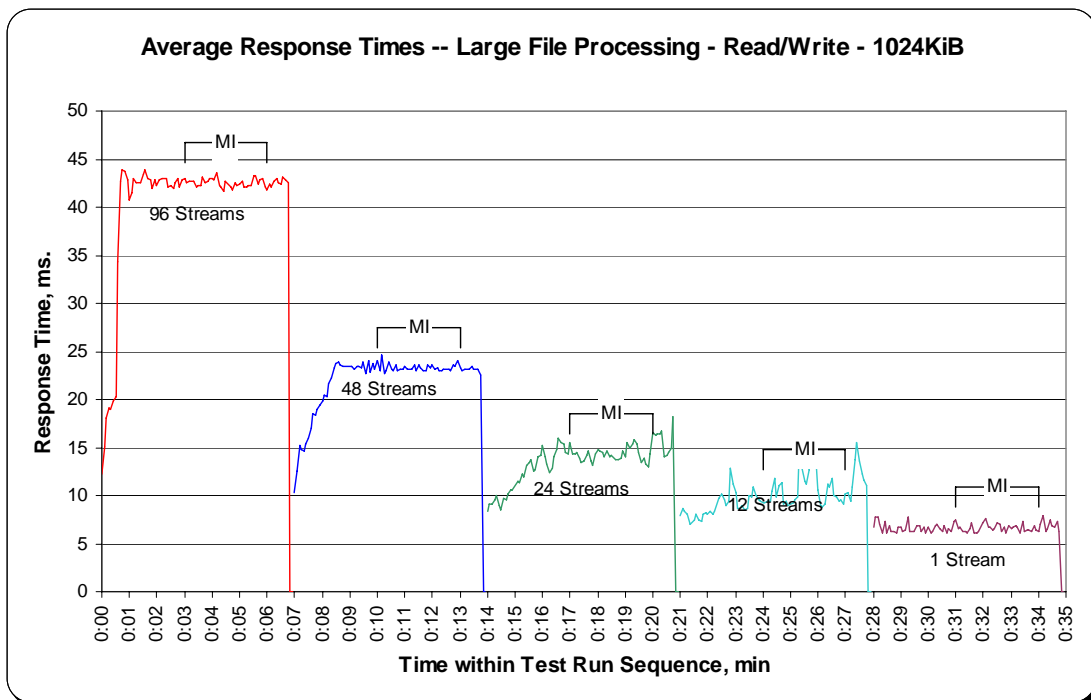
SPC-2 “Large File Processing/ READ-WRITE/1024 KiB Transfer Size” Average Data Rate Graph – Measurement Interval (MI) Only



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



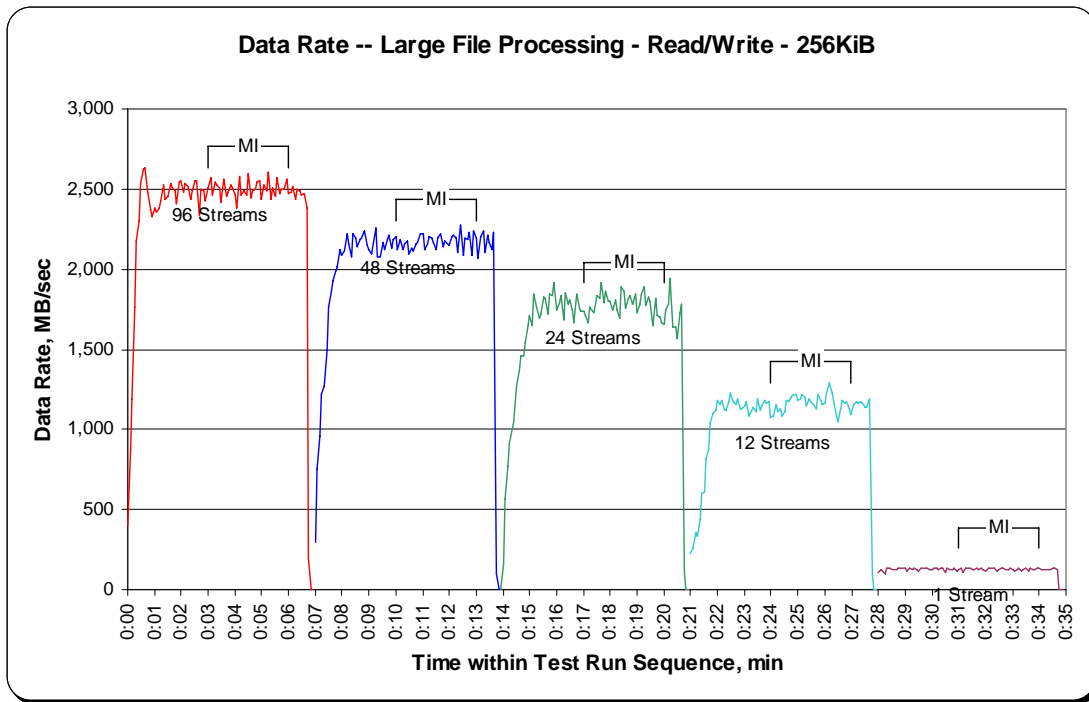
SPC-2 “Large File Processing/READ-WRITE/256 KiB Transfer Size” Test Run Data – Ramp-Up Period

TR16				TR17				TR18				TR19				TR20			
Test Run	96 Streams			Test Run	48 Streams			Test Run	24 Streams			Test Run	12 Streams			Test Run	1 Stream		
Sequence	Data Rate,	/ Stream,	Response	Sequence	Data Rate,	/ Stream,	Response	Sequence	Data Rate,	/ Stream,	Response	Sequence	Data Rate,	/ Stream,	Response	Sequence	Data Rate,	/ Stream,	Response
Time	MB/sec	MB/sec	Time, ms	Time	MB/sec	MB/sec	Time, ms	Time	MB/sec	MB/sec	Time, ms	Time	MB/sec	MB/sec	Time, ms	Time	MB/sec	MB/sec	Time, ms
0:00:00	400.71	36.43	3.78	0:07:00	295.23	42.18	3.04	0:13:55	0.00	0.00	0.00	0:21:00	225.44	112.72	2.17	0:28:00	111.78	111.78	2.17
0:00:05	879.02	48.83	4.17	0:07:05	752.67	62.72	3.50	0:14:00	158.54	39.64	2.51	0:21:05	260.10	86.70	2.24	0:28:05	121.90	121.90	2.14
0:00:10	1,189.35	39.64	4.80	0:07:10	961.23	60.08	3.78	0:14:05	565.13	80.73	2.77	0:21:10	353.95	117.98	2.22	0:28:10	117.49	117.49	2.22
0:00:15	1,766.59	45.30	5.08	0:07:15	1,215.51	63.97	3.81	0:14:10	772.70	85.86	2.66	0:21:15	330.77	110.26	2.37	0:28:15	102.34	102.34	2.56
0:00:20	2,174.96	53.05	4.77	0:07:20	1,275.28	63.76	3.92	0:14:15	909.22	90.92	2.78	0:21:20	439.14	87.83	2.13	0:28:20	133.96	133.96	1.95
0:00:25	2,303.04	51.18	4.92	0:07:25	1,499.20	57.66	3.87	0:14:20	1,003.38	91.22	2.75	0:21:25	599.31	119.86	2.18	0:28:25	134.48	134.48	1.94
0:00:30	2,531.58	43.65	5.31	0:07:30	1,760.09	62.86	4.05	0:14:25	1,044.17	87.01	2.82	0:21:30	605.45	100.91	2.39	0:28:30	129.55	129.55	2.02
0:00:35	2,625.53	42.35	5.92	0:07:35	1,862.22	60.07	4.20	0:14:30	1,268.93	90.64	2.65	0:21:35	819.20	102.40	2.26	0:28:35	122.32	122.32	2.14
0:00:40	2,630.35	40.47	6.27	0:07:40	1,925.13	55.00	4.35	0:14:35	1,371.64	91.44	2.73	0:21:40	882.01	98.00	2.42	0:28:40	123.52	123.52	2.12
0:00:45	2,480.41	36.48	7.09	0:07:45	1,985.11	53.65	4.70	0:14:40	1,458.78	91.17	2.83	0:21:45	1,038.14	103.81	2.43	0:28:45	135.48	135.48	1.93
0:00:50	2,372.82	32.50	7.79	0:07:50	2,011.69	50.29	4.91	0:14:45	1,455.79	90.99	2.82	0:21:50	1,102.21	100.20	2.60	0:28:50	134.95	134.95	1.94
0:00:55	2,327.21	31.03	8.35	0:07:55	2,123.16	49.38	5.20	0:14:50	1,536.58	80.87	2.97	0:21:55	1,116.47	101.50	2.53	0:28:55	134.53	134.53	1.94
0:01:00	2,379.80	30.12	8.61	0:08:00	2,088.29	46.41	5.42	0:14:55	1,648.73	86.78	3.02	0:22:00	1,181.43	98.45	2.53	0:29:00	135.90	135.90	1.92
0:01:05	2,354.05	29.06	8.65	0:08:05	2,117.18	47.05	5.58	0:15:00	1,713.79	81.61	3.06	0:22:05	1,156.11	96.34	2.70	0:29:05	120.53	120.53	2.17
0:01:10	2,385.56	28.07	9.20	0:08:10	2,223.24	48.33	5.54	0:15:05	1,650.20	78.58	3.21	0:22:10	1,179.44	98.29	2.67	0:29:10	130.02	130.02	2.01
0:01:15	2,422.58	27.85	9.29	0:08:15	2,156.40	45.88	5.63	0:15:10	1,843.45	83.79	3.17	0:22:15	1,119.46	93.29	2.78	0:29:15	124.26	124.26	2.10
0:01:20	2,523.97	26.85	9.46	0:08:20	2,078.43	43.30	5.86	0:15:15	1,767.27	80.33	3.28	0:22:20	1,115.68	92.97	2.85	0:29:20	134.64	134.64	1.94
0:01:25	2,439.09	25.41	9.99	0:08:25	2,221.30	46.28	5.71	0:15:20	1,690.46	76.84	3.34	0:22:25	1,176.14	98.01	2.68	0:29:25	124.78	124.78	2.09
0:01:30	2,451.47	25.54	10.26	0:08:30	2,194.98	45.73	5.72	0:15:25	1,720.82	71.70	3.56	0:22:30	1,229.98	102.50	2.56	0:29:30	120.53	120.53	2.17
0:01:35	2,534.09	26.40	10.06	0:08:35	2,137.73	44.54	5.82	0:15:30	1,825.31	76.05	3.46	0:22:35	1,172.47	97.71	2.63	0:29:35	132.59	132.59	1.97
0:01:40	2,505.36	26.10	10.12	0:08:40	2,186.18	45.55	5.76	0:15:35	1,821.22	75.88	3.48	0:22:40	1,159.31	96.61	2.71	0:29:40	134.85	134.85	1.94
0:01:45	2,486.44	25.90	10.14	0:08:45	2,191.31	45.65	5.73	0:15:40	1,715.58	71.48	3.57	0:22:45	1,193.59	99.47	2.63	0:29:45	135.74	135.74	1.92
0:01:50	2,408.53	25.09	10.09	0:08:50	2,241.65	46.70	5.77	0:15:45	1,846.54	76.94	3.41	0:22:50	1,129.95	94.16	2.78	0:29:50	134.01	134.01	1.95
0:01:55	2,541.70	26.48	9.97	0:08:55	2,146.91	44.73	5.73	0:15:50	1,840.09	76.67	3.41	0:22:55	1,124.28	93.69	2.79	0:29:55	127.40	127.40	2.05
0:02:00	2,555.80	26.62	10.04	0:09:00	2,120.69	44.18	5.97	0:15:55	1,913.81	79.74	3.37	0:23:00	1,148.03	95.67	2.73	0:30:00	122.00	122.00	2.15
0:02:05	2,477.26	25.80	10.14	0:09:05	2,097.68	43.70	5.83	0:16:00	1,749.76	72.91	3.47	0:23:05	1,172.10	97.67	2.68	0:30:05	135.48	135.48	1.93
0:02:10	2,536.19	26.42	9.84	0:09:10	2,146.33	44.72	5.88	0:16:05	1,789.29	74.55	3.51	0:23:10	1,079.82	89.99	2.91	0:30:10	135.06	135.06	1.93
0:02:15	2,513.17	26.18	10.03	0:09:15	2,259.21	47.07	5.73	0:16:10	1,832.33	76.35	3.49	0:23:15	1,101.27	91.77	2.85	0:30:15	125.88	125.88	2.08
0:02:20	2,431.39	25.33	10.07	0:09:20	2,076.18	43.25	5.91	0:16:15	1,687.05	70.29	3.72	0:23:20	1,134.35	94.53	2.77	0:30:20	136.05	136.05	1.92
0:02:25	2,491.31	25.95	10.13	0:09:25	2,076.60	43.26	6.11	0:16:20	1,853.99	77.25	3.41	0:23:25	1,113.90	92.83	2.82	0:30:25	132.44	132.44	1.93
0:02:30	2,550.87	26.57	9.99	0:09:30	2,166.15	45.13	5.84	0:16:25	1,779.43	74.14	3.46	0:23:30	1,187.20	98.93	2.64	0:30:30	105.33	105.33	2.53
0:02:35	2,553.81	26.60	10.05	0:09:35	2,124.26	44.26	5.83	0:16:30	1,804.65	75.19	3.55	0:23:35	1,121.61	93.47	2.80	0:30:35	133.48	133.48	1.96
0:02:40	2,340.26	24.38	10.37	0:09:40	2,188.06	45.58	5.79	0:16:35	1,741.16	72.55	3.61	0:23:40	1,143.05	95.25	2.74	0:30:40	128.08	128.08	2.04
0:02:45	2,494.46	25.98	10.09	0:09:45	2,214.33	46.13	5.74	0:16:40	1,665.87	69.41	3.70	0:23:45	1,178.13	98.18	2.66	0:30:45	122.58	122.58	2.13
0:02:50	2,488.32	25.92	10.31	0:09:50	2,127.88	44.33	5.77	0:16:45	1,841.35	76.72	3.48	0:23:50	1,165.96	97.16	2.69	0:30:50	134.69	134.69	1.94
0:02:55	2,424.46	25.25	10.19	0:09:55	2,189.48	45.61	5.74	0:16:50	1,758.72	73.28	3.54	0:23:55	1,169.95	97.50	2.68	0:30:55	118.38	118.38	2.21
								0:16:55	1,733.30	72.22	3.56								

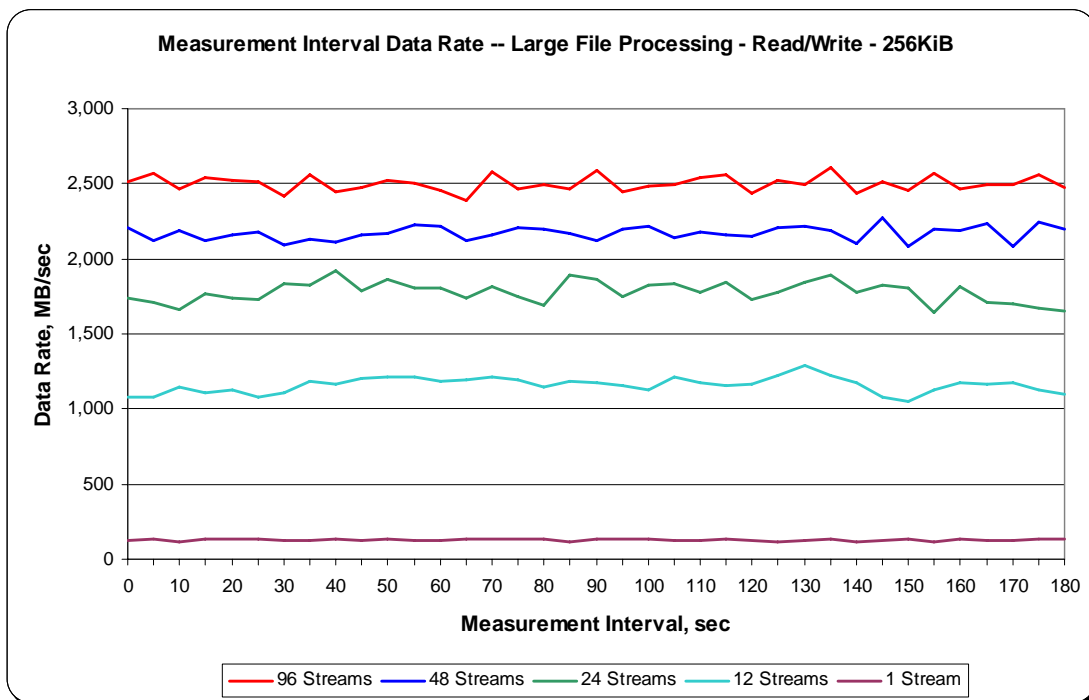
**SPC-2 “Large File Processing/READ-WRITE/256 KiB Transfer Size” Test Run Data
 Measurement Interval, Run-Out, and Ramp-Down Periods**

TR16				TR17				TR18				TR19				TR20			
96 Streams				48 Streams				24 Streams				12 Streams				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
0:03:00	2,510.34	26.15	10.08	0:10:00	2,202.59	45.89	5.83	0:17:00	1,739.06	72.46	3.65	0:24:00	1,076.21	89.68	2.92	0:31:00	125.04	125.04	2.09
0:03:05	2,567.81	26.75	9.94	0:10:05	2,125.36	44.28	5.78	0:17:05	1,709.23	71.22	3.67	0:24:05	1,080.24	90.02	2.90	0:31:05	133.22	133.22	1.96
0:03:10	2,464.26	25.67	10.02	0:10:10	2,186.65	45.56	5.75	0:17:10	1,664.09	69.34	3.77	0:24:10	1,150.76	95.90	2.73	0:31:10	110.99	110.99	2.35
0:03:15	2,543.11	26.49	10.11	0:10:15	2,117.97	44.12	5.97	0:17:15	1,763.13	73.46	3.56	0:24:15	1,110.65	92.55	2.82	0:31:15	135.84	135.84	1.92
0:03:20	2,523.97	26.29	9.96	0:10:20	2,161.27	45.03	5.84	0:17:20	1,741.06	72.54	3.61	0:24:20	1,128.22	94.02	2.78	0:31:20	133.27	133.27	1.96
0:03:25	2,510.66	26.15	10.01	0:10:25	2,179.36	45.40	5.74	0:17:25	1,732.40	72.18	3.60	0:24:25	1,080.56	90.05	2.86	0:31:25	134.53	134.53	1.94
0:03:30	2,418.28	25.19	10.09	0:10:30	2,093.22	43.61	6.04	0:17:30	1,838.68	76.61	3.35	0:24:30	1,109.92	92.49	2.87	0:31:30	123.42	123.42	2.12
0:03:35	2,561.99	26.69	10.07	0:10:35	2,131.60	44.41	5.78	0:17:35	1,821.43	75.89	3.45	0:24:35	1,186.41	98.87	2.64	0:31:35	121.01	121.01	2.16
0:03:40	2,450.10	25.52	10.17	0:10:40	2,111.57	43.99	5.98	0:17:40	1,918.84	79.95	3.39	0:24:40	1,169.06	97.42	2.68	0:31:40	134.58	134.58	1.94
0:03:45	2,476.32	25.79	10.11	0:10:45	2,159.96	45.00	5.82	0:17:45	1,789.81	74.58	3.39	0:24:45	1,199.36	99.95	2.62	0:31:45	123.52	123.52	2.12
0:03:50	2,524.81	26.30	10.06	0:10:50	2,165.73	45.12	5.78	0:17:50	1,861.64	77.57	3.44	0:24:50	1,215.88	101.32	2.58	0:31:50	134.01	134.01	1.95
0:03:55	2,506.20	26.11	10.10	0:10:55	2,223.24	46.32	5.74	0:17:55	1,802.87	75.12	3.51	0:24:55	1,215.88	101.32	2.58	0:31:55	121.90	121.90	2.15
0:04:00	2,459.54	25.62	10.28	0:11:00	2,216.90	46.19	5.78	0:18:00	1,802.66	75.11	3.48	0:25:00	1,185.00	98.75	2.65	0:32:00	119.54	119.54	2.19
0:04:05	2,385.35	24.85	10.19	0:11:05	2,118.65	44.14	5.78	0:18:05	1,742.79	72.62	3.61	0:25:05	1,191.86	99.32	2.63	0:32:05	130.55	130.55	2.00
0:04:10	2,578.97	26.86	9.94	0:11:10	2,157.39	44.95	5.86	0:18:10	1,812.04	75.50	3.54	0:25:10	1,217.29	101.44	2.58	0:32:10	135.21	135.21	1.93
0:04:15	2,464.84	25.68	10.12	0:11:15	2,202.32	45.88	5.74	0:18:15	1,748.24	72.84	3.51	0:25:15	1,197.00	99.75	2.62	0:32:15	135.37	135.37	1.93
0:04:20	2,493.99	25.98	10.25	0:11:20	2,196.92	45.77	5.77	0:18:20	1,692.24	70.51	3.58	0:25:20	1,141.90	95.16	2.75	0:32:20	134.32	134.32	1.94
0:04:25	2,461.53	25.64	10.08	0:11:25	2,167.30	45.15	5.82	0:18:25	1,889.17	78.72	3.36	0:25:25	1,187.83	98.99	2.64	0:32:25	117.96	117.96	2.21
0:04:30	2,593.23	27.01	9.91	0:11:30	2,119.22	44.15	5.74	0:18:30	1,860.86	77.54	3.45	0:25:30	1,175.35	97.95	2.67	0:32:30	129.50	129.50	1.94
0:04:35	2,446.49	25.48	10.07	0:11:35	2,197.08	45.77	5.82	0:18:35	1,750.91	72.95	3.48	0:25:35	1,158.52	96.54	2.71	0:32:35	130.50	130.50	2.08
0:04:40	2,485.60	25.89	10.00	0:11:40	2,216.74	46.18	5.72	0:18:40	1,820.17	75.84	3.53	0:25:40	1,127.38	93.95	2.78	0:32:40	131.39	131.39	1.91
0:04:45	2,498.28	26.02	10.02	0:11:45	2,137.94	44.54	5.77	0:18:45	1,834.12	76.42	3.45	0:25:45	1,217.45	101.45	2.58	0:32:45	123.26	123.26	2.21
0:04:50	2,540.18	26.46	9.99	0:11:50	2,178.73	45.39	5.77	0:18:50	1,778.91	74.12	3.44	0:25:50	1,177.92	98.16	2.66	0:32:50	123.16	123.16	2.12
0:04:55	2,555.85	26.62	10.02	0:11:55	2,160.38	45.01	5.81	0:18:55	1,844.03	76.83	3.50	0:25:55	1,159.41	96.62	2.71	0:32:55	132.64	132.64	1.97
0:05:00	2,438.57	25.40	10.02	0:12:00	2,152.57	44.85	5.81	0:19:00	1,726.22	71.93	3.56	0:26:00	1,164.81	97.07	2.69	0:33:00	121.90	121.90	2.14
0:05:05	2,525.60	26.31	10.03	0:12:05	2,205.94	45.96	5.79	0:19:05	1,780.53	74.19	3.53	0:26:05	1,223.53	101.96	2.56	0:33:05	114.35	114.35	2.28
0:05:10	2,491.78	25.96	10.09	0:12:10	2,212.71	46.10	5.74	0:19:10	1,846.80	76.95	3.40	0:26:10	1,290.38	107.53	2.43	0:33:10	127.56	127.56	2.05
0:05:15	2,603.77	27.12	9.90	0:12:15	2,191.52	45.66	5.74	0:19:15	1,888.01	78.67	3.40	0:26:15	1,225.37	102.11	2.56	0:33:15	134.95	134.95	1.93
0:05:20	2,434.06	25.35	10.12	0:12:20	2,101.35	43.78	5.77	0:19:20	1,776.81	74.03	3.45	0:26:20	1,175.19	97.93	2.67	0:33:20	117.18	117.18	2.24
0:05:25	2,510.97	26.16	10.04	0:12:25	2,276.46	47.43	5.74	0:19:25	1,822.63	75.94	3.49	0:26:25	1,081.29	90.11	2.90	0:33:25	122.26	122.26	2.14
0:05:30	2,456.24	25.59	10.09	0:12:30	2,087.24	43.48	5.82	0:19:30	1,803.08	75.13	3.50	0:26:30	1,049.99	87.50	2.99	0:33:30	132.80	132.80	1.97
0:05:35	2,566.60	26.74	9.95	0:12:35	2,197.71	45.79	5.77	0:19:35	1,646.37	68.60	3.81	0:26:35	1,126.07	93.84	2.79	0:33:35	119.01	119.01	2.20
0:05:40	2,468.92	25.72	10.03	0:12:40	2,188.95	45.60	5.76	0:19:40	1,816.61	75.69	3.49	0:26:40	1,179.23	98.27	2.66	0:33:40	134.85	134.85	1.94
0:05:45	2,497.81	26.02	10.13	0:12:45	2,234.04	46.54	5.73	0:19:45	1,708.50	71.19	3.68	0:26:45	1,163.08	96.92	2.63	0:33:45	123.31	123.31	2.12
0:05:50	2,494.30	25.98	10.08	0:12:50	2,083.57	43.41	5.85	0:19:50	1,705.04	71.04	3.62	0:26:50	1,173.04	97.75	2.68	0:33:50	123.00	123.00	2.12
0:05:55	2,562.30	26.69	10.10	0:12:55	2,243.06	46.73	5.73	0:19:55	1,667.39	69.47	3.89	0:26:55	1,125.86	93.82	2.79	0:33:55	131.91	131.91	1.98
0:06:00	2,475.37	25.79	9.86	0:13:00	2,193.41	45.70	5.76	0:20:00	1,657.01	69.04	3.73	0:27:00	1,094.50	91.21	2.87	0:34:00	133.54	133.54	1.96
0:06:05	2,480.98	25.84	10.23	0:13:05	2,073.03	43.19	5.90	0:20:05	1,743.57	72.65	3.51	0:27:05	1,153.75	96.15	2.72	0:34:05	121.43	121.43	2.15
0:06:10	2,518.31	26.23	10.16	0:13:10	2,199.13	45.82	5.74	0:20:10	1,783.52	74.31	3.48	0:27:10	1,169.63	97.47	2.68	0:34:10	121.95	121.95	2.14
0:06:15	2,438.67	25.40	10.15	0:13:15	2,242.90	46.73	5.76	0:20:15	1,947.68	81.15	3.31	0:27:15	1,167.96	97.33	2.69	0:34:15	128.45	128.45	2.03
0:06:20	2,495.77	26.00	10.09	0:13:20	2,108.06	43.92	5.77	0:20:20	1,635.10	68.13	3.77	0:27:20	1,168.95	97.41	2.68	0:34:20	124.83	124.83	2.09
0:06:25	2,490.79	25.95	10.09	0:13:25	2,215.90	46.16	5.72	0:20:25	1,643.01	68.46	3.91	0:27:25	1,168.43	97.37	2.68	0:34:25	127.09	127.09	2.06
0:06:30	2,462.53	25.65	10.29	0:13:30	2,170.81	45.23	5.80	0:20:30	1,565.63	65.23	3.91	0:27:30	1,140.01	95.00	2.75	0:34:30	131.81	131.81	1.98
0:06:35	2,474.12	25.77	10.24	0:13:35	2,126.04	44.29	5.83	0:20:35	1,728.47	72.02	3.65	0:27:35	1,136.71	94.73	2.76	0:34:35	133.01	133.01	1.96
0:06:40	2,383.57	24.83	10.17	0:13:40	2,231.79	46.50	5.81	0:20:40	1,782.00	74.25	3.55	0:27:40	1,192.13	99.34	2.63	0:34:40	124.31	124.31	2.09
0:06:45	198.29	0.00	9.96	0:13:45	99.14	0.00	5.56	0:20:45	106.22	0.00	3.48	0:27:45	90.91	0.00	2.57	0:34:45	1.94	0.00	6.96
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
0:06:55	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

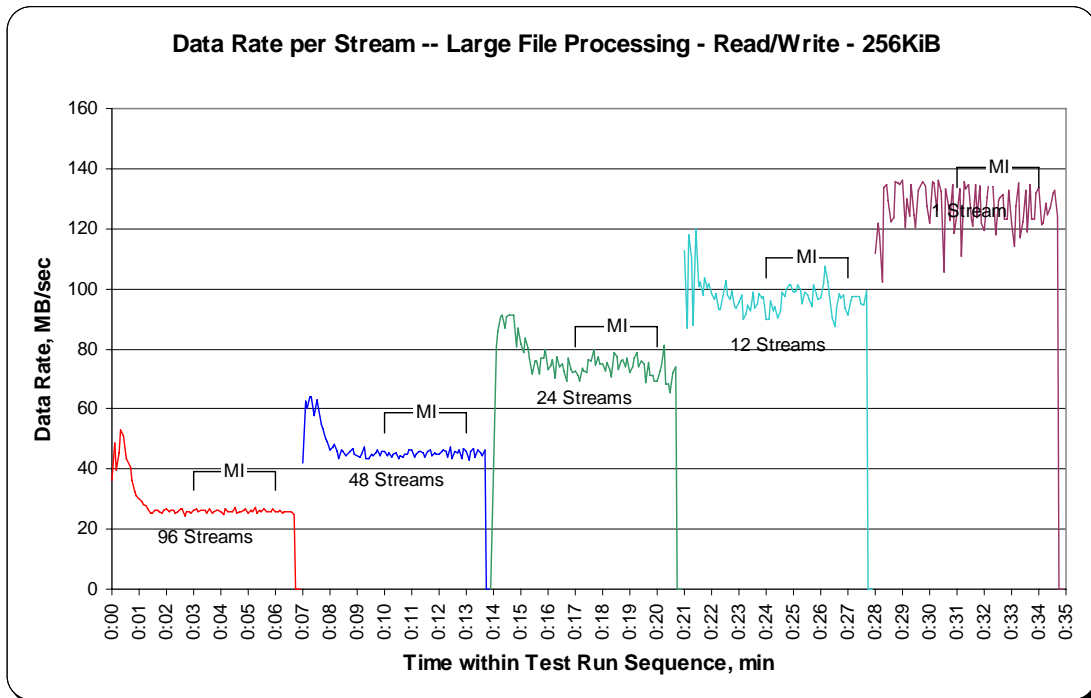
SPC-2 “Large File Processing/READ-WRITE/256 KiB Transfer Size” Average Data Rate Graph – Complete Test Run



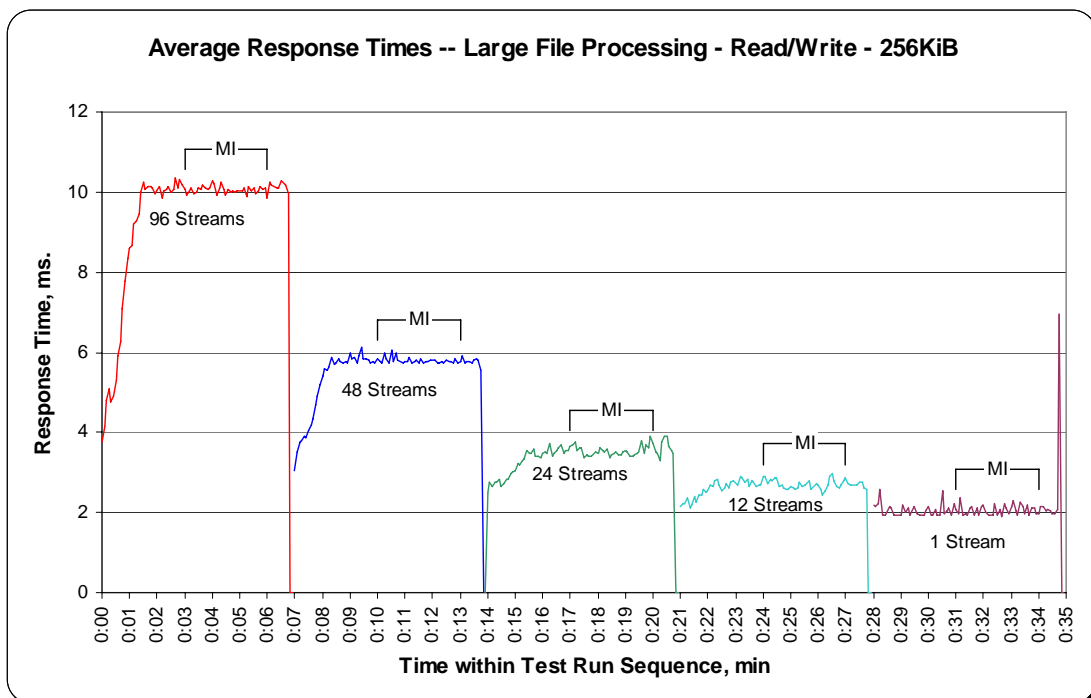
SPC-2 “Large File Processing/READ-WRITE/256 KiB Transfer Size” Average Data Rate Graph – Measurement Interval (MI) Only



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.

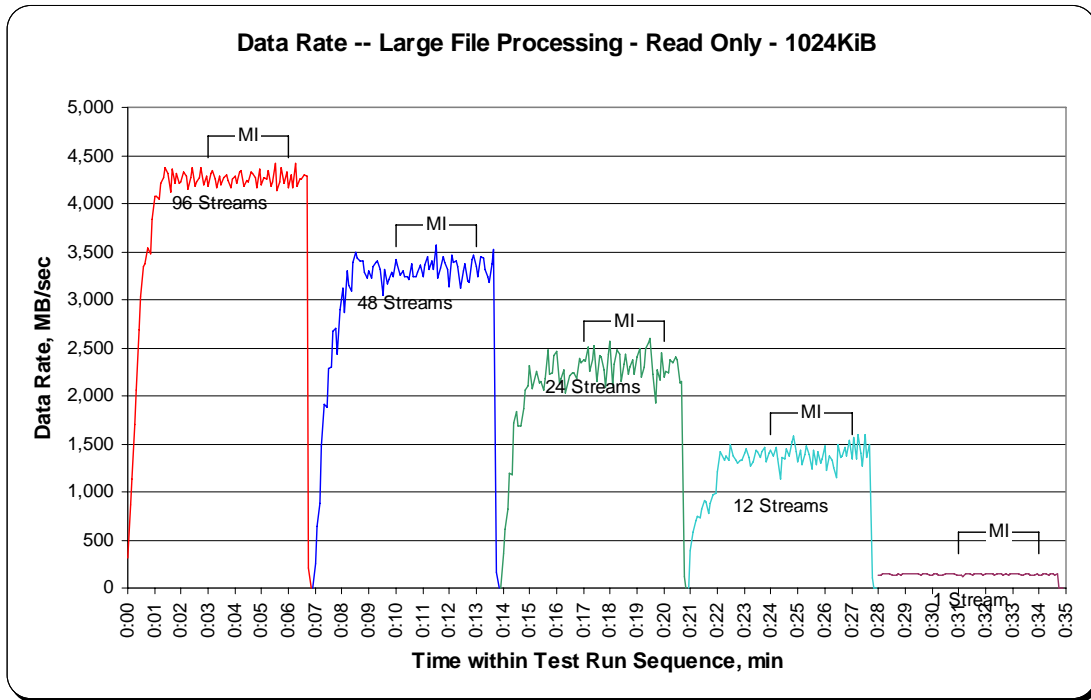
SPC-2 “Large File Processing/READ ONLY/1024 KiB Transfer Size” Test Run Data – Ramp Up Period

TR21 Test Run Sequence Time	96 Streams			TR22 Test Run Sequence Time	48 Streams			TR23 Test Run Sequence Time	24 Streams			TR24 Test Run Sequence Time	12 Streams			TR25 Test Run Sequence Time	1 Stream		
	Data Rate, MB/sec	Data Rate / Stream, MB/sec	Response Time, ms		Data Rate, MB/sec	Data Rate / Stream, MB/sec	Response Time, ms		Data Rate, MB/sec	Data Rate / Stream, MB/sec	Response Time, ms		Data Rate, MB/sec	Data Rate / Stream, MB/sec	Response Time, ms		Data Rate, MB/sec	Data Rate / Stream, MB/sec	Response Time, ms
0:00:00	320.44	29.13	13.17	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	0:28:00	130.86	130.86	7.53
0:00:05	858.99	47.72	16.36	0:07:00	260.89	52.18	12.42	0:14:00	359.66	59.94	9.83	0:21:00	381.26	95.32	7.11	0:28:05	132.54	132.54	7.91
0:00:10	1,140.43	42.24	20.72	0:07:05	641.94	64.19	13.08	0:14:05	609.64	87.09	11.35	0:21:05	580.91	116.18	7.70	0:28:10	142.61	142.61	7.34
0:00:15	1,697.23	49.92	19.38	0:07:10	877.03	58.47	14.92	0:14:10	824.81	103.10	10.06	0:21:10	694.37	115.73	8.19	0:28:15	143.45	143.45	7.30
0:00:20	2,055.21	52.70	18.49	0:07:15	1,484.36	67.47	12.41	0:14:15	1,198.10	108.92	9.32	0:21:15	741.97	123.66	8.54	0:28:20	144.49	144.49	7.24
0:00:25	2,681.21	58.29	17.20	0:07:20	1,912.81	79.70	12.65	0:14:20	1,185.73	98.81	9.42	0:21:20	725.82	120.97	8.66	0:28:25	144.49	144.49	7.25
0:00:30	3,028.71	57.15	17.08	0:07:25	1,885.97	75.44	13.60	0:14:25	1,716.73	114.45	8.88	0:21:25	817.68	136.28	7.69	0:28:30	135.90	135.90	7.71
0:00:35	3,337.41	56.57	17.59	0:07:30	2,280.65	81.45	12.52	0:14:30	1,829.35	107.61	8.92	0:21:30	906.18	129.45	8.02	0:28:35	141.35	141.35	7.41
0:00:40	3,377.25	54.47	18.64	0:07:35	2,294.49	76.48	13.32	0:14:35	1,690.30	93.91	10.75	0:21:35	895.06	127.87	8.19	0:28:40	141.56	141.56	7.40
0:00:45	3,537.06	54.42	19.17	0:07:40	2,670.93	83.47	12.18	0:14:40	1,682.96	88.58	11.87	0:21:40	775.53	110.79	9.46	0:28:45	142.61	142.61	7.34
0:00:50	3,482.53	48.37	20.10	0:07:45	2,706.37	79.60	13.31	0:14:45	1,870.24	93.51	10.77	0:21:45	873.67	124.81	8.39	0:28:50	141.56	141.56	7.39
0:00:55	3,838.21	50.50	20.42	0:07:50	2,436.05	67.67	14.39	0:14:50	2,053.32	97.78	10.10	0:21:50	964.90	120.61	7.75	0:28:55	142.40	142.40	7.37
0:01:00	4,069.73	51.52	20.50	0:07:55	2,896.80	70.65	14.40	0:14:55	2,103.65	100.17	10.48	0:21:55	988.81	109.87	9.69	0:29:00	142.61	142.61	7.34
0:01:05	4,079.17	48.56	20.88	0:08:00	3,118.47	76.06	14.16	0:15:00	2,309.80	109.99	9.58	0:22:00	1,215.51	121.55	8.09	0:29:05	145.33	145.33	7.23
0:01:10	4,047.08	44.97	21.99	0:08:05	2,867.86	66.69	14.82	0:15:05	2,080.58	94.57	11.07	0:22:05	1,412.22	117.69	8.34	0:29:10	143.24	143.24	7.30
0:01:15	4,201.64	45.67	22.37	0:08:10	3,304.69	73.44	14.45	0:15:10	2,139.30	97.24	11.01	0:22:10	1,384.33	115.36	9.08	0:29:15	144.49	144.49	7.24
0:01:20	4,270.85	45.43	22.89	0:08:15	3,150.13	67.02	14.83	0:15:15	2,246.68	97.68	10.50	0:22:15	1,329.38	110.78	9.46	0:29:20	148.06	148.06	7.08
0:01:25	4,373.61	45.56	23.14	0:08:20	3,084.70	64.26	16.09	0:15:20	2,141.61	89.23	11.17	0:22:20	1,379.09	114.92	8.96	0:29:25	144.70	144.70	7.23
0:01:30	4,318.67	44.99	23.58	0:08:25	3,390.47	70.63	15.16	0:15:25	2,144.34	89.35	11.52	0:22:25	1,332.32	111.03	9.59	0:29:30	146.17	146.17	7.17
0:01:35	4,121.95	42.94	23.64	0:08:30	3,487.56	72.66	14.59	0:15:30	2,053.32	85.56	12.30	0:22:30	1,487.72	123.98	8.59	0:29:35	141.14	141.14	7.41
0:01:40	4,361.24	45.43	23.58	0:08:35	3,429.89	71.46	14.66	0:15:35	2,181.46	90.89	11.57	0:22:35	1,371.96	114.33	9.17	0:29:40	143.03	143.03	7.32
0:01:45	4,203.74	43.79	23.60	0:08:40	3,398.43	70.80	14.54	0:15:40	2,480.30	103.35	10.24	0:22:40	1,323.51	110.29	9.25	0:29:45	148.06	148.06	7.08
0:01:50	4,310.07	44.90	23.62	0:08:45	3,404.52	70.93	15.00	0:15:45	2,222.77	92.62	11.20	0:22:45	1,296.04	108.00	9.98	0:29:50	148.06	148.06	7.07
0:01:55	4,205.63	43.81	23.59	0:08:50	3,281.83	68.37	15.33	0:15:50	2,235.56	93.15	11.34	0:22:50	1,326.66	110.55	9.48	0:29:55	138.20	138.20	7.58
0:02:00	4,224.08	44.00	23.63	0:08:55	3,217.87	67.04	15.67	0:15:55	2,424.73	101.03	10.41	0:22:55	1,335.47	111.29	9.31	0:30:00	140.30	140.30	7.46
0:02:05	4,335.65	45.16	23.67	0:09:00	3,295.25	68.65	15.26	0:16:00	2,455.35	102.31	10.32	0:23:00	1,407.19	117.27	8.94	0:30:05	148.48	148.48	7.06
0:02:10	4,290.56	44.69	23.65	0:09:05	3,219.76	67.08	15.15	0:16:05	2,126.09	88.59	11.49	0:23:05	1,448.71	120.73	8.68	0:30:10	143.65	143.65	7.30
0:02:15	4,146.70	43.19	23.68	0:09:10	3,338.25	69.55	15.15	0:16:10	2,181.46	90.89	11.76	0:23:10	1,358.12	113.18	9.25	0:30:15	141.35	141.35	7.41
0:02:20	4,263.72	44.41	23.59	0:09:15	3,386.69	70.56	14.92	0:16:15	2,270.38	94.60	11.28	0:23:15	1,271.71	105.98	9.89	0:30:20	141.56	141.56	7.40
0:02:25	4,365.85	45.48	23.70	0:09:20	3,395.92	70.75	14.81	0:16:20	2,032.14	84.67	12.11	0:23:20	1,314.70	109.56	9.64	0:30:25	137.36	137.36	7.63
0:02:30	4,178.99	43.53	23.65	0:09:25	3,310.77	68.97	15.31	0:16:25	2,148.95	89.54	11.79	0:23:25	1,432.98	119.42	8.53	0:30:30	146.80	146.80	7.13
0:02:35	4,226.18	44.02	23.56	0:09:30	3,041.08	63.36	16.54	0:16:30	2,215.64	92.32	11.37	0:23:30	1,424.39	118.70	8.84	0:30:35	143.45	143.45	7.31
0:02:40	4,275.88	44.54	23.59	0:09:35	3,317.90	69.12	15.35	0:16:35	2,236.40	93.18	11.02	0:23:35	1,358.95	113.25	9.29	0:30:40	143.03	143.03	7.31
0:02:45	4,378.64	45.61	23.57	0:09:40	3,161.46	65.86	15.30	0:16:40	2,234.31	93.10	11.46	0:23:40	1,415.37	117.95	8.89	0:30:45	144.49	144.49	7.26
0:02:50	4,187.38	43.62	23.60	0:09:45	3,215.35	66.99	16.08	0:16:45	2,183.14	90.96	11.24	0:23:45	1,465.28	122.11	8.58	0:30:50	144.07	144.07	7.27
0:02:55	4,286.58	44.65	23.57	0:09:50	3,290.22	68.55	15.44	0:16:50	2,388.45	99.52	10.63	0:23:50	1,317.64	109.80	9.54	0:30:55	139.04	139.04	7.54
				0:09:55	3,232.13	67.34	15.17	0:16:55	2,346.29	97.76	10.93	0:23:55	1,409.50	117.46	8.92				

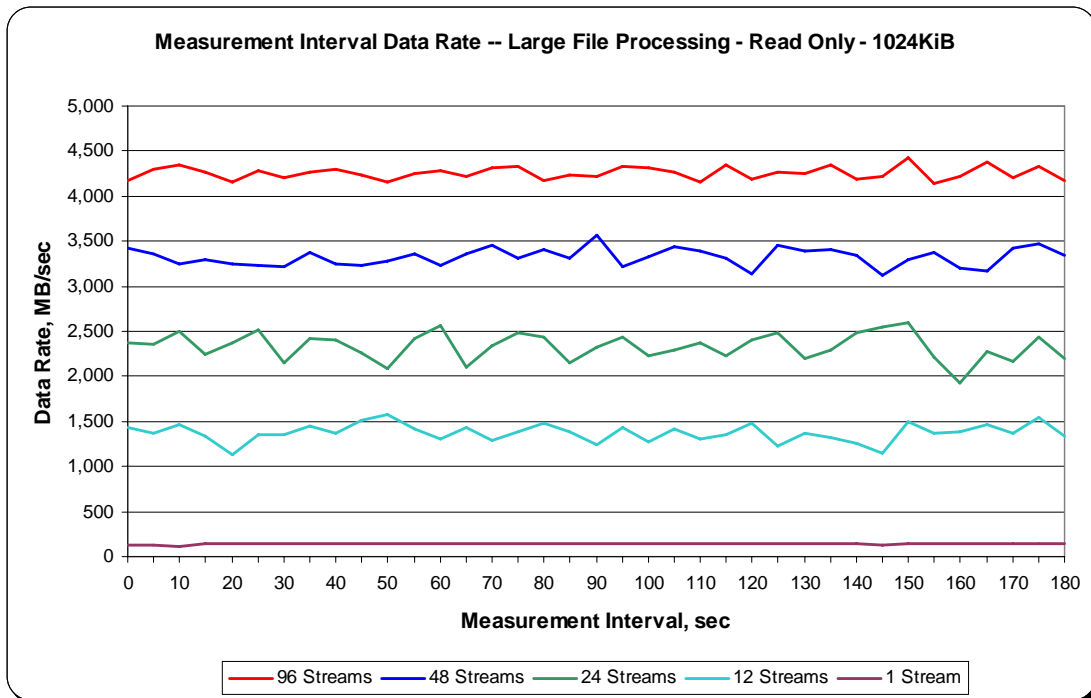
**SPC-2 “Large File Processing/READ ONLY/1024 KiB Transfer Size” Test Run Data
 Measurement Interval, Run-Out, and Ramp-Down Periods**

TR21				TR22				TR23				TR24				TR25			
96 Streams				48 Streams				24 Streams				12 Streams				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
0:03:00	4,175.85	43.50	23.70	0:10:00	3,424.02	71.33	14.80	0:17:00	2,371.67	98.82	10.69	0:24:00	1,433.19	119.43	8.77	0:31:00	133.59	133.59	7.84
0:03:05	4,306.29	44.86	23.61	0:10:05	3,360.69	70.01	15.06	0:17:05	2,351.12	97.96	10.72	0:24:05	1,367.76	113.98	9.19	0:31:05	134.22	134.22	7.81
0:03:10	4,346.35	45.27	23.60	0:10:10	3,256.25	67.84	15.63	0:17:10	2,505.47	104.39	9.87	0:24:10	1,460.46	121.70	8.59	0:31:10	114.50	114.50	9.15
0:03:15	4,260.15	44.38	23.77	0:10:15	3,293.16	68.61	15.07	0:17:15	2,249.61	93.73	11.25	0:24:15	1,342.81	111.90	9.62	0:31:15	141.98	141.98	7.38
0:03:20	4,161.80	43.35	23.69	0:10:20	3,242.83	67.56	15.50	0:17:20	2,373.14	98.88	10.60	0:24:20	1,135.19	94.60	10.68	0:31:20	143.45	143.45	7.29
0:03:25	4,289.93	44.69	23.53	0:10:25	3,233.18	67.36	15.47	0:17:25	2,523.08	105.13	10.01	0:24:25	1,360.42	113.37	9.39	0:31:25	147.01	147.01	7.14
0:03:30	4,198.71	43.74	23.84	0:10:30	3,211.58	66.91	15.66	0:17:30	2,141.82	89.24	11.41	0:24:30	1,348.05	112.34	9.46	0:31:30	140.93	140.93	7.44
0:03:35	4,275.46	44.54	23.68	0:10:35	3,375.58	70.32	15.11	0:17:35	2,415.92	100.66	10.42	0:24:35	1,442.00	120.17	8.73	0:31:35	142.19	142.19	7.36
0:03:40	4,297.90	44.77	23.72	0:10:40	3,245.55	67.62	15.16	0:17:40	2,409.42	100.39	10.66	0:24:40	1,369.44	114.12	8.98	0:31:40	146.59	146.59	7.16
0:03:45	4,236.04	44.13	23.59	0:10:45	3,233.60	67.37	15.77	0:17:45	2,262.41	94.27	11.12	0:24:45	1,517.08	126.42	8.50	0:31:45	146.59	146.59	7.16
0:03:50	4,156.97	43.30	23.71	0:10:50	3,278.27	68.30	15.38	0:17:50	2,082.68	86.78	11.78	0:24:50	1,582.72	131.89	7.94	0:31:50	142.19	142.19	7.38
0:03:55	4,257.22	44.35	23.54	0:10:55	3,363.20	70.07	15.02	0:17:55	2,427.24	101.14	10.36	0:24:55	1,418.93	118.24	8.86	0:31:55	141.35	141.35	7.41
0:04:00	4,289.72	44.68	23.55	0:11:00	3,237.79	67.45	15.54	0:18:00	2,562.51	106.77	9.95	0:25:00	1,309.88	109.16	9.31	0:32:00	143.03	143.03	7.32
0:04:05	4,211.92	43.87	23.60	0:11:05	3,352.72	69.85	15.03	0:18:05	2,100.93	87.54	11.78	0:25:05	1,438.23	119.85	8.86	0:32:05	143.65	143.65	7.29
0:04:10	4,321.39	45.01	23.57	0:11:10	3,451.49	71.91	14.64	0:18:10	2,334.34	97.26	10.81	0:25:10	1,289.54	107.46	9.75	0:32:10	143.45	143.45	7.31
0:04:15	4,338.59	45.19	23.66	0:11:15	3,311.19	68.98	14.78	0:18:15	2,479.04	103.29	10.28	0:25:15	1,385.80	115.48	9.07	0:32:15	144.70	144.70	7.23
0:04:20	4,173.96	43.48	23.72	0:11:20	3,409.13	71.02	15.03	0:18:20	2,437.31	101.55	10.46	0:25:20	1,478.07	123.17	8.50	0:32:20	140.09	140.09	7.48
0:04:25	4,237.72	44.14	23.79	0:11:25	3,317.07	69.11	14.86	0:18:25	2,151.68	89.65	11.36	0:25:25	1,391.04	115.92	9.04	0:32:25	146.38	146.38	7.16
0:04:30	4,218.84	43.95	23.56	0:11:30	3,573.34	74.44	14.32	0:18:30	2,321.76	96.74	10.88	0:25:30	1,235.85	102.99	10.19	0:32:30	145.96	145.96	7.17
0:04:35	4,335.23	45.16	23.63	0:11:35	3,224.37	67.17	15.48	0:18:35	2,439.20	101.63	10.45	0:25:35	1,436.76	119.73	8.75	0:32:35	146.38	146.38	7.16
0:04:40	4,309.02	44.89	23.58	0:11:40	3,333.00	69.44	14.82	0:18:40	2,229.48	92.90	11.07	0:25:40	1,279.26	106.61	9.83	0:32:40	141.77	141.77	7.38
0:04:45	4,274.42	44.53	23.59	0:11:45	3,444.99	71.77	14.74	0:18:45	2,296.38	95.68	11.01	0:25:45	1,415.58	117.96	8.84	0:32:45	144.70	144.70	7.24
0:04:50	4,157.60	43.31	23.57	0:11:50	3,387.95	70.58	15.05	0:18:50	2,369.15	98.71	10.68	0:25:50	1,298.56	108.21	9.74	0:32:50	138.20	138.20	7.58
0:04:55	4,351.59	45.33	23.64	0:11:55	3,317.90	69.12	15.41	0:18:55	2,226.97	92.79	11.33	0:25:55	1,348.26	112.35	9.08	0:32:55	145.12	145.12	7.22
0:05:00	4,189.27	43.64	23.58	0:12:00	3,137.34	65.36	15.43	0:19:00	2,409.42	100.39	10.51	0:26:00	1,483.53	123.63	8.68	0:33:00	142.40	142.40	7.35
0:05:05	4,267.08	44.45	23.62	0:12:05	3,463.03	72.15	14.90	0:19:05	2,489.95	103.75	9.93	0:26:05	1,231.03	102.59	10.24	0:33:05	144.49	144.49	7.25
0:05:10	4,257.85	44.35	23.55	0:12:10	3,394.87	70.73	14.51	0:19:10	2,197.61	91.57	11.60	0:26:10	1,376.57	114.71	9.13	0:33:10	149.95	149.95	6.98
0:05:15	4,341.10	45.22	23.59	0:12:15	3,403.47	70.91	14.96	0:19:15	2,295.54	95.65	10.74	0:26:15	1,325.61	110.47	9.49	0:33:15	144.28	144.28	7.26
0:05:20	4,184.66	43.59	23.58	0:12:20	3,342.23	69.63	15.06	0:19:20	2,486.80	103.62	10.43	0:26:20	1,260.18	105.01	10.01	0:33:20	140.72	140.72	7.45
0:05:25	4,227.44	44.04	23.60	0:12:25	3,116.58	64.93	15.84	0:19:25	2,548.67	106.19	9.64	0:26:25	1,143.79	95.32	11.00	0:33:25	129.39	129.39	8.10
0:05:30	4,418.91	46.03	23.55	0:12:30	3,291.06	68.56	15.44	0:19:30	2,597.95	108.25	9.73	0:26:30	1,490.87	124.24	8.18	0:33:30	143.65	143.65	7.30
0:05:35	4,137.26	43.10	23.68	0:12:35	3,379.77	70.41	15.29	0:19:35	2,218.58	92.44	11.54	0:26:35	1,364.41	113.70	9.22	0:33:35	142.82	142.82	7.33
0:05:40	4,226.18	44.02	23.67	0:12:40	3,199.00	66.65	15.14	0:19:40	1,930.22	80.43	12.91	0:26:40	1,377.41	114.78	9.31	0:33:40	136.11	136.11	7.70
0:05:45	4,371.30	45.53	23.62	0:12:45	3,175.51	66.16	16.06	0:19:45	2,275.20	94.80	10.99	0:26:45	1,460.25	121.69	8.61	0:33:45	140.93	140.93	7.43
0:05:50	4,203.95	43.79	23.69	0:12:50	3,422.97	71.31	14.94	0:19:50	2,167.83	90.33	11.65	0:26:50	1,368.18	114.02	9.18	0:33:50	140.93	140.93	7.43
0:05:55	4,325.38	45.06	23.59	0:12:55	3,467.64	72.24	14.53	0:19:55	2,444.02	101.83	10.38	0:26:55	1,537.84	128.15	8.23	0:33:55	146.17	146.17	7.17
0:06:00	4,171.24	43.45	23.60	0:13:00	3,346.43	69.72	15.01	0:20:00	2,192.99	91.37	11.47	0:27:00	1,338.40	111.53	9.17	0:34:00	136.94	136.94	7.64
0:06:05	4,304.19	44.84	23.66	0:13:05	3,231.92	67.33	15.18	0:20:05	2,247.94	93.66	11.27	0:27:05	1,563.01	130.25	8.27	0:34:05	139.46	139.46	7.52
0:06:10	4,171.24	43.45	23.59	0:13:10	3,453.17	71.94	14.74	0:20:10	2,235.77	93.16	10.85	0:27:10	1,339.45	111.62	9.40	0:34:10	143.65	143.65	7.29
0:06:15	4,422.68	46.07	23.58	0:13:15	3,429.47	71.45	14.67	0:20:15	2,369.57	98.73	10.82	0:27:15	1,599.08	133.26	7.89	0:34:15	149.11	149.11	7.03
0:06:20	4,178.16	43.52	23.83	0:13:20	3,320.00	69.17	15.40	0:20:20	2,347.34	97.81	10.52	0:27:20	1,396.49	116.37	8.67	0:34:20	141.35	141.35	7.41
0:06:25	4,258.48	44.36	23.59	0:13:25	3,232.55	67.34	15.56	0:20:25	2,400.19	100.01	10.56	0:27:25	1,274.65	106.22	9.87	0:34:25	142.40	142.40	7.35
0:06:30	4,248.83	44.26	23.73	0:13:30	3,174.88	66.14	15.36	0:20:30	2,370.20	98.76	10.76	0:27:30	1,599.29	133.27	8.09	0:34:30	145.12	145.12	7.22
0:06:35	4,300.84	44.80	23.58	0:13:35	3,372.85	70.27	15.30	0:20:35	2,132.17	88.84	11.70	0:27:35	1,352.66	112.72	9.05	0:34:35	140.93	140.93	7.43
0:06:40	4,280.50	44.59	23.56	0:13:40	3,527.83	73.50	14.29	0:20:40	2,147.90	89.50	11.82	0:27:40	1,491.49	124.29	8.53	0:34:40	142.40	142.40	7.35
0:06:45	207.83	0.00	22.06	0:13:45	158.54	0.00	15.19	0:20:45	113.67	0.00	10.82	0:27:45	102.34	0.00	7.77	0:34:45	7.13	0.00	7.18
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
												0:27:55	0.00	0.00	0.00	0:34:55	0.00	0.00	0.00

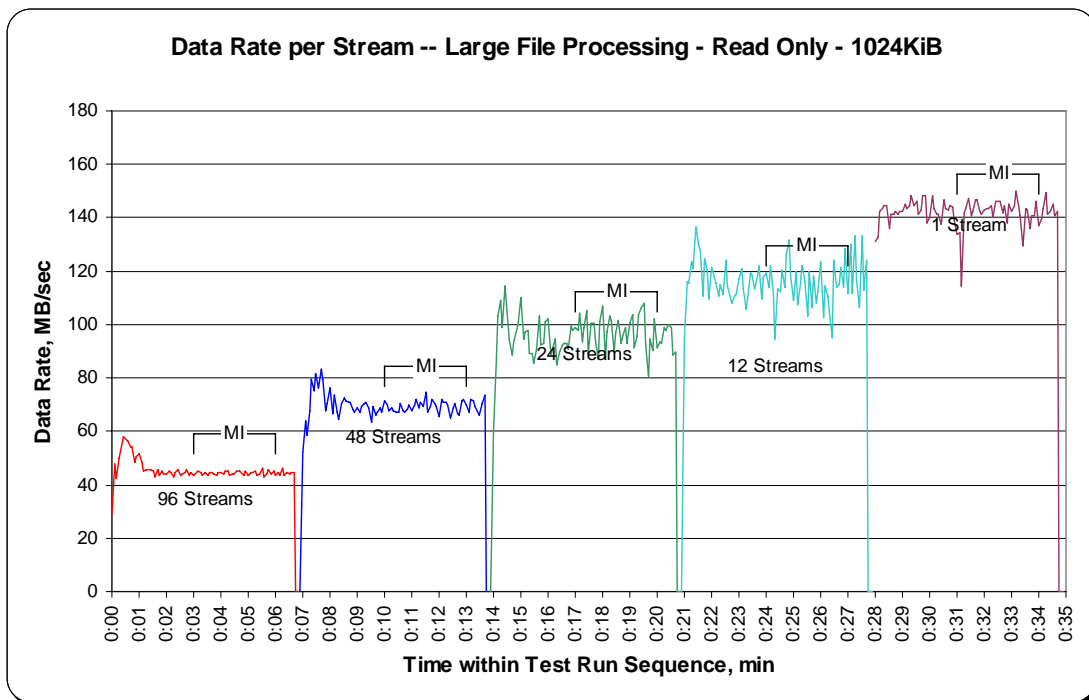
SPC-2 “Large File Processing/READ ONLY/1024 KiB Transfer Size” Average Data Rate Graph – Complete Test Run



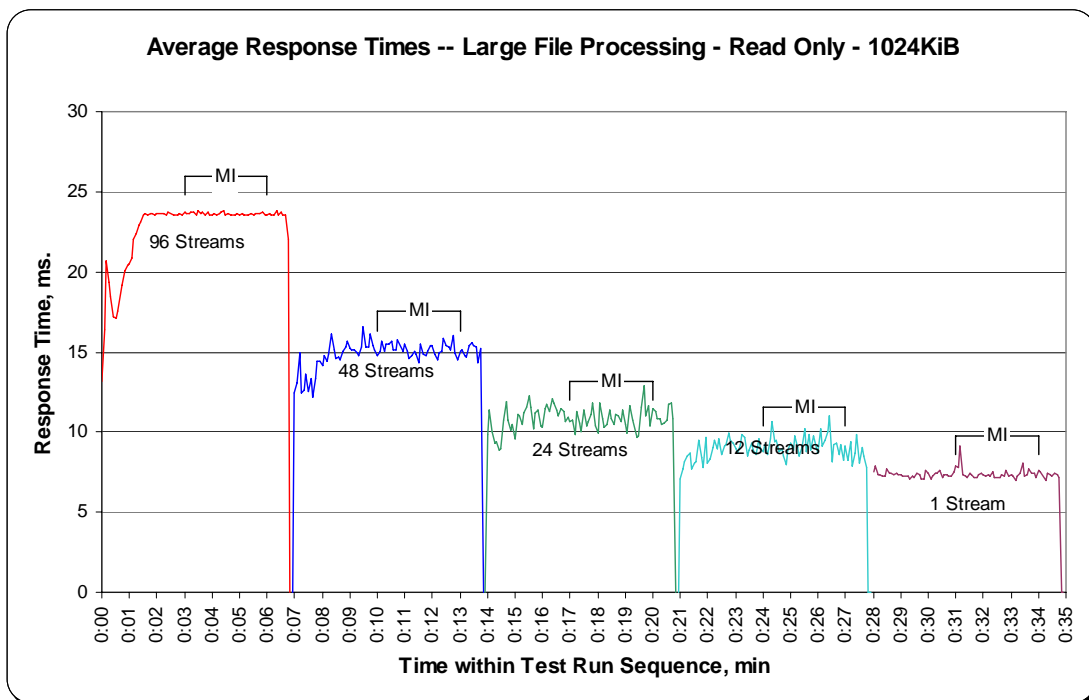
SPC-2 “Large File Processing/READ ONLY/1024 KiB Transfer Size” Average Data Rate Graph – Measurement Interval (MI) Only



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



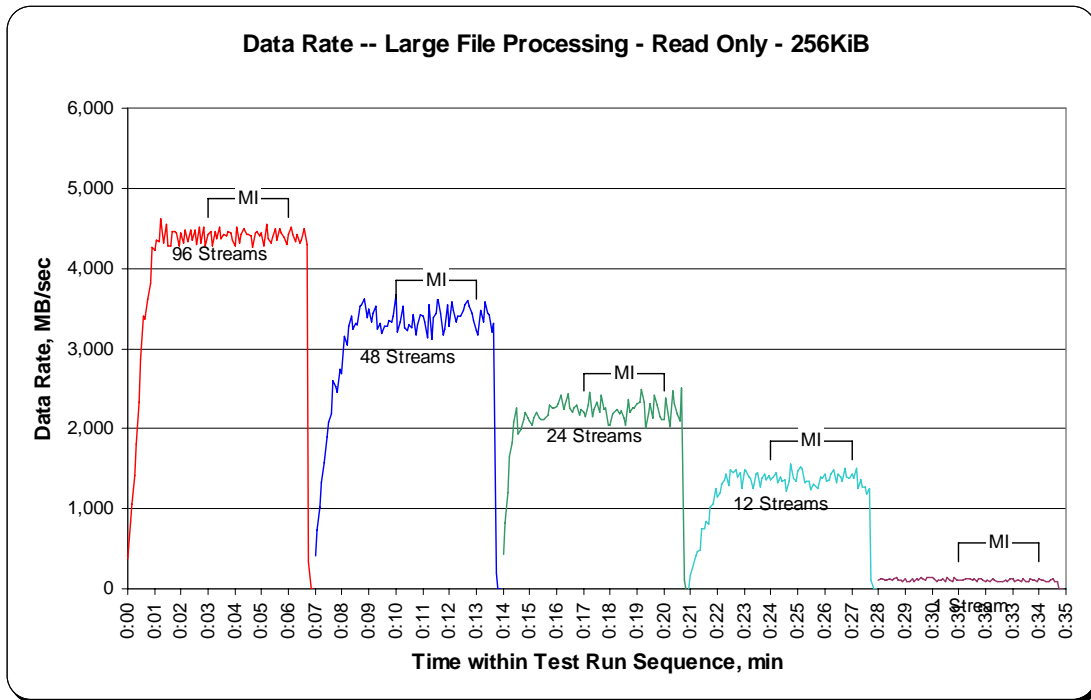
SPC-2 “Large File Processing/READ ONLY/256 KiB Transfer Size” Test Run Data – Ramp-Up Period

TR26				TR27				TR28				TR29				TR30							
Test Run Sequence	96 Streams Data Rate			Response Time, ms	Test Run Sequence	48 Streams Data Rate			Response Time, ms	Test Run Sequence	24 Streams Data Rate			Response Time, ms	Test Run Sequence	12 Streams Data Rate			Response Time, ms	Test Run Sequence	1 Stream Data Rate		
	Data Rate, MB/sec	/ Stream, MB/sec				Data Rate, MB/sec	/ Stream, MB/sec				Data Rate, MB/sec	/ Stream, MB/sec				Data Rate, MB/sec	/ Stream, MB/sec				Data Rate, MB/sec	/ Stream, MB/sec	
0:00:00	374.08	37.41	3.54	0:07:00	418.91	59.84	3.13	0:14:00	423.36	60.48	2.37	0:20:55	0.00	0.00	0.00	0:28:00	98.88	98.88	2.45				
0:00:05	844.52	56.30	3.79	0:07:05	727.76	60.65	3.59	0:14:05	831.36	83.14	2.73	0:21:00	169.71	84.86	1.93	0:28:05	132.23	132.23	1.97				
0:00:10	1,057.49	45.98	4.43	0:07:10	1,026.03	68.40	3.49	0:14:10	1,204.60	92.66	2.48	0:21:05	289.51	144.76	1.80	0:28:10	123.52	123.52	2.11				
0:00:15	1,409.44	46.98	5.04	0:07:15	1,332.64	74.04	3.26	0:14:15	1,642.02	102.63	2.43	0:21:10	406.38	101.59	1.88	0:28:15	104.60	104.60	2.50				
0:00:20	1,811.94	47.68	4.79	0:07:20	1,576.17	75.06	3.31	0:14:20	1,819.38	95.76	2.48	0:21:15	468.24	117.06	2.23	0:28:20	104.07	104.07	2.51				
0:00:25	2,332.14	55.53	4.34	0:07:25	1,907.10	79.46	3.17	0:14:25	2,076.55	103.83	2.55	0:21:20	476.21	119.05	2.19	0:28:25	117.13	117.13	2.23				
0:00:30	2,863.61	58.44	4.15	0:07:30	2,069.94	79.61	3.01	0:14:30	2,262.41	113.12	2.34	0:21:25	757.33	126.22	1.88	0:28:30	105.33	105.33	2.48				
0:00:35	3,400.95	58.64	4.23	0:07:35	2,184.24	75.32	3.39	0:14:35	1,934.62	96.73	2.63	0:21:30	755.97	126.00	2.07	0:28:35	131.44	131.44	1.99				
0:00:40	3,359.17	54.18	4.48	0:07:40	2,602.25	81.32	3.11	0:14:40	1,980.29	94.30	2.69	0:21:35	839.23	119.89	2.06	0:28:40	140.04	140.04	1.86				
0:00:45	3,615.39	53.17	4.74	0:07:45	2,527.96	76.60	3.23	0:14:45	2,113.09	100.62	2.68	0:21:40	798.54	114.08	2.29	0:28:45	110.42	110.42	2.37				
0:00:50	3,822.64	50.97	4.92	0:07:50	2,447.48	74.17	3.55	0:14:50	2,202.53	95.76	2.65	0:21:45	1,017.22	101.72	2.34	0:28:50	105.75	105.75	2.47				
0:00:55	4,258.58	52.58	4.92	0:07:55	2,732.06	78.06	3.37	0:14:55	2,136.05	92.87	2.78	0:21:50	1,055.81	105.58	2.48	0:28:55	88.97	88.97	2.94				
0:01:00	4,229.85	49.18	5.06	0:08:00	2,681.05	70.55	3.53	0:15:00	2,088.19	90.79	2.79	0:21:55	1,249.06	113.55	2.20	0:29:00	118.80	118.80	2.20				
0:01:05	4,350.17	49.43	5.24	0:08:05	3,160.25	79.01	3.30	0:15:05	2,037.80	88.60	3.02	0:22:00	1,140.59	103.69	2.52	0:29:05	93.06	93.06	2.81				
0:01:10	4,342.78	47.72	5.31	0:08:10	3,048.94	72.59	3.44	0:15:10	2,139.51	93.02	2.83	0:22:05	1,202.51	109.32	2.39	0:29:10	88.81	88.81	2.94				
0:01:15	4,612.21	49.07	5.46	0:08:15	3,282.83	76.34	3.41	0:15:15	2,194.72	91.45	2.71	0:22:10	1,313.18	119.38	2.15	0:29:15	133.06	133.06	1.96				
0:01:20	4,323.49	45.99	5.55	0:08:20	3,405.88	72.47	3.49	0:15:20	2,133.59	88.90	3.01	0:22:15	1,355.34	112.94	2.15	0:29:20	98.46	98.46	2.65				
0:01:25	4,554.75	47.45	5.64	0:08:25	3,241.78	67.54	3.74	0:15:25	2,110.84	87.95	2.99	0:22:20	1,427.79	118.98	2.21	0:29:25	119.28	119.28	2.19				
0:01:30	4,271.69	44.50	5.72	0:08:30	3,308.36	68.92	3.86	0:15:30	2,112.09	88.00	2.85	0:22:25	1,285.45	107.12	2.45	0:29:30	98.51	98.51	2.65				
0:01:35	4,275.04	44.53	5.73	0:08:35	3,289.96	68.54	3.75	0:15:35	2,135.84	88.99	2.96	0:22:30	1,491.39	124.28	2.10	0:29:35	142.19	142.19	1.84				
0:01:40	4,461.01	46.47	5.69	0:08:40	3,520.49	73.34	3.64	0:15:40	2,170.24	90.43	2.90	0:22:35	1,459.46	121.62	2.15	0:29:40	127.77	127.77	2.04				
0:01:45	4,461.43	46.47	5.72	0:08:45	3,540.52	73.76	3.53	0:15:45	2,298.16	95.76	2.73	0:22:40	1,495.48	124.62	2.10	0:29:45	106.12	106.12	2.47				
0:01:50	4,449.06	46.34	5.71	0:08:50	3,624.98	75.52	3.55	0:15:50	2,251.08	93.80	2.78	0:22:45	1,393.19	116.10	2.25	0:29:50	136.42	136.42	1.91				
0:01:55	4,279.66	44.58	5.72	0:08:55	3,392.25	70.67	3.59	0:15:55	2,262.62	94.28	2.82	0:22:50	1,458.94	121.58	2.15	0:29:55	143.71	143.71	1.82				
0:02:00	4,448.16	46.34	5.71	0:09:00	3,487.25	72.65	3.68	0:16:00	2,268.49	94.52	2.78	0:22:55	1,254.57	104.55	2.48	0:30:00	140.40	140.40	1.86				
0:02:05	4,322.07	45.02	5.70	0:09:05	3,328.65	69.35	3.77	0:16:05	2,317.25	96.55	2.64	0:23:00	1,485.83	123.82	2.13	0:30:05	128.66	128.66	2.03				
0:02:10	4,481.40	46.68	5.69	0:09:10	3,446.30	71.80	3.61	0:16:10	2,411.57	100.48	2.63	0:23:05	1,474.77	122.90	2.13	0:30:10	87.03	87.03	3.00				
0:02:15	4,333.08	45.14	5.72	0:09:15	3,520.54	73.34	3.67	0:16:15	2,244.21	93.51	2.82	0:23:10	1,400.32	116.69	2.24	0:30:15	109.52	109.52	2.38				
0:02:20	4,468.72	46.55	5.68	0:09:20	3,241.41	67.53	3.79	0:16:20	2,308.49	96.19	2.75	0:23:15	1,374.42	114.54	2.28	0:30:20	107.53	107.53	2.43				
0:02:25	4,345.25	45.26	5.73	0:09:25	3,322.31	69.21	3.79	0:16:25	2,428.66	101.19	2.60	0:23:20	1,258.45	104.87	2.49	0:30:25	117.81	117.81	2.22				
0:02:30	4,483.29	46.70	5.70	0:09:30	3,195.38	66.57	3.83	0:16:30	2,252.13	93.84	2.70	0:23:25	1,426.64	118.89	2.20	0:30:30	90.44	90.44	2.89				
0:02:35	4,306.19	44.86	5.74	0:09:35	3,274.91	68.23	3.86	0:16:35	2,199.13	91.63	2.91	0:23:30	1,458.20	121.52	2.14	0:30:35	138.46	138.46	1.89				
0:02:40	4,505.89	46.94	5.69	0:09:40	3,274.39	68.22	3.85	0:16:40	2,262.51	94.27	2.78	0:23:35	1,262.96	105.25	2.49	0:30:40	106.80	106.80	2.45				
0:02:45	4,311.53	44.91	5.69	0:09:45	3,341.76	69.62	3.72	0:16:45	2,289.83	95.41	2.75	0:23:40	1,384.85	115.40	2.26	0:30:45	94.37	94.37	2.77				
0:02:50	4,516.11	47.04	5.70	0:09:50	3,334.89	69.48	3.89	0:16:50	2,166.15	90.26	2.83	0:23:45	1,435.71	119.64	2.18	0:30:50	136.89	136.89	1.91				
0:02:55	4,277.46	44.56	5.73	0:09:55	3,409.50	71.03	3.55	0:16:55	2,238.19	93.26	2.83	0:23:50	1,356.80	113.07	2.31	0:30:55	102.18	102.18	2.56				
												0:23:55	1,419.72	118.31	2.14								

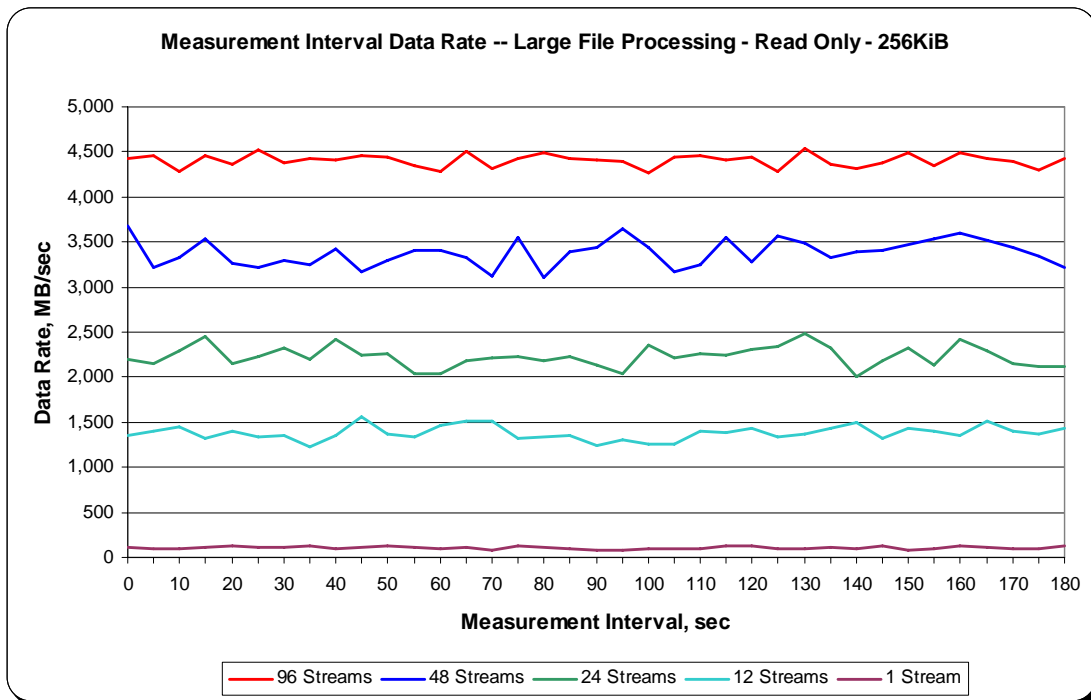
**SPC-2 “Large File Processing/READ ONLY/256 KiB Transfer Size” Test Run Data
 Measurement Interval, Run-Out, and Ramp-Down Periods**

96 Streams				48 Streams				24 Streams				12 Streams				1 Stream			
TR26	Data Rate			TR27	Data Rate			TR28	Data Rate			TR29	Data Rate			TR30	Data Rate		
Test Run	Data Rate,	/ Stream,	Response	Test Run	Data Rate,	/ Stream,	Response	Test Run	Data Rate,	/ Stream,	Response	Test Run	Data Rate,	/ Stream,	Response	Test Run	Data Rate,	/ Stream,	Response
Sequence	MB/sec	MB/sec	Time, ms	Sequence	MB/sec	MB/sec	Time, ms	Sequence	MB/sec	MB/sec	Time, ms	Sequence	MB/sec	MB/sec	Time, ms	Sequence	MB/sec	MB/sec	Time, ms
0:03:00	4,420.17	46.04	5.68	0:10:00	3,676.62	76.60	3.52	0:17:00	2,199.07	91.63	2.91	0:24:00	1,360.68	113.39	2.30	0:31:00	107.43	107.43	2.43
0:03:05	4,463.68	46.50	5.77	0:10:05	3,210.74	66.89	3.85	0:17:05	2,155.82	89.83	2.80	0:24:05	1,395.76	116.31	2.24	0:31:05	99.35	99.35	2.63
0:03:10	4,278.61	44.57	5.72	0:10:10	3,324.46	69.26	3.72	0:17:10	2,286.52	95.27	2.75	0:24:10	1,447.51	120.63	2.17	0:31:10	100.98	100.98	2.59
0:03:15	4,452.88	46.38	5.70	0:10:15	3,527.30	73.49	3.66	0:17:15	2,447.95	102.00	2.61	0:24:15	1,319.63	109.97	2.38	0:31:15	118.91	118.91	2.20
0:03:20	4,369.63	45.52	5.70	0:10:20	3,267.68	68.08	3.83	0:17:20	2,149.11	89.55	2.95	0:24:20	1,398.54	116.54	2.24	0:31:20	130.08	130.08	2.01
0:03:25	4,515.22	47.03	5.70	0:10:25	3,223.85	67.16	3.84	0:17:25	2,236.56	93.19	2.78	0:24:25	1,337.62	111.47	2.34	0:31:25	116.44	116.44	2.24
0:03:30	4,372.72	45.55	5.69	0:10:30	3,299.19	68.73	3.78	0:17:30	2,332.50	97.19	2.71	0:24:30	1,352.93	112.74	2.32	0:31:30	108.84	108.84	2.40
0:03:35	4,420.74	46.05	5.71	0:10:35	3,251.74	67.74	3.84	0:17:35	2,198.08	91.59	2.77	0:24:35	1,219.86	101.66	2.57	0:31:35	130.44	130.44	2.00
0:03:40	4,412.57	45.96	5.68	0:10:40	3,424.44	71.34	3.79	0:17:40	2,414.45	100.60	2.66	0:24:40	1,349.78	112.48	2.32	0:31:40	87.66	87.66	2.98
0:03:45	4,453.09	46.39	5.72	0:10:45	3,174.83	66.14	3.91	0:17:45	2,238.45	93.27	2.81	0:24:45	1,564.53	130.38	2.00	0:31:45	117.13	117.13	2.23
0:03:50	4,448.37	46.34	5.69	0:10:50	3,291.79	68.58	3.75	0:17:50	2,262.36	94.26	2.83	0:24:50	1,375.21	114.60	2.28	0:31:50	126.09	126.09	2.07
0:03:55	4,351.90	45.33	5.69	0:10:55	3,412.01	71.08	3.69	0:17:55	2,043.52	85.15	2.97	0:24:55	1,345.01	112.08	2.38	0:31:55	106.48	106.48	2.46
0:04:00	4,286.58	44.65	5.70	0:11:00	3,409.03	71.02	3.73	0:18:00	2,034.50	84.77	3.12	0:25:00	1,464.65	122.05	2.14	0:32:00	88.97	88.97	2.94
0:04:05	4,511.66	47.00	5.75	0:11:05	3,335.00	69.48	3.80	0:18:05	2,187.96	91.16	2.87	0:25:05	1,513.62	126.13	2.07	0:32:05	110.36	110.36	2.37
0:04:10	4,317.46	44.97	5.69	0:11:10	3,128.69	65.18	3.96	0:18:10	2,205.47	91.89	2.84	0:25:10	1,507.59	125.63	2.08	0:32:10	82.99	82.99	3.15
0:04:15	4,421.16	46.05	5.68	0:11:15	3,552.94	74.02	3.55	0:18:15	2,231.00	92.96	2.84	0:25:15	1,328.39	110.70	2.36	0:32:15	130.65	130.65	2.00
0:04:20	4,488.85	46.76	5.71	0:11:20	3,111.18	64.82	4.00	0:18:20	2,177.37	90.72	2.81	0:25:20	1,345.06	112.09	2.33	0:32:20	111.10	111.10	2.35
0:04:25	4,420.90	46.05	5.72	0:11:25	3,386.38	70.55	3.76	0:18:25	2,225.71	92.74	2.85	0:25:25	1,347.11	112.26	2.33	0:32:25	90.65	90.65	2.88
0:04:30	4,418.02	46.02	5.70	0:11:30	3,445.20	71.78	3.57	0:18:30	2,136.74	89.03	2.94	0:25:30	1,239.42	103.28	2.53	0:32:30	84.99	84.99	3.08
0:04:35	4,398.57	45.82	5.70	0:11:35	3,639.35	75.82	3.50	0:18:35	2,042.84	85.12	3.07	0:25:35	1,301.54	108.46	2.41	0:32:35	85.62	85.62	3.05
0:04:40	4,266.60	44.44	5.70	0:11:40	3,440.33	71.67	3.67	0:18:40	2,356.05	98.17	2.66	0:25:40	1,262.90	105.24	2.48	0:32:40	87.61	87.61	2.98
0:04:45	4,437.36	46.22	5.70	0:11:45	3,176.19	66.17	3.89	0:18:45	2,208.56	92.02	2.78	0:25:45	1,433.86	105.15	2.49	0:32:45	100.40	100.40	2.60
0:04:50	4,465.15	46.51	5.71	0:11:50	3,248.80	67.68	3.83	0:18:50	2,259.00	94.12	2.79	0:25:50	1,404.99	117.08	2.23	0:32:50	97.73	97.73	2.68
0:04:55	4,405.49	45.89	5.70	0:11:55	3,547.33	73.90	3.66	0:18:55	2,251.29	93.80	2.87	0:25:55	1,387.84	115.65	2.26	0:32:55	120.38	120.38	2.17
0:05:00	4,437.78	46.23	5.70	0:12:00	3,286.55	68.47	3.81	0:19:00	2,309.70	96.24	2.61	0:26:00	1,433.40	119.45	2.19	0:33:00	126.41	126.41	2.07
0:05:05	4,284.22	44.63	5.71	0:12:05	3,573.97	74.46	3.48	0:19:05	2,336.12	97.34	2.70	0:26:05	1,337.04	111.42	2.35	0:33:05	91.59	91.59	2.85
0:05:10	4,540.49	47.30	5.71	0:12:10	3,483.58	72.57	3.58	0:19:10	2,485.91	103.58	2.58	0:26:10	1,362.26	113.52	2.30	0:33:10	101.45	101.45	2.57
0:05:15	4,370.15	45.52	5.69	0:12:15	3,323.36	69.24	3.78	0:19:15	2,320.55	96.69	2.70	0:26:15	1,425.70	118.81	2.20	0:33:15	108.68	108.68	2.41
0:05:20	4,316.62	44.96	5.72	0:12:20	3,398.91	70.81	3.73	0:19:20	2,006.29	83.60	3.07	0:26:20	1,493.96	124.50	2.10	0:33:20	88.97	88.97	2.94
0:05:25	4,384.88	45.68	5.72	0:12:25	3,411.23	71.07	3.61	0:19:25	2,177.21	90.72	2.88	0:26:25	1,327.18	110.60	2.36	0:33:25	126.98	126.98	2.06
0:05:30	4,498.39	46.86	5.67	0:12:30	3,474.51	72.39	3.64	0:19:30	2,318.40	96.60	2.78	0:26:30	1,433.56	119.46	2.19	0:33:30	86.72	86.72	3.01
0:05:35	4,354.16	45.36	5.74	0:12:35	3,540.15	73.75	3.52	0:19:35	2,130.86	88.79	2.84	0:26:35	1,395.97	116.33	2.25	0:33:35	98.09	98.09	2.66
0:05:40	4,490.16	46.77	5.70	0:12:40	3,594.20	74.88	3.56	0:19:40	2,424.88	101.04	2.63	0:26:40	1,347.32	112.28	2.33	0:33:40	131.07	131.07	1.99
0:05:45	4,434.22	46.19	5.69	0:12:45	3,522.80	73.39	3.56	0:19:45	2,297.90	95.75	2.76	0:26:45	1,508.38	125.70	2.13	0:33:45	105.07	105.07	2.49
0:05:50	4,389.50	45.72	5.70	0:12:50	3,439.91	71.66	3.58	0:19:50	2,142.40	89.27	2.94	0:26:50	1,399.64	116.64	2.24	0:33:50	102.03	102.03	2.56
0:05:55	4,302.99	44.82	5.67	0:12:55	3,349.99	69.79	3.88	0:19:55	2,111.15	87.96	2.88	0:26:55	1,372.48	114.37	2.28	0:33:55	91.38	91.38	2.86
0:06:00	4,426.35	46.11	5.70	0:13:00	3,223.11	67.15	3.85	0:20:00	2,120.01	88.33	2.97	0:27:00	1,425.22	118.77	2.21	0:34:00	128.77	128.77	2.03
0:06:05	4,515.85	47.04	5.75	0:13:05	3,161.88	65.87	3.97	0:20:05	2,376.44	99.02	2.73	0:27:05	1,383.39	115.28	2.27	0:34:05	98.57	98.57	2.65
0:06:10	4,415.24	45.99	5.69	0:13:10	3,467.06	72.23	3.65	0:20:10	2,148.90	89.54	2.92	0:27:10	1,509.58	125.80	2.08	0:34:10	101.14	101.14	2.59
0:06:15	4,329.78	45.10	5.71	0:13:15	3,338.67	69.56	3.66	0:20:15	2,015.89	84.00	3.00	0:27:15	1,249.48	104.12	2.51	0:34:15	91.28	91.28	2.86
0:06:20	4,424.41	46.09	5.73	0:13:20	3,587.96	74.75	3.57	0:20:20	2,467.93	102.83	2.54	0:27:20	1,359.58	113.30	2.31	0:34:20	92.12	92.12	2.84
0:06:25	4,325.06	45.05	5.67	0:13:25	3,443.79	71.75	3.55	0:20:25	2,301.94	95.91	2.75	0:27:25	1,272.24	106.02	2.47	0:34:25	103.70	103.70	2.52
0:06:30	4,353.84	45.35	5.73	0:13:30	3,416.00	71.17	3.80	0:20:30	2,178.78	90.78	2.89	0:27:30	1,275.12	106.26	2.46	0:34:30	120.80	120.80	2.16
0:06:35	4,499.39	46.87	5.73	0:13:35	3,211.84	66.91	3.78	0:20:35	2,089.13	87.05	3.01	0:27:35	1,188.40	99.03	2.64	0:34:35	97.62	97.62	2.68
0:06:40	4,303.04	44.82	5.70	0:13:40	3,320.26	69.17	3.86	0:20:40	2,503.48	104.31	2.55	0:27:40	1,258.24	104.85	2.40	0:34:40	92.12	92.12	2.84
0:06:45	341.99	0.00	5.56	0:13:45	201.85	0.00	3.66	0:20:45	115.08	0.00	2.54	0:27:45	100.56	0.00	2.35	0:34:45	5.98	0.00	2.88
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
0:06:55	0.00	0.00	0.00	0:13:55	0.00	0.00	0.00					0:27:55	0.00	0.00	0.00	0:34:55	0.00	0.00	0.00

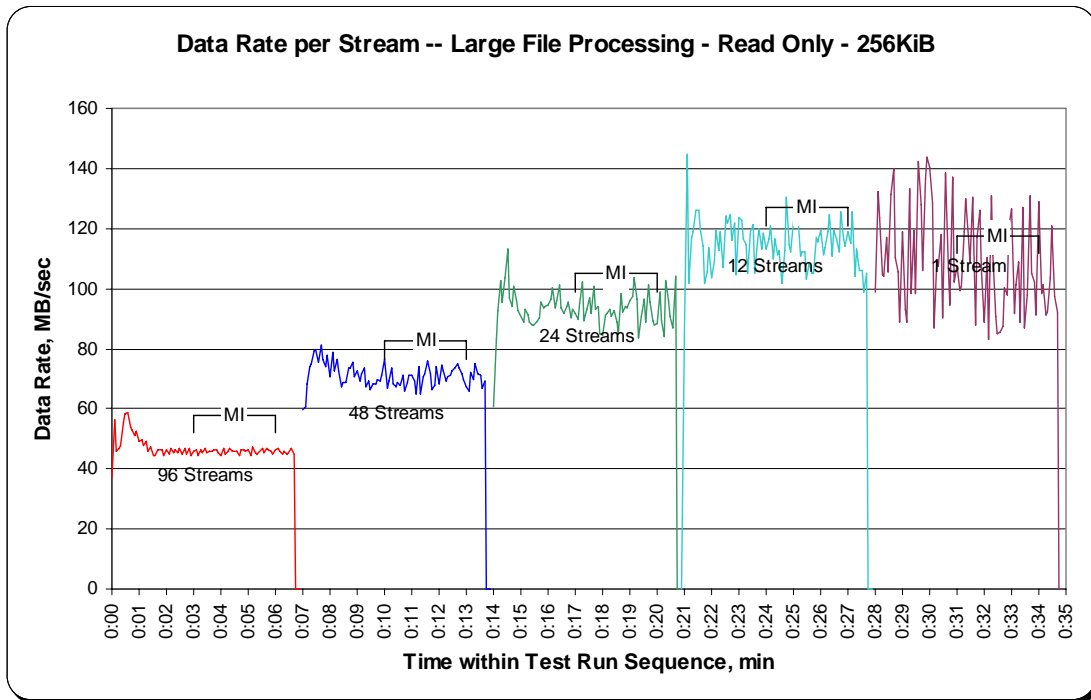
SPC-2 “Large File Processing/READ ONLY/256 KiB Transfer Size” Average Data Rate Graph – Complete Test Run



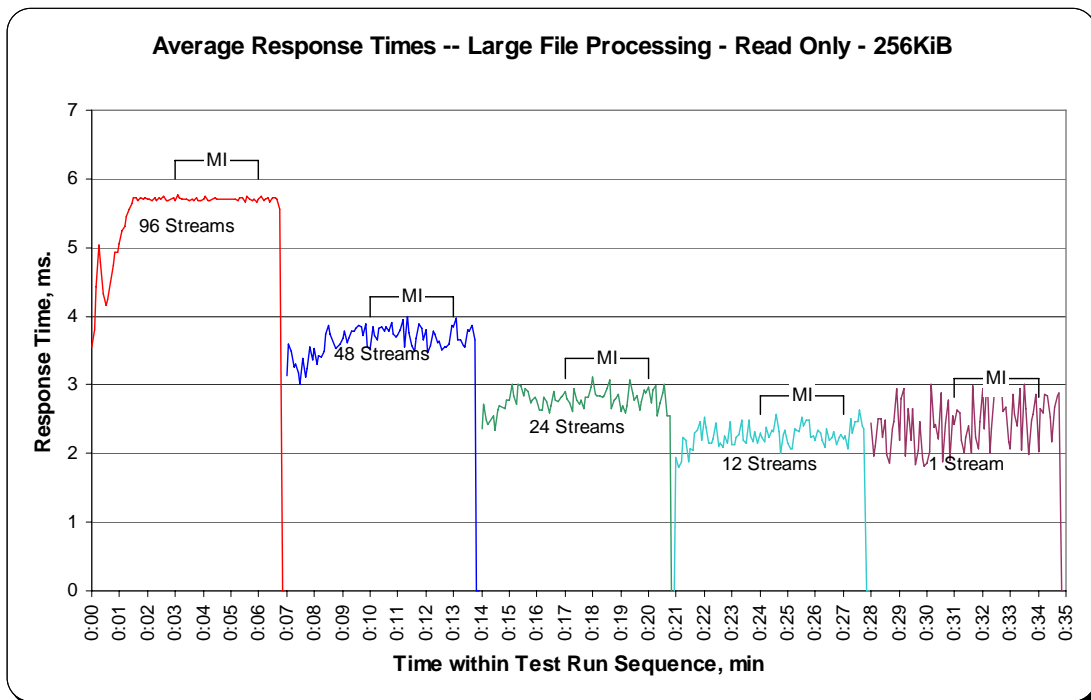
SPC-2 “Large File Processing/READ ONLY/256 KiB Transfer Size” Average Data Rate Graph – Measurement Interval (MI) Only



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 106.

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.

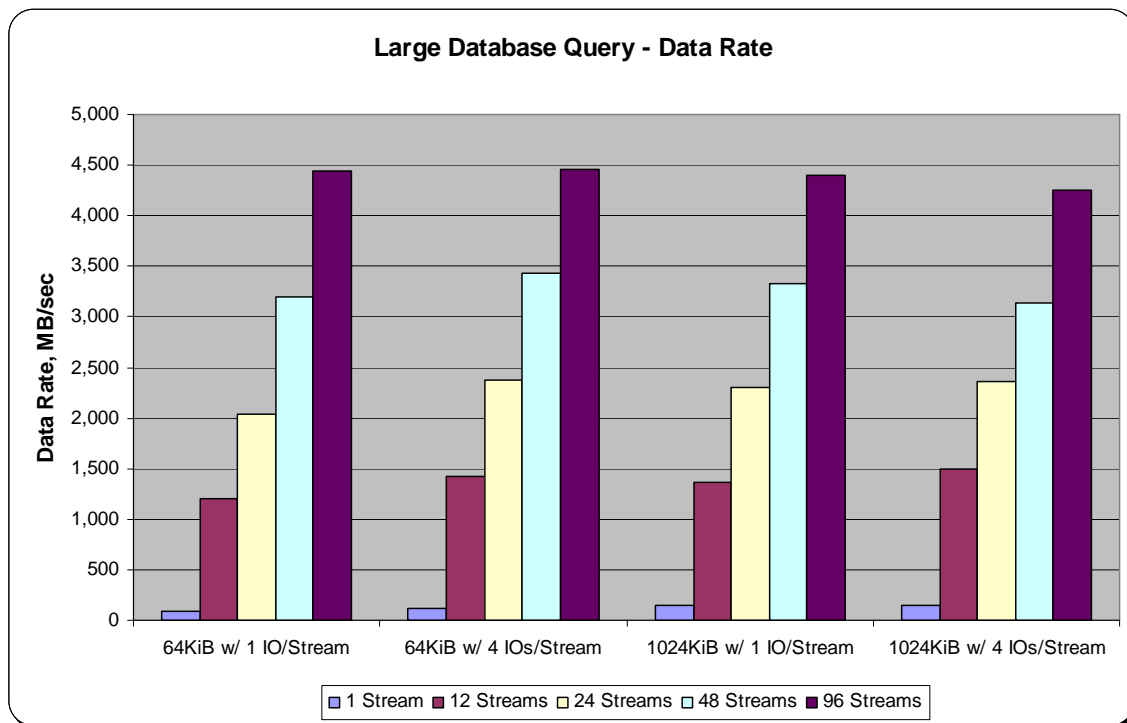
[SPC-2 Large Database Query Test Results File](#)

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	12 Streams	24 Streams	48 Streams	96 Streams
64KiB w/ 1 IO/Stream	89.35	1,208.39	2,040.59	3,194.24	4,435.66
64KiB w/ 4 IOs/Stream	117.76	1,419.16	2,368.23	3,434.92	4,455.87
1024KiB w/ 1 IO/Stream	143.47	1,361.33	2,302.37	3,333.20	4,394.06
1024KiB w/ 4 IOs/Stream	153.26	1,488.62	2,363.49	3,140.22	4,257.44

SPC-2 Large Database Query Average Data Rates Graph

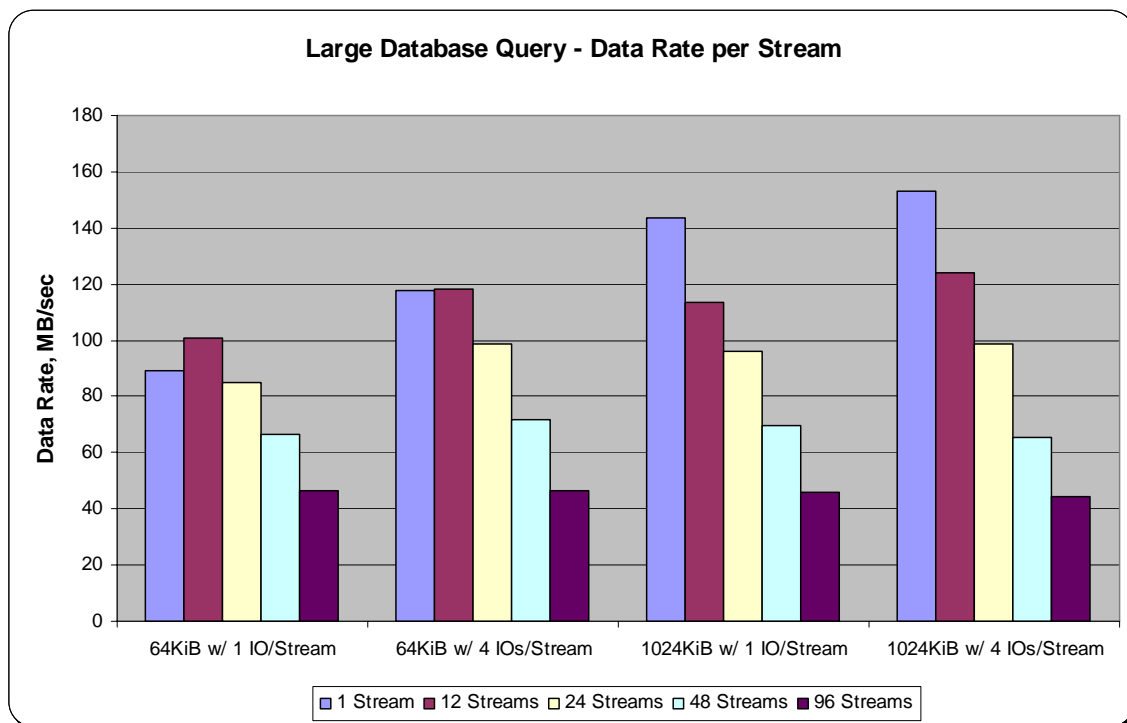


SPC-2 Large Database Query Average Data Rate per Stream

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

Test Run Sequence	1 Stream	12 Streams	24 Streams	48 Streams	96 Streams
64KiB w/ 1 IO/Stream	89.35	100.70	85.02	66.55	46.20
64KiB w/ 4 IOs/Stream	117.76	118.26	98.68	71.56	46.42
1024KiB w/ 1 IO/Stream	143.47	113.44	95.93	69.44	45.77
1024KiB w/ 4 IOs/Stream	153.26	124.05	98.48	65.42	44.35

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



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.

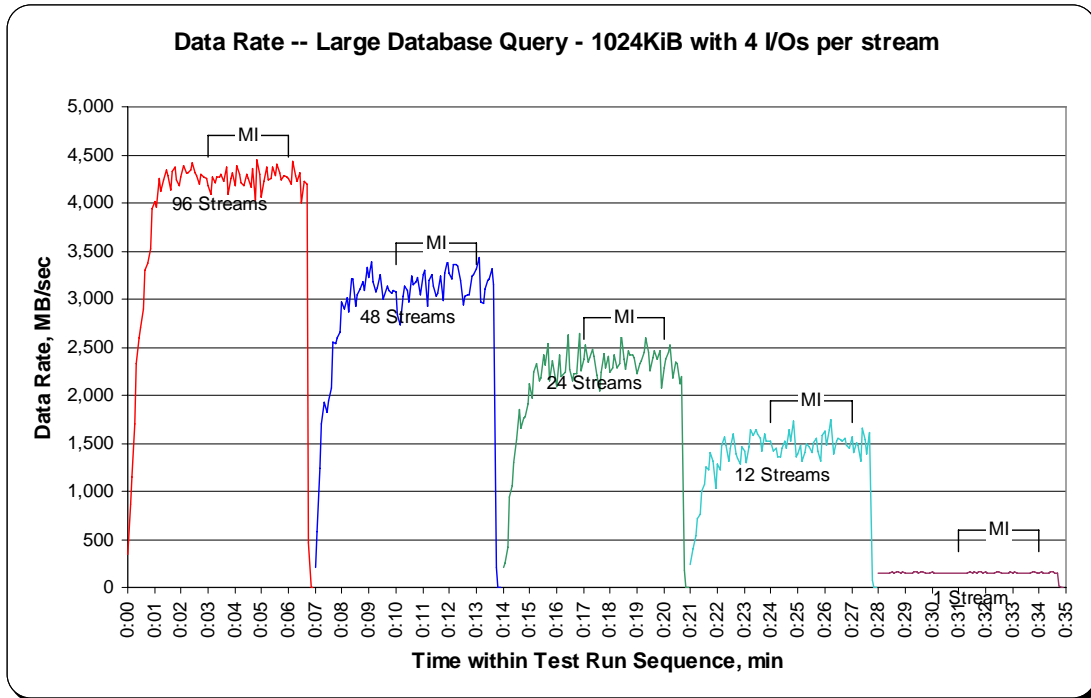
The SPC-2 "Large DatabaseQuery/1024 KiB TRANSFER SIZE/4 Outstanding I/Os" Test Run data is contained in the table that appears on the next page. That table is followed by graphs illustrating the average Data Rate, average Data Rate per Stream, and average Response Time produced by the same Test Runs. 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.

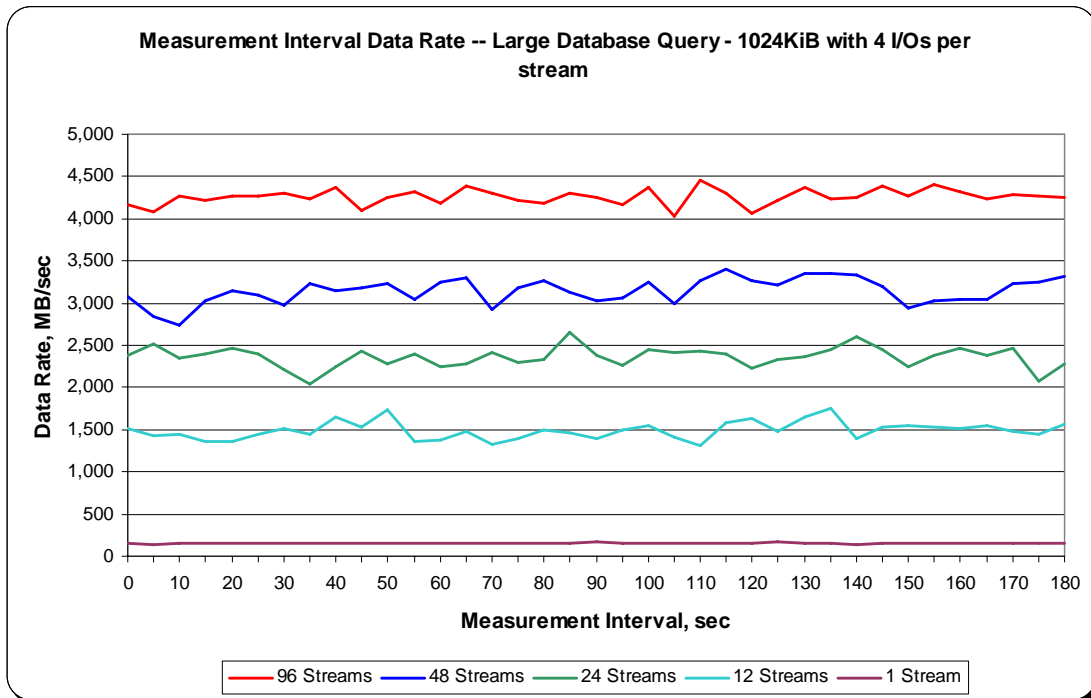
SPC-2 “Large Database Query/1024 KiB Transfer Size/4 Outstanding I/Os” Test Run Data - Ramp-Up Period

TR11 Test Run Sequence Time	96 Streams Data Rate			TR12 Test Run Sequence Time	48 Streams Data Rate			TR13 Test Run Sequence Time	24 Streams Data Rate			TR14 Test Run Sequence Time	12 Streams Data Rate			TR15 Test Run Sequence Time	1 Stream Data Rate		
	Data Rate, MB/sec	/ Stream, MB/sec	Response Time, ms		Data Rate, MB/sec	/ Stream, MB/sec	Response Time, ms		Data Rate, MB/sec	/ Stream, MB/sec	Response Time, ms		Data Rate, MB/sec	/ Stream, MB/sec	Response Time, ms		Data Rate, MB/sec	/ Stream, MB/sec	Response Time, ms
0:00:00	343.09	42.89	53.92	0:07:00	205.31	41.06	57.53	0:14:00	201.54	100.77	26.19	0:21:00	239.70	119.85	28.76	0:28:00	149.74	149.74	27.10
0:00:05	867.59	39.44	67.50	0:07:05	582.17	52.92	49.48	0:14:05	260.47	86.82	36.47	0:21:05	396.57	132.19	27.38	0:28:05	148.90	148.90	28.16
0:00:10	1,149.03	42.56	84.95	0:07:10	1,242.98	65.42	56.27	0:14:10	411.25	58.75	36.76	0:21:10	531.63	106.33	31.27	0:28:10	152.04	152.04	27.58
0:00:15	1,696.60	45.85	76.02	0:07:15	1,701.00	77.32	51.14	0:14:15	933.44	116.68	33.82	0:21:15	710.72	142.14	29.55	0:28:15	154.35	154.35	27.16
0:00:20	2,334.97	54.30	71.55	0:07:20	1,928.33	77.13	51.23	0:14:20	1,054.03	105.40	35.27	0:21:20	755.81	125.97	28.94	0:28:20	151.62	151.62	27.66
0:00:25	2,595.65	52.97	72.17	0:07:25	1,817.39	72.70	56.28	0:14:25	1,300.23	130.02	32.27	0:21:25	1,002.02	125.25	30.89	0:28:25	153.72	153.72	27.28
0:00:30	2,701.13	47.39	71.52	0:07:30	1,935.88	74.46	51.50	0:14:30	1,539.52	102.63	33.60	0:21:30	1,067.45	118.61	32.44	0:28:30	160.64	160.64	26.12
0:00:35	2,894.70	45.95	91.32	0:07:35	2,081.84	71.79	58.82	0:14:35	1,850.11	115.63	35.16	0:21:35	1,251.79	125.18	32.19	0:28:35	148.69	148.69	28.21
0:00:40	3,298.82	47.13	82.26	0:07:40	2,555.17	82.42	50.05	0:14:40	1,662.62	97.80	41.10	0:21:40	1,227.67	122.77	34.18	0:28:40	157.50	157.50	26.62
0:00:45	3,371.17	46.18	80.48	0:07:45	2,534.83	79.21	52.07	0:14:45	1,755.32	103.25	40.32	0:21:45	1,399.85	139.98	29.95	0:28:45	161.69	161.69	24.90
0:00:50	3,519.02	45.12	88.71	0:07:50	2,600.68	76.49	52.76	0:14:50	1,772.09	98.45	40.45	0:21:50	1,315.96	131.60	31.90	0:28:50	154.98	154.98	27.05
0:00:55	3,934.68	48.58	93.87	0:07:55	2,664.01	68.31	58.34	0:14:55	1,908.83	100.46	39.90	0:21:55	1,031.17	103.12	39.99	0:28:55	164.42	164.42	25.50
0:01:00	4,013.53	46.67	90.36	0:08:00	2,964.11	76.00	54.01	0:15:00	2,115.82	105.79	40.35	0:22:00	1,279.05	127.91	32.79	0:29:00	151.20	151.20	27.75
0:01:05	3,955.02	45.46	88.47	0:08:05	2,899.94	69.05	57.79	0:15:05	1,969.85	93.80	44.36	0:22:05	1,227.04	111.55	36.00	0:29:05	156.24	156.24	26.85
0:01:10	4,259.53	48.40	90.69	0:08:10	3,020.95	70.25	62.88	0:15:10	2,242.27	106.77	39.84	0:22:10	1,472.83	122.74	33.25	0:29:10	149.53	149.53	28.07
0:01:15	4,122.37	45.80	82.98	0:08:15	2,867.02	63.71	62.13	0:15:15	2,325.32	105.70	39.52	0:22:15	1,562.38	130.20	32.19	0:29:15	152.04	152.04	27.57
0:01:20	4,246.10	44.70	100.76	0:08:20	3,209.48	68.29	61.49	0:15:20	2,150.63	89.61	43.11	0:22:20	1,479.12	123.26	34.00	0:29:20	158.96	158.96	26.37
0:01:25	4,350.54	45.32	88.65	0:08:25	3,202.56	66.72	61.58	0:15:25	2,177.89	90.75	47.16	0:22:25	1,309.88	109.16	38.40	0:29:25	157.71	157.71	26.57
0:01:30	4,286.37	44.65	84.82	0:08:30	2,928.25	61.01	65.94	0:15:30	2,418.65	100.78	40.29	0:22:30	1,455.21	121.27	34.62	0:29:30	154.35	154.35	27.17
0:01:35	4,134.74	43.07	104.41	0:08:35	3,046.95	63.48	68.64	0:15:35	2,312.11	96.34	43.54	0:22:35	1,602.22	133.52	31.45	0:29:35	161.27	161.27	26.02
0:01:40	4,325.17	45.05	94.68	0:08:40	3,105.46	64.70	65.38	0:15:40	2,539.86	105.83	40.24	0:22:40	1,380.97	115.08	36.93	0:29:40	161.06	161.06	26.00
0:01:45	4,371.09	45.53	86.40	0:08:45	3,184.74	66.35	62.89	0:15:45	2,156.71	89.86	46.07	0:22:45	1,348.47	112.37	37.33	0:29:45	148.06	148.06	28.35
0:01:50	4,237.72	44.14	92.78	0:08:50	3,089.10	64.36	63.09	0:15:50	2,351.33	97.97	42.80	0:22:50	1,289.12	107.43	39.02	0:29:50	149.74	149.74	28.01
0:01:55	4,177.32	43.51	87.09	0:08:55	3,326.50	69.30	59.41	0:15:55	2,264.92	94.37	46.24	0:22:55	1,467.17	122.26	34.10	0:29:55	155.82	155.82	26.89
0:02:00	4,275.67	44.54	90.47	0:09:00	3,218.29	67.05	59.79	0:16:00	2,083.52	86.81	46.52	0:23:00	1,420.19	118.35	35.62	0:30:00	158.75	158.75	26.40
0:02:05	4,391.02	45.74	105.17	0:09:05	3,390.68	70.64	59.46	0:16:05	2,410.89	100.45	42.70	0:23:05	1,304.22	108.68	38.60	0:30:05	155.61	155.61	26.97
0:02:10	4,307.13	44.87	103.48	0:09:10	3,180.96	66.27	61.57	0:16:10	2,192.36	91.35	43.92	0:23:10	1,465.07	122.09	34.43	0:30:10	156.45	156.45	26.77
0:02:15	4,307.34	44.87	89.21	0:09:15	3,071.07	63.98	68.52	0:16:15	2,228.43	92.85	45.76	0:23:15	1,644.80	137.07	31.00	0:30:15	149.32	149.32	28.10
0:02:20	4,345.72	45.27	95.53	0:09:20	3,123.50	65.07	58.51	0:16:20	2,239.34	93.31	44.53	0:23:20	1,577.06	131.42	31.93	0:30:20	154.14	154.14	27.18
0:02:25	4,423.10	46.07	89.02	0:09:25	3,247.02	67.65	71.71	0:16:25	2,632.14	109.67	38.91	0:23:25	1,636.41	136.37	29.80	0:30:25	147.22	147.22	28.49
0:02:30	4,311.12	44.91	89.91	0:09:30	2,999.56	62.49	64.92	0:16:30	2,275.83	94.83	43.99	0:23:30	1,599.50	133.29	31.91	0:30:30	147.01	147.01	28.55
0:02:35	4,276.93	44.55	95.66	0:09:35	3,040.03	63.33	68.18	0:16:35	2,147.06	89.46	46.88	0:23:35	1,549.80	129.15	32.46	0:30:35	150.37	150.37	27.87
0:02:40	4,198.50	43.73	86.43	0:09:40	3,137.55	65.37	65.57	0:16:40	2,217.53	92.40	45.39	0:23:40	1,414.74	117.89	35.61	0:30:40	149.74	149.74	28.02
0:02:45	4,304.82	44.84	99.31	0:09:45	3,089.31	64.36	63.73	0:16:45	2,220.88	92.54	45.34	0:23:45	1,592.58	132.71	31.68	0:30:45	146.80	146.80	28.54
0:02:50	4,264.14	44.42	101.03	0:09:50	3,059.54	63.74	64.52	0:16:50	2,646.19	110.26	38.11	0:23:50	1,521.69	126.81	33.48	0:30:50	150.79	150.79	27.81
0:02:55	4,252.19	44.29	88.31	0:09:55	3,089.10	64.36	65.32	0:16:55	2,256.33	94.01	43.44	0:23:55	1,520.64	126.72	32.91	0:30:55	149.95	149.95	27.93

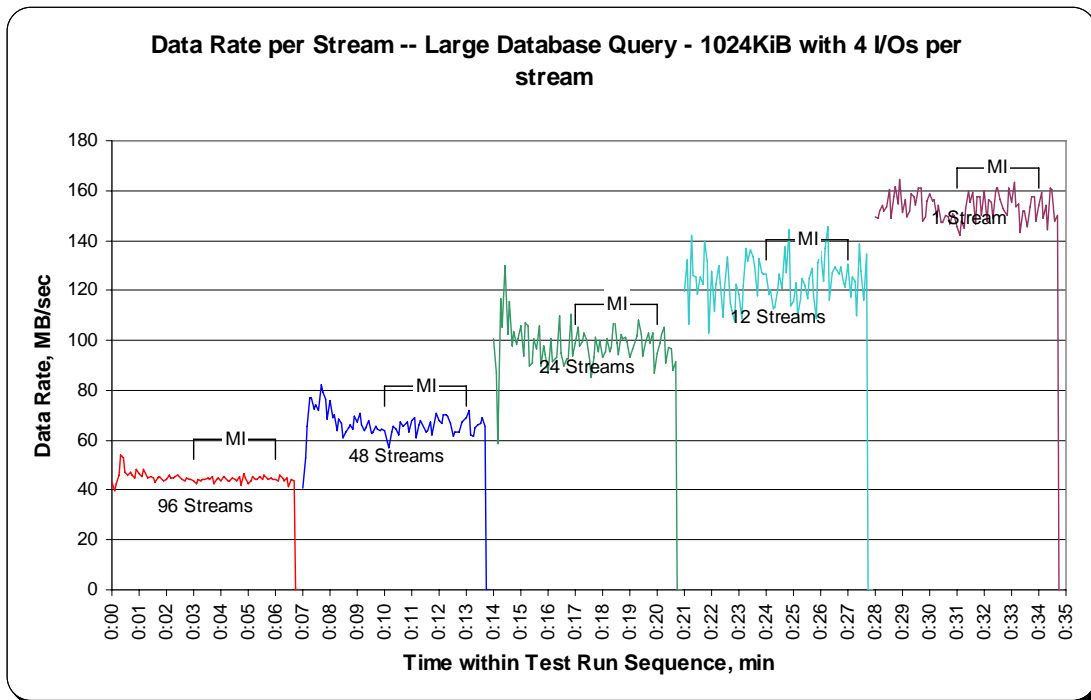
**SPC-2 “Large Database Query/1024 KiB Transfer Size/4 Outstanding I/Os”
 Average Data Rate Graph – Complete Test Run**



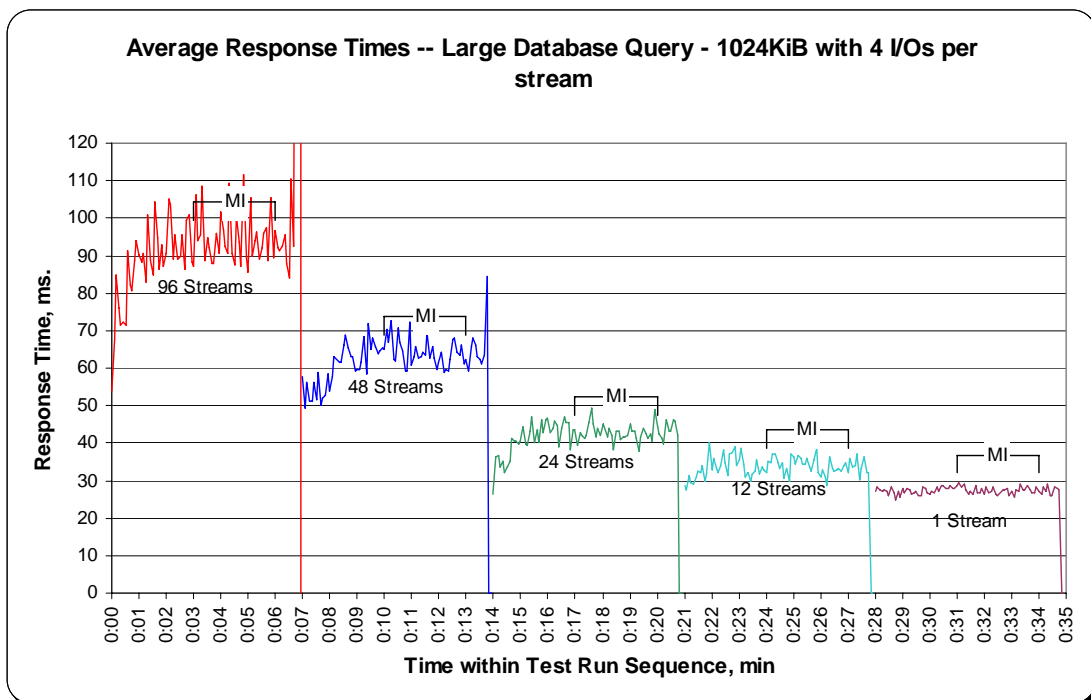
**SPC-2 “Large Database Query/1024 KiB Transfer Size/4 Outstanding I/Os”
 Average Data Rate Graph – Measurement Interval (MI) Only**



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



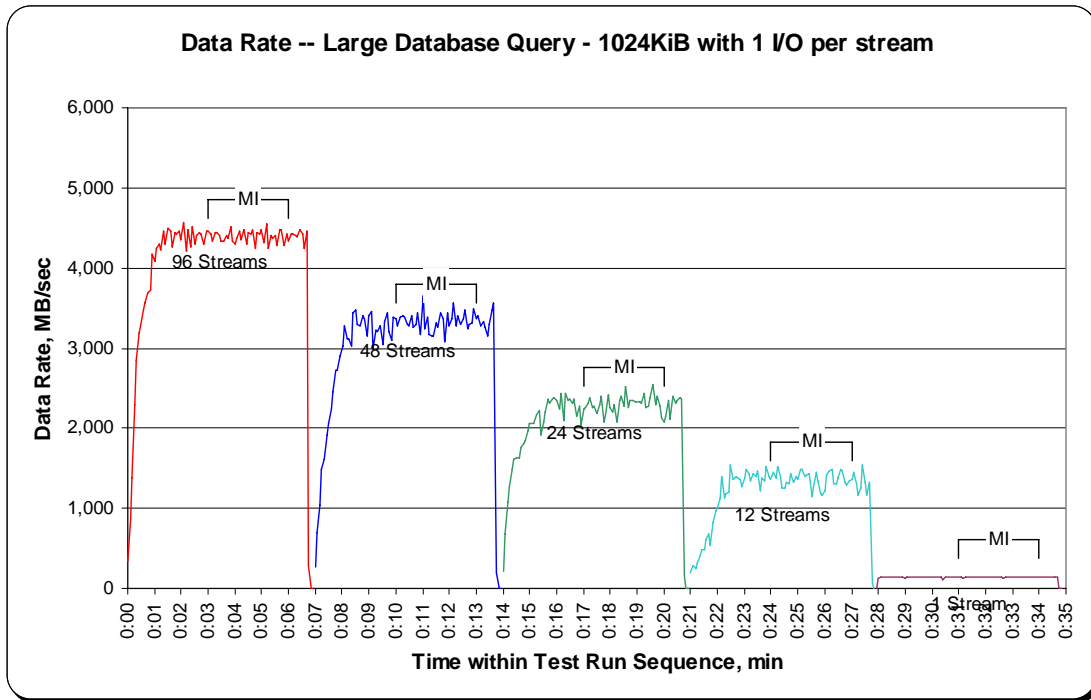
SPC-2 “Large Database Query/1024 KiB Transfer Size/4 Outstanding I/Os” Average Response Time Graph



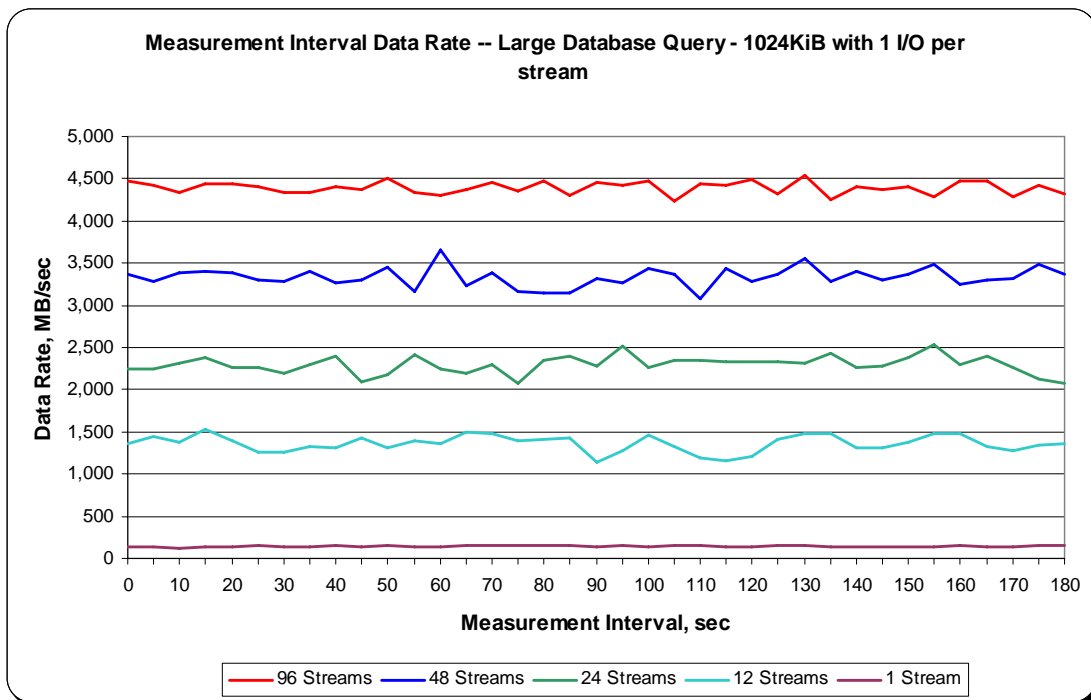
SPC-2 “Large Database Query/1024 KiB Transfer Size/1 Outstanding I/O” Test Run Data – Ramp-Up Period

TR16				TR17				TR18				TR19				TR20			
Test Run	96 Streams			Test Run	48 Streams			Test Run	24 Streams			Test Run	12 Streams			Test Run	1 Stream		
Sequence	Data Rate,	/ Stream,	Response	Sequence	Data Rate,	/ Stream,	Response	Sequence	Data Rate,	/ Stream,	Response	Sequence	Data Rate,	/ Stream,	Response	Sequence	Data Rate,	/ Stream,	Response
Time	MB/sec	MB/sec	Time, ms	Time	MB/sec	MB/sec	Time, ms	Time	MB/sec	MB/sec	Time, ms	Time	MB/sec	MB/sec	Time, ms	Time	MB/sec	MB/sec	Time, ms
0:00:00	342.88	38.10	13.32	0:07:00	264.87	44.15	13.99	0:14:00	206.57	41.31	8.33	0:21:00	199.44	99.72	7.63	0:27:55	0.00	0.00	0.00
0:00:05	851.65	50.10	16.44	0:07:05	695.84	53.53	12.54	0:14:05	671.93	74.66	10.54	0:21:05	287.10	143.55	7.29	0:28:00	130.44	130.44	7.73
0:00:10	1,378.67	38.30	19.76	0:07:10	1,045.85	61.52	14.71	0:14:10	1,080.03	98.18	9.89	0:21:10	246.42	123.21	8.51	0:28:05	138.62	138.62	7.56
0:00:15	2,284.01	53.12	18.60	0:07:15	1,485.83	78.20	12.74	0:14:15	1,265.00	90.36	10.39	0:21:15	324.64	108.21	9.62	0:28:10	145.33	145.33	7.20
0:00:20	2,843.53	58.03	17.06	0:07:20	1,616.69	76.99	13.10	0:14:20	1,491.08	99.41	10.20	0:21:20	416.91	138.97	7.55	0:28:15	150.37	150.37	6.97
0:00:25	3,179.28	57.81	17.13	0:07:25	1,910.09	79.59	12.54	0:14:25	1,603.06	100.19	10.20	0:21:25	489.89	122.47	7.30	0:28:20	144.49	144.49	7.25
0:00:30	3,277.22	52.86	17.88	0:07:30	2,060.03	79.23	12.53	0:14:30	1,630.12	101.88	10.25	0:21:30	483.39	120.85	8.67	0:28:25	145.96	145.96	7.17
0:00:35	3,471.63	54.24	18.93	0:07:35	2,244.58	74.82	12.77	0:14:35	1,629.07	101.82	10.33	0:21:35	616.14	123.23	7.89	0:28:30	143.86	143.86	7.26
0:00:40	3,560.33	53.14	19.64	0:07:40	2,462.69	76.96	12.87	0:14:40	1,762.66	103.69	10.16	0:21:40	677.17	135.43	7.73	0:28:35	135.06	135.06	7.75
0:00:45	3,693.92	50.60	19.93	0:07:45	2,718.12	73.46	13.30	0:14:45	1,809.42	106.44	9.53	0:21:45	538.13	107.63	9.74	0:28:40	141.77	141.77	7.39
0:00:50	3,720.14	48.95	20.62	0:07:50	2,729.44	71.83	14.47	0:14:50	1,851.16	97.43	10.57	0:21:50	832.15	118.88	7.93	0:28:45	143.86	143.86	7.28
0:00:55	4,167.46	49.61	20.77	0:07:55	2,902.25	69.10	14.53	0:14:55	1,977.19	98.86	10.31	0:21:55	965.32	137.90	7.63	0:28:50	143.24	143.24	7.32
0:01:00	4,088.61	47.54	21.46	0:08:00	3,026.82	72.07	14.22	0:15:00	2,056.68	97.94	10.40	0:22:00	1,002.86	111.43	8.90	0:28:55	140.09	140.09	7.48
0:01:05	4,252.19	48.32	21.63	0:08:05	3,270.72	74.33	13.84	0:15:05	2,057.73	93.53	11.22	0:22:05	1,122.40	102.04	8.82	0:29:00	130.44	130.44	8.02
0:01:10	4,306.50	48.94	21.42	0:08:10	3,112.80	67.67	15.33	0:15:10	2,066.32	89.84	11.15	0:22:10	1,404.25	127.66	8.21	0:29:05	145.96	145.96	7.17
0:01:15	4,234.78	46.03	21.78	0:08:15	3,123.92	67.91	15.47	0:15:15	2,161.95	94.00	11.15	0:22:15	1,125.96	93.83	10.45	0:29:10	143.65	143.65	7.29
0:01:20	4,458.96	46.45	22.77	0:08:20	3,026.40	64.39	15.75	0:15:20	2,219.84	96.51	10.83	0:22:20	1,181.33	98.44	10.65	0:29:15	143.86	143.86	7.28
0:01:25	4,305.03	44.84	22.90	0:08:25	3,434.30	71.55	14.62	0:15:25	1,922.04	80.08	12.99	0:22:25	1,203.14	100.26	10.46	0:29:20	146.59	146.59	7.15
0:01:30	4,492.52	46.80	22.80	0:08:30	3,482.32	72.55	14.46	0:15:30	2,085.41	86.89	12.03	0:22:30	1,544.55	128.71	8.14	0:29:25	144.70	144.70	7.24
0:01:35	4,465.68	46.52	22.80	0:08:35	3,296.72	68.68	15.25	0:15:35	2,195.51	91.48	11.48	0:22:35	1,356.23	113.02	9.31	0:29:30	148.90	148.90	7.03
0:01:40	4,255.54	44.33	22.89	0:08:40	3,273.03	68.19	15.71	0:15:40	2,359.09	98.30	10.66	0:22:40	1,403.41	116.95	8.98	0:29:35	140.93	140.93	7.44
0:01:45	4,447.22	46.33	22.80	0:08:45	3,407.66	70.99	14.79	0:15:45	2,319.03	96.63	10.93	0:22:45	1,387.27	115.61	9.07	0:29:40	146.59	146.59	7.14
0:01:50	4,415.13	45.99	22.78	0:08:50	3,373.48	70.28	14.61	0:15:50	2,370.62	98.78	10.71	0:22:50	1,355.81	112.98	9.27	0:29:45	143.86	143.86	7.28
0:01:55	4,466.51	46.53	22.75	0:08:55	3,160.20	65.84	15.92	0:15:55	2,384.04	99.34	10.55	0:22:55	1,263.11	105.26	9.96	0:29:50	143.03	143.03	7.32
0:02:00	4,360.61	45.42	22.79	0:09:00	3,395.92	70.75	14.87	0:16:00	2,352.17	98.01	10.69	0:23:00	1,383.49	115.29	9.09	0:29:55	148.90	148.90	7.01
0:02:05	4,565.08	47.55	23.10	0:09:05	3,455.06	71.98	14.88	0:16:05	2,239.97	93.33	11.23	0:23:05	1,485.83	123.82	8.46	0:30:00	139.67	139.67	7.52
0:02:10	4,215.07	43.91	22.97	0:09:10	2,991.17	62.32	16.21	0:16:10	2,432.07	101.34	10.32	0:23:10	1,426.27	118.86	8.81	0:30:05	145.96	145.96	7.17
0:02:15	4,484.97	46.72	22.75	0:09:15	3,224.37	67.17	15.63	0:16:15	2,095.26	87.30	12.17	0:23:15	1,347.00	112.25	9.34	0:30:10	140.72	140.72	7.44
0:02:20	4,271.48	44.49	23.09	0:09:20	3,203.19	66.73	15.77	0:16:20	2,438.78	101.62	10.04	0:23:20	1,435.08	119.59	8.76	0:30:15	139.25	139.25	7.52
0:02:25	4,514.96	47.03	22.77	0:09:25	3,275.75	68.24	15.66	0:16:25	2,337.70	97.40	10.76	0:23:25	1,401.11	116.76	8.85	0:30:20	140.09	140.09	7.48
0:02:30	4,298.32	44.77	22.85	0:09:30	3,041.08	63.36	16.41	0:16:30	2,371.88	98.83	10.54	0:23:30	1,465.91	122.16	8.57	0:30:25	112.20	112.20	9.34
0:02:35	4,401.50	45.85	22.95	0:09:35	3,338.46	69.55	15.05	0:16:35	2,306.24	96.09	11.00	0:23:35	1,224.74	102.06	10.27	0:30:30	150.58	150.58	6.96
0:02:40	4,442.19	46.27	22.71	0:09:40	3,439.75	71.66	14.78	0:16:40	2,364.75	98.53	10.90	0:23:40	1,376.57	114.71	9.13	0:30:35	143.24	143.24	7.31
0:02:45	4,423.31	46.08	22.83	0:09:45	3,199.83	66.66	15.85	0:16:45	2,152.52	89.69	11.68	0:23:45	1,335.89	111.32	9.41	0:30:40	141.98	141.98	7.38
0:02:50	4,293.29	44.72	22.97	0:09:50	3,093.93	64.46	15.67	0:16:50	2,273.31	94.72	11.13	0:23:50	1,517.92	126.49	8.38	0:30:45	144.70	144.70	7.24
0:02:55	4,464.63	46.51	22.76	0:09:55	3,379.14	70.40	14.86	0:16:55	2,036.96	84.87	12.21	0:23:55	1,392.09	116.01	9.03	0:30:50	145.96	145.96	7.18
																0:30:55	136.11	136.11	7.69

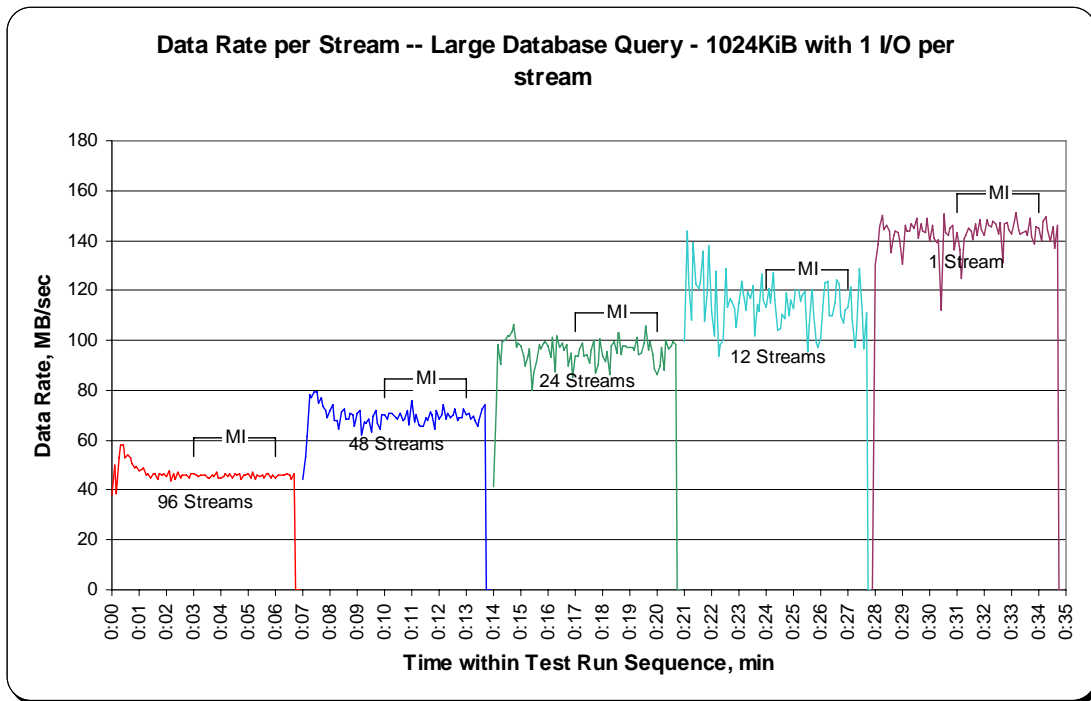
SPC-2 “Large Database Query/1024 KiB Transfer Size/1 Outstanding I/O” Average Data Rate Graph – Complete Test Run



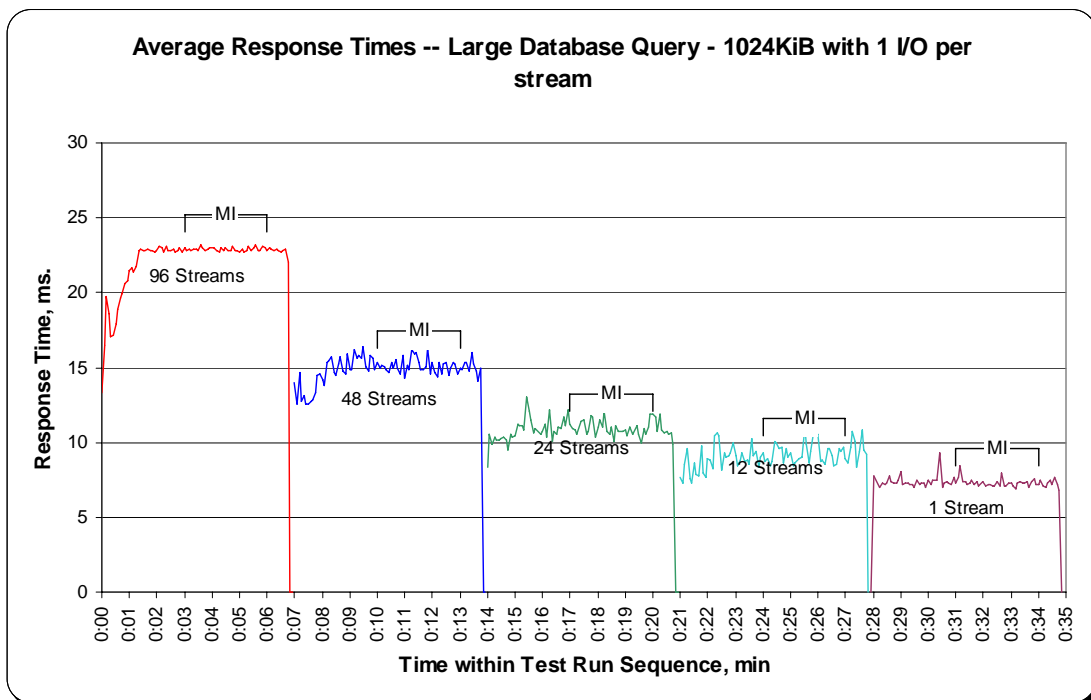
SPC-2 “Large Database Query/1024 KiB Transfer Size/1 Outstanding I/O” Average Data Rate Graph – Measurement Interval (MI) Only



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.

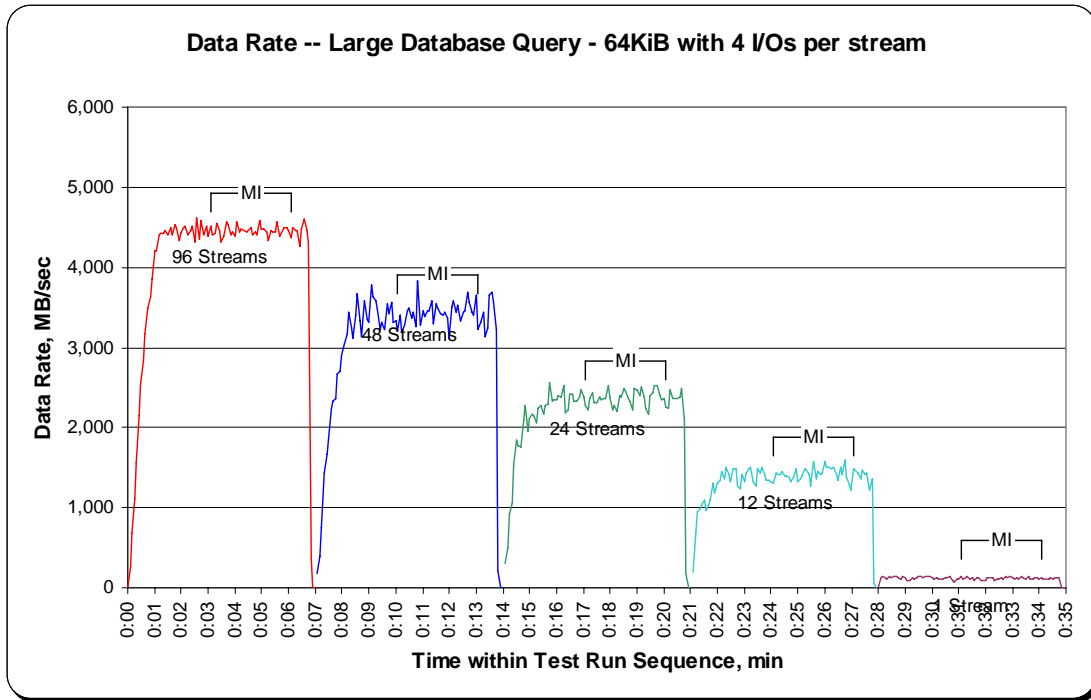
SPC-2 “Large Database Query/64 KiB Transfer Size/4 Outstanding I/Os” Test Run Data – Ramp-Up Period

TR1				TR2				TR3				TR4				TR5			
Test Run	96 Streams			Test Run	48 Streams			Test Run	24 Streams			Test Run	12 Streams			Test Run	1 Stream		
Sequence	Data Rate,	/ Stream,	Response	Sequence	Data Rate,	/ Stream,	Response	Sequence	Data Rate,	/ Stream,	Response	Sequence	Data Rate,	/ Stream,	Response	Sequence	Data Rate,	/ Stream,	Response
Time	MB/sec	MB/sec	Time, ms	Time	MB/sec	MB/sec	Time, ms	Time	MB/sec	MB/sec	Time, ms	Time	MB/sec	MB/sec	Time, ms	Time	MB/sec	MB/sec	Time, ms
0:00:00	0.00	0.00	0.00	0:07:05	175.83	43.96	2.92	0:14:05	308.66	77.16	2.24	0:21:05	198.33	49.58	1.86	0:28:00	0.00	0.00	0.00
0:00:05	265.45	44.24	2.70	0:07:10	386.67	64.45	3.27	0:14:10	494.57	82.43	2.56	0:21:10	692.70	98.96	1.95	0:28:05	122.70	122.70	2.07
0:00:10	672.64	42.04	3.91	0:07:15	758.11	47.38	3.17	0:14:15	904.92	90.49	2.25	0:21:15	954.79	136.40	1.92	0:28:10	150.11	150.11	1.74
0:00:15	1,112.17	44.49	5.21	0:07:20	1,433.91	71.70	3.32	0:14:20	1,058.81	88.23	2.67	0:21:20	981.25	140.18	1.83	0:28:15	125.62	125.62	1.99
0:00:20	1,566.97	42.35	5.10	0:07:25	1,661.78	79.13	3.15	0:14:25	1,532.31	102.15	2.30	0:21:25	1,037.31	129.66	1.89	0:28:20	115.67	115.67	2.25
0:00:25	2,151.94	55.18	4.61	0:07:30	1,855.89	71.38	3.34	0:14:30	1,840.02	115.00	2.28	0:21:30	1,090.64	136.33	1.91	0:28:25	134.43	134.43	1.94
0:00:30	2,539.94	59.07	4.24	0:07:35	2,233.53	79.77	3.24	0:14:35	1,768.17	104.01	2.46	0:21:35	963.84	107.09	2.33	0:28:30	118.74	118.74	2.20
0:00:35	2,833.25	61.59	4.09	0:07:40	2,326.07	83.07	3.15	0:14:40	1,760.55	103.56	2.53	0:21:40	1,035.58	103.56	2.33	0:28:35	144.80	144.80	1.81
0:00:40	3,167.02	54.60	4.30	0:07:45	2,362.99	73.84	3.28	0:14:45	2,088.23	104.41	2.38	0:21:45	1,091.06	109.11	2.41	0:28:40	137.72	137.72	1.89
0:00:45	3,487.98	52.85	4.72	0:07:50	2,664.43	80.74	3.22	0:14:50	2,266.23	113.31	2.33	0:21:50	1,298.75	129.87	2.00	0:28:45	118.48	118.48	2.20
0:00:50	3,636.48	51.22	4.93	0:07:55	2,699.52	72.96	3.23	0:14:55	1,960.46	98.02	2.58	0:21:55	1,188.94	118.89	2.16	0:28:50	107.43	107.43	2.43
0:00:55	3,849.17	48.11	5.06	0:08:00	2,897.02	78.30	3.37	0:15:00	2,116.72	100.80	2.52	0:22:00	1,305.14	130.51	2.08	0:28:55	141.62	141.62	1.84
0:01:00	4,212.74	50.76	5.07	0:08:05	3,047.96	72.57	3.42	0:15:05	2,170.75	103.37	2.49	0:22:05	1,347.89	122.54	2.03	0:29:00	132.45	132.45	1.97
0:01:05	4,215.27	49.59	5.12	0:08:10	3,178.63	72.24	3.49	0:15:10	2,153.93	102.57	2.58	0:22:10	1,442.36	120.20	2.14	0:29:05	95.16	95.16	2.74
0:01:10	4,408.65	50.10	5.19	0:08:15	3,429.87	72.98	3.49	0:15:15	2,068.05	94.00	2.73	0:22:15	1,355.96	113.00	2.31	0:29:10	97.14	97.14	2.69
0:01:15	4,432.20	49.80	5.29	0:08:20	3,234.39	68.82	3.82	0:15:20	2,231.08	101.41	2.54	0:22:20	1,497.06	124.76	2.09	0:29:15	132.87	132.87	1.96
0:01:20	4,415.44	47.99	5.30	0:08:25	3,124.34	66.48	3.93	0:15:25	2,272.70	94.70	2.73	0:22:25	1,414.20	117.85	2.16	0:29:20	112.35	112.35	2.32
0:01:25	4,454.67	46.89	5.53	0:08:30	3,401.52	70.86	3.62	0:15:30	2,163.37	90.14	2.91	0:22:30	1,322.52	110.21	2.40	0:29:25	132.31	132.31	1.97
0:01:30	4,403.45	45.87	5.58	0:08:35	3,677.10	76.61	3.44	0:15:35	2,279.75	94.99	2.69	0:22:35	1,485.51	123.79	2.09	0:29:30	147.98	147.98	1.76
0:01:35	4,488.91	46.76	5.64	0:08:40	3,322.50	69.22	3.84	0:15:40	2,291.33	95.47	2.71	0:22:40	1,482.56	123.55	2.16	0:29:35	145.84	145.84	1.79
0:01:40	4,400.39	45.84	5.65	0:08:45	3,140.02	65.42	4.00	0:15:45	2,570.07	107.09	2.47	0:22:45	1,273.33	106.11	2.47	0:29:40	117.12	117.12	2.23
0:01:45	4,534.76	47.24	5.61	0:08:50	3,590.07	74.79	3.50	0:15:50	2,326.66	96.94	2.68	0:22:50	1,241.09	103.42	2.44	0:29:45	146.32	146.32	1.78
0:01:50	4,500.45	46.88	5.61	0:08:55	3,345.69	69.70	3.73	0:15:55	2,345.26	97.72	2.71	0:22:55	1,409.01	117.42	2.24	0:29:50	146.18	146.18	1.78
0:01:55	4,325.64	45.06	5.65	0:09:00	3,309.20	68.94	3.70	0:16:00	2,353.26	98.05	2.60	0:23:00	1,333.39	111.12	2.35	0:29:55	146.30	146.30	1.78
0:02:00	4,423.90	46.08	5.63	0:09:05	3,770.42	78.55	3.44	0:16:05	2,398.98	99.96	2.64	0:23:05	1,437.64	119.80	2.18	0:30:00	124.05	124.05	2.11
0:02:05	4,497.08	46.84	5.63	0:09:10	3,628.22	75.59	3.35	0:16:10	2,373.33	98.89	2.68	0:23:10	1,491.73	124.31	2.10	0:30:05	110.60	110.60	2.36
0:02:10	4,510.88	46.99	5.66	0:09:15	3,578.67	74.56	3.51	0:16:15	2,528.86	105.37	2.49	0:23:15	1,513.33	126.11	2.07	0:30:10	124.55	124.55	2.11
0:02:15	4,398.46	45.82	5.64	0:09:20	3,481.40	72.53	3.57	0:16:20	2,190.17	91.26	2.80	0:23:20	1,331.21	110.93	2.33	0:30:15	111.26	111.26	2.35
0:02:20	4,466.81	46.53	5.63	0:09:25	3,219.14	67.07	3.89	0:16:25	2,224.22	92.68	2.85	0:23:25	1,273.22	106.10	2.47	0:30:20	104.55	104.55	2.49
0:02:25	4,508.73	46.97	5.64	0:09:30	3,307.38	68.90	3.88	0:16:30	2,415.49	100.65	2.61	0:23:30	1,490.50	124.21	2.10	0:30:25	114.39	114.39	2.28
0:02:30	4,313.09	44.93	5.66	0:09:35	3,218.38	67.05	3.81	0:16:35	2,417.45	100.73	2.52	0:23:35	1,438.10	119.84	2.15	0:30:30	124.51	124.51	2.09
0:02:35	4,614.41	48.07	5.62	0:09:40	3,549.31	73.94	3.55	0:16:40	2,326.33	96.93	2.71	0:23:40	1,509.68	125.81	2.16	0:30:35	130.30	130.30	2.00
0:02:40	4,350.54	45.32	5.62	0:09:45	3,424.88	71.35	3.63	0:16:45	2,328.28	97.01	2.68	0:23:45	1,409.19	117.43	2.18	0:30:40	143.38	143.38	1.78
0:02:45	4,579.66	47.70	5.61	0:09:50	3,571.02	74.40	3.55	0:16:50	2,385.40	99.39	2.63	0:23:50	1,336.40	111.37	2.29	0:30:45	97.24	97.24	2.73
0:02:50	4,401.13	45.85	5.65	0:09:55	3,314.34	69.05	3.78	0:16:55	2,462.99	102.62	2.59	0:23:55	1,342.32	111.86	2.35	0:30:50	73.71	73.71	3.56
0:02:55	4,517.94	47.06	5.63	0:10:00	3,322.72	69.22	3.84	0:17:00	2,388.40	99.52	2.57	0:24:00	1,332.28	111.02	2.41	0:30:55	101.18	101.18	2.58
0:03:00	4,391.44	45.74	5.61												0:31:00	113.52	113.52	2.30	

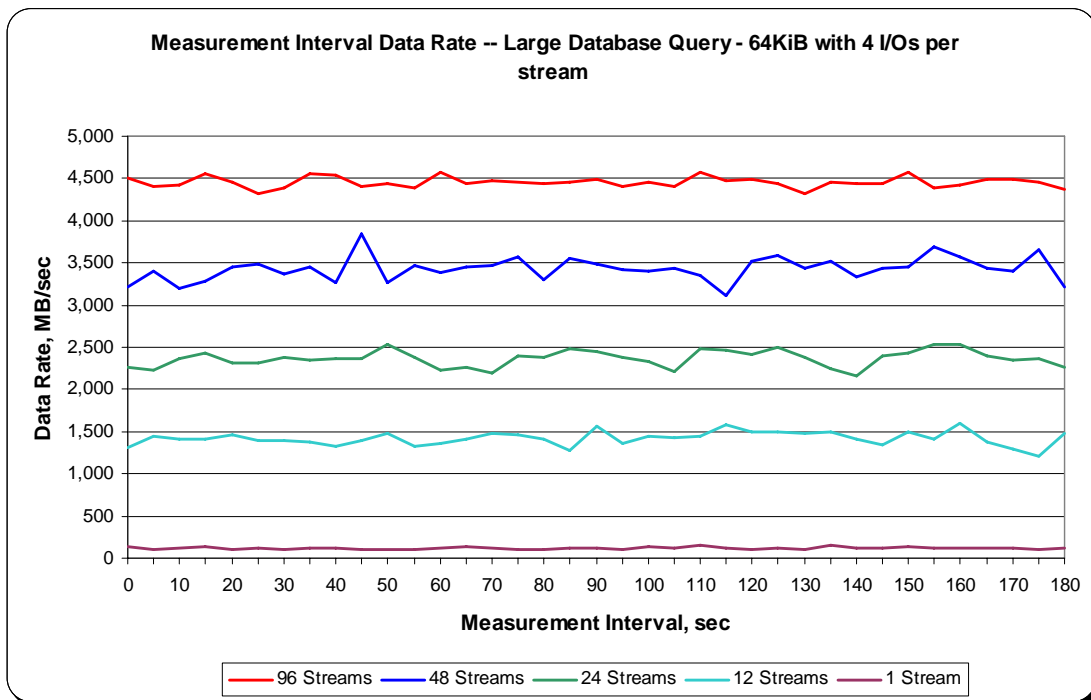
SPC-2 “Large Database Query/64 KiB Transfer Size/4 Outstanding I/Os” Test Run Data Measurement Interval, Run-Out, and Ramp-Down Periods

TR1				TR2				TR3				TR4				TR5			
96 Streams				48 Streams				24 Streams				12 Streams				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
0:03:05	4,504.69	46.92	5.63	0:10:05	3,207.58	66.82	3.85	0:17:05	2,268.30	94.51	2.74	0:24:05	1,306.90	108.91	2.31	0:31:05	135.70	135.70	1.92
0:03:10	4,399.39	45.83	5.65	0:10:10	3,400.18	70.84	3.73	0:17:10	2,226.14	92.76	2.82	0:24:10	1,441.12	120.09	2.26	0:31:10	107.94	107.94	2.42
0:03:15	4,427.84	46.12	5.64	0:10:15	3,193.92	66.54	3.89	0:17:15	2,369.99	98.75	2.70	0:24:15	1,416.90	118.07	2.15	0:31:15	121.11	121.11	2.15
0:03:20	4,554.79	47.45	5.67	0:10:20	3,283.30	68.40	3.83	0:17:20	2,436.48	101.52	2.59	0:24:20	1,419.39	118.28	2.21	0:31:20	144.18	144.18	1.81
0:03:25	4,454.55	46.40	5.69	0:10:25	3,457.79	72.04	3.61	0:17:25	2,307.13	96.13	2.72	0:24:25	1,454.98	121.25	2.15	0:31:25	109.43	109.43	2.38
0:03:30	4,312.04	44.92	5.61	0:10:30	3,485.47	72.61	3.61	0:17:30	2,315.65	96.49	2.67	0:24:30	1,398.21	116.52	2.27	0:31:30	116.55	116.55	2.24
0:03:35	4,388.92	45.72	5.65	0:10:35	3,362.88	70.06	3.69	0:17:35	2,379.75	99.16	2.67	0:24:35	1,390.81	115.90	2.25	0:31:35	97.29	97.29	2.68
0:03:40	4,564.58	47.55	5.63	0:10:40	3,444.90	71.77	3.71	0:17:40	2,343.42	97.64	2.63	0:24:40	1,375.21	114.60	2.28	0:31:40	123.99	123.99	2.10
0:03:45	4,532.67	47.22	5.63	0:10:45	3,262.95	67.98	3.76	0:17:45	2,372.36	98.85	2.68	0:24:45	1,320.22	110.02	2.38	0:31:45	117.65	117.65	2.22
0:03:50	4,397.87	45.81	5.62	0:10:50	3,839.61	79.99	3.40	0:17:50	2,360.19	98.34	2.66	0:24:50	1,387.57	115.63	2.19	0:31:50	97.14	97.14	2.69
0:03:55	4,441.55	46.27	5.64	0:10:55	3,269.82	68.12	3.74	0:17:55	2,531.18	105.47	2.46	0:24:55	1,486.55	123.88	2.17	0:31:55	95.93	95.93	2.72
0:04:00	4,389.88	45.73	5.62	0:11:00	3,461.10	72.11	3.64	0:18:00	2,383.75	99.32	2.61	0:25:00	1,331.38	110.95	2.32	0:32:00	96.05	96.05	2.72
0:04:05	4,568.69	47.59	5.62	0:11:05	3,379.79	70.41	3.67	0:18:05	2,223.69	92.65	2.77	0:25:05	1,359.02	113.25	2.31	0:32:05	119.80	119.80	2.18
0:04:10	4,447.18	46.32	5.65	0:11:10	3,456.33	72.01	3.69	0:18:10	2,269.37	94.56	2.78	0:25:10	1,405.32	117.11	2.23	0:32:10	130.55	130.55	2.00
0:04:15	4,475.55	46.62	5.61	0:11:15	3,464.20	72.17	3.56	0:18:15	2,201.60	91.73	2.86	0:25:15	1,481.87	123.49	2.06	0:32:15	117.27	117.27	2.22
0:04:20	4,452.04	46.38	5.66	0:11:20	3,576.88	74.52	3.55	0:18:20	2,400.44	100.02	2.65	0:25:20	1,470.16	122.51	2.16	0:32:20	97.51	97.51	2.57
0:04:25	4,437.25	46.22	5.68	0:11:25	3,303.01	68.81	3.80	0:18:25	2,378.84	99.12	2.56	0:25:25	1,410.55	117.55	2.25	0:32:25	108.00	108.00	2.51
0:04:30	4,450.85	46.36	5.64	0:11:30	3,554.16	74.04	3.56	0:18:30	2,491.26	103.80	2.58	0:25:30	1,270.34	105.86	2.47	0:32:30	113.97	113.97	2.29
0:04:35	4,489.88	46.77	5.63	0:11:35	3,486.43	72.63	3.60	0:18:35	2,450.62	102.11	2.47	0:25:35	1,567.41	130.62	2.00	0:32:35	118.49	118.49	2.20
0:04:40	4,405.34	45.89	5.63	0:11:40	3,417.36	71.20	3.58	0:18:40	2,372.83	98.87	2.63	0:25:40	1,364.19	113.68	2.28	0:32:40	107.16	107.16	2.44
0:04:45	4,450.15	46.36	5.62	0:11:45	3,396.60	70.76	3.71	0:18:45	2,325.18	96.88	2.75	0:25:45	1,442.54	120.21	2.18	0:32:45	135.46	135.46	1.92
0:04:50	4,408.95	45.93	5.62	0:11:50	3,436.49	71.59	3.69	0:18:50	2,215.90	92.33	2.78	0:25:50	1,422.06	118.50	2.16	0:32:50	121.70	121.70	2.14
0:04:55	4,577.67	47.68	5.63	0:11:55	3,358.38	69.97	3.79	0:18:55	2,480.73	103.36	2.59	0:25:55	1,440.90	120.08	2.17	0:32:55	149.90	149.90	1.74
0:05:00	4,476.18	46.63	5.62	0:12:00	3,114.19	64.88	4.03	0:19:00	2,464.47	102.69	2.56	0:26:00	1,583.16	131.93	1.99	0:33:00	126.83	126.83	2.06
0:05:05	4,485.47	46.72	5.62	0:12:05	3,518.45	73.30	3.44	0:19:05	2,408.79	100.37	2.53	0:26:05	1,499.84	124.99	2.09	0:33:05	108.30	108.30	2.41
0:05:10	4,433.17	46.18	5.65	0:12:10	3,579.95	74.58	3.55	0:19:10	2,507.08	104.46	2.55	0:26:10	1,499.16	124.93	2.10	0:33:10	118.81	118.81	2.19
0:05:15	4,325.39	45.06	5.63	0:12:15	3,429.99	71.46	3.64	0:19:15	2,378.17	99.09	2.65	0:26:15	1,486.04	123.84	2.11	0:33:15	108.85	108.85	2.40
0:05:20	4,460.42	46.46	5.64	0:12:20	3,519.45	73.32	3.52	0:19:20	2,237.39	93.22	2.75	0:26:20	1,498.90	124.91	2.10	0:33:20	148.07	148.07	1.76
0:05:25	4,439.13	46.24	5.62	0:12:25	3,336.13	69.50	3.82	0:19:25	2,165.40	90.23	2.95	0:26:25	1,407.29	117.27	2.16	0:33:25	123.69	123.69	2.11
0:05:30	4,434.20	46.19	5.63	0:12:30	3,442.38	71.72	3.64	0:19:30	2,404.66	100.19	2.62	0:26:30	1,349.81	112.48	2.32	0:33:30	113.27	113.27	2.30
0:05:35	4,574.92	47.66	5.64	0:12:35	3,456.73	72.02	3.60	0:19:35	2,432.89	101.37	2.49	0:26:35	1,502.70	125.23	2.12	0:33:35	135.11	135.11	1.93
0:05:40	4,380.76	45.63	5.64	0:12:40	3,688.05	76.83	3.37	0:19:40	2,529.61	105.40	2.47	0:26:40	1,409.96	117.50	2.18	0:33:40	116.41	116.41	2.24
0:05:45	4,429.82	46.14	5.65	0:12:45	3,568.20	74.34	3.59	0:19:45	2,528.49	105.35	2.48	0:26:45	1,599.85	133.32	2.00	0:33:45	111.82	111.82	2.33
0:05:50	4,491.72	46.79	5.64	0:12:50	3,440.88	71.69	3.63	0:19:50	2,394.47	99.77	2.66	0:26:50	1,384.11	115.34	2.22	0:33:50	119.89	119.89	2.17
0:05:55	4,495.65	46.83	5.63	0:12:55	3,402.74	70.89	3.64	0:19:55	2,340.97	97.54	2.62	0:26:55	1,291.17	107.60	2.43	0:33:55	118.97	118.97	2.19
0:06:00	4,452.05	46.38	5.64	0:13:00	3,660.90	76.27	3.51	0:20:00	2,359.18	98.30	2.76	0:27:00	1,214.05	101.17	2.61	0:34:00	106.55	106.55	2.45
0:06:05	4,373.63	45.56	5.68	0:13:05	3,222.30	67.13	3.77	0:20:05	2,254.07	93.92	2.70	0:27:05	1,482.88	123.57	2.11	0:34:05	125.24	125.24	2.08
0:06:10	4,496.90	46.84	5.69	0:13:10	3,306.64	68.89	3.93	0:20:10	2,243.06	93.46	2.80	0:27:10	1,442.51	120.21	2.15	0:34:10	111.99	111.99	2.33
0:06:15	4,462.52	46.48	5.62	0:13:15	3,435.22	71.57	3.62	0:20:15	2,464.24	102.68	2.58	0:27:15	1,436.97	119.75	2.19	0:34:15	113.85	113.85	2.29
0:06:20	4,464.65	46.51	5.63	0:13:20	3,135.03	65.31	4.06	0:20:20	2,357.01	98.21	2.58	0:27:20	1,365.24	113.77	2.25	0:34:20	113.19	113.19	2.30
0:06:25	4,271.59	44.50	5.70	0:13:25	3,239.70	67.49	3.78	0:20:25	2,360.51	98.35	2.69	0:27:25	1,461.94	121.83	2.19	0:34:25	129.50	129.50	2.01
0:06:30	4,480.30	46.67	5.63	0:13:30	3,647.22	75.98	3.47	0:20:30	2,368.96	98.71	2.66	0:27:30	1,415.43	117.95	2.25	0:34:30	106.86	106.86	2.44
0:06:35	4,596.07	47.88	5.61	0:13:35	3,686.23	76.80	3.35	0:20:35	2,386.68	99.45	2.63	0:27:35	1,429.40	119.12	2.18	0:34:35	124.28	124.28	2.10
0:06:40	4,466.45	46.53	5.63	0:13:40	3,558.67	74.14	3.58	0:20:40	2,490.80	103.78	2.55	0:27:40	1,220.88	101.74	2.57	0:34:40	129.76	129.76	2.01
0:06:45	4,298.15	44.77	5.64	0:13:45	3,227.31	67.24	3.85	0:20:45	2,103.53	87.65	2.89	0:27:45	1,357.92	113.16	2.31	0:34:45	127.82	127.82	2.04
0:06:50	352.68	0.00	5.38	0:13:50	207.07	0.00	3.70	0:20:50	184.40	0.00	2.40	0:27:50	51.69	0.00	2.29	0:34:50	6.29	0.00	1.89
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
0:07:00	0.00	0.00	0.00	0:14:00	0.00	0.00	0.00	0:21:00	0.00	0.00	0.00				0:35:00	0.00	0.00	0.00	

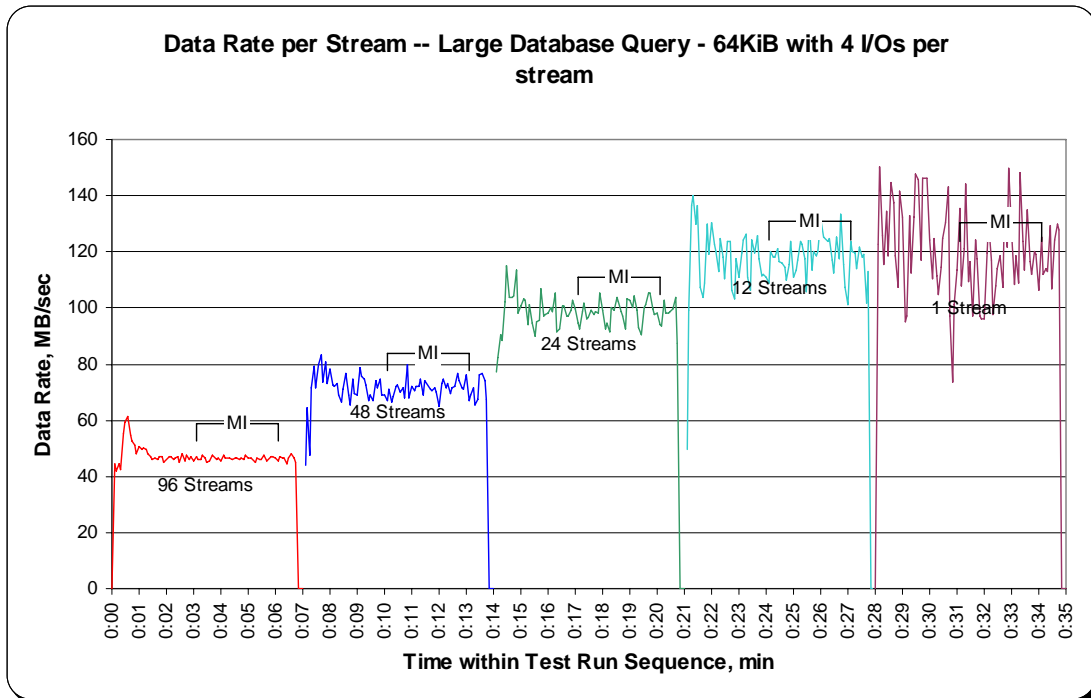
SPC-2 “Large Database Query/64 KiB Transfer Size/4 Outstanding I/Os” Average Data Rate Graph – Complete Test Run



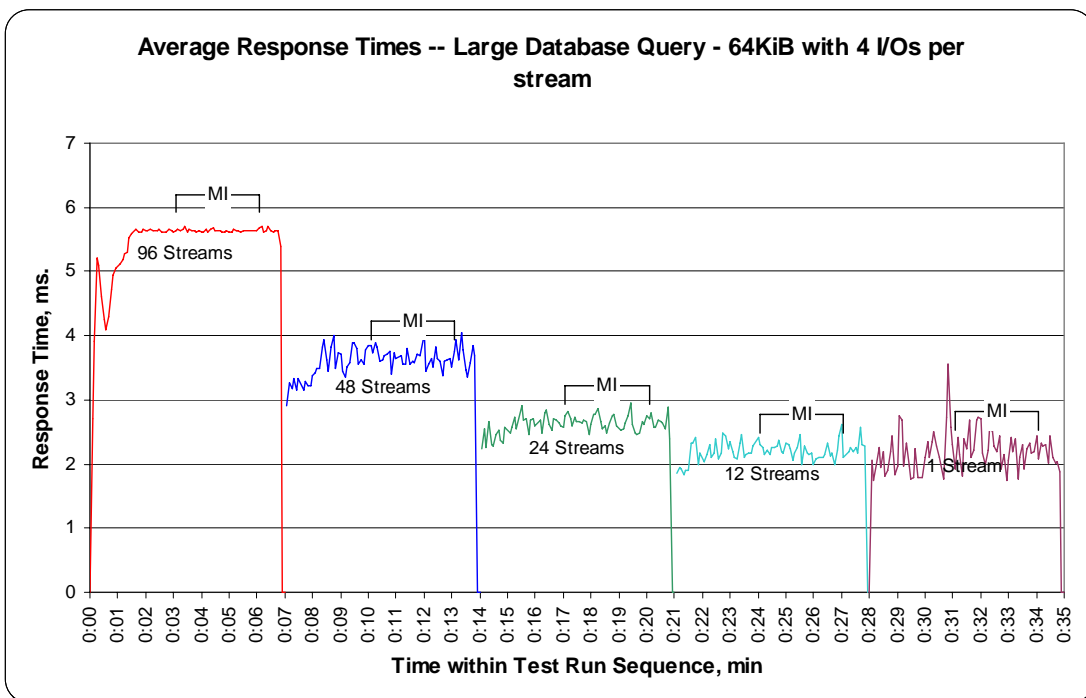
SPC-2 “Large Database Query/64 KiB Transfer Size/4 Outstanding I/Os” Average Data Rate Graph – Measurement Interval (MI) Only



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



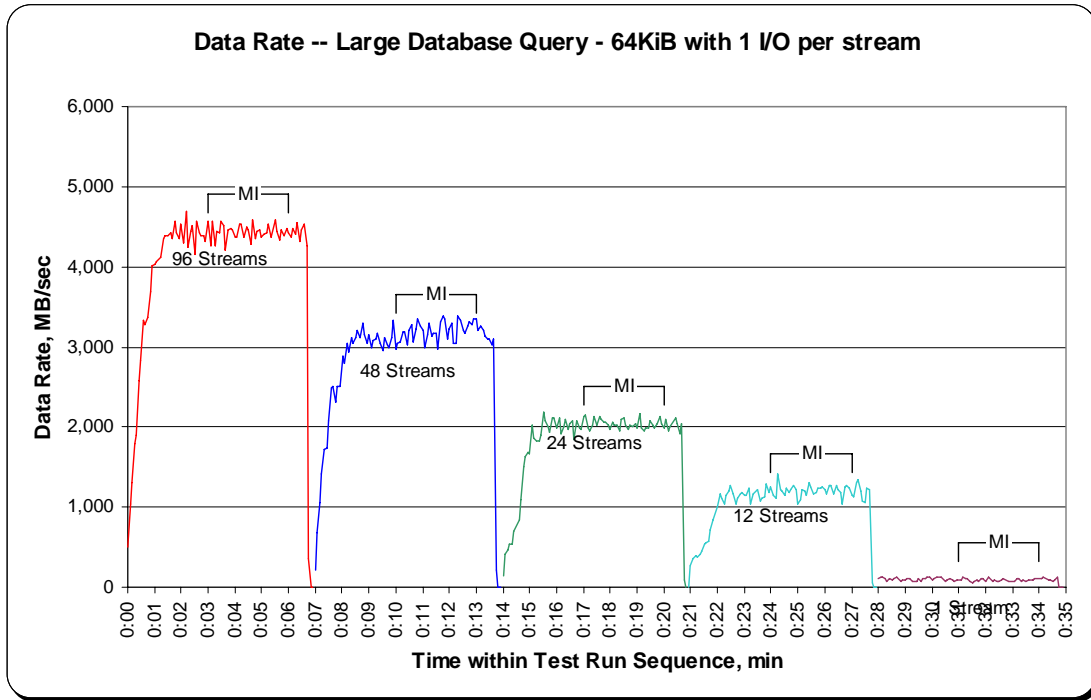
SPC-2 “Large Database Query/64 KiB Transfer Size/1 Outstanding I/O” Test Run Data – Ramp-Up Period

TR6				TR7				TR8				TR9				TR10			
Test Run	96 Streams			Test Run	48 Streams			Test Run	24 Streams			Test Run	12 Streams			Test Run	1 Stream		
Sequence	Data Rate,	/ Stream,	Response	Sequence	Data Rate,	/ Stream,	Response	Sequence	Data Rate,	/ Stream,	Response	Sequence	Data Rate,	/ Stream,	Response	Sequence	Data Rate,	/ Stream,	Response
Time	MB/sec	MB/sec	Time, ms	Time	MB/sec	MB/sec	Time, ms	Time	MB/sec	MB/sec	Time, ms	Time	MB/sec	MB/sec	Time, ms	Time	MB/sec	MB/sec	Time, ms
0:00:00	510.04	36.43	1.02	0:07:00	223.66	31.95	0.85	0:14:00	148.05	49.35	0.58	0:20:55	0.00	0.00	0.00	0:28:00	99.66	99.66	0.62
0:00:05	1,032.73	43.03	1.25	0:07:05	678.73	56.56	0.90	0:14:05	417.34	83.47	0.67	0:21:00	261.56	87.19	0.56	0:28:05	117.27	117.27	0.55
0:00:10	1,311.62	40.99	1.31	0:07:10	1,054.67	58.59	0.93	0:14:10	473.37	78.89	0.70	0:21:05	352.36	117.45	0.55	0:28:10	117.31	117.31	0.55
0:00:15	1,795.79	49.88	1.22	0:07:15	1,410.71	67.18	0.87	0:14:15	535.09	76.44	0.75	0:21:10	391.71	97.93	0.55	0:28:15	101.70	101.70	0.63
0:00:20	1,896.94	47.42	1.23	0:07:20	1,721.59	71.73	0.87	0:14:20	536.77	76.68	0.85	0:21:15	383.69	95.92	0.67	0:28:20	78.42	78.42	0.83
0:00:25	2,578.55	56.06	1.14	0:07:25	1,732.33	66.63	0.93	0:14:25	706.05	88.26	0.66	0:21:20	414.00	103.50	0.62	0:28:25	102.54	102.54	0.63
0:00:30	2,823.63	51.34	1.11	0:07:30	2,071.89	69.06	0.89	0:14:30	766.50	95.81	0.67	0:21:25	452.21	113.05	0.57	0:28:30	94.11	94.11	0.69
0:00:35	3,332.02	54.62	1.15	0:07:35	2,488.69	75.41	0.83	0:14:35	835.48	83.55	0.69	0:21:30	535.38	107.08	0.59	0:28:35	108.89	108.89	0.59
0:00:40	3,271.19	51.92	1.19	0:07:40	2,500.00	73.53	0.88	0:14:40	1,088.36	83.72	0.66	0:21:35	551.44	110.29	0.58	0:28:40	121.91	121.91	0.53
0:00:45	3,361.17	48.71	1.25	0:07:45	2,318.95	66.26	0.94	0:14:45	1,505.04	88.53	0.63	0:21:40	579.88	82.84	0.61	0:28:45	106.98	106.98	0.60
0:00:50	3,697.01	49.29	1.29	0:07:50	2,501.46	69.49	0.94	0:14:50	1,629.68	90.54	0.70	0:21:45	719.23	102.75	0.63	0:28:50	79.47	79.47	0.81
0:00:55	4,016.16	51.49	1.28	0:07:55	2,511.99	64.41	0.97	0:14:55	1,689.59	84.48	0.73	0:21:50	836.12	104.52	0.58	0:28:55	94.05	94.05	0.69
0:01:00	4,033.41	50.42	1.28	0:08:00	2,886.09	72.15	0.90	0:15:00	1,663.24	83.16	0.79	0:21:55	946.56	105.17	0.59	0:29:00	94.21	94.21	0.69
0:01:05	4,058.18	49.49	1.27	0:08:05	2,790.42	66.44	0.93	0:15:05	2,023.96	92.00	0.71	0:22:00	994.85	90.44	0.60	0:29:05	112.97	112.97	0.57
0:01:10	4,110.16	47.79	1.33	0:08:10	3,038.42	69.05	0.91	0:15:10	1,869.31	84.97	0.76	0:22:05	1,169.70	106.34	0.61	0:29:10	106.56	106.56	0.60
0:01:15	4,127.60	45.86	1.35	0:08:15	2,938.01	65.29	0.97	0:15:15	1,821.28	82.79	0.78	0:22:10	1,112.29	101.12	0.64	0:29:15	69.06	69.06	0.94
0:01:20	4,345.55	47.23	1.41	0:08:20	3,115.19	66.28	0.97	0:15:20	1,820.81	82.76	0.78	0:22:15	1,034.22	86.19	0.71	0:29:20	74.08	74.08	0.87
0:01:25	4,394.53	45.78	1.39	0:08:25	3,046.97	63.48	1.03	0:15:25	1,905.41	79.39	0.76	0:22:20	1,153.87	96.16	0.67	0:29:25	75.34	75.34	0.86
0:01:30	4,387.08	45.70	1.42	0:08:30	3,112.63	64.85	1.00	0:15:30	2,177.39	90.72	0.72	0:22:25	1,208.27	100.69	0.64	0:29:30	109.21	109.21	0.59
0:01:35	4,425.64	46.10	1.42	0:08:35	3,207.76	66.83	0.95	0:15:35	2,072.83	86.37	0.75	0:22:30	1,272.25	106.02	0.61	0:29:35	70.15	70.15	0.92
0:01:40	4,355.27	45.37	1.40	0:08:40	3,109.62	64.78	0.98	0:15:40	2,008.18	83.67	0.77	0:22:35	1,155.94	96.33	0.67	0:29:40	99.35	99.35	0.65
0:01:45	4,561.60	47.52	1.41	0:08:45	3,296.95	68.69	0.98	0:15:45	1,941.61	80.90	0.80	0:22:40	1,038.53	86.54	0.74	0:29:45	101.97	101.97	0.63
0:01:50	4,424.20	46.09	1.41	0:08:50	3,157.20	65.77	0.99	0:15:50	2,113.82	88.08	0.73	0:22:45	1,105.36	92.11	0.70	0:29:50	121.44	121.44	0.53
0:01:55	4,345.51	45.27	1.40	0:08:55	3,047.68	63.49	1.04	0:15:55	2,119.72	88.32	0.75	0:22:50	1,170.74	97.56	0.66	0:29:55	119.95	119.95	0.54
0:02:00	4,525.91	47.14	1.40	0:09:00	3,159.03	65.81	0.98	0:16:00	1,984.70	82.70	0.76	0:22:55	1,183.73	98.64	0.65	0:30:00	95.83	95.83	0.67
0:02:05	4,292.37	44.71	1.42	0:09:05	2,990.32	62.30	1.02	0:16:05	2,106.40	87.77	0.74	0:23:00	1,141.39	95.12	0.68	0:30:05	104.21	104.21	0.62
0:02:10	4,686.36	48.82	1.40	0:09:10	3,082.66	64.22	1.01	0:16:10	1,924.47	80.19	0.81	0:23:05	1,139.08	94.92	0.68	0:30:10	117.22	117.22	0.55
0:02:15	4,253.40	44.31	1.42	0:09:15	3,102.09	64.63	0.98	0:16:15	2,002.16	83.42	0.78	0:23:10	1,238.16	103.18	0.62	0:30:15	119.71	119.71	0.54
0:02:20	4,439.67	46.25	1.41	0:09:20	3,172.56	66.10	1.00	0:16:20	2,092.64	87.19	0.74	0:23:15	1,036.50	86.37	0.75	0:30:20	119.01	119.01	0.54
0:02:25	4,512.96	47.01	1.43	0:09:25	3,045.58	63.45	1.01	0:16:25	1,966.52	81.94	0.79	0:23:20	1,158.74	96.56	0.67	0:30:25	114.41	114.41	0.56
0:02:30	4,161.01	43.34	1.42	0:09:30	2,957.57	61.62	1.05	0:16:30	2,050.18	85.42	0.76	0:23:25	1,202.42	100.20	0.64	0:30:30	68.77	68.77	0.94
0:02:35	4,564.09	47.54	1.41	0:09:35	3,118.35	64.97	1.02	0:16:35	2,079.47	86.64	0.75	0:23:30	1,221.91	101.83	0.63	0:30:35	87.86	87.86	0.74
0:02:40	4,428.20	46.13	1.41	0:09:40	3,032.48	63.18	1.01	0:16:40	1,836.36	76.52	0.85	0:23:35	1,082.04	90.17	0.70	0:30:40	113.12	113.12	0.57
0:02:45	4,383.61	45.66	1.42	0:09:45	2,999.78	62.50	1.05	0:16:45	2,069.18	86.22	0.75	0:23:40	1,117.37	93.11	0.71	0:30:45	89.70	89.70	0.72
0:02:50	4,393.17	45.76	1.41	0:09:50	3,115.93	64.92	0.97	0:16:50	1,985.37	82.72	0.78	0:23:45	1,137.07	94.76	0.66	0:30:50	69.05	69.05	0.94
0:02:55	4,310.07	44.90	1.42	0:09:55	3,325.66	69.28	0.97	0:16:55	1,971.93	82.16	0.79	0:23:50	1,291.85	107.65	0.60	0:30:55	87.25	87.25	0.74
												0:23:55	1,187.41	98.95	0.65				

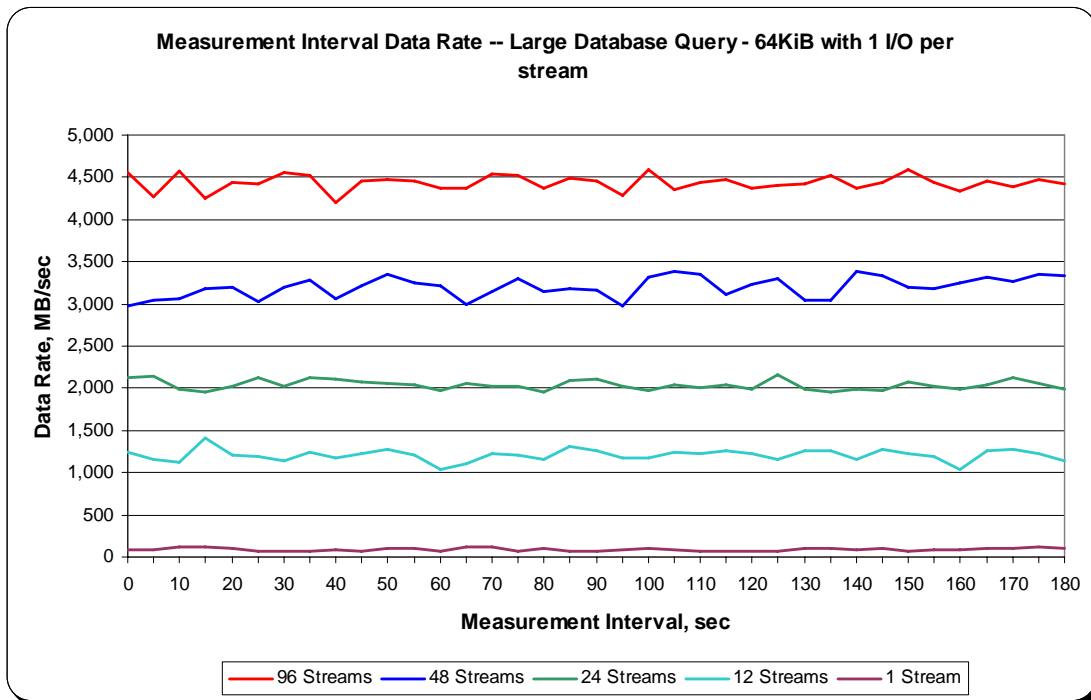
SPC-2 “Large Database Query/64 KiB Transfer Size/1 Outstanding I/O” Test Run Data Measurement Interval, Run-Out, and Ramp-Down Period

TR6				TR7				TR8				TR9				TR10			
Test Run Sequence Time	Data Rate, MB/sec	/ Stream, MB/sec	Response Time, ms	Test Run Sequence Time	Data Rate, MB/sec	/ Stream, MB/sec	Response Time, ms	Test Run Sequence Time	Data Rate, MB/sec	/ Stream, MB/sec	Response Time, ms	Test Run Sequence Time	Data Rate, MB/sec	/ Stream, MB/sec	Response Time, ms	Test Run Sequence Time	Data Rate, MB/sec	/ Stream, MB/sec	Response Time, ms
0:03:00	4,563.04	47.53	1.40	0:10:00	2,971.87	61.91	1.01	0:17:00	2,124.56	88.52	0.73	0:24:00	1,244.96	103.75	0.63	0:31:00	89.12	89.12	0.72
0:03:05	4,263.34	44.41	1.42	0:10:05	3,043.44	63.40	1.04	0:17:05	2,140.34	89.18	0.75	0:24:05	1,150.24	95.85	0.68	0:31:05	92.90	92.90	0.70
0:03:10	4,569.39	47.60	1.41	0:10:10	3,054.70	63.64	1.02	0:17:10	1,990.25	82.93	0.75	0:24:10	1,118.03	93.17	0.68	0:31:10	119.34	119.34	0.54
0:03:15	4,258.59	44.36	1.43	0:10:15	3,182.34	66.30	0.98	0:17:15	1,960.37	81.68	0.79	0:24:15	1,413.33	117.78	0.56	0:31:15	115.09	115.09	0.56
0:03:20	4,445.60	46.31	1.42	0:10:20	3,190.69	66.47	0.98	0:17:20	2,027.01	84.46	0.77	0:24:20	1,213.71	101.14	0.63	0:31:20	108.30	108.30	0.59
0:03:25	4,418.71	46.03	1.41	0:10:25	3,022.81	62.98	1.02	0:17:25	2,125.56	88.56	0.73	0:24:25	1,198.46	99.87	0.66	0:31:25	67.49	67.49	0.96
0:03:30	4,560.67	47.51	1.40	0:10:30	3,203.42	66.74	0.97	0:17:30	2,021.26	84.22	0.78	0:24:30	1,146.05	95.50	0.66	0:31:30	61.05	61.05	1.06
0:03:35	4,519.32	47.08	1.41	0:10:35	3,277.97	68.29	0.96	0:17:35	2,123.68	88.49	0.73	0:24:35	1,236.89	103.07	0.62	0:31:35	68.67	68.67	0.94
0:03:40	4,207.32	43.83	1.40	0:10:40	3,058.26	63.71	1.02	0:17:40	2,101.57	87.57	0.74	0:24:40	1,180.63	98.39	0.66	0:31:40	88.54	88.54	0.73
0:03:45	4,455.71	46.41	1.43	0:10:45	3,215.92	67.00	0.97	0:17:45	2,067.10	86.13	0.75	0:24:45	1,219.37	101.61	0.64	0:31:45	75.37	75.37	0.86
0:03:50	4,477.43	46.64	1.41	0:10:50	3,350.85	69.81	0.92	0:17:50	2,051.53	85.48	0.77	0:24:50	1,268.62	105.72	0.63	0:31:50	108.02	108.02	0.60
0:03:55	4,453.43	46.39	1.40	0:10:55	3,252.64	67.76	0.95	0:17:55	2,032.34	84.68	0.76	0:24:55	1,212.45	101.04	0.63	0:31:55	104.92	104.92	0.61
0:04:00	4,366.12	45.48	1.41	0:11:00	3,210.02	66.88	0.97	0:18:00	1,966.23	81.93	0.77	0:25:00	1,031.51	85.96	0.73	0:32:00	75.08	75.08	0.86
0:04:05	4,378.98	45.61	1.40	0:11:05	2,995.79	62.41	1.05	0:18:05	2,059.97	85.83	0.75	0:25:05	1,098.28	91.52	0.71	0:32:05	122.05	122.05	0.53
0:04:10	4,533.52	47.22	1.40	0:11:10	3,145.63	65.53	1.00	0:18:10	2,025.31	84.39	0.76	0:25:10	1,223.79	101.98	0.63	0:32:10	116.10	116.10	0.55
0:04:15	4,528.63	47.17	1.40	0:11:15	3,292.95	68.60	0.94	0:18:15	2,019.45	84.14	0.77	0:25:15	1,205.82	100.49	0.64	0:32:15	75.08	75.08	0.86
0:04:20	4,366.01	45.48	1.41	0:11:20	3,140.33	65.42	0.96	0:18:20	1,948.47	81.19	0.80	0:25:20	1,154.68	96.22	0.67	0:32:20	98.15	98.15	0.66
0:04:25	4,488.85	46.76	1.40	0:11:25	3,172.90	66.10	0.98	0:18:25	2,100.11	87.50	0.74	0:25:25	1,303.38	108.61	0.59	0:32:25	69.25	69.25	0.94
0:04:30	4,452.82	46.38	1.42	0:11:30	3,170.07	66.04	1.02	0:18:30	2,117.18	88.22	0.73	0:25:30	1,250.22	104.18	0.62	0:32:30	64.17	64.17	1.01
0:04:35	4,287.25	44.66	1.41	0:11:35	2,968.21	61.84	1.02	0:18:35	2,018.72	84.11	0.79	0:25:35	1,165.03	97.09	0.66	0:32:35	89.43	89.43	0.72
0:04:40	4,591.10	47.82	1.40	0:11:40	3,313.86	69.04	0.94	0:18:40	1,977.70	82.40	0.79	0:25:40	1,175.99	98.00	0.66	0:32:40	104.13	104.13	0.62
0:04:45	4,353.06	45.34	1.41	0:11:45	3,384.16	70.50	0.93	0:18:45	2,032.76	84.70	0.76	0:25:45	1,244.22	103.68	0.62	0:32:45	92.78	92.78	0.70
0:04:50	4,446.27	46.32	1.40	0:11:50	3,349.70	69.79	0.94	0:18:50	2,003.35	83.47	0.77	0:25:50	1,232.30	102.69	0.63	0:32:50	65.38	65.38	0.99
0:04:55	4,467.77	46.54	1.41	0:11:55	3,105.71	64.70	0.96	0:18:55	2,038.05	84.92	0.77	0:25:55	1,256.98	104.75	0.62	0:32:55	73.25	73.25	0.88
0:05:00	4,368.00	45.50	1.41	0:12:00	3,226.79	67.22	0.97	0:19:00	1,994.96	83.12	0.75	0:26:00	1,223.77	101.98	0.63	0:33:00	67.58	67.58	0.96
0:05:05	4,408.69	45.92	1.40	0:12:05	3,297.18	68.69	0.97	0:19:05	2,160.64	90.03	0.74	0:26:05	1,161.46	96.79	0.67	0:33:05	63.81	63.81	1.02
0:05:10	4,426.21	46.11	1.41	0:12:10	3,052.50	63.59	1.01	0:19:10	1,992.44	83.02	0.77	0:26:10	1,264.01	105.33	0.61	0:33:10	103.65	103.65	0.62
0:05:15	4,532.17	47.21	1.40	0:12:15	3,045.05	63.44	1.01	0:19:15	1,952.53	81.36	0.79	0:26:15	1,265.01	105.42	0.61	0:33:15	102.32	102.32	0.63
0:05:20	4,368.59	45.51	1.41	0:12:20	3,382.91	70.48	0.93	0:19:20	1,985.22	82.72	0.77	0:26:20	1,156.50	96.37	0.67	0:33:20	76.86	76.86	0.84
0:05:25	4,439.26	46.24	1.41	0:12:25	3,340.03	69.58	0.95	0:19:25	1,979.66	82.49	0.80	0:26:25	1,276.79	106.40	0.61	0:33:25	95.08	95.08	0.68
0:05:30	4,588.68	47.80	1.41	0:12:30	3,202.36	66.72	0.96	0:19:30	2,082.06	86.75	0.75	0:26:30	1,225.74	102.15	0.65	0:33:30	70.65	70.65	0.92
0:05:35	4,447.18	46.32	1.41	0:12:35	3,176.72	66.18	0.97	0:19:35	2,027.33	84.47	0.77	0:26:35	1,186.35	98.86	0.65	0:33:35	83.66	83.66	0.77
0:05:40	4,342.89	45.24	1.40	0:12:40	3,255.07	67.81	0.96	0:19:40	1,996.24	83.18	0.76	0:26:40	1,044.28	87.02	0.74	0:33:40	89.66	89.66	0.72
0:05:45	4,455.36	46.41	1.40	0:12:45	3,319.16	69.15	0.93	0:19:45	2,038.41	84.93	0.77	0:26:45	1,253.61	104.47	0.62	0:33:45	95.63	95.63	0.67
0:05:50	4,380.13	45.63	1.41	0:12:50	3,271.29	68.15	0.95	0:19:50	2,128.66	88.69	0.73	0:26:50	1,272.60	106.05	0.61	0:33:50	108.63	108.63	0.59
0:05:55	4,473.58	46.60	1.40	0:12:55	3,349.47	69.78	0.93	0:19:55	2,050.30	85.43	0.74	0:26:55	1,226.93	102.24	0.63	0:33:55	115.28	115.28	0.56
0:06:00	4,421.91	46.06	1.42	0:13:00	3,341.50	69.61	0.94	0:20:00	1,987.95	82.83	0.78	0:27:00	1,138.25	94.85	0.68	0:34:00	108.33	108.33	0.59
0:06:05	4,377.74	45.60	1.41	0:13:05	3,197.53	66.62	0.96	0:20:05	2,104.38	87.68	0.75	0:27:05	1,127.62	93.97	0.69	0:34:05	115.46	115.46	0.56
0:06:10	4,483.10	46.70	1.41	0:13:10	3,262.41	67.97	0.95	0:20:10	1,957.10	81.55	0.79	0:27:10	1,313.34	109.45	0.57	0:34:10	120.44	120.44	0.53
0:06:15	4,409.64	45.93	1.40	0:13:15	3,211.32	66.90	0.99	0:20:15	2,011.76	83.82	0.77	0:27:15	1,350.44	112.54	0.57	0:34:15	103.10	103.10	0.63
0:06:20	4,545.68	47.35	1.41	0:13:20	3,137.78	65.37	1.00	0:20:20	2,060.26	85.84	0.75	0:27:20	1,200.92	100.08	0.64	0:34:20	88.75	88.75	0.73
0:06:25	4,322.95	45.03	1.41	0:13:25	3,095.59	64.49	1.01	0:20:25	2,112.90	88.04	0.73	0:27:25	1,081.03	90.09	0.72	0:34:25	97.61	97.61	0.66
0:06:30	4,467.58	46.54	1.40	0:13:30	3,094.01	64.46	1.00	0:20:30	2,033.59	84.73	0.76	0:27:30	1,065.00	88.75	0.73	0:34:30	77.23	77.23	0.84
0:06:35	4,525.66	47.14	1.40	0:13:35	3,030.79	63.14	1.02	0:20:35	1,923.07	80.13	0.81	0:27:35	1,235.05	102.92	0.64	0:34:35	87.29	87.29	0.74
0:06:40	4,271.12	44.49	1.43	0:13:40	3,106.35	64.72	0.98	0:20:40	2,050.69	85.45	0.76	0:27:40	1,218.81	101.57	0.64	0:34:40	118.28	118.28	0.54
0:06:45	353.17	0.00	1.37	0:13:45	212.15	0.00	1.09	0:20:45	95.75	0.00	0.72	0:27:45	61.53	0.00	0.67	0:34:45	4.51	0.00	0.54
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
0:06:55	0.00	0.00	0.00	0:13:55	0.00	0.00	0.00					0:27:55	0.00	0.00	0.00	0:34:55	0.00	0.00	0.00

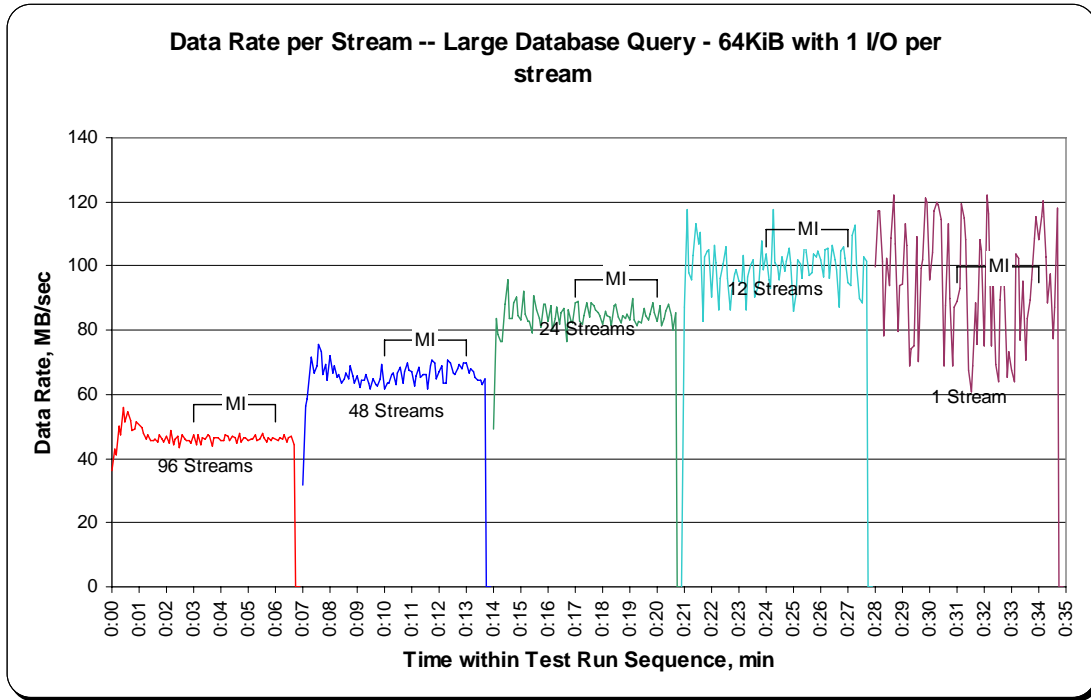
SPC-2 “Large Database Query/64 KiB Transfer Size/1 Outstanding I/O” Average Data Rate Graph – Complete Test Run



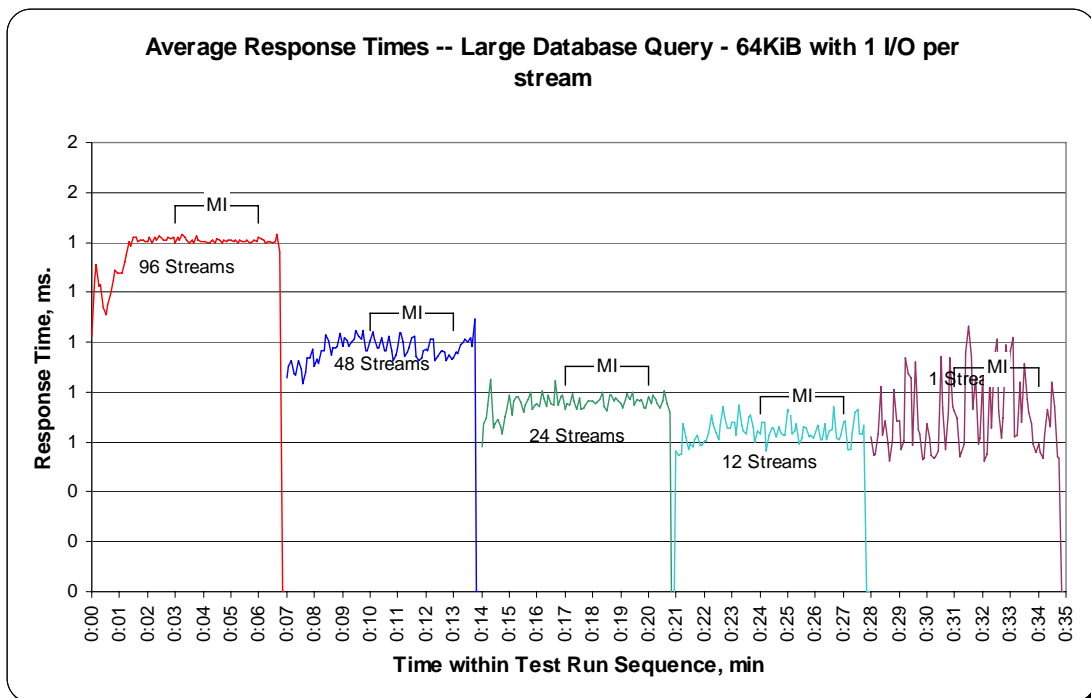
SPC-2 “Large Database Query/64 KiB Transfer Size/1 Outstanding I/O” Average Data Rate Graph – Measurement Interval (MI) Only



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 106.

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.

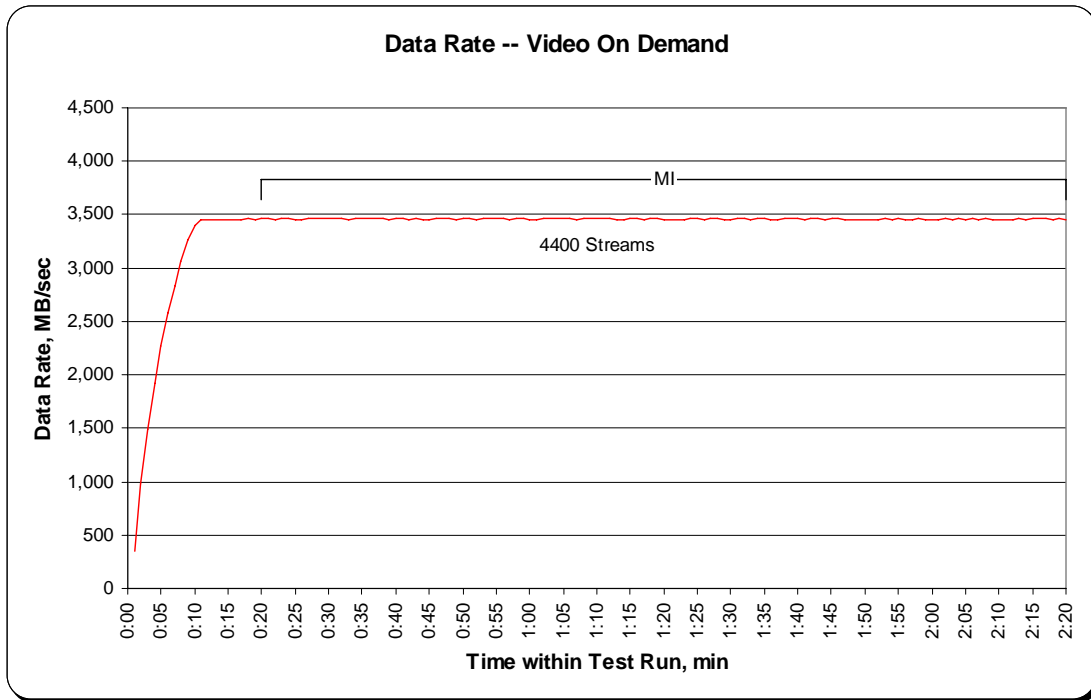
Time	DR	DR/S	RT	MRT
0:20:00	3,641.64	0.83	21.11	332.95
0:20:00	3,823.06	0.87	22.11	348.80
1:20:00	3,823.06	0.87	22.11	348.80
2:20:00	3,823.06	0.87	22.11	348.80
2:20:00	3,641.64	0.83	21.11	332.95
RU length:	0:20:00		156	
MI length:	2:00:00	36	157	
Average:	3,460.23	0.79	20.10	317.09

Video on Demand Delivery Test – TEST RUN DATA BY INTERVAL

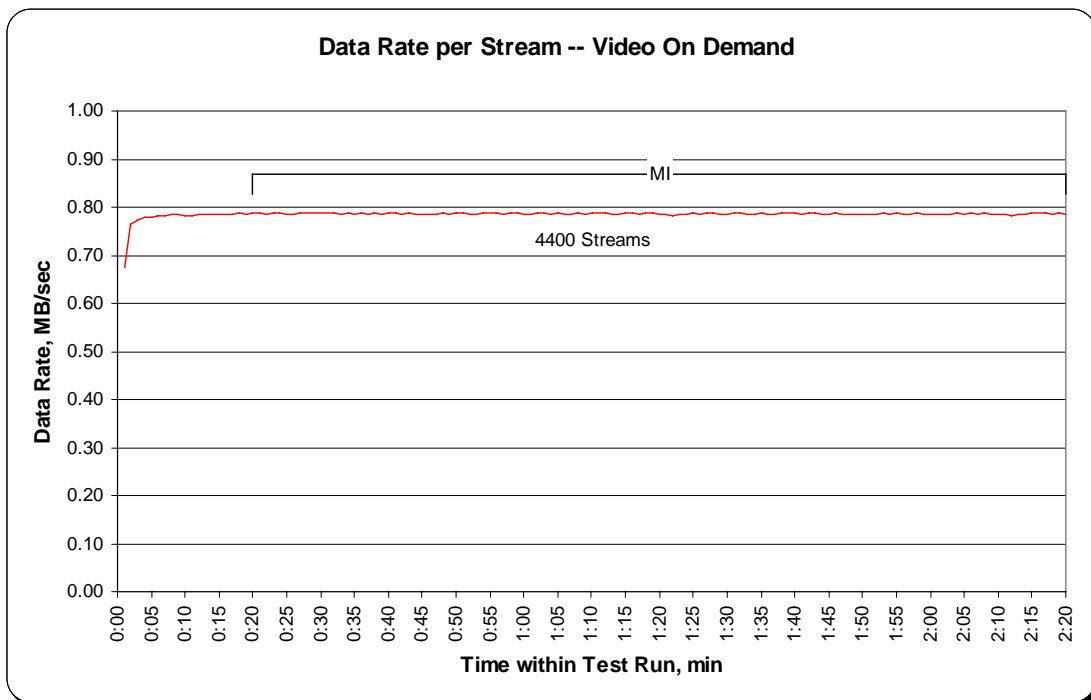
The SPC-2 Video on Demand Delivery Test Run data is contained in the table that appears on the next page. That table is followed by graphs illustrating the average Data Rate and average Data Rate per Stream produced by the same Test Runs. The table and graphs present the data at sixty second intervals.

TR1 Test Run Sequence Time	4400 Streams				TR1 Test Run Sequence Time	4400 Streams				TR1 Test Run Sequence Time	4400 Streams			
	Data Rate, MB/sec	Data Rate / Stream, MB/sec	Response Time, ms	Maximum Response Time, ms		Data Rate, MB/sec	Data Rate / Stream, MB/sec	Response Time, ms	Maximum Response Time, ms		Data Rate, MB/sec	Data Rate / Stream, MB/sec	Response Time, ms	Maximum Response Time, ms
0:01:00	343.45	0.67	2.74	109.50	0:51:00	3,470.05	0.79	20.82	385.69	1:41:00	3,450.97	0.78	19.46	255.43
0:02:00	975.93	0.76	4.34	149.78	0:52:00	3,455.38	0.79	19.81	322.02	1:42:00	3,468.46	0.79	20.33	289.33
0:03:00	1,488.91	0.77	4.12	132.21	0:53:00	3,459.70	0.79	19.14	234.66	1:43:00	3,463.68	0.79	23.15	474.41
0:04:00	1,921.74	0.78	5.15	165.61	0:54:00	3,461.23	0.79	19.59	241.56	1:44:00	3,456.13	0.79	21.82	410.77
0:05:00	2,270.39	0.78	10.39	155.49	0:55:00	3,461.78	0.79	19.52	351.23	1:45:00	3,460.30	0.79	21.78	413.47
0:06:00	2,580.98	0.78	14.87	226.50	0:56:00	3,465.88	0.79	21.04	418.64	1:46:00	3,465.79	0.79	23.60	440.82
0:07:00	2,837.23	0.78	15.42	157.63	0:57:00	3,449.91	0.78	21.33	440.42	1:47:00	3,454.23	0.79	24.54	516.35
0:08:00	3,063.57	0.78	16.61	188.01	0:58:00	3,463.33	0.79	20.63	391.51	1:48:00	3,456.76	0.79	26.00	606.05
0:09:00	3,262.75	0.78	17.23	144.04	0:59:00	3,468.00	0.79	20.17	336.85	1:49:00	3,448.54	0.78	26.18	537.37
0:10:00	3,404.90	0.78	18.46	176.39	1:00:00	3,453.35	0.78	20.05	325.37	1:50:00	3,452.54	0.78	25.55	490.23
0:11:00	3,447.75	0.78	19.95	317.60	1:01:00	3,458.94	0.79	20.75	384.40	1:51:00	3,451.14	0.78	23.03	474.84
0:12:00	3,454.43	0.79	19.81	293.48	1:02:00	3,463.24	0.79	19.19	245.08	1:52:00	3,458.24	0.79	20.69	403.64
0:13:00	3,457.25	0.79	21.58	350.22	1:03:00	3,466.89	0.79	20.95	317.50	1:53:00	3,463.90	0.79	20.11	345.10
0:14:00	3,457.40	0.79	20.69	273.03	1:04:00	3,459.65	0.79	19.10	204.21	1:54:00	3,457.33	0.79	20.49	395.94
0:15:00	3,455.06	0.79	22.27	396.40	1:05:00	3,463.88	0.79	19.33	215.87	1:55:00	3,462.16	0.79	20.94	371.00
0:16:00	3,455.38	0.79	26.01	548.23	1:06:00	3,459.77	0.79	19.24	222.63	1:56:00	3,455.67	0.79	20.90	409.10
0:17:00	3,458.70	0.79	25.10	512.25	1:07:00	3,448.08	0.78	20.63	311.38	1:57:00	3,451.24	0.78	18.63	304.21
0:18:00	3,463.59	0.79	24.24	418.00	1:08:00	3,461.64	0.79	19.20	223.68	1:58:00	3,462.10	0.79	18.99	330.14
0:19:00	3,453.56	0.78	22.74	354.44	1:09:00	3,459.72	0.79	19.58	271.99	1:59:00	3,457.74	0.79	18.67	324.07
0:20:00	3,463.63	0.79	21.03	306.27	1:10:00	3,462.65	0.79	19.56	255.19	2:00:00	3,458.90	0.79	18.49	309.59
0:21:00	3,468.01	0.79	21.60	303.80	1:11:00	3,462.32	0.79	20.84	329.60	2:01:00	3,455.54	0.79	19.25	330.64
0:22:00	3,454.83	0.79	21.90	389.60	1:12:00	3,460.93	0.79	19.93	303.85	2:02:00	3,459.17	0.79	19.22	287.15
0:23:00	3,467.79	0.79	21.69	381.06	1:13:00	3,458.61	0.79	19.39	261.01	2:03:00	3,456.28	0.79	19.74	316.32
0:24:00	3,462.99	0.79	21.68	390.34	1:14:00	3,453.38	0.78	18.61	222.14	2:04:00	3,463.22	0.79	20.75	367.65
0:25:00	3,455.83	0.79	20.59	366.40	1:15:00	3,462.64	0.79	18.86	241.15	2:05:00	3,451.67	0.78	22.19	489.85
0:26:00	3,458.59	0.79	19.07	275.05	1:16:00	3,460.93	0.79	19.09	261.36	2:06:00	3,463.09	0.79	22.52	544.00
0:27:00	3,470.22	0.79	19.50	334.09	1:17:00	3,452.87	0.78	18.84	215.49	2:07:00	3,458.86	0.79	21.57	436.91
0:28:00	3,467.68	0.79	19.83	304.89	1:18:00	3,461.74	0.79	18.31	171.50	2:08:00	3,462.32	0.79	20.18	335.38
0:29:00	3,467.30	0.79	19.48	299.29	1:19:00	3,466.51	0.79	19.21	278.13	2:09:00	3,456.85	0.79	19.50	259.85
0:30:00	3,466.25	0.79	19.70	336.61	1:20:00	3,458.52	0.79	19.08	268.76	2:10:00	3,453.96	0.78	18.89	248.94
0:31:00	3,465.95	0.79	19.11	371.68	1:21:00	3,453.41	0.78	19.96	329.69	2:11:00	3,451.38	0.78	18.86	250.34
0:32:00	3,464.25	0.79	19.15	348.47	1:22:00	3,447.54	0.78	19.00	224.55	2:12:00	3,447.30	0.78	18.91	218.72
0:33:00	3,450.93	0.78	20.03	451.31	1:23:00	3,455.87	0.79	19.22	280.09	2:13:00	3,459.03	0.79	19.03	218.21
0:34:00	3,470.88	0.79	19.39	288.52	1:24:00	3,460.42	0.79	18.72	218.05	2:14:00	3,452.95	0.78	20.09	283.71
0:35:00	3,460.07	0.79	18.72	318.95	1:25:00	3,466.55	0.79	19.43	280.05	2:15:00	3,461.11	0.79	20.83	366.17
0:36:00	3,463.10	0.79	18.89	220.03	1:26:00	3,456.58	0.79	18.50	206.22	2:16:00	3,464.48	0.79	21.41	449.24
0:37:00	3,460.26	0.79	19.05	226.69	1:27:00	3,462.53	0.79	19.14	260.63	2:17:00	3,465.43	0.79	19.66	320.75
0:38:00	3,466.10	0.79	19.00	197.73	1:28:00	3,461.46	0.79	19.02	221.65	2:18:00	3,454.01	0.79	18.91	257.60
0:39:00	3,454.08	0.79	19.47	267.34	1:29:00	3,456.45	0.79	19.10	242.48	2:19:00	3,460.96	0.79	18.62	208.96
0:40:00	3,466.46	0.79	19.40	235.62	1:30:00	3,455.60	0.79	18.61	209.31	2:20:00	3,455.44	0.79	19.28	266.73
0:41:00	3,463.25	0.79	19.83	310.09	1:31:00	3,462.44	0.79	19.28	243.85					
0:42:00	3,457.88	0.79	19.81	273.66	1:32:00	3,463.04	0.79	20.33	326.34					
0:43:00	3,465.86	0.79	20.79	371.99	1:33:00	3,454.38	0.79	19.24	243.46					
0:44:00	3,454.81	0.79	21.79	452.06	1:34:00	3,459.27	0.79	19.54	287.36					
0:45:00	3,454.47	0.79	21.28	416.74	1:35:00	3,471.20	0.79	18.99	285.99					
0:46:00	3,459.26	0.79	21.03	418.09	1:36:00	3,450.31	0.78	19.06	237.52					
0:47:00	3,458.99	0.79	19.43	300.22	1:37:00	3,454.12	0.79	18.94	197.22					
0:48:00	3,466.20	0.79	19.69	308.71	1:38:00	3,464.27	0.79	19.29	263.19					
0:49:00	3,456.31	0.79	20.79	336.94	1:39:00	3,466.57	0.79	19.82	280.14					
0:50:00	3,462.03	0.79	21.64	411.23	1:40:00	3,461.41	0.79	19.75	291.57					

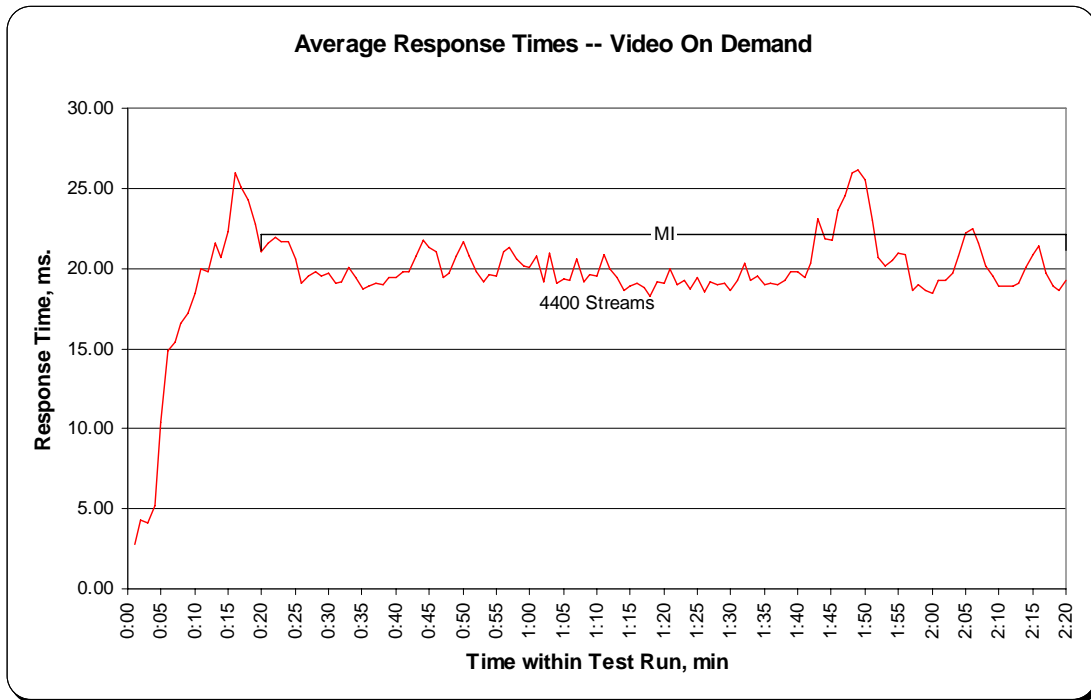
SPC-2 Video on Demand Delivery Average Data Rate Graph



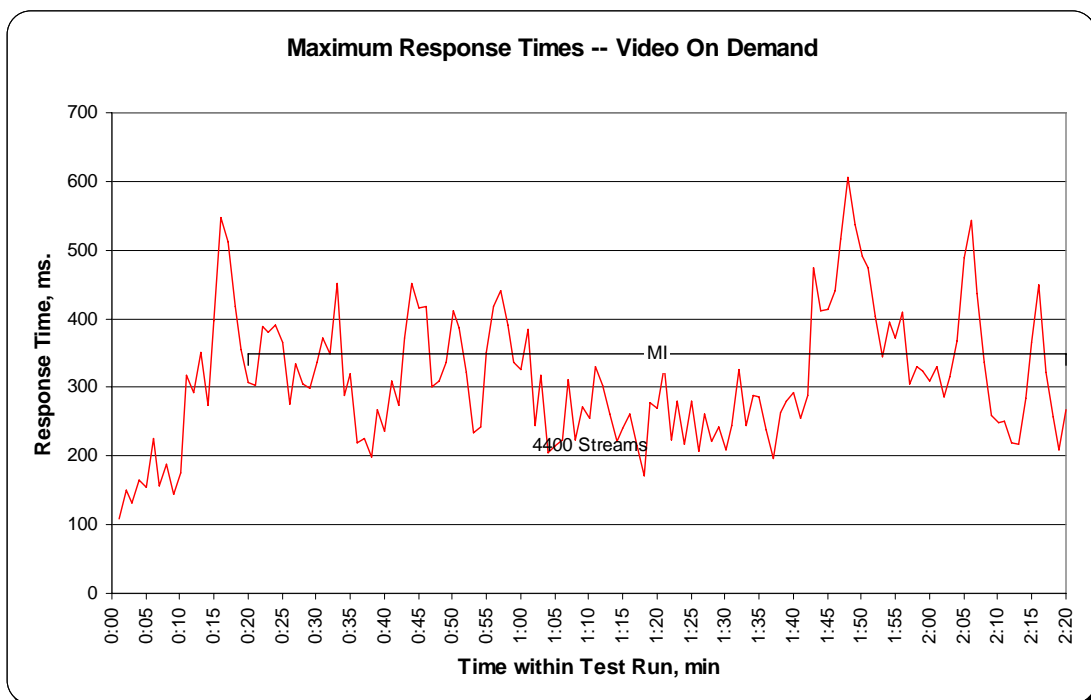
SPC-2 Video on Demand Delivery Average Data Rate per Stream Graph



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 106.

Data Persistence Test Results File

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

[Persistence 1 Test Results File](#)

[Persistence 2 Test Results File](#)

Data Persistence Test Results

Data Persistence Test Results	
Data Persistence Test Number: N	
Total Number of Logical Blocks Written	621,971
Total Number of Logical Blocks Re-referenced	19,257
Total Number of Logical Blocks Verified	621,971
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 IBM TotalStorage® SAN Volume Controller 3.1, as documented in this SPC-2 Full Disclosure Report became available for customer purchase and shipment on November 18, 2005.

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 IBM TotalStorage® SAN Volume Controller 3.1.

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 gibibyte (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:

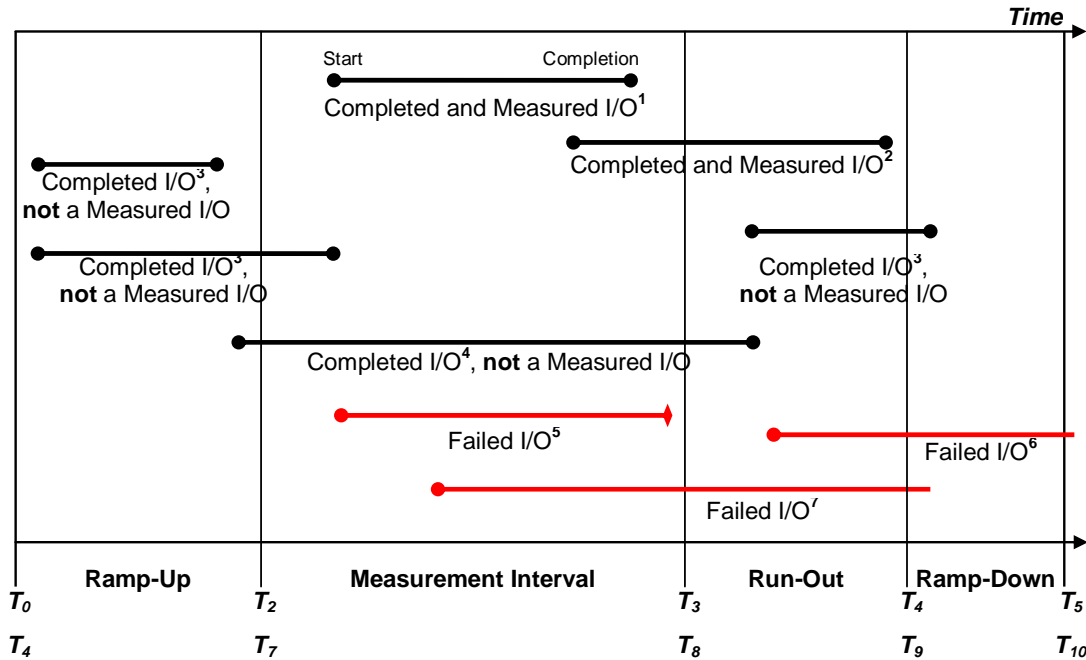
- Test Run 1: Maximum number of Streams, which is selected by the Test Sponsor
- Test Run 2: 50% of the maximum number of Streams used in Test Run 1.
- Test Run 3: 25% of the maximum number of Streams used in Test Run 1.
- Test Run 4: 12.5% of the maximum number of Streams used in Test Run 1.
- Test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

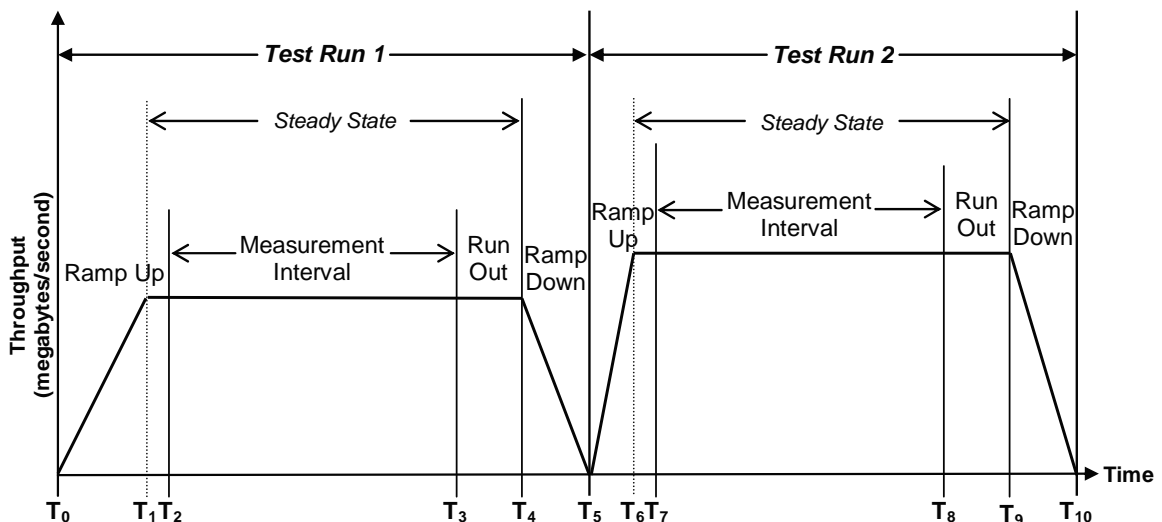
Transfer Size: The Transfer Size parameter specifies the number of bytes in KiB to transfer. (*Clause 3.4.7 of the SPC-2 Benchmark Specification*)

I/O Completion Types



Completed and Measured I/O¹: I/O started and completed within the Measurement Interval.
Completed and Measured I/O²: I/O started within the Measurement Interval and completed within Ramp Down.
Completed I/O³: I/O started before or after the Measurement Interval – not measured.
Completed I/O⁴: I/O started before and completed after the Measurement Interval – not measured.
Failed I/O⁵: Signaled as failed by System Software.
Failed I/O⁶: I/O did not complete prior to the end of Ramp-Down.
Failed I/O⁷: I/O did not complete prior to the end of Run-Out.

SPC-2 Test Run Components



APPENDIX B: CUSTOMER TUNABLE PARAMETERS AND OPTIONS

The AIX queue depth was set to 128 via the `chgdepth.sh` script:

The contents of the script is contained in “Appendix C: Tested Storage Configuration (TSC) Creation” on page 89.

APPENDIX C: TESTED STORAGE CONFIGURATION (TSC) CREATION

Create RAID-10 Arrays (mDisks)

Lay out each of the 24 FASTT 600's as four RAID-10 arrays (plus 4 spares). This was done using the following three scripts; the first is the main routine, the others are subroutines: `defineRAID10seq.bat`, `defineRAID10seq_a.script`, and `defineRAID10seq_b.script`. These scripts create the desired 96 LUN's in four groups of 24, based upon the switch to which the preferred path attaches. After this step, the resulting physical storage appears to the SVC as mDisks.

defineRAID10seq.bat

```
SMcli -n "A1" -f c:\DS4000_scripts\defineRAID10seq_a.script
SMcli -n "A2" -f c:\DS4000_scripts\defineRAID10seq_a.script
SMcli -n "A3" -f c:\DS4000_scripts\defineRAID10seq_a.script
SMcli -n "A4" -f c:\DS4000_scripts\defineRAID10seq_a.script
SMcli -n "A5" -f c:\DS4000_scripts\defineRAID10seq_a.script
SMcli -n "A6" -f c:\DS4000_scripts\defineRAID10seq_a.script
SMcli -n "B1" -f c:\DS4000_scripts\defineRAID10seq_b.script
SMcli -n "B2" -f c:\DS4000_scripts\defineRAID10seq_b.script
SMcli -n "B3" -f c:\DS4000_scripts\defineRAID10seq_b.script
SMcli -n "B4" -f c:\DS4000_scripts\defineRAID10seq_b.script
SMcli -n "B5" -f c:\DS4000_scripts\defineRAID10seq_b.script
SMcli -n "B6" -f c:\DS4000_scripts\defineRAID10seq_b.script
ping 192.168.1.31
@rem ping local address for short delay
plink perfclus_local svctask detectmdisk

SMcli -n "A1" -f c:\DS4000_scripts\defineRAID10seq_b.script
SMcli -n "A2" -f c:\DS4000_scripts\defineRAID10seq_b.script
SMcli -n "A3" -f c:\DS4000_scripts\defineRAID10seq_b.script
SMcli -n "A4" -f c:\DS4000_scripts\defineRAID10seq_b.script
SMcli -n "A5" -f c:\DS4000_scripts\defineRAID10seq_b.script
SMcli -n "A6" -f c:\DS4000_scripts\defineRAID10seq_b.script
SMcli -n "B1" -f c:\DS4000_scripts\defineRAID10seq_a.script
SMcli -n "B2" -f c:\DS4000_scripts\defineRAID10seq_a.script
SMcli -n "B3" -f c:\DS4000_scripts\defineRAID10seq_a.script
SMcli -n "B4" -f c:\DS4000_scripts\defineRAID10seq_a.script
SMcli -n "B5" -f c:\DS4000_scripts\defineRAID10seq_a.script
SMcli -n "B6" -f c:\DS4000_scripts\defineRAID10seq_a.script
ping 192.168.1.31
plink perfclus_local svctask detectmdisk

SMcli -n "C1" -f c:\DS4000_scripts\defineRAID10seq_a.script
SMcli -n "C2" -f c:\DS4000_scripts\defineRAID10seq_a.script
SMcli -n "C3" -f c:\DS4000_scripts\defineRAID10seq_a.script
SMcli -n "C4" -f c:\DS4000_scripts\defineRAID10seq_a.script
SMcli -n "C5" -f c:\DS4000_scripts\defineRAID10seq_a.script
SMcli -n "C6" -f c:\DS4000_scripts\defineRAID10seq_a.script
SMcli -n "D1" -f c:\DS4000_scripts\defineRAID10seq_b.script
SMcli -n "D2" -f c:\DS4000_scripts\defineRAID10seq_b.script
SMcli -n "D3" -f c:\DS4000_scripts\defineRAID10seq_b.script
SMcli -n "D4" -f c:\DS4000_scripts\defineRAID10seq_b.script
SMcli -n "D5" -f c:\DS4000_scripts\defineRAID10seq_b.script
SMcli -n "D6" -f c:\DS4000_scripts\defineRAID10seq_b.script
ping 192.168.1.31
plink perfclus_local svctask detectmdisk

SMcli -n "C1" -f c:\DS4000_scripts\defineRAID10seq_b.script
```

```
SMcli -n "C2" -f c:\DS4000_scripts\defineRAID10seq_b.script
SMcli -n "C3" -f c:\DS4000_scripts\defineRAID10seq_b.script
SMcli -n "C4" -f c:\DS4000_scripts\defineRAID10seq_b.script
SMcli -n "C5" -f c:\DS4000_scripts\defineRAID10seq_b.script
SMcli -n "C6" -f c:\DS4000_scripts\defineRAID10seq_b.script
SMcli -n "D1" -f c:\DS4000_scripts\defineRAID10seq_a.script
SMcli -n "D2" -f c:\DS4000_scripts\defineRAID10seq_a.script
SMcli -n "D3" -f c:\DS4000_scripts\defineRAID10seq_a.script
SMcli -n "D4" -f c:\DS4000_scripts\defineRAID10seq_a.script
SMcli -n "D5" -f c:\DS4000_scripts\defineRAID10seq_a.script
SMcli -n "D6" -f c:\DS4000_scripts\defineRAID10seq_a.script
ping 192.168.1.31
plink perfclus_local svctask detectmdisk
```

defineRAID10seq_a.script

```
set storageSubsystem defaultHostType=12;
set drives[0,1 0,14 1,1 1,14] hotSpare=TRUE;

create logicalDrive drives[0,2 0,3 0,4 1,2 1,3 1,4]
RAIDLevel=1
segmentSize=256
userLabel="1"
capacity=213487104kb
owner=a;

create logicalDrive drives[0,5 0,6 0,7 1,5 1,6 1,7]
RAIDLevel=1
segmentSize=256
userLabel="3"
capacity=213487104kb
owner=a;

set allLogicalDrives mirrorEnabled=TRUE writeCacheEnabled=TRUE
cacheWithoutBatteryEnabled=FALSE readAheadMultiplier=1;
```

defineRAID10seq_b.script

```
set storageSubsystem defaultHostType=12;
set drives[0,1 0,14 1,1 1,14] hotSpare=TRUE;

create logicalDrive drives[0,8 0,9 0,10 1,8 1,9 1,10]
RAIDLevel=1
segmentSize=256
userLabel="2"
capacity=213487104kb
owner=b;

create logicalDrive drives[0,11 0,12 0,13 1,11 1,12 1,13]
RAIDLevel=1
segmentSize=256
userLabel="4"
capacity=213487104kb
owner=b;

set allLogicalDrives mirrorEnabled=TRUE writeCacheEnabled=TRUE
cacheWithoutBatteryEnabled=FALSE readAheadMultiplier=1;
```

Define the mDisk Group

Define a pool of mDisk storage within the SVC. This is referred to as an mDisk group.

mkgroup_seq.py

```
import os

list="md0"

for i in range(1,96): list=list + ":md" + str(i)

os.system('plink perfclus_local svctask mkmdiskgrp -name thebiggroup -ext 512 -mdisk
' + list)
```

Define the vDisks (LUNs)

Define 96 LUN's (vDisks) that will be presented to the Host System.

mk96vd_8node_seq.py

```
import os

outfile = 'mk96vd_8node_seq.tmp'

i=0
iogrp=0
lode=1
f = open(outfile, 'a')

for i in range(96):
    j=((i/3)%4)*24 + (i/12)*3 + i%3
    print ("i=" + str(i) + " j=" + str(j))
    #create sequential mode vdisk, size 200 GB
    f.write('svctask mkvdisk -vtype seq -mdisk md' + str(j) +
        ' -size 200 -unit gb -mdiskgrp thebiggroup -iogrp io_grp' + str(iogrp) +
        ' -name vd' + str(i) + ' -node lode' + str(lode) + '\n')
    if i%24 == 23: iogrp += 1
    if i%12 == 11: lode += 1
f.close()

os.system('plink perfclus_local -m ' + outfile)
os.remove(outfile)
```

Define vDisk Paths

For each vDisk seen by the host, define two paths by which it can be accessed. One path supports access via the "preferred" SVC node; the other via the "alternate" SVC node. The specific mapping which we used was chosen in order to balance the use of the available SVC ports (each port is assigned an equal number of vDisks). This step completes the configuration process on the SVC.

The above is accomplished by the following two scripts. The `mkhost_perfsh1c.bat` script defines the paths by associated wwn's with them, while the `mapfcsgroups_perfsh1c.py` script establishes the associations between paths and vDisks, both preferred and alternate.

mkhost_perfshlc.bat

```
plink perfclus_local svctask mkhost -force -name C0 -hbawwpn 10000000C945CF5D
plink perfclus_local svctask mkhost -force -name C1 -hbawwpn 10000000C945CDE0
plink perfclus_local svctask mkhost -force -name C2 -hbawwpn 10000000C949053E
plink perfclus_local svctask mkhost -force -name C3 -hbawwpn 10000000C9490139
plink perfclus_local svctask mkhost -force -name C4 -hbawwpn 10000000C94905CE
plink perfclus_local svctask mkhost -force -name C5 -hbawwpn 10000000C9490403
plink perfclus_local svctask mkhost -force -name C6 -hbawwpn 10000000C945D3BE
plink perfclus_local svctask mkhost -force -name C7 -hbawwpn 10000000C9490127
plink perfclus_local svctask mkhost -force -name C8 -hbawwpn 10000000C944C8D6
plink perfclus_local svctask mkhost -force -name C9 -hbawwpn 10000000C944966D
plink perfclus_local svctask mkhost -force -name C10 -hbawwpn 10000000C9448622
plink perfclus_local svctask mkhost -force -name C11 -hbawwpn 10000000C944C844
plink perfclus_local svctask mkhost -force -name C12 -hbawwpn 10000000C944A12E
plink perfclus_local svctask mkhost -force -name C13 -hbawwpn 10000000C944DD47
plink perfclus_local svctask mkhost -force -name C14 -hbawwpn 10000000C944D20F
plink perfclus_local svctask mkhost -force -name C15 -hbawwpn 10000000C9449CA2
plink perfclus_local svctask mkhost -force -name C16 -hbawwpn 10000000C9449D76
plink perfclus_local svctask mkhost -force -name C17 -hbawwpn 10000000C94901F1
plink perfclus_local svctask mkhost -force -name C18 -hbawwpn 10000000C944E72F
plink perfclus_local svctask mkhost -force -name C19 -hbawwpn 10000000C9490542
plink perfclus_local svctask mkhost -force -name C20 -hbawwpn 10000000C9449CE4
plink perfclus_local svctask mkhost -force -name C21 -hbawwpn 10000000C944E02D
plink perfclus_local svctask mkhost -force -name C22 -hbawwpn 10000000C94904C6
plink perfclus_local svctask mkhost -force -name C23 -hbawwpn 10000000C94905D7
plink perfclus_local svctask mkhost -force -name C24 -hbawwpn 10000000C945CCBA
plink perfclus_local svctask mkhost -force -name C25 -hbawwpn 10000000C945D10F
plink perfclus_local svctask mkhost -force -name C26 -hbawwpn 10000000C94902AE
plink perfclus_local svctask mkhost -force -name C27 -hbawwpn 10000000C945CDCB
plink perfclus_local svctask mkhost -force -name C28 -hbawwpn 10000000C9490274
plink perfclus_local svctask mkhost -force -name C29 -hbawwpn 10000000C944DA79
plink perfclus_local svctask mkhost -force -name C30 -hbawwpn 10000000C945CDD4
plink perfclus_local svctask mkhost -force -name C31 -hbawwpn 10000000C945CD69=
```

mapfcsgroups_pershlc.py

```
#uses map4x4 function to map each vdisk to two fcs's.

import os

def map4x4(fcslist,nodegrp,switch):
# Maps a set of four host path names (parm 1) to twelve vdisks. The twelve vdisks
# are identified based upon parm2=1 or 2 and parm3=0, 1, 2, or 3. The routine
# should be called twice with the same parm2 and parm3 but an alternate set
# of fcs's. The first set of fcs's should connect to the switch identified by parm 3.
    n=1
    for fcs in fcslist:
        for k in range(3):
            i=(7*n)%12
            j=12*(nodegrp-1) + 3*switch + 24*(i/3) + i%3
            f.write('svctask mkvdiskhostmap -force -host ' + fcs + ' vd' + str(j) + '\n')
            print 'mapping ' + fcs + ' to vd' + str(j)
            n=(n+1)%12

outfile = 'mapfcsgroups.tmp'

# The fcs's are organized
# into groups of four, with two groups in each switch.
```

```
fcsarray = [9,11,13,15,2,4,6,0, \
            3,5,7,1,24,26,28,30, \
            25,27,29,31,16,18,20,22, \
            17,19,21,23,8,10,12,14]

fcsarray = ['C' + str(v) for v in fcsarray]

f = open(outfile, 'w')

for s in [0,1,2,3]:
    for nodegroup in [1,2]:
        i=8*s +4*(nodegroup-1)
        fcsgroup = fcsarray[i:i+4]
        map4x4(fcsgroup, nodegroup, s)
        as=(s/2)*2+(1-s%2)
        i=8*as + 4*(2-nodegroup)
        fcsgroup = fcsarray[i:i+4]
        map4x4(fcsgroup, nodegroup, s)
f.close()

os.system('plink perfclus_local -m ' + outfile)
os.remove(outfile)
```

Discover each vDisk

From the AIX host, discover the available vDisks, Each available vDisk now appears to AIX as an MPIO-enabled hdisk.

cfg32.sh

```
#discovers 32 host paths numbered fcs0 through fcs31
i=0
while [[ $i -le 31 ]]
do
echo "configuring fcs$i"
cfgmgr -vl fcs$i > fcs$i.cfg
i=$((i+1))
done
```

Increase hdisk queue depth

Increase the queue depth of all hdisks to 128. This step completes the configuration process on AIX; the resulting MPIO-enabled hdisks are used to comprise the ASU storage for the test.

chqdepth.sh

```
#changes the queue depth of each hdisk in hlist
h=4
while [[ $h -le 99 ]]
do
chdev -l hdisk$h -a queue_depth=128
let h="h+1"
done
```

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

Large File Processing Test (“lfp.cfg”)

```
maxlatestart=0
host=localhost , jvms=8 , maxstreams=200
reportinginterval=5
segmentlength=512m
sd=default , host=localhost , size=200g
sd=sd1 , lun=/dev/rhdisk4
sd=sd2 , lun=/dev/rhdisk5
sd=sd3 , lun=/dev/rhdisk6
sd=sd4 , lun=/dev/rhdisk7
sd=sd5 , lun=/dev/rhdisk8
sd=sd6 , lun=/dev/rhdisk9
sd=sd7 , lun=/dev/rhdisk10
sd=sd8 , lun=/dev/rhdisk11
sd=sd9 , lun=/dev/rhdisk12
sd=sd10 , lun=/dev/rhdisk13
sd=sd11 , lun=/dev/rhdisk14
sd=sd12 , lun=/dev/rhdisk15
sd=sd13 , lun=/dev/rhdisk16
sd=sd14 , lun=/dev/rhdisk17
sd=sd15 , lun=/dev/rhdisk18
sd=sd16 , lun=/dev/rhdisk19
sd=sd17 , lun=/dev/rhdisk20
sd=sd18 , lun=/dev/rhdisk21
sd=sd19 , lun=/dev/rhdisk22
sd=sd20 , lun=/dev/rhdisk23
sd=sd21 , lun=/dev/rhdisk24
sd=sd22 , lun=/dev/rhdisk25
sd=sd23 , lun=/dev/rhdisk26
sd=sd24 , lun=/dev/rhdisk27
sd=sd25 , lun=/dev/rhdisk28
sd=sd26 , lun=/dev/rhdisk29
sd=sd27 , lun=/dev/rhdisk30
sd=sd28 , lun=/dev/rhdisk31
sd=sd29 , lun=/dev/rhdisk32
sd=sd30 , lun=/dev/rhdisk33
sd=sd31 , lun=/dev/rhdisk34
sd=sd32 , lun=/dev/rhdisk35
sd=sd33 , lun=/dev/rhdisk36
sd=sd34 , lun=/dev/rhdisk37
sd=sd35 , lun=/dev/rhdisk38
sd=sd36 , lun=/dev/rhdisk39
sd=sd37 , lun=/dev/rhdisk40
sd=sd38 , lun=/dev/rhdisk41
sd=sd39 , lun=/dev/rhdisk42
sd=sd40 , lun=/dev/rhdisk43
sd=sd41 , lun=/dev/rhdisk44
sd=sd42 , lun=/dev/rhdisk45
sd=sd43 , lun=/dev/rhdisk46
sd=sd44 , lun=/dev/rhdisk47
sd=sd45 , lun=/dev/rhdisk48
sd=sd46 , lun=/dev/rhdisk49
sd=sd47 , lun=/dev/rhdisk50
sd=sd48 , lun=/dev/rhdisk51
sd=sd49 , lun=/dev/rhdisk52
sd=sd50 , lun=/dev/rhdisk53
```

```
sd=sd51,lun=/dev/rhdisk54
sd=sd52,lun=/dev/rhdisk55
sd=sd53,lun=/dev/rhdisk56
sd=sd54,lun=/dev/rhdisk57
sd=sd55,lun=/dev/rhdisk58
sd=sd56,lun=/dev/rhdisk59
sd=sd57,lun=/dev/rhdisk60
sd=sd58,lun=/dev/rhdisk61
sd=sd59,lun=/dev/rhdisk62
sd=sd60,lun=/dev/rhdisk63
sd=sd61,lun=/dev/rhdisk64
sd=sd62,lun=/dev/rhdisk65
sd=sd63,lun=/dev/rhdisk66
sd=sd64,lun=/dev/rhdisk67
sd=sd65,lun=/dev/rhdisk68
sd=sd66,lun=/dev/rhdisk69
sd=sd67,lun=/dev/rhdisk70
sd=sd68,lun=/dev/rhdisk71
sd=sd69,lun=/dev/rhdisk72
sd=sd70,lun=/dev/rhdisk73
sd=sd71,lun=/dev/rhdisk74
sd=sd72,lun=/dev/rhdisk75
sd=sd73,lun=/dev/rhdisk76
sd=sd74,lun=/dev/rhdisk77
sd=sd75,lun=/dev/rhdisk78
sd=sd76,lun=/dev/rhdisk79
sd=sd77,lun=/dev/rhdisk80
sd=sd78,lun=/dev/rhdisk81
sd=sd79,lun=/dev/rhdisk82
sd=sd80,lun=/dev/rhdisk83
sd=sd81,lun=/dev/rhdisk84
sd=sd82,lun=/dev/rhdisk85
sd=sd83,lun=/dev/rhdisk86
sd=sd84,lun=/dev/rhdisk87
sd=sd85,lun=/dev/rhdisk88
sd=sd86,lun=/dev/rhdisk89
sd=sd87,lun=/dev/rhdisk90
sd=sd88,lun=/dev/rhdisk91
sd=sd89,lun=/dev/rhdisk92
sd=sd90,lun=/dev/rhdisk93
sd=sd91,lun=/dev/rhdisk94
sd=sd92,lun=/dev/rhdisk95
sd=sd93,lun=/dev/rhdisk96
sd=sd94,lun=/dev/rhdisk97
sd=sd95,lun=/dev/rhdisk98
sd=sd96,lun=/dev/rhdisk99
rd=default,rampup=180,measurement=180,runout=45,rampdown=15,buffers=1,periods=90
rd=default,rdpct=0,xfersize=1024k,streams=96
rd=TR1_SPC-2-FP2.0,streams=96
rd=TR2_SPC-2-FP2.0,streams=48
rd=TR3_SPC-2-FP2.0,streams=24
rd=TR4_SPC-2-FP2.0,streams=12
rd=TR5_SPC-2-FP2.0,streams=1
rd=default,rdpct=0,xfersize=256k,streams=96
rd=TR6_SPC-2-FP2.0,streams=96
rd=TR7_SPC-2-FP2.0,streams=48
rd=TR8_SPC-2-FP2.0,streams=24
rd=TR9_SPC-2-FP2.0,streams=12
rd=TR10_SPC-2-FP2.0,streams=1
rd=default,rdpct=50,xfersize=1024k,streams=96
rd=TR11_SPC-2-FP2.0,streams=96
rd=TR12_SPC-2-FP2.0,streams=48
rd=TR13_SPC-2-FP2.0,streams=24
```

```
rd=TR14_SPC-2-FP2.0,streams=12
rd=TR15_SPC-2-FP2.0,streams=1
rd=default,rdpct=50,xfersize=256k,streams=96
rd=TR16_SPC-2-FP2.0,streams=96
rd=TR17_SPC-2-FP2.0,streams=48
rd=TR18_SPC-2-FP2.0,streams=24
rd=TR19_SPC-2-FP2.0,streams=12
rd=TR20_SPC-2-FP2.0,streams=1
rd=default,rdpct=100,xfersize=1024k,streams=96
rd=TR21_SPC-2-FP2.0,streams=96
rd=TR22_SPC-2-FP2.0,streams=48
rd=TR23_SPC-2-FP2.0,streams=24
rd=TR24_SPC-2-FP2.0,streams=12
rd=TR25_SPC-2-FP2.0,streams=1
rd=default,rdpct=100,xfersize=256k,streams=96
rd=TR26_SPC-2-FP2.0,streams=96
rd=TR27_SPC-2-FP2.0,streams=48
rd=TR28_SPC-2-FP2.0,streams=24
rd=TR29_SPC-2-FP2.0,streams=12
rd=TR30_SPC-2-FP2.0,streams=1
```


Large Database Query Test (“*ldq.cfg*”)

```
maxlatestart=0
host=localhost,jvms=6,maxstreams=200
reportinginterval=5
segmentlength=512m
sd=default,host=localhost,size=200g
sd=sd1,lun=/dev/rhdisk4
sd=sd2,lun=/dev/rhdisk5
sd=sd3,lun=/dev/rhdisk6
sd=sd4,lun=/dev/rhdisk7
sd=sd5,lun=/dev/rhdisk8
sd=sd6,lun=/dev/rhdisk9
sd=sd7,lun=/dev/rhdisk10
sd=sd8,lun=/dev/rhdisk11
sd=sd9,lun=/dev/rhdisk12
sd=sd10,lun=/dev/rhdisk13
sd=sd11,lun=/dev/rhdisk14
sd=sd12,lun=/dev/rhdisk15
sd=sd13,lun=/dev/rhdisk16
sd=sd14,lun=/dev/rhdisk17
sd=sd15,lun=/dev/rhdisk18
sd=sd16,lun=/dev/rhdisk19
sd=sd17,lun=/dev/rhdisk20
sd=sd18,lun=/dev/rhdisk21
sd=sd19,lun=/dev/rhdisk22
sd=sd20,lun=/dev/rhdisk23
sd=sd21,lun=/dev/rhdisk24
sd=sd22,lun=/dev/rhdisk25
sd=sd23,lun=/dev/rhdisk26
sd=sd24,lun=/dev/rhdisk27
sd=sd25,lun=/dev/rhdisk28
sd=sd26,lun=/dev/rhdisk29
sd=sd27,lun=/dev/rhdisk30
sd=sd28,lun=/dev/rhdisk31
sd=sd29,lun=/dev/rhdisk32
sd=sd30,lun=/dev/rhdisk33
sd=sd31,lun=/dev/rhdisk34
sd=sd32,lun=/dev/rhdisk35
sd=sd33,lun=/dev/rhdisk36
sd=sd34,lun=/dev/rhdisk37
sd=sd35,lun=/dev/rhdisk38
sd=sd36,lun=/dev/rhdisk39
sd=sd37,lun=/dev/rhdisk40
sd=sd38,lun=/dev/rhdisk41
sd=sd39,lun=/dev/rhdisk42
sd=sd40,lun=/dev/rhdisk43
sd=sd41,lun=/dev/rhdisk44
sd=sd42,lun=/dev/rhdisk45
sd=sd43,lun=/dev/rhdisk46
sd=sd44,lun=/dev/rhdisk47
sd=sd45,lun=/dev/rhdisk48
sd=sd46,lun=/dev/rhdisk49
sd=sd47,lun=/dev/rhdisk50
sd=sd48,lun=/dev/rhdisk51
sd=sd49,lun=/dev/rhdisk52
sd=sd50,lun=/dev/rhdisk53
sd=sd51,lun=/dev/rhdisk54
sd=sd52,lun=/dev/rhdisk55
sd=sd53,lun=/dev/rhdisk56
sd=sd54,lun=/dev/rhdisk57
sd=sd55,lun=/dev/rhdisk58
sd=sd56,lun=/dev/rhdisk59
```

```
sd=sd57,lun=/dev/rhdisk60
sd=sd58,lun=/dev/rhdisk61
sd=sd59,lun=/dev/rhdisk62
sd=sd60,lun=/dev/rhdisk63
sd=sd61,lun=/dev/rhdisk64
sd=sd62,lun=/dev/rhdisk65
sd=sd63,lun=/dev/rhdisk66
sd=sd64,lun=/dev/rhdisk67
sd=sd65,lun=/dev/rhdisk68
sd=sd66,lun=/dev/rhdisk69
sd=sd67,lun=/dev/rhdisk70
sd=sd68,lun=/dev/rhdisk71
sd=sd69,lun=/dev/rhdisk72
sd=sd70,lun=/dev/rhdisk73
sd=sd71,lun=/dev/rhdisk74
sd=sd72,lun=/dev/rhdisk75
sd=sd73,lun=/dev/rhdisk76
sd=sd74,lun=/dev/rhdisk77
sd=sd75,lun=/dev/rhdisk78
sd=sd76,lun=/dev/rhdisk79
sd=sd77,lun=/dev/rhdisk80
sd=sd78,lun=/dev/rhdisk81
sd=sd79,lun=/dev/rhdisk82
sd=sd80,lun=/dev/rhdisk83
sd=sd81,lun=/dev/rhdisk84
sd=sd82,lun=/dev/rhdisk85
sd=sd83,lun=/dev/rhdisk86
sd=sd84,lun=/dev/rhdisk87
sd=sd85,lun=/dev/rhdisk88
sd=sd86,lun=/dev/rhdisk89
sd=sd87,lun=/dev/rhdisk90
sd=sd88,lun=/dev/rhdisk91
sd=sd89,lun=/dev/rhdisk92
sd=sd90,lun=/dev/rhdisk93
sd=sd91,lun=/dev/rhdisk94
sd=sd92,lun=/dev/rhdisk95
sd=sd93,lun=/dev/rhdisk96
sd=sd94,lun=/dev/rhdisk97
sd=sd95,lun=/dev/rhdisk98
sd=sd96,lun=/dev/rhdisk99
rd=default,rdpct=99,rampup=180,measurement=180,runout=45,rampdown=15,periods=90
rd=default,xfersize=1024k,buffers=4,streams=96
rd=TR11_SPC-2-DQ2.0,streams=96
rd=TR12_SPC-2-DQ2.0,streams=48
rd=TR13_SPC-2-DQ2.0,streams=24
rd=TR14_SPC-2-DQ2.0,streams=12
rd=TR15_SPC-2-DQ2.0,streams=1
rd=default,xfersize=1024k,buffers=1,streams=96
rd=TR16_SPC-2-DQ2.0,streams=96
rd=TR17_SPC-2-DQ2.0,streams=48
rd=TR18_SPC-2-DQ2.0,streams=24
rd=TR19_SPC-2-DQ2.0,streams=12
rd=TR20_SPC-2-DQ2.0,streams=1
rd=default,xfersize=64k,buffers=4,streams=96
rd=TR1_SPC-2-DQ2.0,streams=96
rd=TR2_SPC-2-DQ2.0,streams=48
rd=TR3_SPC-2-DQ2.0,streams=24
rd=TR4_SPC-2-DQ2.0,streams=12
rd=TR5_SPC-2-DQ2.0,streams=1
rd=default,xfersize=64k,buffers=1,streams=96
rd=TR6_SPC-2-DQ2.0,streams=96
rd=TR7_SPC-2-DQ2.0,streams=48
rd=TR8_SPC-2-DQ2.0,streams=24
```

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

```
rd=TR9_SPC-2-DQ2.0,streams=12  
rd=TR10_SPC-2-DQ2.0,streams=1
```

Video on Demand Delivery Test (“vod.cfg”)

```
maxlatestart=0
host=localhost,jvms=24,maxstreams=400
reportinginterval=5
videosegmentduration=600
maxlatevod=0
sd=default,host=localhost,size=200g
sd=sd1,lun=/dev/rhdisk4
sd=sd2,lun=/dev/rhdisk5
sd=sd3,lun=/dev/rhdisk6
sd=sd4,lun=/dev/rhdisk7
sd=sd5,lun=/dev/rhdisk8
sd=sd6,lun=/dev/rhdisk9
sd=sd7,lun=/dev/rhdisk10
sd=sd8,lun=/dev/rhdisk11
sd=sd9,lun=/dev/rhdisk12
sd=sd10,lun=/dev/rhdisk13
sd=sd11,lun=/dev/rhdisk14
sd=sd12,lun=/dev/rhdisk15
sd=sd13,lun=/dev/rhdisk16
sd=sd14,lun=/dev/rhdisk17
sd=sd15,lun=/dev/rhdisk18
sd=sd16,lun=/dev/rhdisk19
sd=sd17,lun=/dev/rhdisk20
sd=sd18,lun=/dev/rhdisk21
sd=sd19,lun=/dev/rhdisk22
sd=sd20,lun=/dev/rhdisk23
sd=sd21,lun=/dev/rhdisk24
sd=sd22,lun=/dev/rhdisk25
sd=sd23,lun=/dev/rhdisk26
sd=sd24,lun=/dev/rhdisk27
sd=sd25,lun=/dev/rhdisk28
sd=sd26,lun=/dev/rhdisk29
sd=sd27,lun=/dev/rhdisk30
sd=sd28,lun=/dev/rhdisk31
sd=sd29,lun=/dev/rhdisk32
sd=sd30,lun=/dev/rhdisk33
sd=sd31,lun=/dev/rhdisk34
sd=sd32,lun=/dev/rhdisk35
sd=sd33,lun=/dev/rhdisk36
sd=sd34,lun=/dev/rhdisk37
sd=sd35,lun=/dev/rhdisk38
sd=sd36,lun=/dev/rhdisk39
sd=sd37,lun=/dev/rhdisk40
sd=sd38,lun=/dev/rhdisk41
sd=sd39,lun=/dev/rhdisk42
sd=sd40,lun=/dev/rhdisk43
sd=sd41,lun=/dev/rhdisk44
sd=sd42,lun=/dev/rhdisk45
sd=sd43,lun=/dev/rhdisk46
sd=sd44,lun=/dev/rhdisk47
sd=sd45,lun=/dev/rhdisk48
sd=sd46,lun=/dev/rhdisk49
sd=sd47,lun=/dev/rhdisk50
sd=sd48,lun=/dev/rhdisk51
sd=sd49,lun=/dev/rhdisk52
sd=sd50,lun=/dev/rhdisk53
sd=sd51,lun=/dev/rhdisk54
sd=sd52,lun=/dev/rhdisk55
sd=sd53,lun=/dev/rhdisk56
sd=sd54,lun=/dev/rhdisk57
sd=sd55,lun=/dev/rhdisk58
```

```
sd=sd56,lun=/dev/rhdisk59
sd=sd57,lun=/dev/rhdisk60
sd=sd58,lun=/dev/rhdisk61
sd=sd59,lun=/dev/rhdisk62
sd=sd60,lun=/dev/rhdisk63
sd=sd61,lun=/dev/rhdisk64
sd=sd62,lun=/dev/rhdisk65
sd=sd63,lun=/dev/rhdisk66
sd=sd64,lun=/dev/rhdisk67
sd=sd65,lun=/dev/rhdisk68
sd=sd66,lun=/dev/rhdisk69
sd=sd67,lun=/dev/rhdisk70
sd=sd68,lun=/dev/rhdisk71
sd=sd69,lun=/dev/rhdisk72
sd=sd70,lun=/dev/rhdisk73
sd=sd71,lun=/dev/rhdisk74
sd=sd72,lun=/dev/rhdisk75
sd=sd73,lun=/dev/rhdisk76
sd=sd74,lun=/dev/rhdisk77
sd=sd75,lun=/dev/rhdisk78
sd=sd76,lun=/dev/rhdisk79
sd=sd77,lun=/dev/rhdisk80
sd=sd78,lun=/dev/rhdisk81
sd=sd79,lun=/dev/rhdisk82
sd=sd80,lun=/dev/rhdisk83
sd=sd81,lun=/dev/rhdisk84
sd=sd82,lun=/dev/rhdisk85
sd=sd83,lun=/dev/rhdisk86
sd=sd84,lun=/dev/rhdisk87
sd=sd85,lun=/dev/rhdisk88
sd=sd86,lun=/dev/rhdisk89
sd=sd87,lun=/dev/rhdisk90
sd=sd88,lun=/dev/rhdisk91
sd=sd89,lun=/dev/rhdisk92
sd=sd90,lun=/dev/rhdisk93
sd=sd91,lun=/dev/rhdisk94
sd=sd92,lun=/dev/rhdisk95
sd=sd93,lun=/dev/rhdisk96
sd=sd94,lun=/dev/rhdisk97
sd=sd95,lun=/dev/rhdisk98
sd=sd96,lun=/dev/rhdisk99
rd=default,measurement=7200,rampup=1200,runout=45,rampdown=15,periods=600
rd=TR1_SPC-2-VOD11.0,streams=4400,buffers=8
```

Persistence Test Run 1 (“*persistw.cfg*”)

```
* Persistence Test Run 1  
host=localhost,jvms=2,maxstreams=500
```

```
sd=default,host=localhost,size=126g  
sd=sd1,lun=/dev/rhdisk4  
sd=sd2,lun=/dev/rhdisk5  
sd=sd3,lun=/dev/rhdisk6  
sd=sd4,lun=/dev/rhdisk7  
sd=sd5,lun=/dev/rhdisk8  
sd=sd6,lun=/dev/rhdisk9  
sd=sd7,lun=/dev/rhdisk10  
sd=sd8,lun=/dev/rhdisk11  
sd=sd9,lun=/dev/rhdisk12  
sd=sd10,lun=/dev/rhdisk13  
sd=sd11,lun=/dev/rhdisk14  
sd=sd12,lun=/dev/rhdisk15  
sd=sd13,lun=/dev/rhdisk16  
sd=sd14,lun=/dev/rhdisk17  
sd=sd15,lun=/dev/rhdisk18  
sd=sd16,lun=/dev/rhdisk19  
sd=sd17,lun=/dev/rhdisk20  
sd=sd18,lun=/dev/rhdisk21  
sd=sd19,lun=/dev/rhdisk22  
sd=sd20,lun=/dev/rhdisk23  
sd=sd21,lun=/dev/rhdisk24  
sd=sd22,lun=/dev/rhdisk25  
sd=sd23,lun=/dev/rhdisk26  
sd=sd24,lun=/dev/rhdisk27  
sd=sd25,lun=/dev/rhdisk28  
sd=sd26,lun=/dev/rhdisk29  
sd=sd27,lun=/dev/rhdisk30  
sd=sd28,lun=/dev/rhdisk31  
sd=sd29,lun=/dev/rhdisk32  
sd=sd30,lun=/dev/rhdisk33  
sd=sd31,lun=/dev/rhdisk34  
sd=sd32,lun=/dev/rhdisk35  
sd=sd33,lun=/dev/rhdisk36  
sd=sd34,lun=/dev/rhdisk37  
sd=sd35,lun=/dev/rhdisk38  
sd=sd36,lun=/dev/rhdisk39  
sd=sd37,lun=/dev/rhdisk40  
sd=sd38,lun=/dev/rhdisk41  
sd=sd39,lun=/dev/rhdisk42  
sd=sd40,lun=/dev/rhdisk43  
sd=sd41,lun=/dev/rhdisk44  
sd=sd42,lun=/dev/rhdisk45  
sd=sd43,lun=/dev/rhdisk46  
sd=sd44,lun=/dev/rhdisk47  
sd=sd45,lun=/dev/rhdisk48  
sd=sd46,lun=/dev/rhdisk49  
sd=sd47,lun=/dev/rhdisk50  
sd=sd48,lun=/dev/rhdisk51  
sd=sd49,lun=/dev/rhdisk52  
sd=sd50,lun=/dev/rhdisk53  
sd=sd51,lun=/dev/rhdisk54  
sd=sd52,lun=/dev/rhdisk55  
sd=sd53,lun=/dev/rhdisk56  
sd=sd54,lun=/dev/rhdisk57  
sd=sd55,lun=/dev/rhdisk58  
sd=sd56,lun=/dev/rhdisk59  
sd=sd57,lun=/dev/rhdisk60
```

```
sd=sd58,lun=/dev/rhdisk61
sd=sd59,lun=/dev/rhdisk62
sd=sd60,lun=/dev/rhdisk63
sd=sd61,lun=/dev/rhdisk64
sd=sd62,lun=/dev/rhdisk65
sd=sd63,lun=/dev/rhdisk66
sd=sd64,lun=/dev/rhdisk67
sd=sd65,lun=/dev/rhdisk68
sd=sd66,lun=/dev/rhdisk69
sd=sd67,lun=/dev/rhdisk70
sd=sd68,lun=/dev/rhdisk71
sd=sd69,lun=/dev/rhdisk72
sd=sd70,lun=/dev/rhdisk73
sd=sd71,lun=/dev/rhdisk74
sd=sd72,lun=/dev/rhdisk75
sd=sd73,lun=/dev/rhdisk76
sd=sd74,lun=/dev/rhdisk77
sd=sd75,lun=/dev/rhdisk78
sd=sd76,lun=/dev/rhdisk79
sd=sd77,lun=/dev/rhdisk80
sd=sd78,lun=/dev/rhdisk81
sd=sd79,lun=/dev/rhdisk82
sd=sd80,lun=/dev/rhdisk83
sd=sd81,lun=/dev/rhdisk84
sd=sd82,lun=/dev/rhdisk85
sd=sd83,lun=/dev/rhdisk86
sd=sd84,lun=/dev/rhdisk87
sd=sd85,lun=/dev/rhdisk88
sd=sd86,lun=/dev/rhdisk89
sd=sd87,lun=/dev/rhdisk90
sd=sd88,lun=/dev/rhdisk91
sd=sd89,lun=/dev/rhdisk92
sd=sd90,lun=/dev/rhdisk93
sd=sd91,lun=/dev/rhdisk94
sd=sd92,lun=/dev/rhdisk95
sd=sd93,lun=/dev/rhdisk96
sd=sd94,lun=/dev/rhdisk97
sd=sd95,lun=/dev/rhdisk98
sd=sd96,lun=/dev/rhdisk99
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=TR1-5s_SPC-2-persist-w,streams=96
```

Persistence Test Run 2 (“*persistr.cfg*”)

* Persistence Test Run 2

host=localhost,jvms=2,maxstreams=100

sd=default,host=localhost,size=126g

sd=sd1,lun=/dev/rhdisk4

sd=sd2,lun=/dev/rhdisk5

sd=sd3,lun=/dev/rhdisk6

sd=sd4,lun=/dev/rhdisk7

sd=sd5,lun=/dev/rhdisk8

sd=sd6,lun=/dev/rhdisk9

sd=sd7,lun=/dev/rhdisk10

sd=sd8,lun=/dev/rhdisk11

sd=sd9,lun=/dev/rhdisk12

sd=sd10,lun=/dev/rhdisk13

sd=sd11,lun=/dev/rhdisk14

sd=sd12,lun=/dev/rhdisk15

sd=sd13,lun=/dev/rhdisk16

sd=sd14,lun=/dev/rhdisk17

sd=sd15,lun=/dev/rhdisk18

sd=sd16,lun=/dev/rhdisk19

sd=sd17,lun=/dev/rhdisk20

sd=sd18,lun=/dev/rhdisk21

sd=sd19,lun=/dev/rhdisk22

sd=sd20,lun=/dev/rhdisk23

sd=sd21,lun=/dev/rhdisk24

sd=sd22,lun=/dev/rhdisk25

sd=sd23,lun=/dev/rhdisk26

sd=sd24,lun=/dev/rhdisk27

sd=sd25,lun=/dev/rhdisk28

sd=sd26,lun=/dev/rhdisk29

sd=sd27,lun=/dev/rhdisk30

sd=sd28,lun=/dev/rhdisk31

sd=sd29,lun=/dev/rhdisk32

sd=sd30,lun=/dev/rhdisk33

sd=sd31,lun=/dev/rhdisk34

sd=sd32,lun=/dev/rhdisk35

sd=sd33,lun=/dev/rhdisk36

sd=sd34,lun=/dev/rhdisk37

sd=sd35,lun=/dev/rhdisk38

sd=sd36,lun=/dev/rhdisk39

sd=sd37,lun=/dev/rhdisk40

sd=sd38,lun=/dev/rhdisk41

sd=sd39,lun=/dev/rhdisk42

sd=sd40,lun=/dev/rhdisk43

sd=sd41,lun=/dev/rhdisk44

sd=sd42,lun=/dev/rhdisk45

sd=sd43,lun=/dev/rhdisk46

sd=sd44,lun=/dev/rhdisk47

sd=sd45,lun=/dev/rhdisk48

sd=sd46,lun=/dev/rhdisk49

sd=sd47,lun=/dev/rhdisk50

sd=sd48,lun=/dev/rhdisk51

sd=sd49,lun=/dev/rhdisk52

sd=sd50,lun=/dev/rhdisk53

sd=sd51,lun=/dev/rhdisk54

sd=sd52,lun=/dev/rhdisk55

sd=sd53,lun=/dev/rhdisk56

sd=sd54,lun=/dev/rhdisk57


```
sd=sd55,lun=/dev/rhdisk58
sd=sd56,lun=/dev/rhdisk59
sd=sd57,lun=/dev/rhdisk60
sd=sd58,lun=/dev/rhdisk61
sd=sd59,lun=/dev/rhdisk62
sd=sd60,lun=/dev/rhdisk63
sd=sd61,lun=/dev/rhdisk64
sd=sd62,lun=/dev/rhdisk65
sd=sd63,lun=/dev/rhdisk66
sd=sd64,lun=/dev/rhdisk67
sd=sd65,lun=/dev/rhdisk68
sd=sd66,lun=/dev/rhdisk69
sd=sd67,lun=/dev/rhdisk70
sd=sd68,lun=/dev/rhdisk71
sd=sd69,lun=/dev/rhdisk72
sd=sd70,lun=/dev/rhdisk73
sd=sd71,lun=/dev/rhdisk74
sd=sd72,lun=/dev/rhdisk75
sd=sd73,lun=/dev/rhdisk76
sd=sd74,lun=/dev/rhdisk77
sd=sd75,lun=/dev/rhdisk78
sd=sd76,lun=/dev/rhdisk79
sd=sd77,lun=/dev/rhdisk80
sd=sd78,lun=/dev/rhdisk81
sd=sd79,lun=/dev/rhdisk82
sd=sd80,lun=/dev/rhdisk83
sd=sd81,lun=/dev/rhdisk84
sd=sd82,lun=/dev/rhdisk85
sd=sd83,lun=/dev/rhdisk86
sd=sd84,lun=/dev/rhdisk87
sd=sd85,lun=/dev/rhdisk88
sd=sd86,lun=/dev/rhdisk89
sd=sd87,lun=/dev/rhdisk90
sd=sd88,lun=/dev/rhdisk91
sd=sd89,lun=/dev/rhdisk92
sd=sd90,lun=/dev/rhdisk93
sd=sd91,lun=/dev/rhdisk94
sd=sd92,lun=/dev/rhdisk95
sd=sd93,lun=/dev/rhdisk96
sd=sd94,lun=/dev/rhdisk97
sd=sd95,lun=/dev/rhdisk98
sd=sd96,lun=/dev/rhdisk99
maxlateststart=1
reportinginterval=5
segmentlength=512m

maxpersistenceerrors=10
*corruptstreams=3

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

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

“javaopts.cfg”

```
-Xms384m -Xmx768m -Xss128k -Xgcpolicy:optavgpause
```

“runthem.sh

```
export SPC2HOME=/perform/lode336/spc2install
export CLASSPATH=$SPC2HOME
export LIBPATH=$SPC2HOME/aix
export IBM_JAVADUMP_OUTOFMEMORY=false
export IBM_HEAPDUMP_OUTOFMEMORY=false
java -Xoptionsfile=javaopts.cfg vdbench -f lfp.cfg -o lfp
java -Xoptionsfile=javaopts.cfg vdbench -f ldq.cfg -o ldq
java -Xoptionsfile=javaopts.cfg vdbench -f vod.cfg -o vod
java -Xoptionsfile=javaopts.cfg vdbench -f persistw.cfg -o persistw
```

“runpersist2.sh

```
export SPC2HOME=/perform/lode336/spc2install
export CLASSPATH=$SPC2HOME
export LIBPATH=$SPC2HOME/aix
export IBM_JAVADUMP_OUTOFMEMORY=false
export IBM_HEAPDUMP_OUTOFMEMORY=false
java -Xoptionsfile=javaopts.cfg vdbench -f persistr.cfg -o persistr
```