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THE POSSIBILITIES ARE INFINITE

SPC BENCHMARK 2™
FULL DISCLOSURE REPORT

FUJITSU LIMITED
FUJITSU STORAGE SYSTEMS ETERNUS DX440 S2

SPC-2™ V1.3

Submitted for Review: April 10, 2012
Submission Identifier: B00057
Revised: April 12, 2012

First Edition – April 2012

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AUDIT CERTIFICATION

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April 12, 2012

The SPC Benchmark 2™ Reported Data listed below for the Fujitsu Storage Systems ETERNUS DX440 S2 produced in compliance with the SPC Benchmark 2™ V1.3 Remote Audit requirements.

SPC Benchmark 2™ V1.3 Reported Data	
Tested Storage Product (TSP) Name: Fujitsu Storage Systems ETERNUS DX440 S2	
Metric	**Reported Result**
SPC-2 MBPS™	5,768.04
SPC-2 Price-Performance	$66.50/SPC-2 MBPS™
ASU Capacity	42,133.629 GB
Data Protection Level	Protected *(Mirroring)*
Total Price (including three-year maintenance)	$383,576.20

The following SPC Benchmark 2™ Remote Audit requirements were reviewed and found compliant with V1.3 of the SPC Benchmark 2™ specification:

- A Letter of Good Faith, signed by a senior executive.
- The following Data Repository storage items were verified by documentation supplied by Fujitsu Limited:
  - ✓ Physical Storage Capacity and related requirements.
  - ✓ Configured Storage Capacity and related requirements.
  - ✓ Addressable Storage Capacity and related requirements.
  - ✓ Capacity of each Logical Volume and related requirements.
  - ✓ Capacity of the Application Storage Unit (ASU) and related requirements.
- The Application Storage Unit (ASU) Capacity was filled with random data using Vdbench 5.03 prior to the execution of the SPC-2 Tests.
- An appropriate diagram of the Benchmark Configuration (BC)/Tested Storage Configuration (TSC).

Storage Performance Council
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Redwood City, CA 94062
AuditService@StoragePerformance.org
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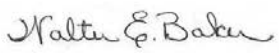
AUDIT CERTIFICATION *(CONT.)*

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

Audit Notes:

There were no audit notes or exceptions.

Respectfully,



Walter E. Baker
SPC Auditor

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LETTER OF GOOD FAITH

FUJITSU

Kanagawa-ken,Kawasaki-shi,Nakahara-ku,Kamikodanaka,4-1-1,JAPAN211-8588
Phone: 044-754-3240

December 8, 2011
From: Yasuhito Arikawa, Fujitsu Limited

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

Contact Information: Carrel A. (Sandy)Wilson
Fujitsu America, Inc.
1250 East Arques Ave. PO Box 3470
Sunnyvale, CA 94088, U.S.A.

Subject: SPC-2 Letter of Good Faith for the ETERNUS DX440S2

Fujitsu Limited is the SPC-2 Test Sponsor for the above listed product. To the best of our knowledge and belief, the required SPC-2 benchmark results and materials we have submitted for that product are complete, accurate, and in full compliance with V1.3 of the SPC-2 benchmark specification.

In addition, we have reported any items in the Benchmark Configuration and execution of the benchmark necessary to reproduce the reported results even if the items are not explicitly required to be disclosed by the SPC-2 benchmark specification.

Signed: Yasuhito Arikawa

Date: 8/Dec./2011

Yasuhito Arikawa
General Manager, Storage System Division

EXECUTIVE SUMMARY

Test Sponsor and Contact Information

Test Sponsor and Contact Information	
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Revision Information and Key Dates

Revision Information and Key Dates	
SPC-2 Specification revision number	**Error! Unknown document property name.**
SPC-2 Workload Generator revision number	V1.0
Date Results were first used publicly	April 10, 2012
Date FDR was submitted to the SPC	April 10, 2012
Date revised FDR was submitted to the SPC Revised SPC-2 Reported Data table to reflect the correct values	April 12, 2012
Date the TSC will be available for shipment to customers	currently available
Date the TSC completed audit certification	April 9, 2012

Tested Storage Product (TSP) Description

The Fujitsu ETERNUS DX440 S2 is a flexible, highly reliable storage array, equipped with redundant components to provide uncompromised availability to mid market requirements. A mixture of 300GB, 450GB, 600GB, & 900GB 10krpm 2.5" SAS drives, 300GB, 450GB, & 600GB 15krpm 3.5" SAS drives, as well as 1TB, 2TB, & 3TB Nearline SAS drives may be used. SSD drives are also available in 100 GB, 200 GB and 400 GB sizes. Up to 960 2.5" drives may be included, or up to 480 3.5" drives. Both sized drives can be included in the same storage array. The drives may be arranged in a variety of RAID groups, including RAID1, RAID1+0(10), RAID5, RAID6, and RAID5+0(50). The product is offered with Fibre Channel (4 port as tested or 2 port 2/4/8Gbps versions), iSCSI (1Gbps & 10 Gbps 2 port), and FCoE (10 Gbps 2 port) host connection Channel Adapters. Up to four Channel Adapters can be attached to each of the two Controllers, with multiple types available. In addition, a number of different snapshot and replication facilities, native disk data encryption, and MAID capabilities are available.

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				
Fujitsu Storage Systems ETERNUS DX440 S2				
SPC-2 MBPS™	**SPC-2 Price-Performance**	**ASU Capacity (GB)**	**Total Price**	**Data Protection Level**
5,768.04	$66.50	42,133.629	$383,576.20	Protected *(Mirroring)*
The above SPC-2 MBPS™ value represents the aggregate data rate of all three SPC-2 workloads: Large File Processing (LFP), Large Database Query (LDQ), and Video On Demand (VOD)				
SPC-2 Large File Processing (LFP) Reported Data				
	Data Rate *(MB/second)*	**Number of Streams**	**Data Rate per Stream**	**Price-Performance**
LFP Composite	4,558.06			$84.15
Write Only:				
1024 KiB Transfer	1,988.88	32	62.15	
256 KiB Transfer	1,952.51	32	61.02	
Read-Write:				
1024 KiB Transfer	3,100.13	32	96.88	
256 KiB Transfer	3,088.52	32	96.52	
Read Only:				
1024 KiB Transfer	8,657.02	72	120.24	
256 KiB Transfer	8,561.27	72	118.91	
The above SPC-2 Data Rate value for LFP Composite represents the aggregate performance of all three LFP Test Phases: (Write Only, Read-Write, and Read Only).				
SPC-2 Large Database Query (LDQ) Reported Data				
	Data Rate *(MB/second)*	**Number of Streams**	**Data Rate per Stream**	**Price-Performance**
LDQ Composite	8,027.49			$47.78
1024 KiB Transfer Size				
4 I/Os Outstanding	8,227.59	72	114.27	
1 I/O Outstanding	8,232.56	72	114.34	
64 KiB Transfer Size				
4 I/Os Outstanding	8,064.08	72	112.00	
1 I/O Outstanding	7,585.73	72	105.36	
The above SPC-2 Data Rate value for LDQ Composite represents the aggregate performance of the two LDQ Test Phases: (1024 KiB and 64 KiB Transfer Sizes).				
SPC-2 Video On Demand (VOD) Reported Data				
	Data Rate *(MB/second)*	**Number of Streams**	**Data Rate per Stream**	**Price-Performance**
	4,718.58	6,000	0.79	$81.29

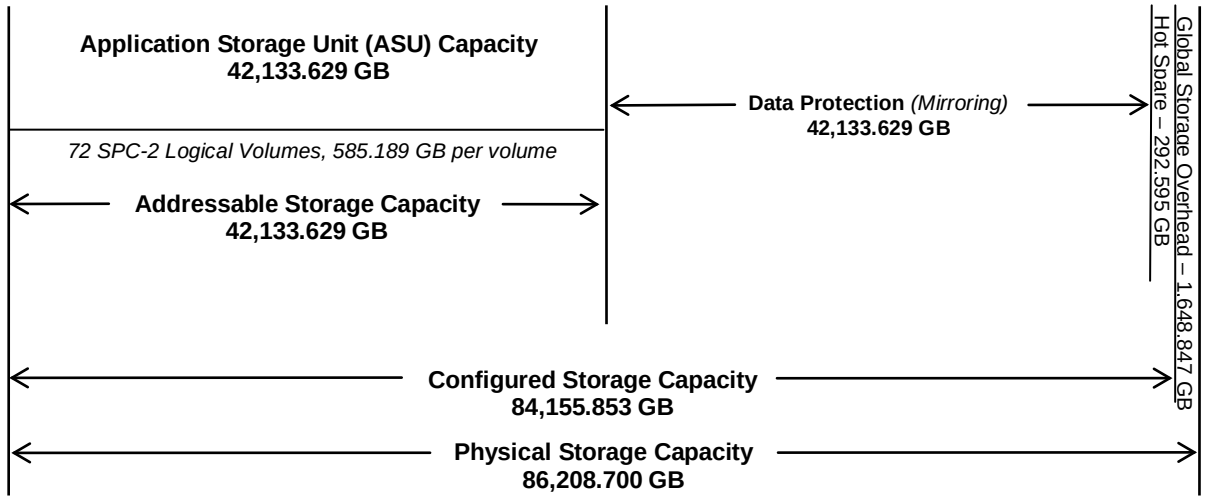
SPC-2 MBPS™ represents the aggregate data rate, in megabytes per second, of all three SPC-2 workloads: Large File Processing (LFP), Large Database Query (LDQ), and Video on Demand (VOD).

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

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

Storage Capacities and Relationships

The following diagram *(not to scale)* and table document the various storage capacities, used in this benchmark, and their relationships, as well as the storage utilization values required to be reported.



SPC-1 Storage Capacity Utilization	
Application Utilization	48.87%
Protected Application Utilization	97.75%
Unused Storage Ratio	0.00%

Application Utilization: Total ASU Capacity *(42,133.629 GB)* divided by Physical Storage Capacity *(86,208.700 GB)*.

Protected Application Utilization: Total ASU Capacity *(42,133.629 GB)* plus total Data Protection Capacity *(42,133.629 GB)* minus unused Data Protection Capacity *(0.000 GB)* divided by Physical Storage Capacity *(86,208.700 GB)*.

Unused Storage Ratio: Total Unused Capacity *(0.000 GB)* divided by Physical Storage Capacity *(86,208.700 GB)* and may not exceed 45%.

Detailed information for the various storage capacities and utilizations is available on pages 24-25 in the Full Disclosure Report.

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

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

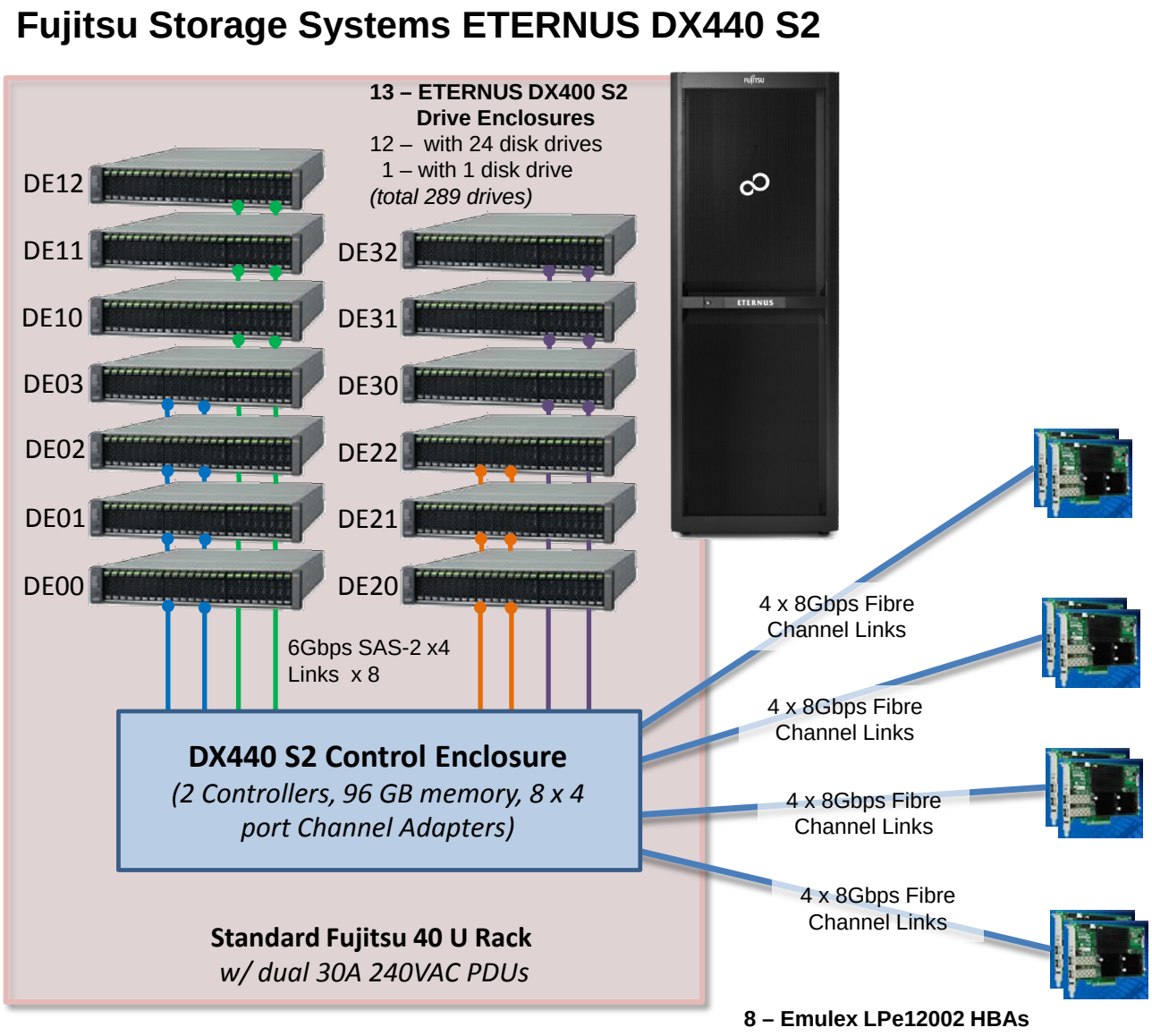
Priced Storage Configuration Pricing

Product ID	Product Name	Qty	Unit List Price	Extended LP	Discount %	Discounted Price
ET442SAU	DX440 S2 Base System Rackmount (AC200V, 3RU)	1	$39,515.00	$39,515.00	30%	$27,660.50
ETNHF24	FC Host Interface, pair - 8 ports (2/4/8 Gbps, Host/Remote Connect)	4	$10,300.00	$41,200.00	30%	$28,840.00
ETNM86	48GB Cache Memory for DX440 S2 (8GB two sets of 3)	2	$3,600.00	$7,200.00	30%	$5,040.00
ETNAD2CU	Drive Enclosure (2.5" HDD) Rackmount (AC200V, 2RU)	13	$6,700.00	$87,100.00	30%	$60,970.00
ETND3HC	300GB/10krpm 2.5" Disk Drives	289	$865.00	$249,985.00	30%	$174,989.50
19R-174A1	Base Rack - Standard (40RU) with Front & Rear doors, side panels	1	$3,150.00	$3,150.00	30%	$2,205.00
19R-16BP31	Blank panel (3RU)	3	$60.00	$180.00	30%	$126.00
19R-16BP21	Blank panel (2RU)	1	$40.00	$40.00	30%	$28.00
ETNP16U-L	Power Distribution Unit for DX (AC240V, 30A - 8 enclosures, 2RU)	2	$1,520.00	$3,040.00	30%	$2,128.00
Third-Party LP312002-M8	Emulex 8Gbps Dual Port Fibre Channel Host Bus Adapter	8	$1,785.00	$14,280.00	10%	$12,852.00
61-343827-003	Fibre Channel Cable LC-LC 3 m	16	$132.00	$2,112.00	30%	$1,478.40
	(Provide 24 hour per day / 7days per week 4 hour response maintenance for 36 months)					
	36 months, Enhanced Plus	1	$96,084.00	$96,084.00	30%	$67,258.80
	SFPs are included.			**Total:**		**$383,576.20**

The above pricing includes the following:

- Acknowledgement of new and existing hardware and/or software problems within four hours.
- Onsite presence of a qualified maintenance engineer or provision of a customer replaceable part within four hours of the above acknowledgement for any hardware failure that results in an inoperative Priced Storage Configuration component.

Priced Storage Configuration Diagram



Priced Storage Configuration Components

Priced Storage Configuration
8 – Emulex LPe12002-M8 FC dual port FC HBAs *(8 Gbps)*
Fujitsu Storage Systems ETERNUS DX440 S2 2 – Controller Modules, each with: 48 GB cache *(96 GB total)* Flash Memory power fail protection 4 – Channel Adapter modules, each with 4 –8 Gbps Fibre Channel ports *(front-end Host connections, 16 total and 8 used)* *(32 connections available and 16 used with both controllers)* 4 – SAS 2 x4 Expander Drive interfaces *(backend connections to first drive enclosure*)
13 –ETERNUS DX400 S2 Drive Enclosures, each with 2 – I/O Modules, each with SAS 2 x 4 Expander Drive interface *(2 total, 2 used)*
289 – 300 GB 10K RPM 2.5” SAS Disk Drives: *24 disk drives in each of 12 ETERNUS DX400 S2 Drive Enclosures* *1 disk drive in 1 ETERNUS DX80 S2 Drive Enclosure*
1 – standard Fujitsu 40U rack w/dual 30A 240VAC PDUs

CONFIGURATION INFORMATION

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

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

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

Clause 10.6.6

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

The Benchmark Configuration (BC)/Tested Storage Configuration (TSC) is illustrated on page 21.

Storage Network Configuration

Clause 10.6.6.1

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

The Benchmark Configuration (BC)/Tested Storage Configuration (TSC) utilized direct attached storage.

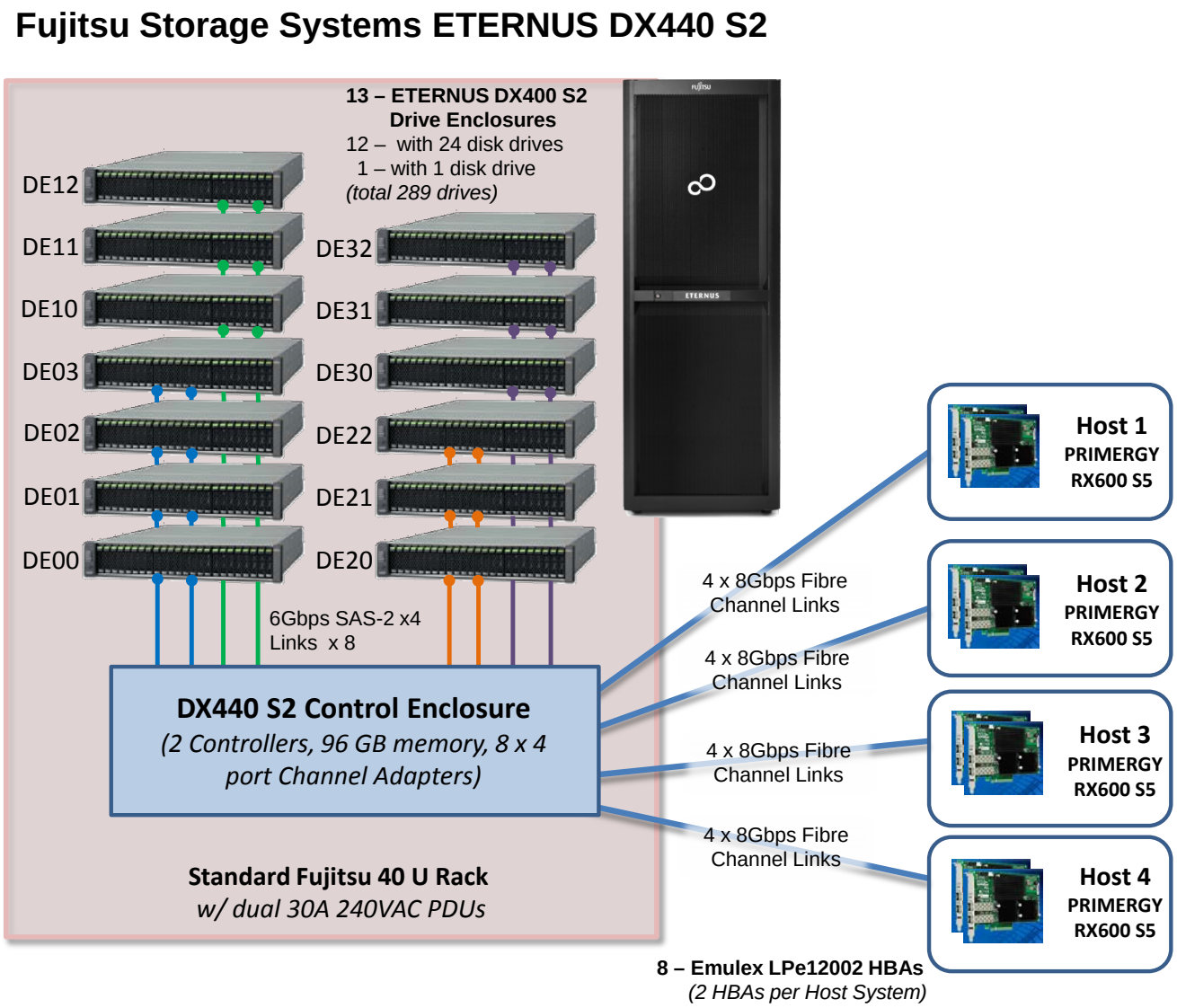
Host System and Tested Storage Configuration Table

Clause 10.6.6.2

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

The components that comprise each Host System and the Tested Storage Configuration are listed in the table that appears on page 22.

Benchmark Configuration/Tested Storage Configuration Diagram



Host System and Tested Storage Configuration Components

Host Systems:	Tested Storage Configuration (TSC):
4 –Fujitsu PRIMERGY RX600 S5, each with: 4 – Intel Xeon™ 2.66 GHz CPUs, 6 Cores/CPU with 18 MB L2 cache 64 GB main memory Windows 2003 Enterprise Server (64-bit) with SP2 PCIe	8 – Emulex LPe12002-M8 FC dual port FC HBAs *(8 Gbps)* **Fujitsu Storage Systems ETERNUS DX440 S2** 2 – Controller Modules, each with: 48 GB cache *(96 GB total)* Flash Memory power fail protection 4 – Channel Adapter modules, each with 4 –8 Gbps Fibre Channel ports *(front-end Host connections, 16 total, 8 used)* *(32 connections available and 16 used with both controllers)* 4 – SAS 2 x4 Expander Drive interfaces *(backend connections to first drive enclosure*) 13 –ETERNUS DX400 S2 Drive Enclosures, each with 2 – I/O Modules, each with SAS 2 x 4 Expander Drive interface *(2 total, 2 used)* 289 – 300 GB 10K RPM 2.5" SAS Disk Drives: *24 disk drives in each of 12 drive enclosures* *1 disk drive in 1 drive enclosure* 1 – standard Fujitsu 40U rack w/dual 30A 240VAC PDUs

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

Tested Storage Configuration (TSC) Description

Clause 10.6.6.2

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

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

"Appendix C: Tested Storage Configuration (TSC) Creation" on page 100 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 101.

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 94 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)	42,133.629
Addressable Storage Capacity	Gigabytes (GB)	42,133.629
Configured Storage Capacity	Gigabytes (GB)	84,559.853
Physical Storage Capacity	Gigabytes (GB)	86,208.700
Data Protection *(Mirroring)*	Gigabytes (GB)	42,133.629
Required Storage *(spares/metadata/overhead)*	Gigabytes (GB)	292.595
Global Storage Overhead	Gigabytes (GB)	1,648.847
Total Unused Storage	Gigabytes (GB)	0.000

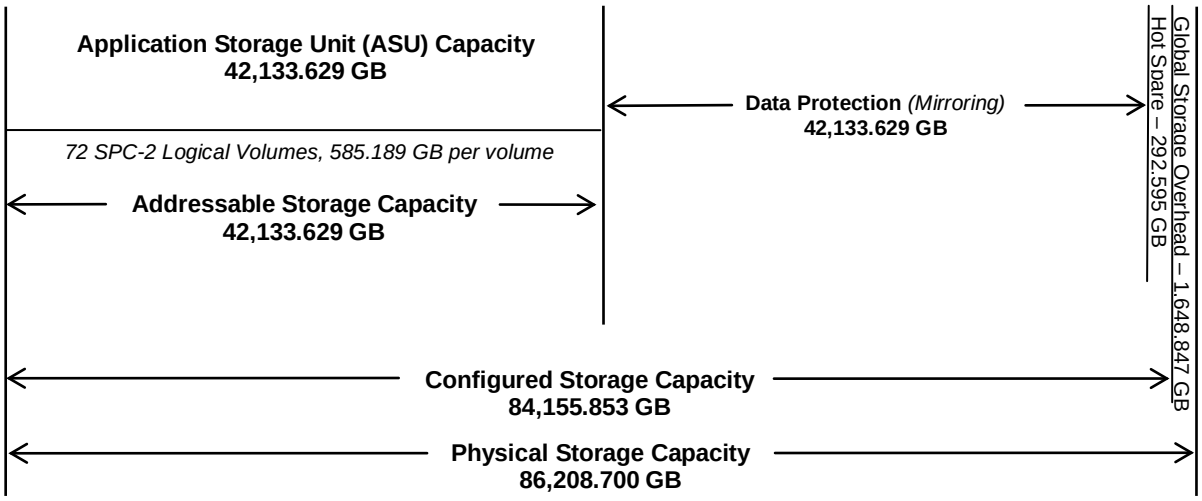
SPC-2 Storage Hierarchy Ratios

	Addressable Storage Capacity	Configured Storage Capacity	Physical Storage Capacity
Total ASU Capacity	100.00%	49.83%	48.87%
Data Protection *(RAID-5)*		49.83%	48.87%
Addressable Storage Capacity		49.83%	48.87%
Required Storage *(spares/metadata/overhead)*		0.35%	0.34%
Configured Storage Capacity			98.09%
Global Storage Overhead			1.91%
Unused Storage:			
Addressable	0.00%		
Configured		0.00%	
Physical			0.00%

The Physical Storage Capacity consisted of 86,208.700 GB distributed over 289 disk drives each with a formatted capacity of 298.300 GB. There was 0.000 GB (0.00%) of Unused Storage within the Physical Storage Capacity. Global Storage Overhead consisted of 1,648.847 GB (1.91%) of the Physical Storage Capacity. There was 0.000 GB (0.00%) of Unused Storage within the Configured Storage Capacity. The Total ASU Capacity utilized 100% of the Addressable Storage Capacity resulting in 0.000 GB (0.00%) of Unused Storage within the Addressable Storage Capacity. The Data Protection *(Mirroring)* capacity was 42,133.629 GB of which 42,133.629 GB was utilized. The total Unused Storage was 0.000 GB.

SPC-2 Storage Capacities and Relationships Illustration

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



Storage Capacity Utilization

Clause 10.6.8.2

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

Clause 2,8.1

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

Clause 2,8.2

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

Clause 2,8.3

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

SPC-1 Storage Capacity Utilization	
Application Utilization	48.87%
Protected Application Utilization	97.75%
Unused Storage Ratio	0.00%

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 (42,133.629 GB)			
	Total Capacity *(GB)*	Capacity Used *(GB)*	Capacity Unused *(GB)*
Logical Volumes 1-72	585.189 per LV	585.189 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 101 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 95 contains definitions of terms specific to the SPC-2 Data Repository.

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

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

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

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

- **Large File Processing Test *(continued)***
  - READ ONLY Test Phase
    - Test Run Sequence 5
      - ✓ Test Run 21 – 1024 KiB Transfer – maximum number of Streams
      - ✓ Test Run 22 – 1024 KiB Transfer – 50% of Test Run 21's Streams value
      - ✓ Test Run 23 – 1024 KiB Transfer – 25% of Test Run 21's Streams value
      - ✓ Test Run 24 – 1024 KiB Transfer – 12.5% of Test Run 21's Streams value
      - ✓ Test Run 25 – 1024 KiB Transfer – single (1) Stream
    - Test Run Sequence 6
      - ✓ Test Run 26 – 256 KiB Transfer – maximum number of Streams
      - ✓ Test Run 27 – 256 KiB Transfer – 50% of Test Run 26's Streams value
      - ✓ Test Run 28 – 256 KiB Transfer – 25% of Test Run 26's Streams value
      - ✓ Test Run 29 – 256 KiB Transfer – 12.5% of Test Run 26's Streams value
      - ✓ Test Run 30 – 256 KiB Transfer – single (1) Stream

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

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

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

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

Large File Processing Test

Clause 6.4.2.1

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

Clause 6.4.2.2

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

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

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

Clause 10.6.8.1

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

1. *A listing of the SPC-2 Workload Generator commands and parameters used to execute each of the Test Runs in the Large File Processing Test.*
2. *The human readable SPC-2 Test Results File for each of the Test Runs in the Large File Processing Test.*
3. *A table that contains the following information for each Test Run in all three Test Phases of the Large File Processing Test:*
    - *The number Streams specified.*
    - *The Ramp-Up duration in seconds.*
    - *The Measurement Interval duration in seconds.*
    - *The average data rate, in MB per second, for the Measurement Interval.*
    - *The average data rate, in MB per second, per Stream for the Measurement Interval.*
4. *Average Data Rate and Average Data Rate per Stream graphs as defined in Clauses 10.1.1 and 10.1.2.*

SPC-2 Workload Generator Commands and Parameters

The SPC-2 Workload Generator commands and parameters for the Large File Processing Test Runs are documented in "Appendix E: SPC-2 Workload Generator Execution Commands and Parameters" on Page 107.

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.

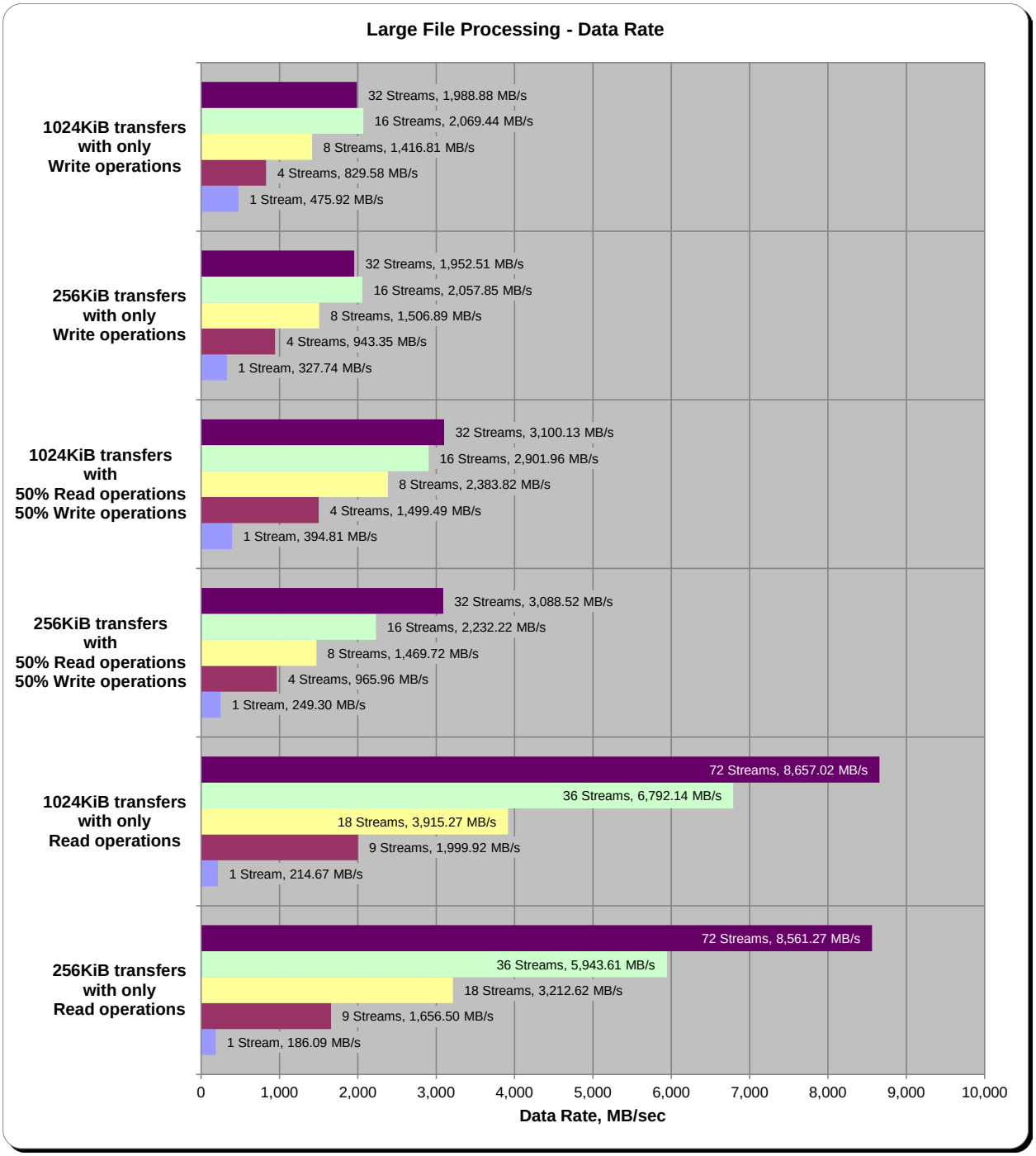
SPC-2 Large File Processing Test Results File

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	4 Streams	8 Streams	16 Streams	32 Streams
Write 1024KiB	475.92	829.58	1,416.81	2,069.44	1,988.88
Test Run Sequence	**1 Stream**	**4 Streams**	**8 Streams**	**16 Streams**	**32 Streams**
Write 256KiB	327.74	943.35	1,506.89	2,057.85	1,952.51
Test Run Sequence	**1 Stream**	**4 Streams**	**8 Streams**	**16 Streams**	**32 Streams**
Read/Write 1024KiB	394.81	1,499.49	2,383.82	2,901.96	3,100.13
Test Run Sequence	**1 Stream**	**4 Streams**	**8 Streams**	**16 Streams**	**32 Streams**
Read/Write 256KiB	249.30	965.96	1,469.72	2,232.22	3,088.52
Test Run Sequence	**1 Stream**	**9 Streams**	**18 Streams**	**36 Streams**	**72 Streams**
Read 1024KiB	214.67	1,999.92	3,915.27	6,792.14	8,657.02
Test Run Sequence	**1 Stream**	**9 Streams**	**18 Streams**	**36 Streams**	**72 Streams**
Read 256KiB	186.09	1,656.50	3,212.62	5,943.61	8,561.27

SPC-2 Large File Processing Average Data Rates Graph

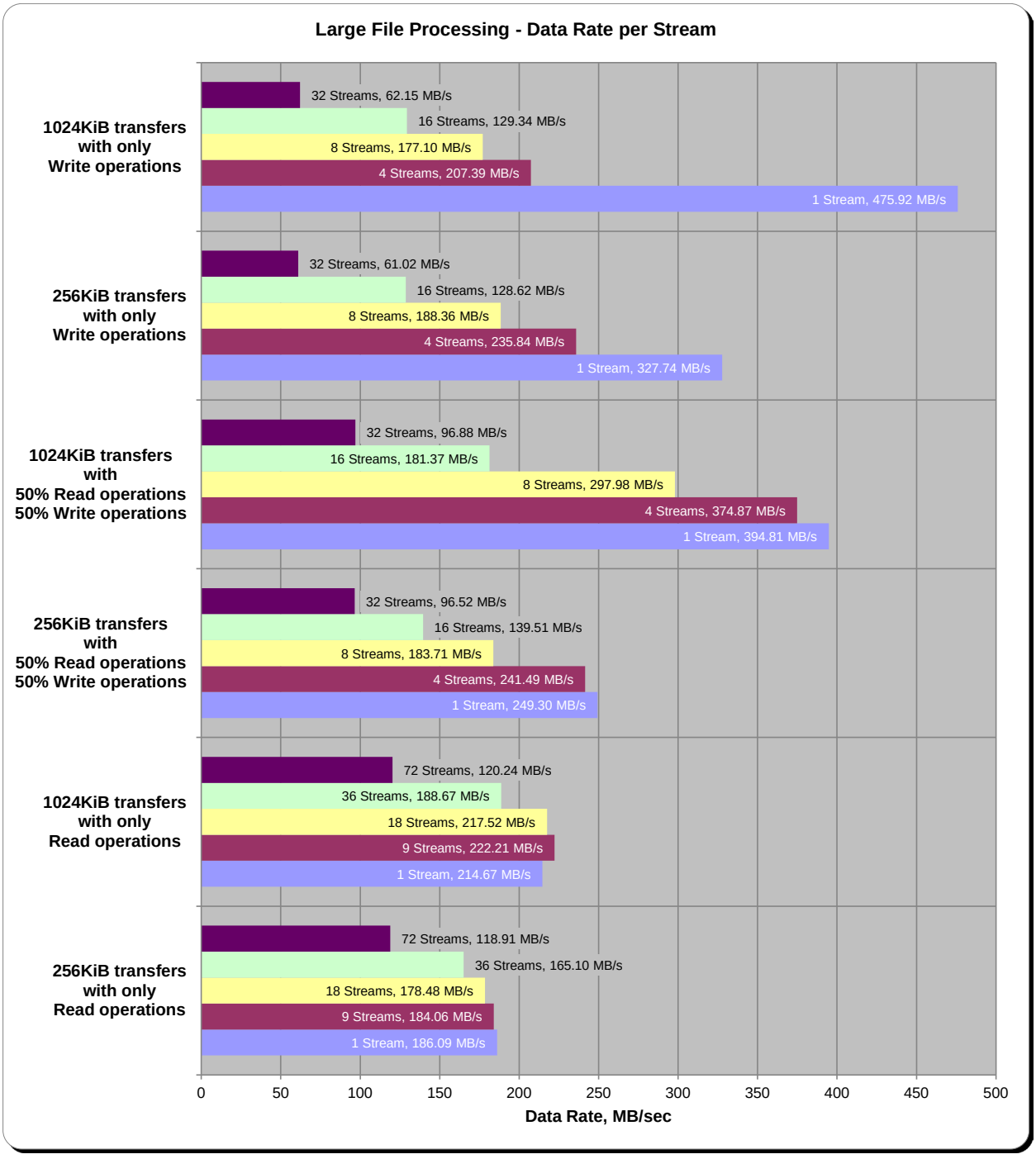


SPC-2 Large File Processing Average Data Rate per Stream

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	4 Streams	8 Streams	16 Streams	32 Streams
Write 1024KiB	475.92	207.39	177.10	129.34	62.15
Test Run Sequence	**1 Stream**	**4 Streams**	**8 Streams**	**16 Streams**	**32 Streams**
Write 256KiB	327.74	235.84	188.36	128.62	61.02
Test Run Sequence	**1 Stream**	**4 Streams**	**8 Streams**	**16 Streams**	**32 Streams**
Read/Write 1024KiB	394.81	374.87	297.98	181.37	96.88
Test Run Sequence	**1 Stream**	**4 Streams**	**8 Streams**	**16 Streams**	**32 Streams**
Read/Write 256KiB	249.30	241.49	183.71	139.51	96.52
Test Run Sequence	**1 Stream**	**9 Streams**	**18 Streams**	**36 Streams**	**72 Streams**
Read 1024KiB	214.67	222.21	217.52	188.67	120.24
Test Run Sequence	**1 Stream**	**9 Streams**	**18 Streams**	**36 Streams**	**72 Streams**
Read 256KiB	186.09	184.06	178.48	165.10	118.91

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

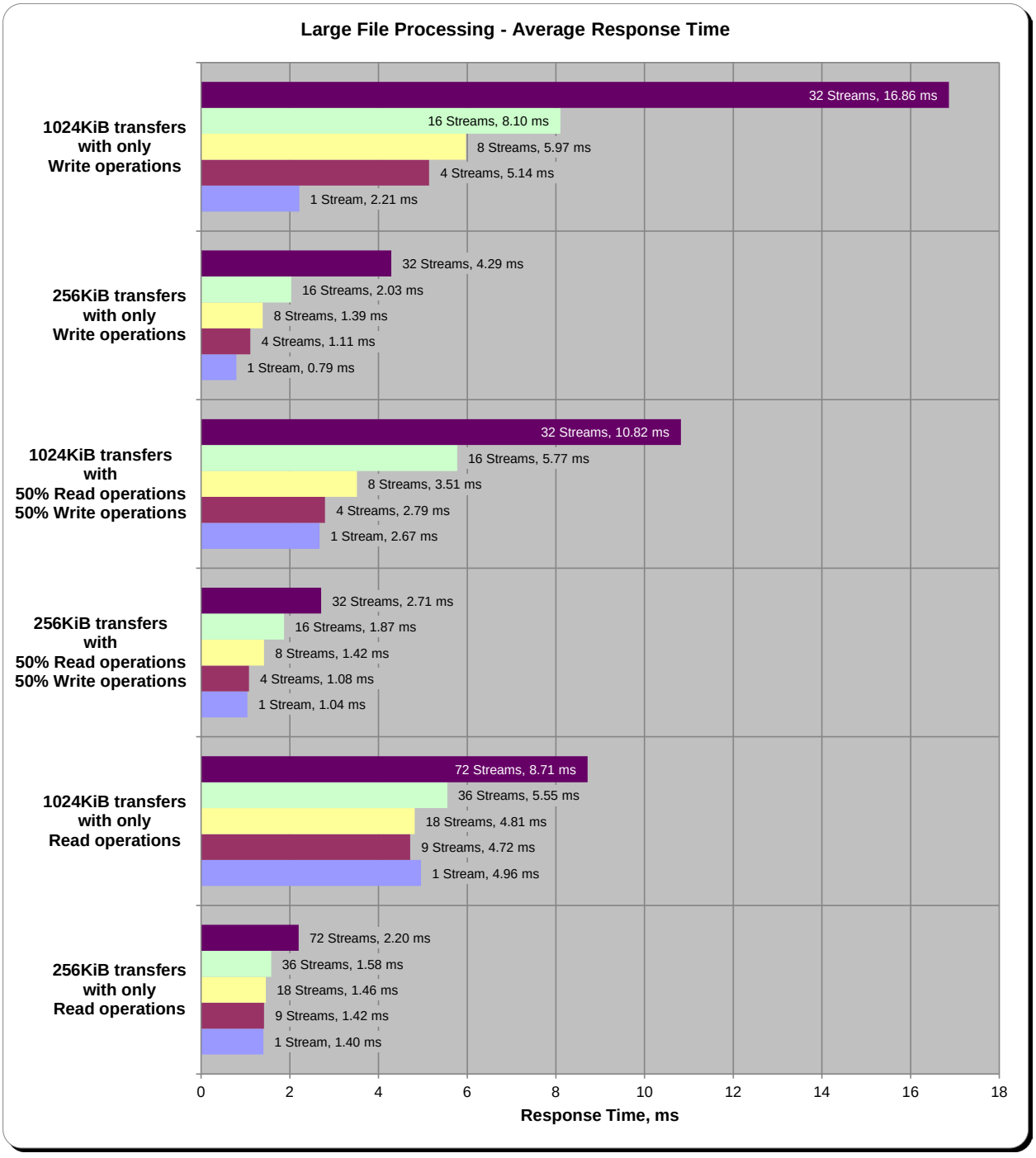


SPC-2 Large File Processing Average Response Time

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

Test Run Sequence	1 Stream	4 Streams	8 Streams	16 Streams	32 Streams
Write 1024KiB	2.21	5.14	5.97	8.10	16.86
Test Run Sequence	**1 Stream**	**4 Streams**	**8 Streams**	**16 Streams**	**32 Streams**
Write 256KiB	0.79	1.11	1.39	2.03	4.29
Test Run Sequence	**1 Stream**	**4 Streams**	**8 Streams**	**16 Streams**	**32 Streams**
Read/Write 1024KiB	2.67	2.79	3.51	5.77	10.82
Test Run Sequence	**1 Stream**	**4 Streams**	**8 Streams**	**16 Streams**	**32 Streams**
Read/Write 256KiB	1.04	1.08	1.42	1.87	2.71
Test Run Sequence	**1 Stream**	**9 Streams**	**18 Streams**	**36 Streams**	**72 Streams**
Read 1024KiB	4.96	4.72	4.81	5.55	8.71
Test Run Sequence	**1 Stream**	**9 Streams**	**18 Streams**	**36 Streams**	**72 Streams**
Read 256KiB	1.40	1.42	1.46	1.58	2.20

SPC-2 Large File Processing Average Response Time 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

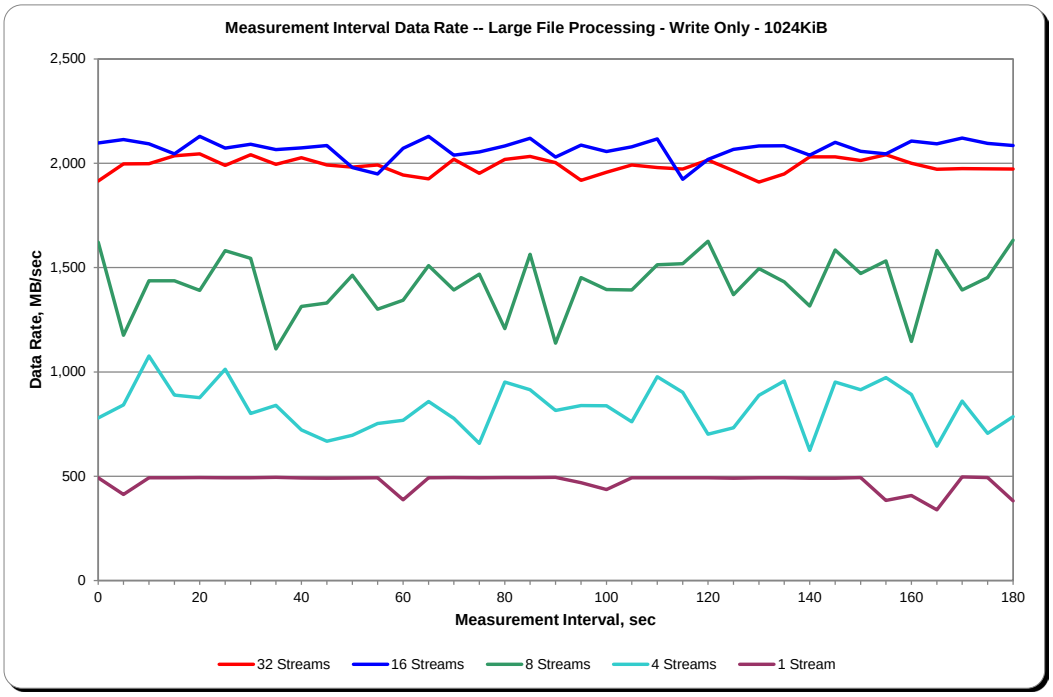
TR1	32 Streams			TR2	16 Streams			TR3	8 Streams			TR4	4 Streams			TR5	1 Stream		
Test Run Sequence Time	Data Rate, MB/sec	Data Rate / Stream, MB/sec	Response Time, ms	Test Run Sequence Time	Data Rate, MB/sec	Data Rate / Stream, MB/sec	Response Time, ms	Test Run Sequence Time	Data Rate, MB/sec	Data Rate / Stream, MB/sec	Response Time, ms	Test Run Sequence Time	Data Rate, MB/sec	Data Rate / Stream, MB/sec	Response Time, ms	Test Run Sequence Time	Data Rate, MB/sec	Data Rate / Stream, MB/sec	Response Time, ms
0:00:00	618.66	154.66	3.90	0:06:55	0.00	0.00	0.00	0:13:55	0.00	0.00	0.00	0:20:55	0.00	0.00	0.00	0:27:55	0.00	0.00	0.00
0:00:05	808.87	202.22	5.16	0:07:00	452.98	452.98	2.29	0:14:00	482.55	482.55	2.15	0:21:00	485.28	485.28	2.13	0:28:00	492.20	492.20	2.11
0:00:10	601.67	100.28	8.64	0:07:05	278.71	278.71	3.75	0:14:05	346.45	346.45	3.02	0:21:05	435.79	435.79	2.40	0:28:05	456.34	456.34	2.29
0:00:15	744.07	82.67	10.60	0:07:10	422.58	211.29	3.40	0:14:10	318.14	159.07	4.49	0:21:10	133.17	133.17	7.86	0:28:10	491.78	491.78	2.12
0:00:20	1,181.75	118.17	8.27	0:07:15	246.63	61.66	13.57	0:14:15	602.72	200.91	4.93	0:21:15	188.95	188.95	5.54	0:28:15	383.15	383.15	2.73
0:00:25	1,283.04	106.92	9.40	0:07:20	526.80	105.36	9.27	0:14:20	519.05	173.02	6.05	0:21:20	210.97	210.97	4.96	0:28:20	491.99	491.99	2.13
0:00:30	1,109.81	73.99	12.67	0:07:25	1,011.46	126.43	6.70	0:14:25	445.64	148.55	7.05	0:21:25	154.14	154.14	6.80	0:28:25	492.20	492.20	2.12
0:00:35	1,299.61	68.40	12.80	0:07:30	1,258.08	139.79	7.21	0:14:30	687.87	229.29	4.57	0:21:30	186.65	186.65	5.60	0:28:30	490.94	490.94	2.13
0:00:40	1,909.25	86.78	10.77	0:07:35	1,454.58	121.22	7.81	0:14:35	1,110.65	222.13	4.04	0:21:35	579.86	289.93	3.01	0:28:35	492.83	492.83	2.12
0:00:45	1,690.72	73.51	14.13	0:07:40	1,504.92	115.76	8.61	0:14:40	998.03	166.34	5.64	0:21:40	777.62	259.21	3.24	0:28:40	494.72	494.72	2.11
0:00:50	1,810.68	72.43	14.05	0:07:45	2,001.52	153.96	6.79	0:14:45	804.68	134.11	7.77	0:21:45	1,031.38	343.79	3.05	0:28:45	492.20	492.20	2.12
0:00:55	1,983.07	70.82	13.69	0:07:50	2,056.68	146.91	6.68	0:14:50	951.69	135.96	6.73	0:21:50	494.51	164.84	6.35	0:28:50	373.92	373.92	2.80
0:01:00	1,932.94	69.03	15.13	0:07:55	2,155.45	153.96	6.86	0:14:55	1,262.70	180.39	5.82	0:21:55	722.68	240.89	4.34	0:28:55	492.20	492.20	2.12
0:01:05	1,988.52	64.15	15.48	0:08:00	1,950.35	130.02	7.49	0:15:00	1,631.16	203.90	4.54	0:22:00	772.38	193.10	4.11	0:29:00	495.77	495.77	2.11
0:01:10	1,935.88	62.45	16.84	0:08:05	1,904.84	126.99	8.29	0:15:05	1,496.53	187.07	5.52	0:22:05	1,104.99	276.25	3.79	0:29:05	492.83	492.83	2.12
0:01:15	2,016.62	65.05	16.08	0:08:10	2,043.26	127.70	7.92	0:15:10	1,141.48	142.68	7.36	0:22:10	973.92	243.48	4.29	0:29:10	491.57	491.57	2.13
0:01:20	1,991.25	62.23	16.87	0:08:15	1,945.53	121.60	8.62	0:15:15	1,484.15	185.52	5.66	0:22:15	861.09	215.27	4.87	0:29:15	494.30	494.30	2.11
0:01:25	1,957.48	61.17	16.98	0:08:20	2,054.37	128.40	8.11	0:15:20	1,165.18	145.65	7.13	0:22:20	825.44	206.36	5.07	0:29:20	492.83	492.83	2.12
0:01:30	2,043.46	63.86	16.51	0:08:25	2,016.41	126.03	8.30	0:15:25	1,578.95	197.37	5.32	0:22:25	807.61	201.90	5.18	0:29:25	497.23	497.23	2.10
0:01:35	1,966.71	61.46	17.05	0:08:30	2,103.23	131.45	8.05	0:15:30	1,449.34	181.17	5.80	0:22:30	720.79	180.20	5.81	0:29:30	492.83	492.83	2.12
0:01:40	2,013.06	62.91	16.42	0:08:35	2,044.72	127.80	8.15	0:15:35	1,382.65	172.83	6.08	0:22:35	923.38	230.84	4.53	0:29:35	494.51	494.51	2.11
0:01:45	2,073.45	64.80	16.38	0:08:40	2,135.95	133.50	7.88	0:15:40	1,346.37	168.30	6.17	0:22:40	737.57	184.39	5.68	0:29:40	496.19	496.19	2.11
0:01:50	1,993.97	62.31	16.79	0:08:45	2,082.89	130.18	8.04	0:15:45	1,460.25	182.53	5.76	0:22:45	692.69	173.17	6.05	0:29:45	491.15	491.15	2.13
0:01:55	1,921.83	60.06	17.52	0:08:50	2,054.37	128.40	8.16	0:15:50	1,482.06	185.26	5.67	0:22:50	911.21	227.80	4.59	0:29:50	493.25	493.25	2.12
0:02:00	1,972.37	61.64	16.90	0:08:55	2,024.59	126.54	8.23	0:15:55	1,331.90	166.49	6.24	0:22:55	694.58	173.64	6.02	0:29:55	494.09	494.09	2.11
0:02:05	2,025.85	63.31	16.64	0:09:00	2,037.17	127.32	8.21	0:16:00	1,456.05	182.01	5.77	0:23:00	786.43	196.61	5.33	0:30:00	432.22	432.22	2.42
0:02:10	2,025.01	63.28	16.55	0:09:05	2,121.69	132.61	7.98	0:16:05	1,379.09	172.39	6.10	0:23:05	806.15	201.54	5.20	0:30:05	446.69	446.69	2.34
0:02:15	1,956.43	61.14	16.94	0:09:10	2,066.95	129.18	8.05	0:16:10	1,341.97	167.75	6.26	0:23:10	759.17	189.79	5.51	0:30:10	492.83	492.83	2.12
0:02:20	2,052.69	64.15	16.51	0:09:15	2,109.53	131.85	7.99	0:16:15	1,465.49	183.19	5.67	0:23:15	868.22	217.06	4.83	0:30:15	492.83	492.83	2.12
0:02:25	2,010.12	62.82	16.62	0:09:20	2,094.64	130.91	7.99	0:16:20	1,239.21	154.90	6.78	0:23:20	974.76	243.69	4.30	0:30:20	491.15	491.15	2.13
0:02:30	2,027.95	63.37	16.65	0:09:25	2,129.03	133.06	7.87	0:16:25	1,393.56	174.19	6.04	0:23:25	784.33	196.08	5.33	0:30:25	491.36	491.36	2.13
0:02:35	1,974.47	61.70	16.89	0:09:30	2,070.73	129.42	8.04	0:16:30	1,435.92	179.49	5.79	0:23:30	775.74	193.93	5.40	0:30:30	492.62	492.62	2.12
0:02:40	2,051.85	64.12	16.42	0:09:35	2,065.28	129.08	8.10	0:16:35	1,685.27	210.66	4.99	0:23:35	723.10	180.77	5.79	0:30:35	494.51	494.51	2.11
0:02:45	1,973.21	61.66	16.93	0:09:40	2,124.83	132.80	7.97	0:16:40	1,382.65	172.83	6.08	0:23:40	740.08	185.02	5.66	0:30:40	491.15	491.15	2.13
0:02:50	1,978.87	61.84	16.79	0:09:45	2,082.89	130.18	8.00	0:16:45	1,566.57	195.82	5.36	0:23:45	847.46	211.86	4.95	0:30:45	495.35	495.35	2.11
0:02:55	1,964.19	61.38	17.16	0:09:50	2,039.90	127.49	8.25	0:16:50	1,440.53	180.07	5.77	0:23:50	831.73	207.93	5.03	0:30:50	491.36	491.36	2.13
				0:09:55	2,050.80	128.18	8.17	0:16:55	1,470.52	183.82	5.72	0:23:55	1,034.73	258.68	4.05	0:30:55	494.09	494.09	2.12

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

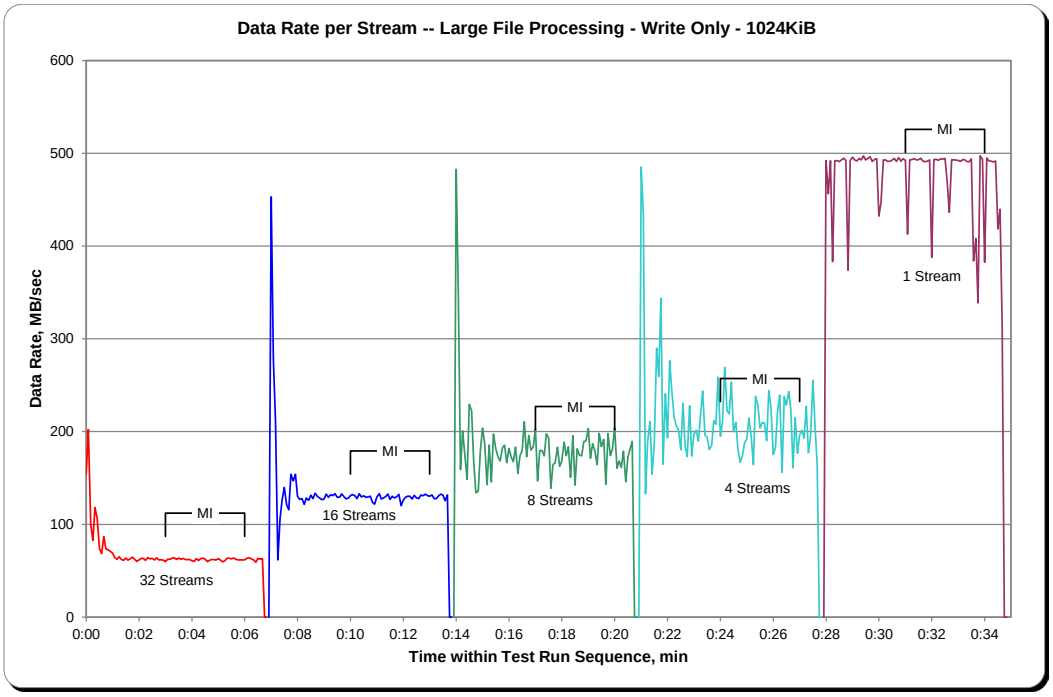
TR1	32 Streams			TR2	16 Streams			TR3	8 Streams			TR4	4 Streams			TR5	1 Stream		
Test Run Sequence Time	Data Rate, MB/sec	Data Rate / Stream, MB/sec	Response Time, ms	Test Run Sequence Time	Data Rate, MB/sec	Data Rate / Stream, MB/sec	Response Time, ms	Test Run Sequence Time	Data Rate, MB/sec	Data Rate / Stream, MB/sec	Response Time, ms	Test Run Sequence Time	Data Rate, MB/sec	Data Rate / Stream, MB/sec	Response Time, ms	Test Run Sequence Time	Data Rate, MB/sec	Data Rate / Stream, MB/sec	Response Time, ms
0:03:00	1,915.12	59.85	17.52	0:10:00	2,097.78	131.11	7.93	0:17:00	1,622.57	202.82	5.17	0:24:00	779.72	194.93	5.38	0:31:00	492.41	492.41	2.12
0:03:05	1,996.70	62.40	16.80	0:10:05	2,113.72	132.11	7.92	0:17:05	1,175.87	146.98	7.15	0:24:05	842.43	210.61	4.97	0:31:05	412.93	412.93	2.53
0:03:10	1,998.17	62.44	16.72	0:10:10	2,093.80	130.86	7.99	0:17:10	1,436.55	179.57	5.78	0:24:10	1,076.89	269.22	3.89	0:31:10	492.83	492.83	2.12
0:03:15	2,036.33	63.64	16.59	0:10:15	2,045.56	127.85	8.19	0:17:15	1,436.97	179.62	5.85	0:24:15	888.98	222.25	4.71	0:31:15	493.25	493.25	2.12
0:03:20	2,045.14	63.91	16.46	0:10:20	2,129.45	133.09	7.91	0:17:20	1,390.83	173.85	6.04	0:24:20	877.24	219.31	4.77	0:31:20	494.09	494.09	2.12
0:03:25	1,989.99	62.19	16.76	0:10:25	2,073.03	129.56	8.02	0:17:25	1,581.04	197.63	5.26	0:24:25	1,013.13	253.28	4.13	0:31:25	492.83	492.83	2.12
0:03:30	2,040.95	63.78	16.42	0:10:30	2,091.70	130.73	8.11	0:17:30	1,544.55	193.07	5.44	0:24:30	800.69	200.17	5.23	0:31:30	493.04	493.04	2.12
0:03:35	1,995.44	62.36	16.75	0:10:35	2,065.90	129.12	8.06	0:17:35	1,110.02	138.75	7.58	0:24:35	839.91	209.98	4.99	0:31:35	494.72	494.72	2.11
0:03:40	2,026.27	63.32	16.57	0:10:40	2,073.87	129.62	8.08	0:17:40	1,314.49	164.31	6.39	0:24:40	722.68	180.67	5.79	0:31:40	491.36	491.36	2.13
0:03:45	1,991.46	62.23	16.82	0:10:45	2,084.78	130.30	8.03	0:17:45	1,330.64	166.33	6.25	0:24:45	668.15	167.04	6.27	0:31:45	490.94	490.94	2.13
0:03:50	1,981.60	61.92	17.00	0:10:50	1,980.13	123.76	8.46	0:17:50	1,463.60	182.95	5.74	0:24:50	696.46	174.12	6.02	0:31:50	491.36	491.36	2.13
0:03:55	1,992.29	62.26	16.87	0:10:55	1,948.46	121.78	8.65	0:17:55	1,300.44	162.56	6.47	0:24:55	752.46	188.11	5.57	0:31:55	492.83	492.83	2.12
0:04:00	1,943.85	60.75	17.08	0:11:00	2,071.36	129.46	8.04	0:18:00	1,343.85	167.98	6.18	0:25:00	768.19	192.05	5.45	0:32:00	387.76	387.76	2.70
0:04:05	1,925.19	60.16	17.52	0:11:05	2,129.66	133.10	8.02	0:18:05	1,509.53	188.69	5.57	0:25:05	858.15	214.54	4.88	0:32:05	493.25	493.25	2.12
0:04:10	2,019.77	63.12	16.57	0:11:10	2,039.06	127.44	8.09	0:18:10	1,392.72	174.09	6.04	0:25:10	777.20	194.30	5.39	0:32:10	493.46	493.46	2.12
0:04:15	1,951.61	60.99	17.19	0:11:15	2,054.16	128.39	8.16	0:18:15	1,468.22	183.53	5.72	0:25:15	658.09	164.52	6.36	0:32:15	492.41	492.41	2.12
0:04:20	2,018.93	63.09	16.56	0:11:20	2,082.89	130.18	8.04	0:18:20	1,207.12	150.89	6.89	0:25:20	951.69	237.92	4.40	0:32:20	493.88	493.88	2.12
0:04:25	2,033.40	63.54	16.62	0:11:25	2,120.43	132.53	7.89	0:18:25	1,564.06	195.51	5.37	0:25:25	914.36	228.59	4.58	0:32:25	493.67	493.67	2.12
0:04:30	2,002.99	62.59	16.81	0:11:30	2,030.04	126.88	8.30	0:18:30	1,137.91	142.24	7.38	0:25:30	815.16	203.79	5.14	0:32:30	494.51	494.51	2.11
0:04:35	1,917.85	59.93	17.38	0:11:35	2,086.88	130.43	7.93	0:18:35	1,451.86	181.48	5.73	0:25:35	838.65	209.66	5.00	0:32:35	469.55	469.55	2.23
0:04:40	1,956.64	61.15	17.14	0:11:40	2,056.68	128.54	8.28	0:18:40	1,395.03	174.38	6.03	0:25:40	838.23	209.56	5.00	0:32:40	436.42	436.42	2.39
0:04:45	1,991.67	62.24	16.76	0:11:45	2,079.33	129.96	8.02	0:18:45	1,392.93	174.12	6.03	0:25:45	761.06	190.26	5.50	0:32:45	493.04	493.04	2.12
0:04:50	1,980.13	61.88	16.95	0:11:50	2,117.28	132.33	7.91	0:18:50	1,514.14	189.27	5.55	0:25:50	977.48	244.37	4.29	0:32:50	493.04	493.04	2.12
0:04:55	1,972.16	61.63	17.02	0:11:55	1,923.09	120.19	8.71	0:18:55	1,519.18	189.90	5.47	0:25:55	902.82	225.71	4.63	0:32:55	492.62	492.62	2.12
0:05:00	2,015.15	62.97	16.73	0:12:00	2,018.30	126.14	8.30	0:19:00	1,626.34	203.29	5.17	0:26:00	701.29	175.32	5.97	0:33:00	492.41	492.41	2.12
0:05:05	1,964.61	61.39	17.10	0:12:05	2,066.32	129.15	8.15	0:19:05	1,370.28	171.28	6.13	0:26:05	732.74	183.19	5.72	0:33:05	491.15	491.15	2.13
0:05:10	1,910.30	59.70	17.49	0:12:10	2,083.52	130.22	7.99	0:19:10	1,495.27	186.91	5.55	0:26:10	888.56	222.14	4.71	0:33:10	493.04	493.04	2.12
0:05:15	1,949.09	60.91	17.21	0:12:15	2,084.36	130.27	8.13	0:19:15	1,431.94	178.99	5.88	0:26:15	956.93	239.23	4.38	0:33:15	493.04	493.04	2.12
0:05:20	2,030.88	63.47	16.49	0:12:20	2,039.06	127.44	8.17	0:19:20	1,315.96	164.50	6.39	0:26:20	624.32	156.08	6.71	0:33:20	490.94	490.94	2.13
0:05:25	2,031.09	63.47	16.50	0:12:25	2,100.09	131.26	7.98	0:19:25	1,583.98	198.00	5.31	0:26:25	951.48	237.87	4.40	0:33:25	490.94	490.94	2.13
0:05:30	2,013.48	62.92	16.64	0:12:30	2,057.52	128.59	8.13	0:19:30	1,472.20	184.03	5.65	0:26:30	914.78	228.69	4.58	0:33:30	493.88	493.88	2.12
0:05:35	2,041.16	63.79	16.53	0:12:35	2,044.93	127.81	8.20	0:19:35	1,532.60	191.57	5.49	0:26:35	972.66	243.16	4.31	0:33:35	383.99	383.99	2.72
0:05:40	2,000.05	62.50	16.84	0:12:40	2,106.38	131.65	7.99	0:19:40	1,145.88	143.24	7.33	0:26:40	891.71	222.93	4.69	0:33:40	408.11	408.11	2.56
0:05:45	1,971.53	61.61	16.88	0:12:45	2,093.59	130.85	7.96	0:19:45	1,582.30	197.79	5.25	0:26:45	644.04	161.01	6.50	0:33:45	338.69	338.69	3.09
0:05:50	1,974.89	61.72	16.98	0:12:50	2,121.48	132.59	7.98	0:19:50	1,392.51	174.06	6.04	0:26:50	860.25	215.06	4.87	0:33:50	497.23	497.23	2.10
0:05:55	1,973.84	61.68	16.86	0:12:55	2,095.26	130.95	7.95	0:19:55	1,451.86	181.48	5.79	0:26:55	706.11	176.53	5.92	0:33:55	493.46	493.46	2.12
0:06:00	1,972.58	61.64	17.14	0:13:00	2,085.62	130.35	8.00	0:20:00	1,632.00	204.00	5.14	0:27:00	785.80	196.45	5.35	0:34:00	382.52	382.52	2.73
0:06:05	2,032.98	63.53	16.41	0:13:05	2,108.27	131.77	8.00	0:20:05	1,284.72	160.59	6.46	0:27:05	805.94	201.48	5.20	0:34:05	494.93	494.93	2.11
0:06:10	2,044.72	63.90	16.42	0:13:10	2,044.72	127.80	8.10	0:20:10	1,346.58	168.32	6.23	0:27:10	771.54	192.89	5.42	0:34:10	491.78	491.78	2.12
0:06:15	2,010.12	62.82	16.64	0:13:15	2,046.19	127.89	8.28	0:20:15	1,290.80	161.35	6.35	0:27:15	909.12	227.28	4.61	0:34:15	491.36	491.36	2.13
0:06:20	1,974.89	61.72	17.07	0:13:20	2,088.97	130.56	7.97	0:20:20	1,431.10	178.89	5.93	0:27:20	709.05	177.26	5.90	0:34:20	490.73	490.73	2.13
0:06:25	1,893.94	59.19	17.73	0:13:25	2,123.58	132.72	7.93	0:20:25	1,168.74	146.09	7.18	0:27:25	779.09	194.77	5.38	0:34:25	491.57	491.57	2.13
0:06:30	2,022.70	63.21	16.56	0:13:30	2,103.65	131.48	7.96	0:20:30	1,381.60	172.70	6.01	0:27:30	1,021.10	255.28	4.10	0:34:30	418.38	418.38	2.50
0:06:35	2,001.10	62.53	16.74	0:13:35	2,006.76	125.42	8.34	0:20:35	1,450.39	181.30	5.79	0:27:35	821.04	205.26	5.10	0:34:35	439.56	439.56	2.38
0:06:40	2,020.82	63.15	16.44	0:13:40	2,107.85	131.74	7.99	0:20:40	1,513.51	189.19	5.47	0:27:40	655.57	163.89	6.39	0:34:40	312.69	312.69	3.35
0:06:45	50.96	0.00	13.88	0:13:45	80.74	0.00	6.60	0:20:45	66.69	0.00	5.84	0:27:45	4.82	0.00	7.83	0:34:45	3.15	0.00	2.13
0:06:50	0.00	0.00	0.00	0:13:50	0.00	0.00	0.00	0:20:50	0.00	0.00	0.00	0:27:50	0.00	0.00	0.00	0:34:50	0.00	0.00	0.00

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

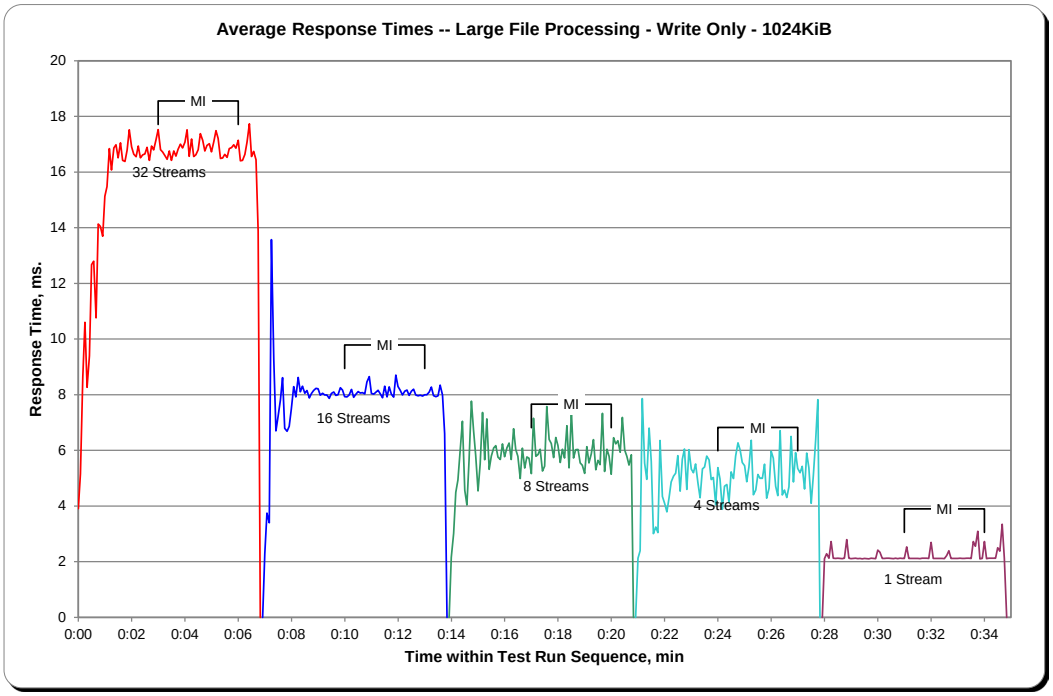
SPC-2 "Large File Processing/ WRITE ONLY /1024 KiB Transfer Size" Average Data Rate Graph – Measurement Interval (MI) Only



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



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



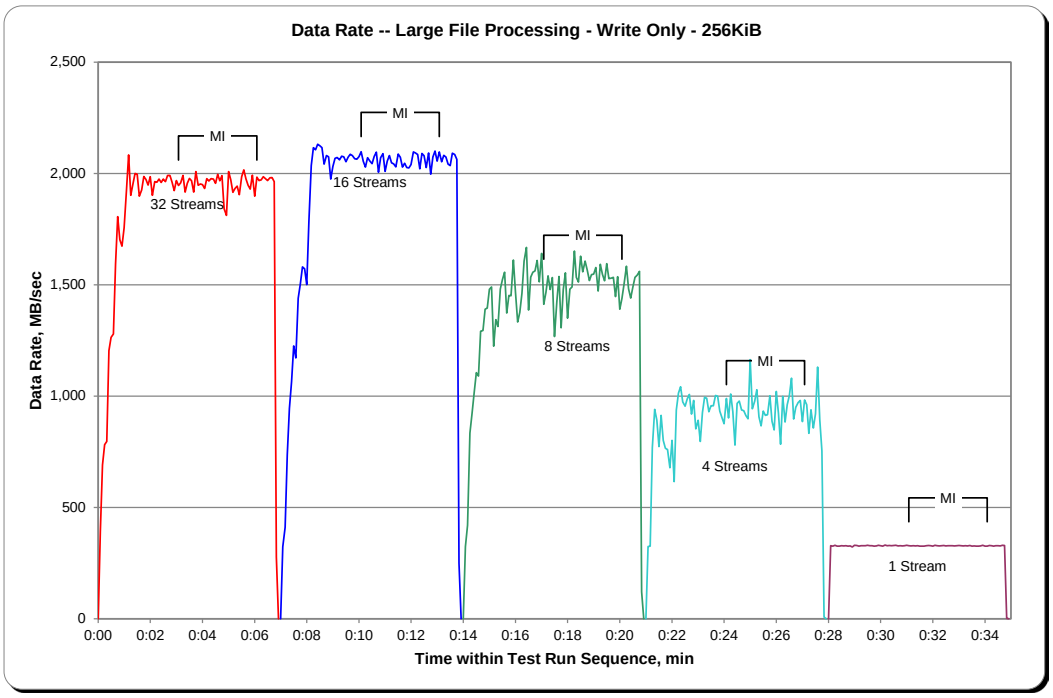
SPC-2 "Large File Processing/ WRITE ONLY /256 KiB Transfer Size" Test Run Data – Ramp-Up Period

TR6	32 Streams			TR7	16 Streams			TR8	8 Streams			TR9	4 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
0:00:00	0.00	0.00	0.00	0:07:00	0.00	0.00	0.00	0:14:00	0.00	0.00	0.00	0:21:00	0.00	0.00	0.00	0:28:00	0.00	0.00	0.00
0:00:05	394.26	197.13	0.89	0:07:05	323.70	323.70	0.80	0:14:05	324.48	324.48	0.80	0:21:05	323.80	323.80	0.80	0:28:05	328.52	328.52	0.79
0:00:10	691.06	172.77	1.37	0:07:10	410.26	205.13	0.94	0:14:10	420.53	210.27	0.92	0:21:10	326.32	326.32	0.80	0:28:10	326.26	326.26	0.80
0:00:15	782.03	130.34	1.50	0:07:15	736.73	147.35	1.41	0:14:15	833.41	208.35	1.07	0:21:15	768.24	256.08	0.82	0:28:15	330.30	330.30	0.79
0:00:20	796.03	66.34	3.17	0:07:20	945.08	189.02	1.38	0:14:20	922.07	230.52	1.13	0:21:20	940.15	313.38	0.83	0:28:20	326.58	326.58	0.80
0:00:25	1,204.34	92.64	2.75	0:07:25	1,064.36	152.05	1.58	0:14:25	1,015.97	203.19	1.15	0:21:25	892.08	297.36	0.87	0:28:25	326.16	326.16	0.80
0:00:30	1,263.69	84.25	2.92	0:07:30	1,225.10	175.01	1.50	0:14:30	1,105.67	221.13	1.17	0:21:30	772.85	257.62	1.01	0:28:30	328.52	328.52	0.79
0:00:35	1,279.37	71.08	3.34	0:07:35	1,171.21	130.13	1.71	0:14:35	1,089.89	181.65	1.20	0:21:35	913.57	304.52	0.85	0:28:35	327.47	327.47	0.79
0:00:40	1,593.73	79.69	3.00	0:07:40	1,439.33	159.93	1.64	0:14:40	1,291.74	215.29	1.20	0:21:40	801.27	267.09	0.97	0:28:40	327.73	327.73	0.79
0:00:45	1,805.60	82.07	3.17	0:07:45	1,503.45	150.34	1.61	0:14:45	1,294.57	184.94	1.25	0:21:45	765.30	255.10	1.02	0:28:45	326.26	326.26	0.80
0:00:50	1,702.10	74.00	3.47	0:07:50	1,579.94	157.99	1.64	0:14:50	1,390.73	198.68	1.33	0:21:50	759.48	253.16	1.03	0:28:50	326.84	326.84	0.80
0:00:55	1,672.95	66.92	3.70	0:07:55	1,571.29	142.84	1.67	0:14:55	1,395.34	199.33	1.30	0:21:55	678.01	226.00	1.15	0:28:55	322.07	322.07	0.80
0:01:00	1,756.00	67.54	3.76	0:08:00	1,500.98	125.08	2.04	0:15:00	1,479.17	211.31	1.24	0:22:00	801.53	267.18	0.97	0:29:00	329.67	329.67	0.79
0:01:05	1,925.19	71.30	3.60	0:08:05	1,784.83	137.29	1.83	0:15:05	1,490.45	212.92	1.23	0:22:05	615.67	205.22	1.27	0:29:05	329.25	329.25	0.79
0:01:10	2,082.79	69.43	3.68	0:08:10	2,035.23	135.68	1.80	0:15:10	1,223.95	152.99	1.55	0:22:10	937.48	234.37	0.97	0:29:10	326.63	326.63	0.80
0:01:15	1,901.85	63.40	4.09	0:08:15	2,116.08	132.25	1.93	0:15:15	1,343.75	167.97	1.56	0:22:15	1,013.03	253.26	1.03	0:29:15	328.52	328.52	0.79
0:01:20	1,952.08	62.97	4.11	0:08:20	2,106.33	131.65	1.96	0:15:20	1,312.50	164.06	1.58	0:22:20	1,041.76	260.44	1.00	0:29:20	327.94	327.94	0.79
0:01:25	1,999.16	62.47	4.15	0:08:25	2,130.71	133.17	1.97	0:15:25	1,480.27	185.03	1.43	0:22:25	974.02	243.51	1.07	0:29:25	328.41	328.41	0.79
0:01:30	1,996.86	62.40	4.21	0:08:30	2,124.26	132.77	1.97	0:15:30	1,523.74	190.47	1.36	0:22:30	954.57	238.64	1.09	0:29:30	330.25	330.25	0.79
0:01:35	1,897.97	59.31	4.41	0:08:35	2,115.40	132.21	2.00	0:15:35	1,556.24	194.53	1.35	0:22:35	986.97	246.74	1.06	0:29:35	328.31	328.31	0.79
0:01:40	1,925.71	60.18	4.35	0:08:40	2,041.47	127.59	2.04	0:15:40	1,373.16	171.65	1.53	0:22:40	1,007.05	251.76	1.03	0:29:40	328.10	328.10	0.79
0:01:45	1,985.79	62.06	4.24	0:08:45	2,080.01	130.00	2.01	0:15:45	1,452.17	181.52	1.43	0:22:45	918.87	229.72	1.13	0:29:45	326.42	326.42	0.80
0:01:50	1,972.53	61.64	4.24	0:08:50	2,074.24	129.64	2.02	0:15:50	1,451.12	181.39	1.44	0:22:50	980.89	245.22	1.06	0:29:50	326.84	326.84	0.80
0:01:55	1,948.20	60.88	4.25	0:08:55	1,974.84	123.43	2.09	0:15:55	1,610.67	201.33	1.29	0:22:55	853.17	213.29	1.22	0:29:55	329.83	329.83	0.79
0:02:00	1,985.58	62.05	4.22	0:09:00	2,031.14	126.95	2.07	0:16:00	1,463.81	182.98	1.45	0:23:00	891.13	222.78	1.17	0:30:00	328.36	328.36	0.79
0:02:05	1,902.12	59.44	4.44	0:09:05	2,067.27	129.20	2.02	0:16:05	1,332.43	166.55	1.55	0:23:05	796.08	199.02	1.31	0:30:05	326.58	326.58	0.80
0:02:10	1,963.46	61.36	4.26	0:09:10	2,071.20	129.45	2.04	0:16:10	1,375.52	171.94	1.52	0:23:10	926.21	231.55	1.13	0:30:10	331.35	331.35	0.78
0:02:15	1,960.57	61.27	4.27	0:09:15	2,060.66	128.79	2.02	0:16:15	1,461.03	182.63	1.43	0:23:15	994.73	248.68	1.05	0:30:15	328.20	328.20	0.79
0:02:20	1,974.36	61.70	4.26	0:09:20	2,077.18	129.82	2.01	0:16:20	1,606.58	200.82	1.29	0:23:20	989.91	247.48	1.05	0:30:20	328.94	328.94	0.79
0:02:25	1,959.11	61.22	4.26	0:09:25	2,074.76	129.67	2.02	0:16:25	1,667.29	208.41	1.26	0:23:25	929.72	232.43	1.12	0:30:25	328.47	328.47	0.79
0:02:30	1,974.89	61.72	4.20	0:09:30	2,051.91	128.24	2.01	0:16:30	1,386.58	173.32	1.49	0:23:30	956.56	239.14	1.09	0:30:30	328.94	328.94	0.79
0:02:35	1,963.62	61.36	4.28	0:09:35	2,072.72	129.55	2.02	0:16:35	1,534.01	191.75	1.38	0:23:35	956.35	239.09	1.09	0:30:35	330.35	330.35	0.79
0:02:40	1,991.09	62.22	4.22	0:09:40	2,086.40	130.40	2.00	0:16:40	1,556.61	194.58	1.33	0:23:40	1,002.60	250.65	1.04	0:30:40	326.74	326.74	0.80
0:02:45	1,990.51	62.20	4.21	0:09:45	2,080.17	130.01	2.03	0:16:45	1,561.85	195.23	1.34	0:23:45	1,000.24	250.06	1.04	0:30:45	327.89	327.89	0.79
0:02:50	1,959.84	61.25	4.27	0:09:50	2,065.96	129.12	2.01	0:16:50	1,609.25	201.16	1.30	0:23:50	932.92	233.23	1.12	0:30:50	327.05	327.05	0.79
0:02:55	1,922.46	60.08	4.38	0:09:55	2,063.81	128.99	2.02	0:16:55	1,512.68	189.08	1.37	0:23:55	903.61	225.90	1.15	0:30:55	327.99	327.99	0.79
0:03:00	1,967.71	61.49	4.25	0:10:00	2,075.81	129.74	2.02	0:17:00	1,641.13	205.14	1.27	0:24:00	875.77	218.94	1.19	0:31:00	329.88	329.88	0.79

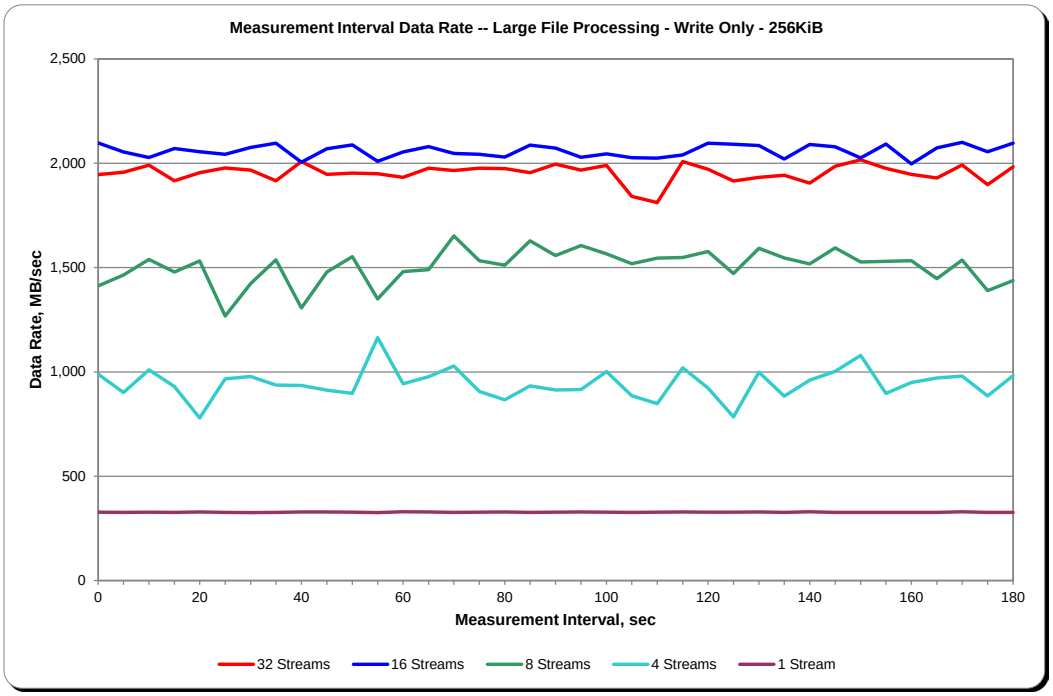
SPC-2 "Large File Processing/ WRITE ONLY /256 KiB Transfer Size" Test Run Data Measurement Interval, Run-Out, and Ramp-Down Periods

TR6	32 Streams			TR7	16 Streams			TR8	8 Streams			TR9	4 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	1,946.05	60.81	4.25	0:10:05	2,097.57	131.10	2.00	0:17:05	1,412.75	176.59	1.48	0:24:05	989.44	247.36	1.05	0:31:05	328.15	328.15	0.79
0:03:10	1,957.43	61.17	4.30	0:10:10	2,054.74	128.42	2.02	0:17:10	1,464.86	183.11	1.43	0:24:10	901.83	225.46	1.16	0:31:10	327.37	327.37	0.79
0:03:15	1,990.77	62.21	4.23	0:10:15	2,028.00	126.75	2.05	0:17:15	1,539.78	192.47	1.34	0:24:15	1,009.83	252.46	1.03	0:31:15	328.31	328.31	0.79
0:03:20	1,916.06	59.88	4.34	0:10:20	2,070.73	129.42	2.04	0:17:20	1,478.60	184.82	1.42	0:24:20	929.82	232.46	1.12	0:31:20	327.21	327.21	0.79
0:03:25	1,955.49	61.11	4.30	0:10:25	2,055.63	128.48	2.02	0:17:25	1,532.23	191.53	1.35	0:24:25	779.72	194.93	1.34	0:31:25	328.52	328.52	0.79
0:03:30	1,977.46	61.80	4.23	0:10:30	2,043.52	127.72	2.04	0:17:30	1,267.52	158.44	1.65	0:24:30	966.89	241.72	1.08	0:31:30	326.42	326.42	0.80
0:03:35	1,967.39	61.48	4.28	0:10:35	2,076.29	129.77	2.02	0:17:35	1,423.97	178.00	1.47	0:24:35	978.11	244.53	1.07	0:31:35	326.21	326.21	0.80
0:03:40	1,916.01	59.88	4.32	0:10:40	2,096.00	131.00	2.01	0:17:40	1,537.37	192.17	1.36	0:24:40	936.96	234.24	1.11	0:31:40	326.53	326.53	0.80
0:03:45	2,008.18	62.76	4.19	0:10:45	2,005.19	125.32	2.07	0:17:45	1,306.89	163.36	1.60	0:24:45	934.86	233.71	1.11	0:31:45	328.52	328.52	0.79
0:03:50	1,947.15	60.85	4.32	0:10:50	2,070.20	129.39	2.01	0:17:50	1,478.49	184.81	1.40	0:24:50	912.37	228.09	1.14	0:31:50	328.99	328.99	0.79
0:03:55	1,952.82	61.03	4.26	0:10:55	2,088.66	130.54	2.02	0:17:55	1,553.15	194.14	1.35	0:24:55	897.74	224.43	1.16	0:31:55	328.20	328.20	0.79
0:04:00	1,949.72	60.93	4.32	0:11:00	2,009.60	125.60	2.07	0:18:00	1,349.88	168.74	1.53	0:25:00	1,164.29	291.07	0.89	0:32:00	326.26	326.26	0.80
0:04:05	1,932.63	60.39	4.33	0:11:05	2,054.89	128.43	2.03	0:18:05	1,480.80	185.10	1.41	0:25:05	943.35	235.84	1.10	0:32:05	329.83	329.83	0.79
0:04:10	1,976.62	61.77	4.26	0:11:10	2,080.11	130.01	2.02	0:18:10	1,490.34	186.29	1.40	0:25:10	976.96	244.24	1.07	0:32:10	328.57	328.57	0.79
0:04:15	1,965.66	61.43	4.21	0:11:15	2,047.50	127.97	2.03	0:18:15	1,651.61	206.45	1.28	0:25:15	1,028.65	257.16	1.01	0:32:15	326.79	326.79	0.80
0:04:20	1,976.83	61.78	4.26	0:11:20	2,042.89	127.68	2.06	0:18:20	1,533.70	191.71	1.35	0:25:20	906.76	226.69	1.15	0:32:20	328.05	328.05	0.79
0:04:25	1,974.47	61.70	4.26	0:11:25	2,029.52	126.84	2.05	0:18:25	1,511.78	188.97	1.37	0:25:25	866.39	216.60	1.20	0:32:25	328.83	328.83	0.79
0:04:30	1,955.28	61.10	4.26	0:11:30	2,086.88	130.43	2.02	0:18:30	1,628.28	203.54	1.29	0:25:30	933.02	233.26	1.12	0:32:30	326.68	326.68	0.80
0:04:35	1,995.96	62.37	4.22	0:11:35	2,072.72	129.55	2.00	0:18:35	1,557.76	194.72	1.33	0:25:35	913.41	228.35	1.14	0:32:35	328.20	328.20	0.79
0:04:40	1,967.02	61.47	4.25	0:11:40	2,028.31	126.77	2.06	0:18:40	1,606.00	200.75	1.30	0:25:40	916.04	229.01	1.14	0:32:40	328.57	328.57	0.79
0:04:45	1,990.09	62.19	4.23	0:11:45	2,045.40	127.84	2.05	0:18:45	1,566.05	195.76	1.34	0:25:45	1,001.97	250.49	1.04	0:32:45	328.36	328.36	0.79
0:04:50	1,841.09	57.53	4.50	0:11:50	2,026.74	126.67	2.05	0:18:50	1,518.86	189.86	1.38	0:25:50	886.31	221.58	1.18	0:32:50	327.05	327.05	0.79
0:04:55	1,811.68	56.61	4.64	0:11:55	2,024.70	126.54	2.07	0:18:55	1,545.50	193.19	1.35	0:25:55	848.30	212.07	1.23	0:32:55	327.78	327.78	0.79
0:05:00	2,008.55	62.77	4.19	0:12:00	2,039.74	127.48	2.04	0:19:00	1,548.07	193.51	1.34	0:26:00	1,020.47	255.12	1.02	0:33:00	328.83	328.83	0.79
0:05:05	1,971.38	61.61	4.22	0:12:05	2,096.42	131.03	2.01	0:19:05	1,577.48	197.18	1.33	0:26:05	923.17	230.79	1.13	0:33:05	328.26	328.26	0.79
0:05:10	1,914.75	59.84	4.40	0:12:10	2,091.75	130.73	1.99	0:19:10	1,472.10	184.01	1.41	0:26:10	784.23	196.06	1.33	0:33:10	327.42	327.42	0.79
0:05:15	1,932.58	60.39	4.33	0:12:15	2,085.09	130.32	2.00	0:19:15	1,592.26	199.03	1.31	0:26:15	998.56	249.64	1.04	0:33:15	328.52	328.52	0.79
0:05:20	1,942.91	60.72	4.33	0:12:20	2,020.40	126.27	2.08	0:19:20	1,546.65	193.33	1.35	0:26:20	884.11	221.03	1.18	0:33:20	327.21	327.21	0.79
0:05:25	1,904.69	59.52	4.35	0:12:25	2,089.97	130.62	1.99	0:19:25	1,518.02	189.75	1.38	0:26:25	961.02	240.25	1.08	0:33:25	329.52	329.52	0.79
0:05:30	1,985.58	62.05	4.24	0:12:30	2,079.06	129.94	2.02	0:19:30	1,594.46	199.31	1.31	0:26:30	1,002.49	250.62	1.04	0:33:30	326.53	326.53	0.80
0:05:35	2,016.31	63.01	4.17	0:12:35	2,026.16	126.64	2.05	0:19:35	1,527.15	190.89	1.36	0:26:35	1,079.98	270.00	0.96	0:33:35	326.68	326.68	0.80
0:05:40	1,975.15	61.72	4.21	0:12:40	2,092.17	130.76	2.02	0:19:40	1,529.66	191.21	1.37	0:26:40	897.53	224.38	1.16	0:33:40	326.53	326.53	0.80
0:05:45	1,946.94	60.84	4.33	0:12:45	1,996.75	124.80	2.08	0:19:45	1,532.81	191.60	1.35	0:26:45	949.96	237.49	1.10	0:33:45	326.58	326.58	0.80
0:05:50	1,929.69	60.30	4.33	0:12:50	2,073.45	129.59	2.01	0:19:50	1,446.93	180.87	1.45	0:26:50	970.82	242.71	1.07	0:33:50	326.84	326.84	0.80
0:05:55	1,992.19	62.26	4.23	0:12:55	2,100.72	131.29	2.00	0:19:55	1,536.16	192.02	1.36	0:26:55	980.16	245.04	1.06	0:33:55	329.67	329.67	0.79
0:06:00	1,897.77	59.31	4.36	0:13:00	2,055.10	128.44	2.02	0:20:00	1,390.25	173.78	1.51	0:27:00	885.16	221.29	1.18	0:34:00	326.58	326.58	0.80
0:06:05	1,983.07	61.97	4.22	0:13:05	2,096.21	131.01	2.01	0:20:05	1,438.44	179.80	1.44	0:27:05	982.52	245.63	1.06	0:34:05	326.47	326.47	0.80
0:06:10	1,967.86	61.50	4.29	0:13:10	2,052.27	128.27	2.02	0:20:10	1,503.82	187.98	1.39	0:27:10	961.39	240.35	1.08	0:34:10	328.73	328.73	0.79
0:06:15	1,970.96	61.59	4.25	0:13:15	2,080.85	130.05	2.02	0:20:15	1,583.24	197.91	1.32	0:27:15	833.25	208.31	1.25	0:34:15	328.41	328.41	0.79
0:06:20	1,984.80	62.02	4.19	0:13:20	2,073.77	129.61	2.00	0:20:20	1,481.38	185.17	1.41	0:27:20	938.27	234.57	1.11	0:34:20	326.00	326.00	0.80
0:06:25	1,976.41	61.76	4.23	0:13:25	2,042.10	127.63	2.04	0:20:25	1,439.85	179.98	1.44	0:27:25	857.26	214.32	1.22	0:34:25	328.20	328.20	0.79
0:06:30	1,967.65	61.49	4.28	0:13:30	2,035.50	127.22	2.05	0:20:30	1,489.61	186.20	1.40	0:27:30	920.39	230.10	1.13	0:34:30	328.52	328.52	0.79
0:06:35	1,980.66	61.90	4.22	0:13:35	2,090.70	130.67	2.02	0:20:35	1,533.75	191.72	1.37	0:27:35	1,130.31	282.58	0.92	0:34:35	326.79	326.79	0.80
0:06:40	1,981.76	61.93	4.23	0:13:40	2,084.62	130.29	2.01	0:20:40	1,543.35	192.92	1.34	0:27:40	893.91	223.48	1.17	0:34:40	330.25	330.25	0.79
0:06:45	1,963.14	61.35	4.28	0:13:45	2,063.02	128.94	2.01	0:20:45	1,560.02	195.00	1.34	0:27:45	753.77	188.44	1.38	0:34:45	328.83	328.83	0.79
0:06:50	276.98	0.00	3.00	0:13:50	249.77	0.00	1.78	0:20:50	121.11	0.00	1.64	0:27:50	7.55	0.00	1.10	0:34:50	2.10	0.00	0.79
0:06:55	0.00	0.00	0.00	0:13:55	0.00	0.00	0.00	0:20:55	0.00	0.00	0.00	0:27:55	0.00	0.00	0.00	0:34:55	0.00	0.00	0.00

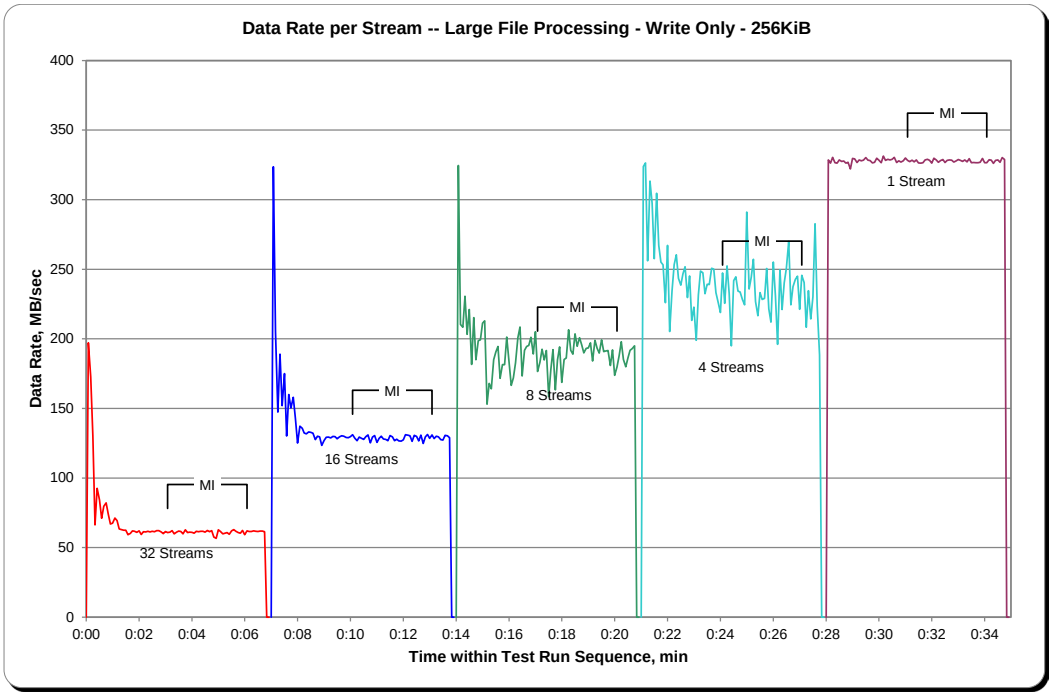
SPC-2 "Large File Processing/ WRITE ONLY /256 KiB Transfer Size" Average Data Rate Graph – Complete Test Run



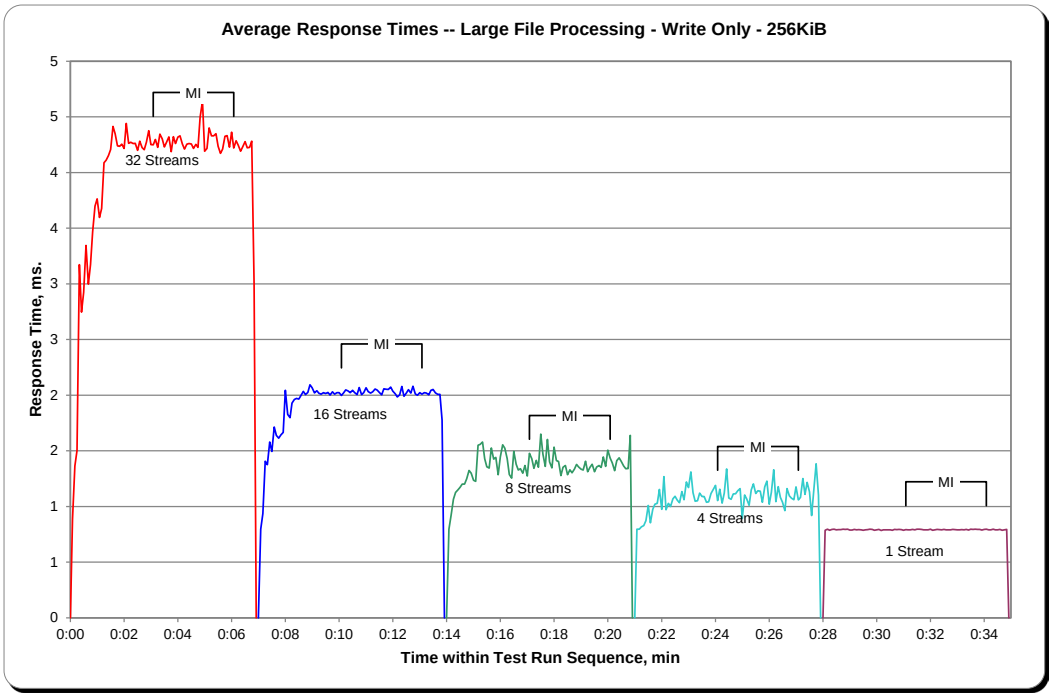
SPC-2 "Large File Processing/ WRITE ONLY /256 KiB Transfer Size" Average Data Rate Graph – Measurement Interval (MI) Only



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



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



Large File Processing Test – READ-WRITE Test Phase

Clause 10.6.8.1.2

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

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

Immediately following the SPC-2 "Large File Processing/ READ-WRITE /1024 KiB Transfer Size" table and graphs will be the SPC-2 "Large File Processing/ READ-WRITE /64 KiB Transfer Size" table and graphs. The table contains the Test Run data and the graphs illustrate the average Data Rate, average Data Rate per Stream, and average Response Time produced by the Test Runs.

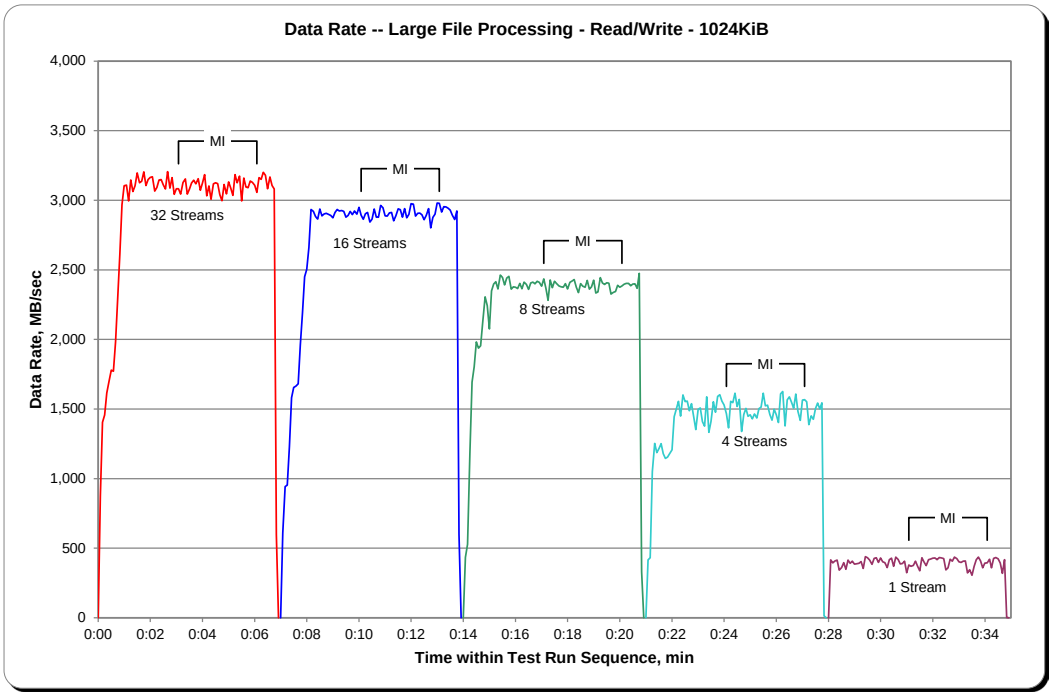
SPC-2 "Large File Processing/READ-WRITE/1024 KiB Transfer Size" Test Run Data – Ramp-Up Period

TR11	32 Streams			TR12	16 Streams			TR13	8 Streams			TR14	4 Streams			TR15	1 Stream		
Test Run Sequence Time	Data Rate, MB/sec	Data Rate / Stream, MB/sec	Response Time, ms	Test Run Sequence Time	Data Rate, MB/sec	Data Rate / Stream, MB/sec	Response Time, ms	Test Run Sequence Time	Data Rate, MB/sec	Data Rate / Stream, MB/sec	Response Time, ms	Test Run Sequence Time	Data Rate, MB/sec	Data Rate / Stream, MB/sec	Response Time, ms	Test Run Sequence Time	Data Rate, MB/sec	Data Rate / Stream, MB/sec	Response Time, ms
0:00:00	0.00	0.00	0.00	0:07:00	0.00	0.00	0.00	0:14:00	0.00	0.00	0.00	0:21:00	0.00	0.00	0.00	0:28:00	0.00	0.00	0.00
0:00:05	874.93	174.99	3.23	0:07:05	609.43	203.14	2.99	0:14:05	434.53	434.53	2.39	0:21:05	416.07	416.07	2.50	0:28:05	416.07	416.07	2.49
0:00:10	1,404.67	234.11	4.24	0:07:10	942.46	314.15	3.33	0:14:10	528.48	264.24	2.79	0:21:10	430.96	430.96	2.43	0:28:10	394.68	394.68	2.64
0:00:15	1,456.47	208.07	4.37	0:07:15	953.78	238.45	3.67	0:14:15	1,187.20	237.44	3.09	0:21:15	1,049.62	349.87	2.44	0:28:15	408.94	408.94	2.56
0:00:20	1,615.44	179.49	5.11	0:07:20	1,229.98	246.00	3.72	0:14:20	1,693.66	338.73	3.09	0:21:20	1,252.00	417.33	2.51	0:28:20	414.19	414.19	2.52
0:00:25	1,694.92	154.08	6.35	0:07:25	1,581.25	263.54	3.83	0:14:25	1,804.39	300.73	3.09	0:21:25	1,185.94	395.31	2.65	0:28:25	342.67	342.67	3.05
0:00:30	1,779.22	127.09	7.63	0:07:30	1,655.49	236.50	4.25	0:14:30	1,982.44	330.41	3.15	0:21:30	1,215.93	405.31	2.58	0:28:30	360.50	360.50	2.90
0:00:35	1,772.30	118.15	8.77	0:07:35	1,663.46	237.64	4.42	0:14:35	1,937.14	322.86	3.25	0:21:35	1,251.37	417.12	2.51	0:28:35	395.94	395.94	2.64
0:00:40	1,981.60	116.56	8.68	0:07:40	1,681.29	210.16	4.63	0:14:40	1,954.34	325.72	3.22	0:21:40	1,179.23	393.08	2.66	0:28:40	348.55	348.55	3.00
0:00:45	2,294.49	127.47	8.20	0:07:45	1,961.47	217.94	4.69	0:14:45	2,126.30	303.76	3.22	0:21:45	1,145.67	381.89	2.74	0:28:45	414.40	414.40	2.52
0:00:50	2,610.74	124.32	7.93	0:07:50	2,189.43	199.04	4.64	0:14:50	2,305.82	329.40	3.18	0:21:50	1,155.11	385.04	2.72	0:28:50	391.54	391.54	2.67
0:00:55	2,967.68	129.03	7.62	0:07:55	2,450.10	222.74	4.69	0:14:55	2,242.69	320.38	3.27	0:21:55	1,182.58	394.19	2.65	0:28:55	407.48	407.48	2.56
0:01:00	3,103.99	124.16	8.07	0:08:00	2,503.79	208.65	4.70	0:15:00	2,075.13	296.45	3.54	0:22:00	1,206.07	402.02	2.60	0:29:00	385.04	385.04	2.72
0:01:05	3,108.82	115.14	8.73	0:08:05	2,660.66	204.67	4.74	0:15:05	2,349.02	293.63	3.40	0:22:05	1,444.73	361.18	2.82	0:29:05	388.39	388.39	2.69
0:01:10	2,994.73	99.82	9.89	0:08:10	2,933.92	183.37	5.23	0:15:10	2,397.46	299.68	3.50	0:22:10	1,499.25	374.81	2.80	0:29:10	391.75	391.75	2.67
0:01:15	3,145.73	104.86	10.07	0:08:15	2,919.86	182.49	5.76	0:15:15	2,414.45	301.81	3.48	0:22:15	1,555.25	388.81	2.69	0:29:15	403.07	403.07	2.59
0:01:20	3,063.10	95.72	10.55	0:08:20	2,883.37	180.21	5.78	0:15:20	2,362.86	295.36	3.52	0:22:20	1,448.50	362.13	2.89	0:29:20	354.00	354.00	2.96
0:01:25	3,104.41	97.01	10.75	0:08:25	2,864.92	179.06	5.81	0:15:25	2,462.27	307.78	3.41	0:22:25	1,600.76	400.19	2.61	0:29:25	438.30	438.30	2.38
0:01:30	3,196.48	99.89	10.58	0:08:30	2,936.22	183.51	5.73	0:15:30	2,445.28	305.66	3.43	0:22:30	1,553.15	388.29	2.69	0:29:30	431.59	431.59	2.42
0:01:35	3,125.81	97.68	10.73	0:08:35	2,887.57	180.47	5.80	0:15:35	2,392.01	299.00	3.51	0:22:35	1,557.35	389.34	2.69	0:29:35	413.77	413.77	2.53
0:01:40	3,136.71	98.02	10.70	0:08:40	2,901.83	181.36	5.77	0:15:40	2,440.67	305.08	3.41	0:22:40	1,486.88	371.72	2.81	0:29:40	384.20	384.20	2.72
0:01:45	3,203.40	100.11	10.34	0:08:45	2,906.65	181.67	5.79	0:15:45	2,453.25	306.66	3.42	0:22:45	1,538.05	384.51	2.72	0:29:45	426.35	426.35	2.45
0:01:50	3,106.09	97.07	10.84	0:08:50	2,897.84	181.12	5.81	0:15:50	2,360.97	295.12	3.56	0:22:50	1,446.83	361.71	2.89	0:29:50	432.01	432.01	2.42
0:01:55	3,148.24	98.38	10.65	0:08:55	2,890.29	180.64	5.76	0:15:55	2,377.54	297.19	3.50	0:22:55	1,353.08	338.27	3.09	0:29:55	397.41	397.41	2.63
0:02:00	3,163.76	98.87	10.53	0:09:00	2,874.57	179.66	5.79	0:16:00	2,374.40	296.80	3.54	0:23:00	1,498.83	374.71	2.79	0:30:00	429.29	429.29	2.43
0:02:05	3,169.01	99.03	10.68	0:09:05	2,912.52	182.03	5.78	0:16:05	2,365.38	295.67	3.55	0:23:05	1,507.43	376.86	2.77	0:30:05	401.81	401.81	2.60
0:02:10	3,065.83	95.81	10.82	0:09:10	2,933.92	183.37	5.71	0:16:10	2,402.50	300.31	3.50	0:23:10	1,408.66	352.16	2.97	0:30:10	395.52	395.52	2.64
0:02:15	3,092.46	96.64	10.91	0:09:15	2,922.38	182.65	5.73	0:16:15	2,363.91	295.49	3.51	0:23:15	1,377.20	344.30	3.04	0:30:15	360.71	360.71	2.90
0:02:20	3,146.15	98.32	10.57	0:09:20	2,926.58	182.91	5.76	0:16:20	2,411.93	301.49	3.48	0:23:20	1,587.12	396.78	2.64	0:30:20	417.12	417.12	2.51
0:02:25	3,149.08	98.41	10.72	0:09:25	2,920.28	182.52	5.76	0:16:25	2,394.95	299.37	3.51	0:23:25	1,332.74	333.19	3.14	0:30:25	428.45	428.45	2.44
0:02:30	3,109.66	97.18	10.80	0:09:30	2,878.34	179.90	5.78	0:16:30	2,359.30	294.91	3.52	0:23:30	1,411.17	352.79	2.96	0:30:30	369.73	369.73	2.83
0:02:35	3,081.35	96.29	10.77	0:09:35	2,890.29	180.64	5.76	0:16:35	2,406.27	300.78	3.49	0:23:35	1,551.68	387.92	2.70	0:30:35	435.37	435.37	2.40
0:02:40	3,206.13	100.19	10.52	0:09:40	2,920.70	182.54	5.77	0:16:40	2,411.31	301.41	3.48	0:23:40	1,476.40	369.10	2.83	0:30:40	419.64	419.64	2.49
0:02:45	3,087.64	96.49	10.83	0:09:45	2,896.59	181.04	5.78	0:16:45	2,398.93	299.87	3.50	0:23:45	1,591.11	397.78	2.63	0:30:45	386.51	386.51	2.71
0:02:50	3,162.51	98.83	10.69	0:09:50	2,923.22	182.70	5.73	0:16:50	2,418.65	302.33	3.44	0:23:50	1,603.06	400.77	2.61	0:30:50	389.65	389.65	2.68
0:02:55	3,042.76	95.09	10.94	0:09:55	2,899.73	181.23	5.80	0:16:55	2,410.68	301.33	3.48	0:23:55	1,556.09	389.02	2.69	0:30:55	407.27	407.27	2.57
0:03:00	3,081.97	96.31	10.94	0:10:00	2,949.85	184.37	5.71	0:17:00	2,382.78	297.85	3.52	0:24:00	1,528.82	382.21	2.74	0:31:00	323.80	323.80	3.23

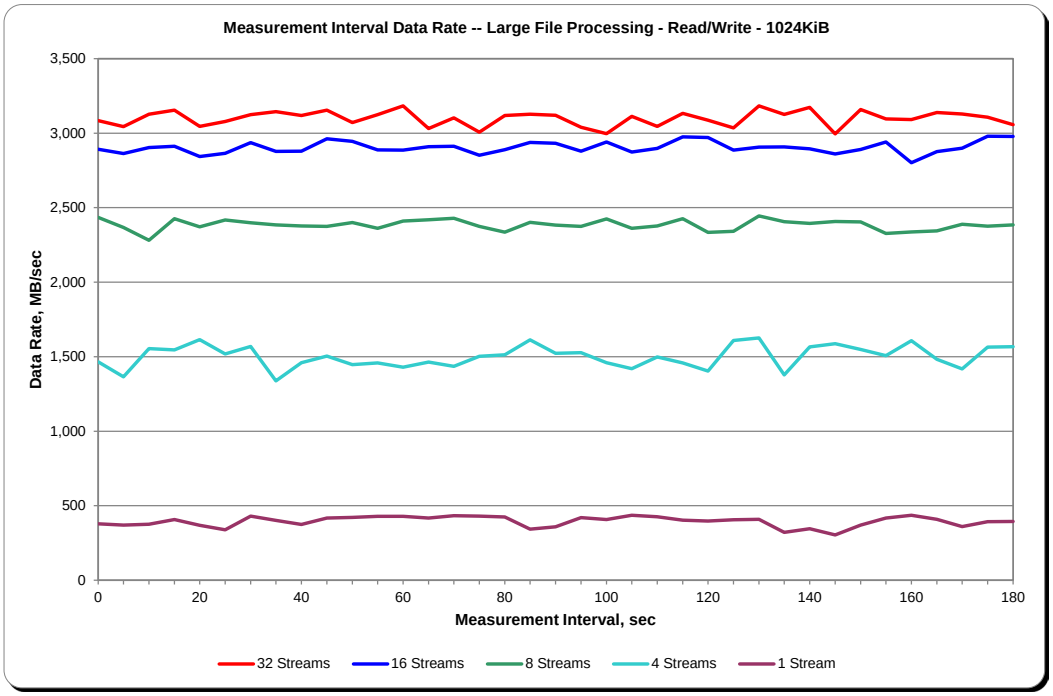
SPC-2 "Large File Processing/READ-WRITE/1024 KiB Transfer Size" Test Run Data Measurement Interval, Run-Out, and Ramp-Down Periods

TR11	32 Streams			TR12	16 Streams			TR13	8 Streams			TR14	4 Streams			TR15	1 Stream		
Test Run Sequence Time	Data Rate, MB/sec	Data Rate / Stream, MB/sec	Response Time, ms	Test Run Sequence Time	Data Rate, MB/sec	Data Rate / Stream, MB/sec	Response Time, ms	Test Run Sequence Time	Data Rate, MB/sec	Data Rate / Stream, MB/sec	Response Time, ms	Test Run Sequence Time	Data Rate, MB/sec	Data Rate / Stream, MB/sec	Response Time, ms	Test Run Sequence Time	Data Rate, MB/sec	Data Rate / Stream, MB/sec	Response Time, ms
0:03:05	3,083.44	96.36	10.78	0:10:05	2,892.39	180.77	5.77	0:17:05	2,434.16	304.27	3.45	0:24:05	1,465.49	366.37	2.86	0:31:05	378.54	378.54	2.76
0:03:10	3,044.23	95.13	11.02	0:10:10	2,863.03	178.94	5.81	0:17:10	2,367.47	295.93	3.45	0:24:10	1,365.04	341.26	3.05	0:31:10	370.57	370.57	2.82
0:03:15	3,127.27	97.73	10.80	0:10:15	2,903.72	181.48	5.80	0:17:15	2,281.49	285.19	3.74	0:24:15	1,554.62	388.65	2.69	0:31:15	376.02	376.02	2.78
0:03:21	3,153.91	98.56	10.68	0:10:20	2,911.69	181.98	5.78	0:17:20	2,426.40	303.30	3.46	0:24:20	1,545.60	386.40	2.70	0:31:20	407.27	407.27	2.57
0:03:25	3,044.65	95.15	10.95	0:10:25	2,843.53	177.72	5.84	0:17:25	2,371.88	296.48	3.50	0:24:25	1,614.18	403.54	2.58	0:31:25	369.31	369.31	2.83
0:03:30	3,079.04	96.22	10.80	0:10:30	2,865.13	179.07	5.82	0:17:30	2,417.18	302.15	3.47	0:24:30	1,518.34	379.58	2.75	0:31:30	338.27	338.27	3.09
0:03:35	3,124.55	97.64	10.77	0:10:35	2,937.06	183.57	5.73	0:17:35	2,399.14	299.89	3.50	0:24:35	1,569.30	392.32	2.66	0:31:35	430.96	430.96	2.43
0:03:40	3,143.84	98.25	10.71	0:10:40	2,878.34	179.90	5.85	0:17:40	2,384.04	298.01	3.53	0:24:40	1,338.61	334.65	3.11	0:31:40	401.19	401.19	2.61
0:03:45	3,117.84	97.43	10.66	0:10:45	2,879.18	179.95	5.78	0:17:45	2,377.54	297.19	3.49	0:24:45	1,459.41	364.85	2.87	0:31:45	374.13	374.13	2.80
0:03:50	3,154.12	98.57	10.67	0:10:50	2,962.23	185.14	5.68	0:17:50	2,374.19	296.77	3.54	0:24:50	1,504.71	376.18	2.78	0:31:50	417.54	417.54	2.50
0:03:55	3,071.70	95.99	10.90	0:10:55	2,945.45	184.09	5.72	0:17:55	2,400.40	300.05	3.50	0:24:55	1,447.24	361.81	2.89	0:31:55	421.95	421.95	2.48
0:04:00	3,124.34	97.64	10.82	0:11:00	2,887.99	180.50	5.74	0:18:00	2,362.23	295.28	3.52	0:25:00	1,457.73	364.43	2.87	0:32:00	428.66	428.66	2.44
0:04:05	3,183.48	99.48	10.51	0:11:05	2,886.31	180.39	5.79	0:18:05	2,409.84	301.23	3.48	0:25:05	1,429.00	357.25	2.92	0:32:05	429.08	429.08	2.44
0:04:10	3,031.43	94.73	10.95	0:11:10	2,909.38	181.84	5.79	0:18:10	2,419.06	302.38	3.47	0:25:10	1,464.23	366.06	2.86	0:32:10	417.12	417.12	2.51
0:04:15	3,103.16	96.97	10.76	0:11:15	2,912.73	182.05	5.78	0:18:15	2,429.55	303.69	3.46	0:25:15	1,434.87	358.72	2.91	0:32:15	433.06	433.06	2.41
0:04:20	3,007.32	93.98	11.22	0:11:20	2,851.71	178.23	5.84	0:18:20	2,374.61	296.83	3.50	0:25:20	1,502.61	375.65	2.79	0:32:20	430.55	430.55	2.43
0:04:25	3,118.05	97.44	10.85	0:11:25	2,888.41	180.53	5.83	0:18:25	2,336.02	292.00	3.59	0:25:25	1,513.10	378.27	2.76	0:32:25	424.67	424.67	2.46
0:04:30	3,126.43	97.70	10.63	0:11:30	2,937.69	183.61	5.73	0:18:30	2,401.24	300.15	3.50	0:25:30	1,613.34	403.33	2.60	0:32:30	343.30	343.30	3.05
0:04:35	3,119.93	97.50	10.84	0:11:35	2,931.61	183.23	5.65	0:18:35	2,382.36	297.80	3.49	0:25:35	1,522.95	380.74	2.75	0:32:35	359.24	359.24	2.91
0:04:40	3,039.19	94.97	11.04	0:11:40	2,878.55	179.91	5.82	0:18:40	2,374.81	296.85	3.53	0:25:40	1,527.78	381.94	2.74	0:32:40	420.69	420.69	2.49
0:04:45	2,996.62	93.64	11.08	0:11:45	2,940.42	183.78	5.73	0:18:45	2,424.52	303.06	3.46	0:25:45	1,460.04	365.01	2.87	0:32:45	406.85	406.85	2.57
0:04:50	3,112.80	97.28	10.88	0:11:50	2,873.31	179.58	5.86	0:18:50	2,360.97	295.12	3.56	0:25:50	1,419.35	354.84	2.95	0:32:50	436.00	436.00	2.40
0:04:55	3,045.69	95.18	10.89	0:11:55	2,898.26	181.14	5.74	0:18:55	2,377.75	297.22	3.50	0:25:55	1,498.00	374.50	2.79	0:32:55	425.72	425.72	2.45
0:05:00	3,132.10	97.88	10.84	0:12:00	2,975.44	185.96	5.65	0:19:00	2,425.78	303.22	3.46	0:26:00	1,457.73	364.43	2.87	0:33:00	402.65	402.65	2.60
0:05:05	3,087.22	96.48	10.76	0:12:05	2,971.45	185.72	5.67	0:19:05	2,333.92	291.74	3.60	0:26:05	1,403.20	350.80	2.98	0:33:05	397.83	397.83	2.63
0:05:10	3,034.79	94.84	11.11	0:12:10	2,886.94	180.43	5.73	0:19:10	2,341.47	292.68	3.55	0:26:10	1,609.35	402.34	2.60	0:33:10	406.43	406.43	2.57
0:05:15	3,183.48	99.48	10.49	0:12:15	2,906.65	181.67	5.76	0:19:15	2,444.23	305.53	3.43	0:26:15	1,625.50	406.38	2.57	0:33:15	408.53	408.53	2.56
0:05:20	3,124.97	97.66	10.73	0:12:20	2,908.12	181.76	5.79	0:19:20	2,406.27	300.78	3.49	0:26:20	1,378.67	344.67	3.03	0:33:20	321.70	321.70	3.25
0:05:25	3,173.62	99.18	10.59	0:12:25	2,895.33	180.96	5.81	0:19:25	2,394.95	299.37	3.51	0:26:25	1,565.94	391.49	2.67	0:33:25	345.19	345.19	3.03
0:05:30	2,995.78	93.62	11.14	0:12:30	2,860.52	178.78	5.82	0:19:30	2,406.90	300.86	3.45	0:26:30	1,587.54	396.89	2.63	0:33:30	304.72	304.72	3.43
0:05:35	3,159.15	98.72	10.74	0:12:35	2,890.09	180.63	5.83	0:19:35	2,404.18	300.52	3.49	0:26:35	1,549.17	387.29	2.70	0:33:35	370.57	370.57	2.82
0:05:40	3,095.61	96.74	10.68	0:12:40	2,940.21	183.76	5.73	0:19:40	2,326.58	290.82	3.61	0:26:40	1,506.38	376.60	2.78	0:33:40	416.91	416.91	2.51
0:05:45	3,090.78	96.59	10.94	0:12:45	2,801.80	175.11	5.91	0:19:45	2,337.70	292.21	3.56	0:26:45	1,606.84	401.71	2.60	0:33:45	436.00	436.00	2.40
0:05:50	3,138.18	98.07	10.72	0:12:50	2,876.45	179.78	5.82	0:19:50	2,344.62	293.08	3.58	0:26:50	1,482.48	370.62	2.82	0:33:50	408.73	408.73	2.56
0:05:55	3,128.74	97.77	10.65	0:12:55	2,899.31	181.21	5.81	0:19:55	2,388.66	298.58	3.52	0:26:55	1,418.51	354.63	2.95	0:33:55	359.66	359.66	2.91
0:06:00	3,107.35	97.10	10.83	0:13:00	2,980.05	186.25	5.64	0:20:00	2,375.23	296.90	3.54	0:27:00	1,564.69	391.17	2.67	0:34:00	393.43	393.43	2.66
0:06:05	3,057.02	95.53	11.01	0:13:05	2,977.75	186.11	5.61	0:20:05	2,384.88	298.11	3.47	0:27:05	1,566.78	391.70	2.66	0:34:05	394.47	394.47	2.65
0:06:10	3,163.13	98.85	10.57	0:13:10	2,914.62	182.16	5.71	0:20:10	2,396.21	299.53	3.50	0:27:10	1,551.68	387.92	2.70	0:34:11	420.06	420.06	2.49
0:06:15	3,149.50	98.42	10.55	0:13:15	2,953.00	184.56	5.67	0:20:15	2,403.34	300.42	3.50	0:27:15	1,388.52	347.13	3.01	0:34:15	359.24	359.24	2.91
0:06:20	3,200.46	100.01	10.56	0:13:20	2,952.79	184.55	5.73	0:20:20	2,403.34	300.42	3.50	0:27:20	1,451.23	362.81	2.88	0:34:20	426.77	426.77	2.45
0:06:25	3,179.91	99.37	10.44	0:13:25	2,942.51	183.91	5.62	0:20:25	2,385.51	298.19	3.48	0:27:25	1,425.85	356.46	2.94	0:34:25	432.64	432.64	2.42
0:06:30	3,081.97	96.31	10.79	0:13:30	2,928.88	183.06	5.79	0:20:30	2,397.25	299.66	3.50	0:27:30	1,503.45	375.86	2.78	0:34:30	424.25	424.25	2.46
0:06:35	3,167.54	98.99	10.65	0:13:35	2,892.39	180.77	5.82	0:20:35	2,400.19	300.02	3.50	0:27:35	1,542.25	385.56	2.71	0:34:35	393.43	393.43	2.66
0:06:40	3,106.30	97.07	10.83	0:13:40	2,860.93	178.81	5.82	0:20:40	2,366.85	295.86	3.51	0:27:40	1,501.35	375.34	2.79	0:34:40	319.19	319.19	3.28
0:06:45	3,080.93	96.28	11.00	0:13:45	2,923.22	182.70	5.70	0:20:45	2,475.06	309.38	3.39	0:27:45	1,544.55	386.14	2.71	0:34:45	418.17	418.17	2.50
0:06:50	597.48	0.00	8.89	0:13:50	599.79	0.00	4.59	0:20:50	330.51	0.00	3.16	0:27:50	14.26	0.00	2.47	0:34:50	1.47	0.00	4.94
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

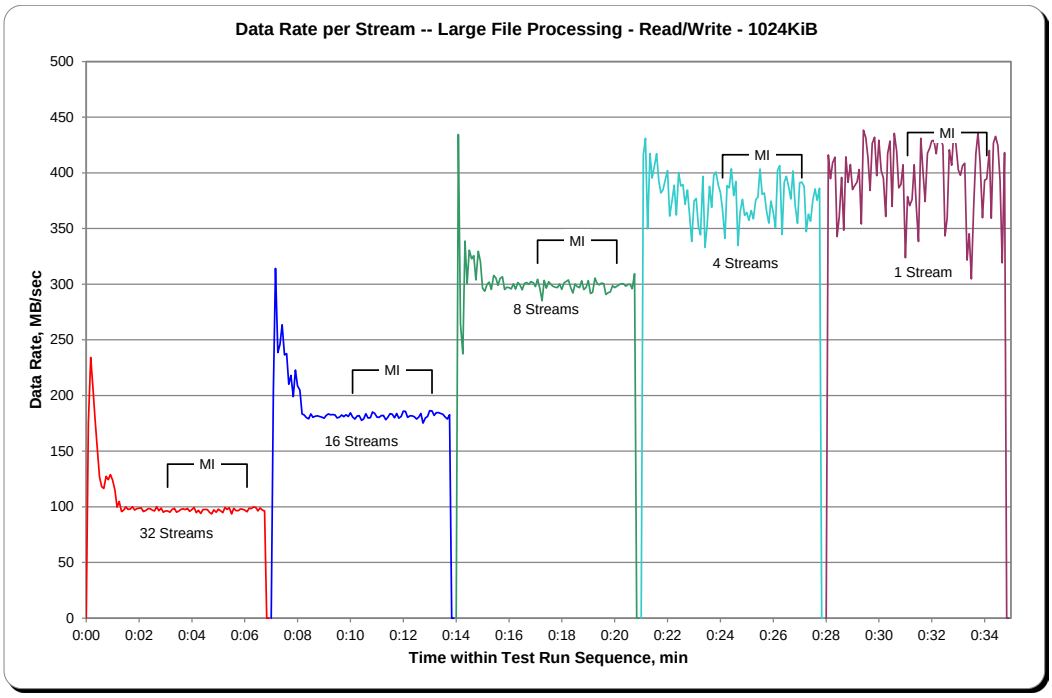
SPC-2 "Large File Processing/ READ-WRITE/1024 KiB Transfer Size" Average Data Rate Graph – Complete Test Run



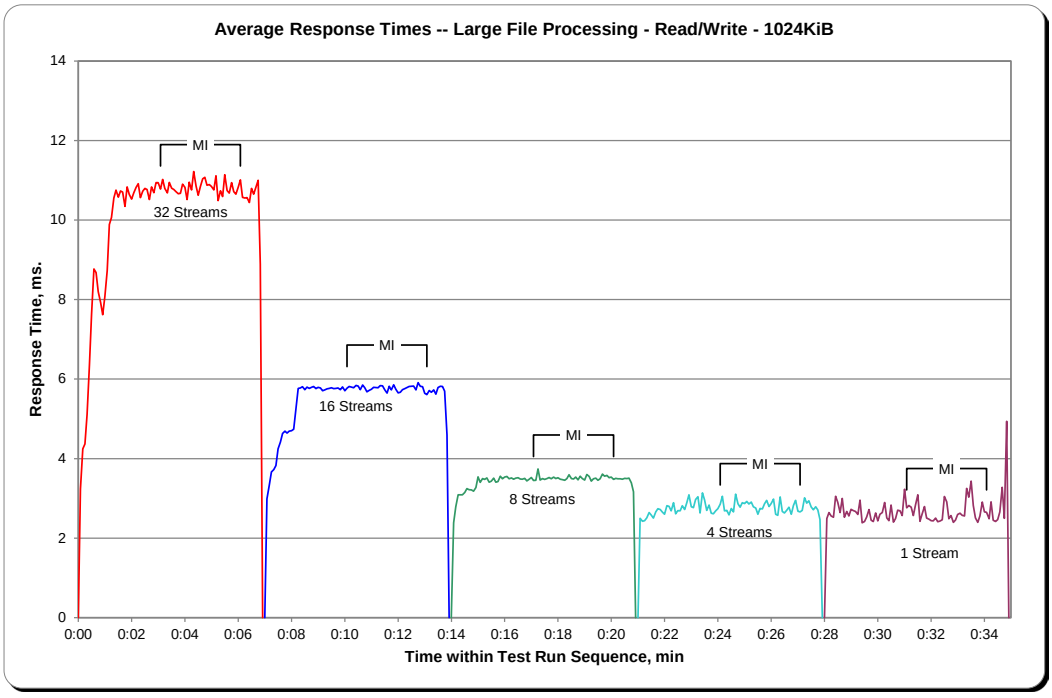
SPC-2 "Large File Processing/ READ-WRITE/1024 KiB Transfer Size" Average Data Rate Graph – Measurement Interval (MI) Only



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

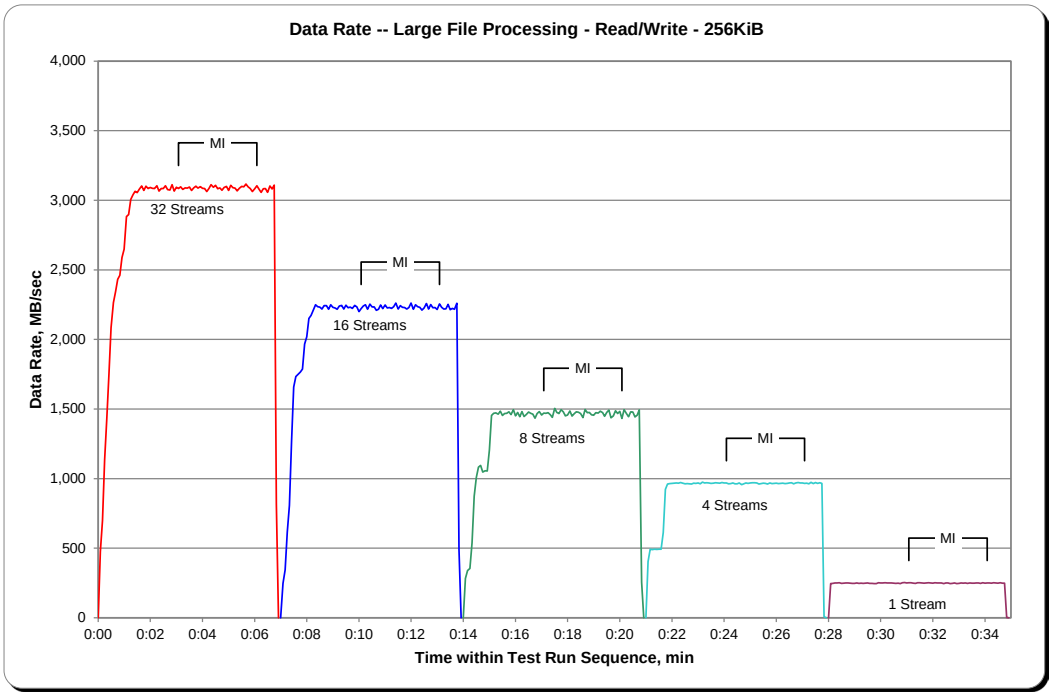
Test Run Sequence - Ramp-Up Interval

TR16	32 Streams			TR17	16 Streams			TR18	8 Streams			TR19	4 Streams			TR20	1 Stream		
Test Run Sequence Time	Data Rate, MB/sec	Data Rate / Stream, MB/sec	Response Time, ms	Test Run Sequence Time	Data Rate, MB/sec	Data Rate / Stream, MB/sec	Response Time, ms	Test Run Sequence Time	Data Rate, MB/sec	Data Rate / Stream, MB/sec	Response Time, ms	Test Run Sequence Time	Data Rate, MB/sec	Data Rate / Stream, MB/sec	Response Time, ms	Test Run Sequence Time	Data Rate, MB/sec	Data Rate / Stream, MB/sec	Response Time, ms
0:00:00	0.00	0.00	0.00	0:07:00	0.00	0.00	0.00	0:14:00	0.00	0.00	0.00	0:21:00	0.00	0.00	0.00	0:28:00	0.00	0.00	0.00
0:00:05	476.05	119.01	1.53	0:07:05	246.73	246.73	1.05	0:14:05	282.38	141.19	1.29	0:21:05	402.97	201.48	1.06	0:28:05	245.52	245.52	1.05
0:00:10	698.77	116.46	1.65	0:07:10	343.62	85.90	1.61	0:14:10	338.74	169.37	1.54	0:21:10	492.67	246.34	1.06	0:28:10	246.52	246.52	1.06
0:00:15	1,136.39	126.27	1.73	0:07:15	616.14	154.04	1.69	0:14:15	355.15	177.58	1.47	0:21:15	490.42	245.21	1.06	0:28:15	249.51	249.51	1.04
0:00:20	1,427.11	118.93	1.88	0:07:20	808.14	134.69	1.60	0:14:20	538.60	134.65	1.43	0:21:20	492.36	246.18	1.06	0:28:20	250.19	250.19	1.04
0:00:25	1,744.94	96.94	2.19	0:07:25	1,265.74	115.07	1.69	0:14:25	873.04	174.61	1.39	0:21:25	491.57	245.79	1.06	0:28:25	251.82	251.82	1.03
0:00:30	2,084.10	109.69	2.29	0:07:30	1,658.64	150.79	1.75	0:14:30	1,008.15	168.03	1.43	0:21:30	491.99	246.00	1.06	0:28:30	247.62	247.62	1.05
0:00:35	2,263.77	113.19	2.30	0:07:35	1,733.72	144.48	1.79	0:14:35	1,082.92	180.49	1.45	0:21:35	492.10	246.05	1.06	0:28:35	249.04	249.04	1.05
0:00:40	2,342.05	111.53	2.28	0:07:40	1,748.45	145.70	1.79	0:14:40	1,094.14	182.36	1.42	0:21:40	613.10	204.37	1.06	0:28:40	250.19	250.19	1.04
0:00:45	2,432.43	115.83	2.23	0:07:45	1,765.85	147.15	1.78	0:14:45	1,047.68	174.61	1.50	0:21:45	922.75	230.69	1.08	0:28:45	249.98	249.98	1.04
0:00:50	2,460.64	117.17	2.24	0:07:50	1,787.40	137.49	1.77	0:14:50	1,056.70	176.12	1.48	0:21:50	960.92	240.23	1.08	0:28:50	248.72	248.72	1.05
0:00:55	2,588.93	112.56	2.27	0:07:55	1,966.45	151.27	1.73	0:14:55	1,054.71	175.79	1.49	0:21:55	964.53	241.13	1.08	0:28:55	247.41	247.41	1.05
0:01:00	2,647.92	101.84	2.29	0:08:00	2,018.88	134.59	1.76	0:15:00	1,205.81	172.26	1.40	0:22:00	966.00	241.50	1.08	0:29:00	247.52	247.52	1.05
0:01:05	2,883.74	110.91	2.36	0:08:05	2,151.47	143.43	1.83	0:15:05	1,453.17	181.65	1.41	0:22:05	967.15	241.79	1.08	0:29:05	250.40	250.40	1.04
0:01:10	2,897.58	103.49	2.42	0:08:10	2,172.07	135.75	1.85	0:15:10	1,469.11	183.64	1.43	0:22:10	968.62	242.16	1.08	0:29:10	247.83	247.83	1.05
0:01:15	3,006.27	100.21	2.51	0:08:15	2,212.29	138.27	1.88	0:15:15	1,471.57	183.95	1.41	0:22:15	966.58	241.64	1.08	0:29:15	248.46	248.46	1.05
0:01:20	3,037.62	101.25	2.58	0:08:20	2,248.67	140.54	1.87	0:15:20	1,463.71	182.96	1.43	0:22:20	971.56	242.89	1.07	0:29:20	247.36	247.36	1.05
0:01:25	3,064.04	98.84	2.61	0:08:25	2,235.98	139.75	1.87	0:15:25	1,484.84	185.60	1.41	0:22:25	967.21	241.80	1.08	0:29:25	249.30	249.30	1.04
0:01:30	3,054.76	95.46	2.67	0:08:30	2,232.37	139.52	1.87	0:15:30	1,453.33	181.67	1.44	0:22:30	963.27	240.82	1.08	0:29:30	250.92	250.92	1.04
0:01:35	3,079.30	96.23	2.72	0:08:35	2,218.21	138.64	1.87	0:15:35	1,466.96	183.37	1.41	0:22:35	964.38	241.09	1.08	0:29:35	247.73	247.73	1.05
0:01:40	3,102.84	96.96	2.71	0:08:40	2,242.43	140.15	1.87	0:15:40	1,468.48	183.56	1.43	0:22:40	961.75	240.44	1.08	0:29:40	247.15	247.15	1.05
0:01:45	3,071.17	95.97	2.71	0:08:45	2,242.59	140.16	1.87	0:15:45	1,480.33	185.04	1.42	0:22:45	960.81	240.20	1.08	0:29:45	245.89	245.89	1.06
0:01:50	3,100.90	96.90	2.70	0:08:50	2,217.21	138.58	1.87	0:15:50	1,459.93	182.49	1.42	0:22:50	966.42	241.61	1.08	0:29:50	246.00	246.00	1.06
0:01:55	3,083.76	96.37	2.71	0:08:55	2,248.67	140.54	1.87	0:15:55	1,495.58	186.95	1.40	0:22:55	966.05	241.51	1.08	0:29:55	252.34	252.34	1.03
0:02:00	3,091.52	96.61	2.72	0:09:00	2,230.11	139.38	1.87	0:16:00	1,450.81	181.35	1.44	0:23:00	967.99	242.00	1.08	0:30:00	249.51	249.51	1.04
0:02:05	3,086.38	96.45	2.71	0:09:05	2,226.76	139.17	1.87	0:16:05	1,476.03	184.50	1.42	0:23:05	962.75	240.69	1.08	0:30:05	250.92	250.92	1.04
0:02:10	3,084.91	96.40	2.71	0:09:10	2,216.85	138.55	1.87	0:16:10	1,444.94	180.62	1.43	0:23:10	974.81	243.70	1.07	0:30:10	251.45	251.45	1.04
0:02:15	3,103.47	96.98	2.71	0:09:15	2,239.18	139.95	1.88	0:16:15	1,481.11	185.14	1.41	0:23:15	969.20	242.30	1.08	0:30:15	250.40	250.40	1.04
0:02:20	3,065.51	95.80	2.71	0:09:20	2,244.01	140.25	1.87	0:16:20	1,446.30	180.79	1.45	0:23:20	969.62	242.40	1.07	0:30:20	249.67	249.67	1.04
0:02:25	3,084.75	96.40	2.71	0:09:25	2,218.42	138.65	1.87	0:16:25	1,460.19	182.52	1.42	0:23:25	968.26	242.06	1.08	0:30:25	249.61	249.61	1.04
0:02:30	3,083.50	96.36	2.71	0:09:30	2,246.52	140.41	1.87	0:16:30	1,479.07	184.88	1.42	0:23:30	966.11	241.53	1.08	0:30:30	247.88	247.88	1.05
0:02:35	3,103.63	96.99	2.71	0:09:35	2,227.54	139.22	1.87	0:16:35	1,469.47	183.68	1.42	0:23:35	967.26	241.81	1.08	0:30:35	247.73	247.73	1.05
0:02:40	3,076.78	96.15	2.72	0:09:40	2,232.73	139.55	1.87	0:16:40	1,463.76	182.97	1.43	0:23:40	969.99	242.50	1.07	0:30:40	249.04	249.04	1.05
0:02:45	3,074.11	96.07	2.72	0:09:45	2,222.25	138.89	1.87	0:16:45	1,433.35	179.17	1.44	0:23:45	969.41	242.35	1.07	0:30:45	246.05	246.05	1.06
0:02:50	3,111.54	97.24	2.70	0:09:50	2,244.58	140.29	1.87	0:16:50	1,466.91	183.36	1.43	0:23:50	967.00	241.75	1.08	0:30:50	251.13	251.13	1.04
0:02:55	3,066.46	95.83	2.71	0:09:55	2,233.83	139.61	1.88	0:16:55	1,481.85	185.23	1.41	0:23:55	971.72	242.93	1.07	0:30:55	252.71	252.71	1.03
0:03:00	3,092.83	96.65	2.70	0:10:00	2,200.07	137.50	1.89	0:17:00	1,456.89	182.11	1.42	0:24:00	968.62	242.16	1.08	0:31:00	250.19	250.19	1.04

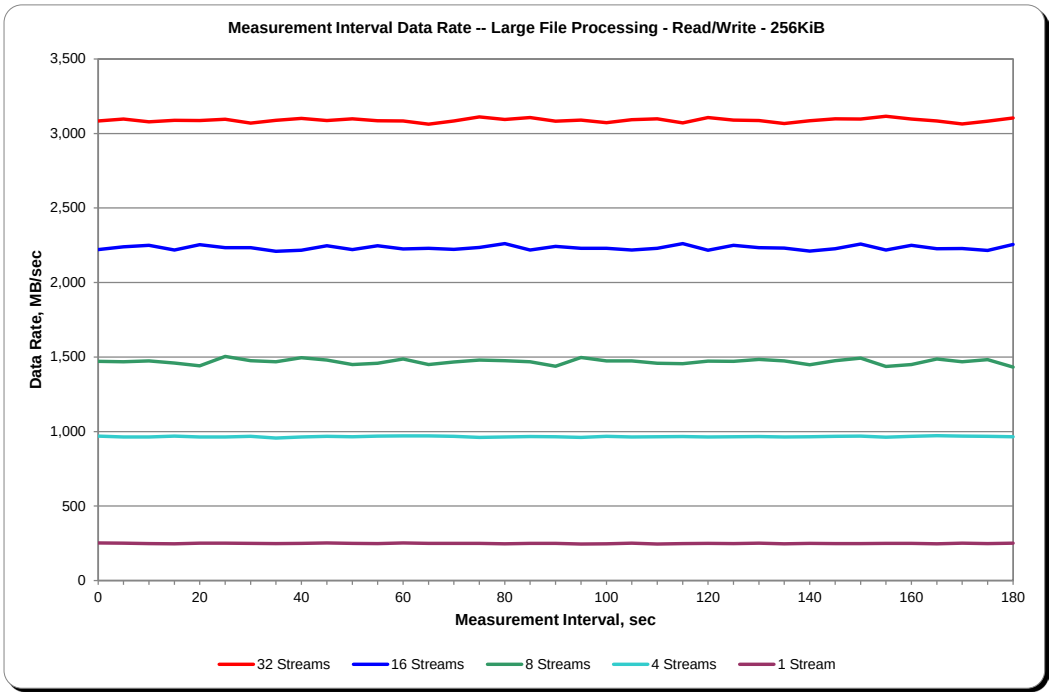
SPC-2 "Large File Processing/READ-WRITE/256 KiB Transfer Size" Test Run Data Measurement Interval, Run-Out, and Ramp-Down Periods

TR16	32 Streams			TR17	16 Streams			TR18	8 Streams			TR19	4 Streams			TR20	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	3,083.97	96.37	2.71	0:10:05	2,221.20	138.82	1.88	0:17:05	1,471.41	183.93	1.42	0:24:05	969.30	242.33	1.08	0:31:05	252.34	252.34	1.03
0:03:10	3,097.23	96.79	2.71	0:10:10	2,239.23	139.95	1.87	0:17:10	1,469.00	183.63	1.43	0:24:10	963.17	240.79	1.08	0:31:10	251.87	251.87	1.03
0:03:15	3,078.30	96.20	2.71	0:10:15	2,249.09	140.57	1.88	0:17:15	1,473.41	184.18	1.42	0:24:15	964.01	241.00	1.08	0:31:15	247.99	247.99	1.05
0:03:20	3,088.84	96.53	2.72	0:10:20	2,217.53	138.60	1.87	0:17:20	1,459.83	182.48	1.42	0:24:20	969.04	242.26	1.07	0:31:20	247.36	247.36	1.05
0:03:25	3,086.64	96.46	2.71	0:10:25	2,254.12	140.88	1.86	0:17:25	1,440.43	180.05	1.44	0:24:25	963.22	240.81	1.08	0:31:25	251.61	251.61	1.04
0:03:30	3,095.19	96.72	2.70	0:10:30	2,233.83	139.61	1.87	0:17:30	1,504.08	188.01	1.41	0:24:30	963.06	240.77	1.08	0:31:30	251.40	251.40	1.04
0:03:35	3,069.76	95.93	2.71	0:10:35	2,233.57	139.60	1.87	0:17:35	1,475.56	184.44	1.42	0:24:35	968.31	242.08	1.07	0:31:35	249.61	249.61	1.04
0:03:40	3,088.37	96.51	2.71	0:10:40	2,208.93	138.06	1.88	0:17:40	1,468.16	183.52	1.41	0:24:40	956.04	239.01	1.08	0:31:40	248.15	248.15	1.05
0:03:45	3,101.58	96.92	2.71	0:10:45	2,217.16	138.57	1.88	0:17:45	1,495.22	186.90	1.40	0:24:45	963.22	240.81	1.08	0:31:45	249.61	249.61	1.04
0:03:50	3,087.53	96.49	2.71	0:10:50	2,246.99	140.44	1.88	0:17:50	1,479.49	184.94	1.42	0:24:50	968.26	242.06	1.08	0:31:50	252.39	252.39	1.03
0:03:55	3,097.70	96.80	2.71	0:10:55	2,221.41	138.84	1.87	0:17:55	1,450.02	181.25	1.43	0:24:55	965.53	241.38	1.08	0:31:55	249.51	249.51	1.04
0:04:00	3,085.91	96.43	2.71	0:11:00	2,247.52	140.47	1.87	0:18:00	1,457.63	182.20	1.42	0:25:00	969.36	242.34	1.07	0:32:00	249.04	249.04	1.05
0:04:05	3,084.18	96.38	2.71	0:11:05	2,225.97	139.12	1.87	0:18:05	1,486.57	185.82	1.42	0:25:05	970.56	242.64	1.07	0:32:05	252.08	252.08	1.03
0:04:10	3,062.73	95.71	2.72	0:11:10	2,229.32	139.33	1.87	0:18:10	1,449.34	181.17	1.44	0:25:10	970.93	242.73	1.07	0:32:10	249.82	249.82	1.04
0:04:15	3,083.76	96.37	2.71	0:11:15	2,222.19	138.89	1.87	0:18:15	1,466.80	183.35	1.41	0:25:15	968.67	242.17	1.08	0:32:15	250.35	250.35	1.04
0:04:20	3,111.18	97.22	2.70	0:11:20	2,235.25	139.70	1.87	0:18:20	1,479.54	184.94	1.42	0:25:20	960.71	240.18	1.08	0:32:20	249.77	249.77	1.04
0:04:25	3,093.61	96.68	2.70	0:11:25	2,261.73	141.36	1.87	0:18:25	1,476.08	184.51	1.42	0:25:25	963.85	240.96	1.08	0:32:25	246.21	246.21	1.06
0:04:30	3,106.51	97.08	2.71	0:11:30	2,217.69	138.61	1.87	0:18:30	1,467.90	183.49	1.41	0:25:30	966.37	241.59	1.08	0:32:30	250.45	250.45	1.04
0:04:35	3,083.23	96.35	2.71	0:11:35	2,242.64	140.17	1.87	0:18:35	1,438.17	179.77	1.44	0:25:35	965.42	241.36	1.08	0:32:35	249.72	249.72	1.04
0:04:40	3,089.16	96.54	2.71	0:11:40	2,230.01	139.38	1.87	0:18:40	1,496.48	187.06	1.42	0:25:40	960.60	240.15	1.08	0:32:40	246.15	246.15	1.06
0:04:45	3,072.22	96.01	2.71	0:11:45	2,229.64	139.35	1.87	0:18:45	1,473.72	184.22	1.42	0:25:45	967.89	241.97	1.08	0:32:45	247.04	247.04	1.05
0:04:50	3,092.25	96.63	2.70	0:11:50	2,218.11	138.63	1.87	0:18:50	1,474.66	184.33	1.40	0:25:50	963.43	240.86	1.08	0:32:50	250.71	250.71	1.04
0:04:55	3,098.91	96.84	2.71	0:11:55	2,229.43	139.34	1.87	0:18:55	1,458.78	182.35	1.44	0:25:55	965.06	241.26	1.08	0:32:55	245.68	245.68	1.06
0:05:00	3,070.96	95.97	2.72	0:12:00	2,260.68	141.29	1.87	0:19:00	1,455.42	181.93	1.44	0:26:00	966.63	241.66	1.08	0:33:00	247.67	247.67	1.05
0:05:05	3,107.66	97.11	2.70	0:12:05	2,216.58	138.54	1.87	0:19:05	1,473.30	184.16	1.41	0:26:05	963.54	240.88	1.08	0:33:05	249.61	249.61	1.04
0:05:10	3,090.26	96.57	2.71	0:12:10	2,249.77	140.61	1.87	0:19:10	1,471.05	183.88	1.41	0:26:10	964.85	241.21	1.08	0:33:10	248.51	248.51	1.05
0:05:15	3,087.32	96.48	2.71	0:12:15	2,234.57	139.66	1.87	0:19:15	1,484.78	185.60	1.43	0:26:15	966.79	241.70	1.08	0:33:15	250.50	250.50	1.04
0:05:20	3,066.93	95.84	2.71	0:12:20	2,230.69	139.42	1.87	0:19:20	1,474.30	184.29	1.43	0:26:20	963.59	240.90	1.08	0:33:20	247.36	247.36	1.05
0:05:25	3,085.17	96.41	2.71	0:12:25	2,210.45	138.15	1.88	0:19:25	1,447.61	180.95	1.42	0:26:25	965.42	241.36	1.08	0:33:25	250.19	250.19	1.04
0:05:30	3,099.12	96.85	2.71	0:12:30	2,226.76	139.17	1.87	0:19:30	1,475.03	184.38	1.42	0:26:30	967.89	241.97	1.08	0:33:30	247.88	247.88	1.05
0:05:35	3,096.60	96.77	2.70	0:12:35	2,258.69	141.17	1.87	0:19:35	1,492.49	186.56	1.40	0:26:35	969.62	242.40	1.07	0:33:35	248.51	248.51	1.05
0:05:40	3,115.95	97.37	2.70	0:12:40	2,218.05	138.63	1.87	0:19:40	1,436.44	179.56	1.44	0:26:40	961.81	240.45	1.08	0:33:40	249.56	249.56	1.04
0:05:45	3,097.13	96.79	2.70	0:12:45	2,249.82	140.61	1.87	0:19:45	1,450.23	181.28	1.43	0:26:45	968.31	242.08	1.08	0:33:45	249.56	249.56	1.04
0:05:50	3,084.49	96.39	2.71	0:12:50	2,226.86	139.18	1.87	0:19:50	1,486.99	185.87	1.42	0:26:50	972.34	243.09	1.07	0:33:50	247.20	247.20	1.06
0:05:55	3,063.41	95.73	2.71	0:12:55	2,228.80	139.30	1.87	0:19:55	1,467.74	183.47	1.43	0:26:55	969.36	242.34	1.07	0:33:55	251.08	251.08	1.04
0:06:00	3,083.08	96.35	2.71	0:13:00	2,215.80	138.49	1.87	0:20:00	1,482.21	185.28	1.40	0:27:00	968.52	242.13	1.08	0:34:00	248.41	248.41	1.05
0:06:05	3,103.99	97.00	2.70	0:13:05	2,255.02	140.94	1.87	0:20:05	1,432.30	179.04	1.44	0:27:05	965.74	241.43	1.08	0:34:05	250.92	250.92	1.04
0:06:10	3,079.77	96.24	2.71	0:13:10	2,231.37	139.46	1.87	0:20:10	1,495.06	186.88	1.42	0:27:10	966.84	241.71	1.08	0:34:10	250.71	250.71	1.04
0:06:15	3,057.28	95.54	2.72	0:13:15	2,217.58	138.60	1.87	0:20:15	1,468.27	183.53	1.43	0:27:15	962.85	240.71	1.08	0:34:15	248.30	248.30	1.05
0:06:20	3,082.97	96.34	2.71	0:13:20	2,219.52	138.72	1.87	0:20:20	1,444.62	180.58	1.43	0:27:20	972.61	243.15	1.07	0:34:20	252.23	252.23	1.03
0:06:25	3,084.18	96.38	2.71	0:13:25	2,251.66	140.73	1.87	0:20:25	1,480.48	185.06	1.41	0:27:25	964.06	241.02	1.08	0:34:25	250.03	250.03	1.04
0:06:30	3,057.07	95.53	2.72	0:13:30	2,213.60	138.35	1.89	0:20:30	1,478.65	184.83	1.42	0:27:30	971.51	242.88	1.07	0:34:30	249.25	249.25	1.04
0:06:35	3,102.32	96.95	2.71	0:13:35	2,222.19	138.89	1.88	0:20:35	1,443.42	180.43	1.43	0:27:35	965.79	241.45	1.08	0:34:35	251.82	251.82	1.03
0:06:40	3,081.14	96.29	2.71	0:13:40	2,216.95	138.56	1.87	0:20:40	1,455.58	181.95	1.42	0:27:40	970.46	242.61	1.07	0:34:40	249.35	249.35	1.04
0:06:45	3,108.77	97.15	2.69	0:13:45	2,259.05	141.19	1.87	0:20:45	1,494.38	186.80	1.42	0:27:45	965.95	241.49	1.08	0:34:45	249.14	249.14	1.05
0:06:50	818.15	0.00	2.15	0:13:50	490.05	0.00	1.79	0:20:50	255.38	0.00	1.36	0:27:50	7.86	0.00	1.07	0:34:50	1.68	0.00	1.03
0:06:55	0.00	0.00	0.00	0:13:55	0.00	0.00	0.00	0:20:55	0.00	0.00	0.00	0:27:55	0.00	0.00	0.00	0:34:55	0.00	0.00	0.00

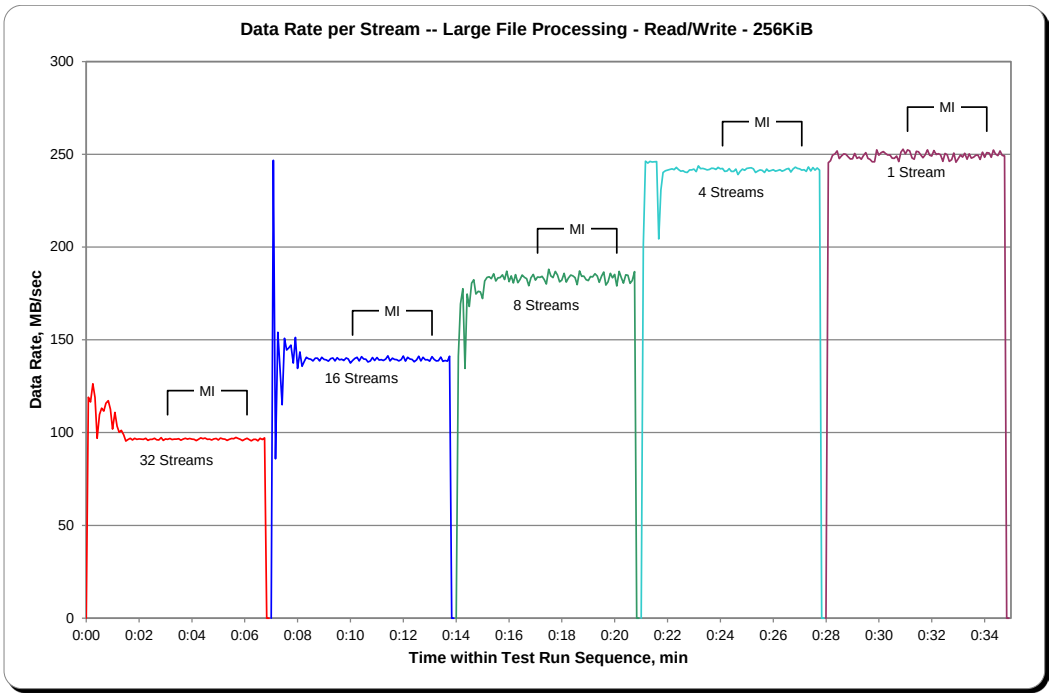
SPC-2 "Large File Processing/READ-WRITE/256 KiB Transfer Size" Average Data Rate Graph – Complete Test Run



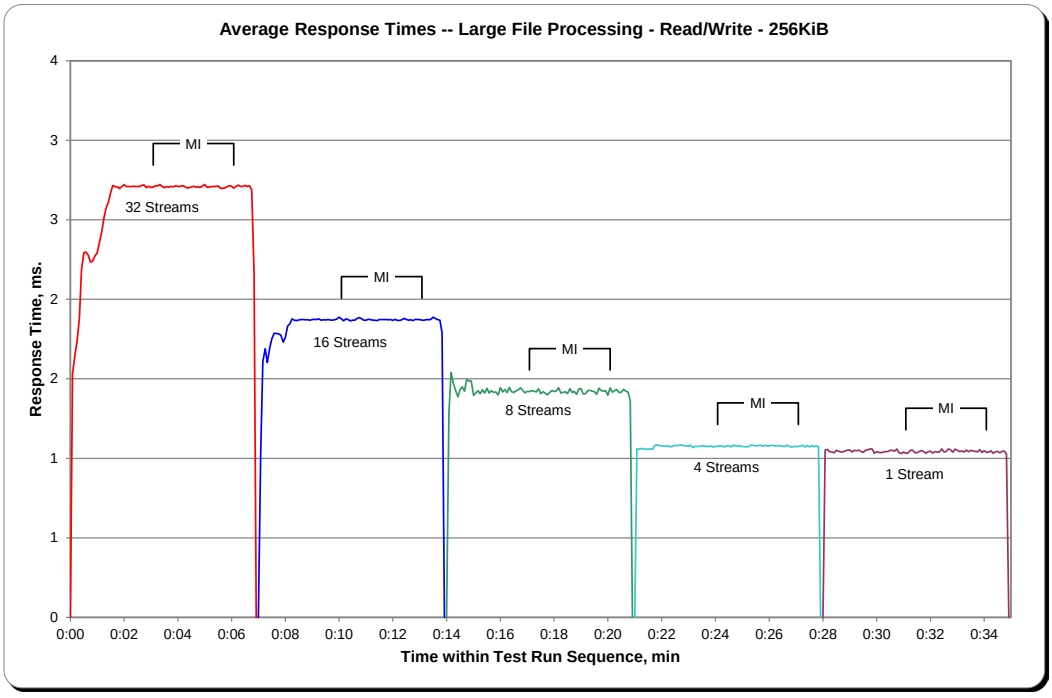
SPC-2 "Large File Processing/READ-WRITE/256 KiB Transfer Size" Average Data Rate Graph – Measurement Interval (MI) Only



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



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



Large File Processing Test – READ ONLY Test Phase

Clause 10.6.8.1.3

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

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

Immediately following the SPC-2 "Large File Processing/READ ONLY/1024 KiB Transfer Size" table and graphs will be the SPC-2 "Large File Processing/READ ONLY/64 KiB Transfer Size" table and graphs. The table contains the Test Run data and the graphs illustrate the average Data Rate, average Data Rate per Stream, and average Response Time produced by the Test Runs.

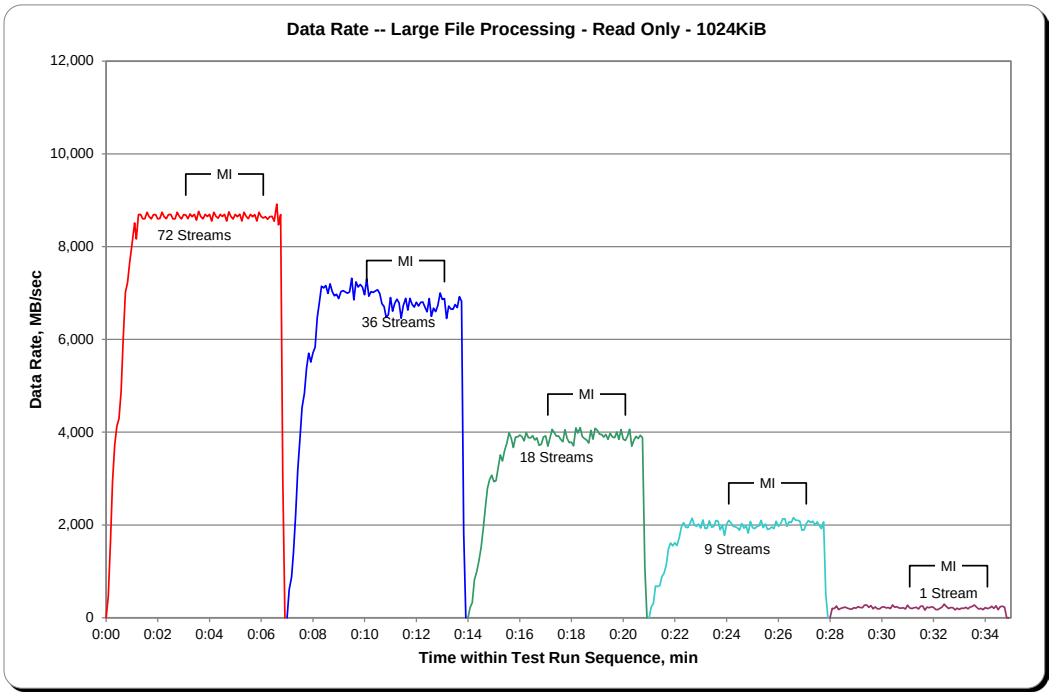
SPC-2 "Large File Processing/READ ONLY/1024 KiB Transfer Size" Test Run Data – Ramp Up Period

TR21	72 Streams			TR22	36 Streams			TR23	18 Streams			TR24	9 Streams			TR25	1 Stream		
Test Run Sequence Time	Data Rate, MB/sec	Data Rate / Stream, MB/sec	Response Time, ms	Test Run Sequence Time	Data Rate, MB/sec	Data Rate / Stream, MB/sec	Response Time, ms	Test Run Sequence Time	Data Rate, MB/sec	Data Rate / Stream, MB/sec	Response Time, ms	Test Run Sequence Time	Data Rate, MB/sec	Data Rate / Stream, MB/sec	Response Time, ms	Test Run Sequence Time	Data Rate, MB/sec	Data Rate / Stream, MB/sec	Response Time, ms
0:00:00	0.00	0.00	0.00	0:07:00	0.00	0.00	0.00	0:14:00	0.00	0.00	0.00	0:21:00	0.00	0.00	0.00	0:28:00	0.00	0.00	0.00
0:00:05	466.62	116.65	5.24	0:07:05	607.75	151.94	4.74	0:14:05	219.78	219.78	4.73	0:21:05	233.83	233.83	4.46	0:28:05	203.00	203.00	5.11
0:00:10	1,603.69	133.64	5.12	0:07:10	874.09	145.68	5.08	0:14:10	325.06	81.26	4.65	0:21:10	306.81	102.27	4.72	0:28:10	198.81	198.81	5.27
0:00:15	2,949.64	147.48	6.14	0:07:15	1,408.87	156.54	5.14	0:14:15	818.52	204.63	5.11	0:21:15	685.35	228.45	4.58	0:28:15	252.92	252.92	4.14
0:00:20	3,720.98	155.04	6.33	0:07:20	2,208.51	184.04	5.13	0:14:20	997.62	199.52	5.02	0:21:20	673.81	224.60	4.66	0:28:20	175.53	175.53	5.97
0:00:25	4,125.31	128.92	6.84	0:07:25	3,188.30	177.13	5.03	0:14:25	1,224.53	174.93	4.94	0:21:25	694.79	231.60	4.52	0:28:25	202.58	202.58	5.17
0:00:30	4,291.82	119.22	8.44	0:07:30	3,841.77	192.09	5.31	0:14:30	1,508.06	167.56	5.25	0:21:30	886.89	221.72	4.65	0:28:30	216.85	216.85	4.83
0:00:35	4,884.06	116.29	8.23	0:07:35	4,533.20	197.10	5.06	0:14:35	1,905.89	190.59	5.08	0:21:35	963.43	192.69	4.45	0:28:35	229.64	229.64	4.56
0:00:40	6,042.10	128.56	7.66	0:07:40	4,836.66	186.03	5.19	0:14:40	2,371.88	197.66	4.78	0:21:40	1,139.59	189.93	4.83	0:28:40	208.46	208.46	4.98
0:00:45	7,015.81	134.92	7.34	0:07:45	5,380.87	199.29	5.16	0:14:45	2,789.63	214.59	4.71	0:21:45	1,478.91	211.27	4.57	0:28:45	193.99	193.99	5.45
0:00:50	7,227.00	126.79	7.72	0:07:50	5,703.41	203.69	5.11	0:14:50	2,980.26	212.88	4.91	0:21:50	1,611.03	230.15	4.55	0:28:50	185.18	185.18	5.65
0:00:55	7,659.01	134.37	7.75	0:07:55	5,511.11	196.83	5.34	0:14:55	3,070.65	219.33	4.82	0:21:55	1,552.94	221.85	4.74	0:28:55	214.75	214.75	4.87
0:01:00	8,021.61	135.96	7.69	0:08:00	5,710.34	196.91	5.24	0:15:00	2,933.50	209.54	4.99	0:22:00	1,616.69	230.96	4.50	0:29:00	206.57	206.57	5.07
0:01:06	8,511.29	139.53	7.65	0:08:05	5,832.18	201.11	5.24	0:15:05	2,958.24	211.30	4.93	0:22:05	1,554.83	222.12	4.73	0:29:05	237.61	237.61	4.40
0:01:10	8,163.79	121.85	7.74	0:08:10	6,472.02	184.91	5.24	0:15:10	3,236.74	202.30	4.86	0:22:10	1,731.62	192.40	4.74	0:29:10	220.83	220.83	4.74
0:01:15	8,689.97	124.14	8.29	0:08:15	6,804.00	189.00	5.36	0:15:15	3,508.95	219.31	4.77	0:22:15	1,963.77	218.20	4.81	0:29:15	217.47	217.47	4.82
0:01:20	8,696.89	120.79	8.53	0:08:20	7,146.26	198.51	5.32	0:15:20	3,382.50	211.41	4.96	0:22:20	2,047.87	227.54	4.57	0:29:20	271.58	271.58	3.85
0:01:25	8,599.37	119.44	8.71	0:08:25	7,111.86	197.55	5.30	0:15:25	3,607.31	212.19	4.73	0:22:25	1,954.76	217.20	4.81	0:29:25	273.89	273.89	3.83
0:01:30	8,604.61	119.51	8.72	0:08:30	7,161.77	198.94	5.29	0:15:30	3,752.64	208.48	5.04	0:22:30	1,942.80	215.87	4.88	0:29:30	226.91	226.91	4.61
0:01:35	8,743.03	121.43	8.71	0:08:35	6,992.95	194.25	5.31	0:15:35	3,990.25	221.68	4.72	0:22:35	2,035.08	226.12	4.60	0:29:35	262.56	262.56	3.98
0:01:40	8,646.35	120.09	8.72	0:08:40	7,196.80	199.91	5.28	0:15:40	3,867.57	214.86	4.87	0:22:40	2,144.34	238.26	4.40	0:29:40	191.05	191.05	5.49
0:01:45	8,596.65	119.40	8.72	0:08:45	7,032.38	195.34	5.38	0:15:45	3,668.76	203.82	5.16	0:22:45	1,999.42	222.16	4.73	0:29:45	234.04	234.04	4.47
0:01:50	8,691.65	120.72	8.72	0:08:50	6,942.41	192.84	5.38	0:15:50	3,897.56	216.53	4.83	0:22:50	1,973.00	219.22	4.79	0:29:50	194.41	194.41	5.39
0:01:55	8,691.02	120.71	8.72	0:08:55	6,974.92	193.75	5.45	0:15:55	3,902.17	216.79	4.78	0:22:55	2,015.36	223.93	4.65	0:29:55	191.05	191.05	5.48
0:02:00	8,597.06	119.40	8.72	0:09:00	6,879.71	191.10	5.48	0:16:00	3,936.14	218.67	4.80	0:23:00	1,933.78	214.86	4.87	0:30:00	229.01	229.01	4.57
0:02:05	8,609.23	119.57	8.72	0:09:05	7,031.75	195.33	5.38	0:16:05	3,904.69	216.93	4.85	0:23:05	2,108.48	234.28	4.48	0:30:05	236.77	236.77	4.40
0:02:10	8,743.24	121.43	8.71	0:09:10	7,049.16	195.81	5.27	0:16:10	3,812.62	211.81	4.94	0:23:10	1,925.81	213.98	4.87	0:30:11	211.60	211.60	4.98
0:02:15	8,646.56	120.09	8.72	0:09:15	7,025.46	195.15	5.42	0:16:15	3,993.82	221.88	4.72	0:23:15	1,929.80	214.42	4.88	0:30:15	220.62	220.62	4.74
0:02:20	8,601.26	119.46	8.71	0:09:20	6,996.52	194.35	5.41	0:16:20	3,881.20	215.62	4.88	0:23:20	2,090.02	232.22	4.53	0:30:20	199.65	199.65	5.25
0:02:25	8,692.28	120.73	8.72	0:09:25	7,023.15	195.09	5.31	0:16:25	3,878.05	215.45	4.86	0:23:25	1,950.56	216.73	4.85	0:30:25	275.99	275.99	3.79
0:02:30	8,697.52	120.80	8.71	0:09:30	7,320.11	203.34	5.20	0:16:30	3,922.93	217.94	4.75	0:23:30	1,967.34	218.59	4.76	0:30:30	226.28	226.28	4.62
0:02:35	8,597.69	119.41	8.72	0:09:35	6,852.44	190.35	5.50	0:16:35	3,831.08	212.84	4.94	0:23:35	2,095.68	232.85	4.49	0:30:35	240.96	240.96	4.35
0:02:40	8,600.84	119.46	8.72	0:09:40	7,237.69	201.05	5.23	0:16:40	3,875.54	215.31	4.88	0:23:40	2,081.63	231.29	4.55	0:30:40	212.65	212.65	4.92
0:02:45	8,740.51	121.40	8.71	0:09:45	7,129.06	198.03	5.21	0:16:45	3,714.90	206.38	5.07	0:23:45	1,895.41	210.60	4.94	0:30:45	208.46	208.46	5.03
0:02:50	8,647.19	120.10	8.72	0:09:50	7,185.47	199.60	5.29	0:16:50	3,740.48	207.80	5.03	0:23:50	2,000.68	222.30	4.71	0:30:50	215.59	215.59	4.86
0:02:55	8,598.32	119.42	8.72	0:09:55	7,129.69	198.05	5.31	0:16:55	3,901.33	216.74	4.85	0:23:55	1,777.13	197.46	5.32	0:30:55	190.63	190.63	5.49
0:03:00	8,690.81	120.71	8.71	0:10:00	6,964.22	193.45	5.35	0:17:00	3,918.11	217.67	4.81	0:24:00	2,015.99	224.00	4.65	0:31:00	270.95	270.95	3.86

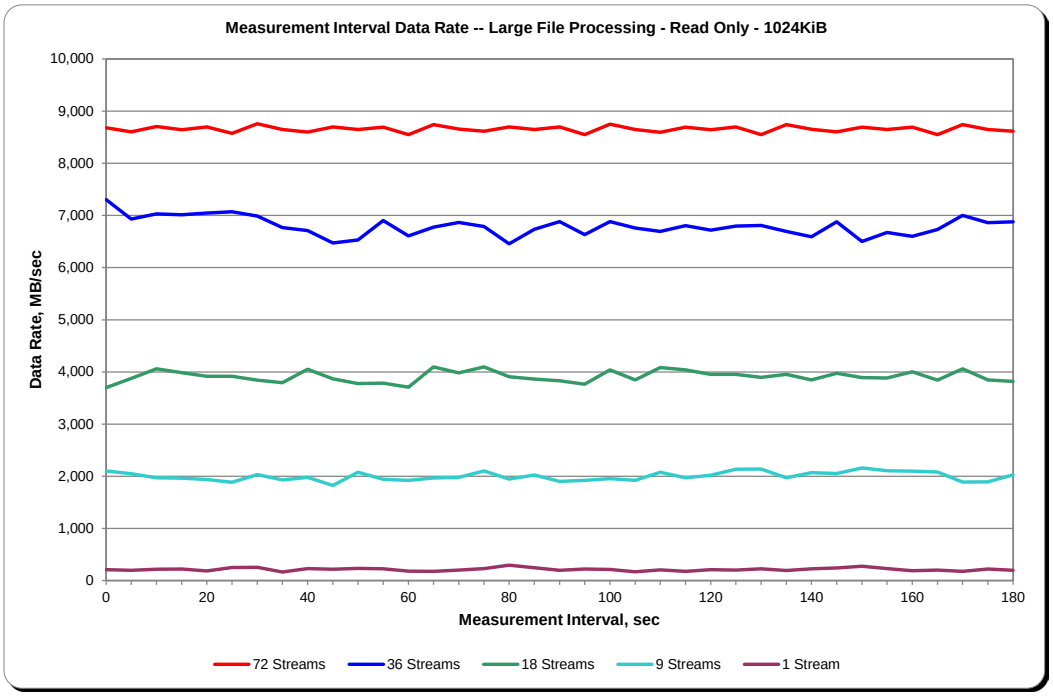
SPC-2 "Large File Processing/READ ONLY/1024 KiB Transfer Size" Test Run Data Measurement Interval, Run-Out, and Ramp-Down Periods

TR21	72 Streams			TR22	36 Streams			TR23	18 Streams			TR24	9 Streams			TR25	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	8,680.53	120.56	8.72	0:10:05	7,305.43	202.93	5.20	0:17:05	3,699.38	205.52	5.05	0:24:05	2,100.72	233.41	4.49	0:31:05	211.60	211.60	4.94
0:03:10	8,601.68	119.47	8.71	0:10:10	6,933.39	192.59	5.43	0:17:10	3,877.21	215.40	4.88	0:24:10	2,047.66	227.52	4.60	0:31:10	199.23	199.23	5.27
0:03:15	8,706.75	120.93	8.70	0:10:15	7,030.07	195.28	5.33	0:17:15	4,060.09	225.56	4.66	0:24:15	1,973.21	219.25	4.78	0:31:15	216.43	216.43	4.84
0:03:20	8,645.72	120.08	8.72	0:10:20	7,014.97	194.86	5.36	0:17:20	3,986.48	221.47	4.72	0:24:20	1,961.05	217.89	4.77	0:31:20	223.77	223.77	4.68
0:03:25	8,696.68	120.79	8.72	0:10:25	7,048.11	195.78	5.34	0:17:25	3,916.85	217.60	4.81	0:24:25	1,938.40	215.38	4.86	0:31:25	187.28	187.28	5.59
0:03:30	8,572.32	119.06	8.70	0:10:30	7,070.13	196.39	5.32	0:17:30	3,917.90	217.66	4.78	0:24:30	1,886.60	209.62	4.95	0:31:30	250.61	250.61	4.18
0:03:35	8,759.38	121.66	8.69	0:10:35	6,988.76	194.13	5.38	0:17:35	3,844.71	213.59	4.95	0:24:35	2,032.14	225.79	4.60	0:31:35	252.92	252.92	4.14
0:03:40	8,648.24	120.11	8.72	0:10:40	6,769.19	188.03	5.53	0:17:40	3,793.12	210.73	4.92	0:24:40	1,930.01	214.45	4.89	0:31:40	165.68	165.68	6.32
0:03:45	8,597.27	119.41	8.72	0:10:45	6,709.42	186.37	5.60	0:17:45	4,051.49	225.08	4.67	0:24:45	1,978.24	219.80	4.76	0:31:45	230.27	230.27	4.54
0:03:50	8,697.10	120.79	8.71	0:10:50	6,473.91	179.83	5.79	0:17:50	3,869.66	214.98	4.89	0:24:50	1,823.68	202.63	5.19	0:31:50	216.64	216.64	4.84
0:03:55	8,649.07	120.13	8.72	0:10:55	6,529.48	181.37	5.74	0:17:55	3,778.65	209.92	4.98	0:24:55	2,077.65	230.85	4.51	0:31:55	235.51	235.51	4.45
0:04:00	8,693.53	120.74	8.71	0:11:00	6,902.99	191.75	5.51	0:18:00	3,784.73	210.26	4.98	0:25:00	1,942.80	215.87	4.87	0:32:00	224.60	224.60	4.66
0:04:05	8,550.93	118.76	8.72	0:11:05	6,608.55	183.57	5.69	0:18:05	3,708.81	206.05	5.05	0:25:05	1,921.83	213.54	4.91	0:32:05	181.61	181.61	5.77
0:04:10	8,740.30	121.39	8.70	0:11:10	6,777.79	188.27	5.56	0:18:10	4,095.11	227.51	4.64	0:25:10	1,968.18	218.69	4.76	0:32:10	177.00	177.00	5.91
0:04:15	8,654.32	120.20	8.71	0:11:15	6,865.45	190.71	5.46	0:18:15	3,982.49	221.25	4.68	0:25:15	1,979.29	219.92	4.78	0:32:15	200.49	200.49	5.23
0:04:20	8,614.05	119.64	8.70	0:11:20	6,788.69	188.57	5.60	0:18:20	4,097.21	227.62	4.62	0:25:20	2,101.14	233.46	4.49	0:32:20	230.69	230.69	4.54
0:04:25	8,695.63	120.77	8.71	0:11:25	6,455.03	179.31	5.81	0:18:25	3,907.41	217.08	4.84	0:25:25	1,944.90	216.10	4.86	0:32:25	294.44	294.44	3.55
0:04:30	8,649.28	120.13	8.72	0:11:30	6,735.42	187.10	5.57	0:18:30	3,862.74	214.60	4.88	0:25:30	2,022.49	224.72	4.63	0:32:30	244.74	244.74	4.28
0:04:35	8,695.84	120.78	8.72	0:11:35	6,883.69	191.21	5.52	0:18:35	3,830.45	212.80	4.92	0:25:35	1,902.75	211.42	4.97	0:32:35	196.71	196.71	5.32
0:04:40	8,550.72	118.76	8.72	0:11:40	6,630.98	184.19	5.68	0:18:40	3,765.02	209.17	4.98	0:25:40	1,921.20	213.47	4.91	0:32:40	220.83	220.83	4.74
0:04:45	8,749.74	121.52	8.70	0:11:45	6,884.11	191.23	5.47	0:18:45	4,040.79	224.49	4.71	0:25:45	1,955.80	217.31	4.79	0:32:45	214.12	214.12	4.89
0:04:50	8,649.70	120.13	8.72	0:11:50	6,757.44	187.71	5.54	0:18:50	3,848.06	213.78	4.85	0:25:50	1,921.20	213.47	4.92	0:32:50	170.50	170.50	6.14
0:04:55	8,595.39	119.38	8.72	0:11:55	6,695.58	185.99	5.69	0:18:55	4,084.20	226.90	4.63	0:25:55	2,079.33	231.04	4.54	0:32:55	206.99	206.99	5.05
0:05:00	8,693.32	120.74	8.72	0:12:00	6,803.79	188.99	5.51	0:19:00	4,038.49	224.36	4.69	0:26:00	1,969.65	218.85	4.80	0:33:00	178.26	178.26	5.87
0:05:05	8,644.88	120.07	8.72	0:12:05	6,719.27	186.65	5.57	0:19:05	3,955.02	219.72	4.77	0:26:05	2,020.40	224.49	4.63	0:33:05	207.83	207.83	5.05
0:05:10	8,698.15	120.81	8.71	0:12:10	6,798.13	188.84	5.59	0:19:10	3,951.87	219.55	4.76	0:26:10	2,134.06	237.12	4.43	0:33:10	203.63	203.63	5.14
0:05:15	8,550.72	118.76	8.72	0:12:15	6,807.77	189.10	5.54	0:19:15	3,897.98	216.55	4.81	0:26:15	2,138.68	237.63	4.41	0:33:15	227.12	227.12	4.61
0:05:20	8,743.45	121.44	8.71	0:12:20	6,694.53	185.96	5.63	0:19:20	3,951.87	219.55	4.81	0:26:20	1,973.00	219.22	4.74	0:33:20	195.04	195.04	5.37
0:05:25	8,652.43	120.17	8.72	0:12:25	6,593.03	183.14	5.69	0:19:25	3,845.76	213.65	4.85	0:26:25	2,069.68	229.96	4.57	0:33:25	227.96	227.96	4.59
0:05:30	8,603.57	119.49	8.71	0:12:30	6,879.92	191.11	5.53	0:19:30	3,974.73	220.82	4.76	0:26:30	2,051.85	227.98	4.59	0:33:30	241.59	241.59	4.33
0:05:35	8,694.37	120.76	8.71	0:12:35	6,500.33	180.56	5.77	0:19:35	3,893.99	216.33	4.86	0:26:35	2,159.23	239.91	4.38	0:33:35	274.10	274.10	3.82
0:05:40	8,646.14	120.09	8.72	0:12:40	6,671.67	185.32	5.62	0:19:40	3,884.34	215.80	4.85	0:26:40	2,106.80	234.09	4.44	0:33:40	230.27	230.27	4.54
0:05:45	8,692.90	120.73	8.72	0:12:45	6,598.27	183.29	5.76	0:19:45	4,002.41	222.36	4.71	0:26:45	2,098.83	233.20	4.50	0:33:45	189.79	189.79	5.52
0:05:50	8,550.93	118.76	8.72	0:12:50	6,730.18	186.95	5.58	0:19:50	3,843.24	213.51	4.87	0:26:50	2,082.68	231.41	4.53	0:33:50	203.00	203.00	5.15
0:05:55	8,740.51	121.40	8.71	0:12:55	6,999.87	194.44	5.41	0:19:55	4,059.04	225.50	4.69	0:26:55	1,888.28	209.81	4.96	0:33:55	176.37	176.37	5.94
0:06:00	8,647.19	120.10	8.72	0:13:00	6,861.67	190.60	5.46	0:20:00	3,848.48	213.80	4.85	0:27:00	1,893.73	210.41	5.00	0:34:00	220.41	220.41	4.74
0:06:05	8,615.52	119.66	8.71	0:13:05	6,878.87	191.08	5.52	0:20:05	3,820.38	212.24	4.96	0:27:05	2,028.58	225.40	4.63	0:34:05	198.81	198.81	5.27
0:06:10	8,644.25	120.06	8.71	0:13:10	6,453.99	179.28	5.81	0:20:10	3,915.38	217.52	4.79	0:27:10	2,095.68	232.85	4.51	0:34:10	213.07	213.07	4.92
0:06:15	8,591.61	119.33	8.72	0:13:15	6,719.07	186.64	5.61	0:20:15	4,062.18	225.68	4.68	0:27:15	2,052.06	228.01	4.56	0:34:15	249.77	249.77	4.19
0:06:20	8,645.09	120.07	8.71	0:13:20	6,653.21	184.81	5.69	0:20:20	3,697.07	205.39	5.05	0:27:20	2,081.00	231.22	4.55	0:34:20	203.84	203.84	5.14
0:06:25	8,655.16	120.21	8.70	0:13:25	6,649.02	184.70	5.64	0:20:25	3,827.51	212.64	4.97	0:27:25	1,996.91	221.88	4.72	0:34:25	257.11	257.11	4.07
0:06:30	8,545.89	118.69	8.71	0:13:30	6,750.10	187.50	5.61	0:20:30	3,909.51	217.20	4.81	0:27:30	2,067.16	229.68	4.52	0:34:30	173.43	173.43	6.04
0:06:36	8,917.09	123.85	8.67	0:13:35	6,686.56	185.74	5.55	0:20:35	3,864.84	214.71	4.87	0:27:35	1,990.83	221.20	4.75	0:34:35	238.45	238.45	4.39
0:06:40	8,471.66	117.66	8.65	0:13:40	6,922.49	192.29	5.55	0:20:40	3,933.42	218.52	4.79	0:27:40	1,920.78	213.42	4.91	0:34:40	250.19	250.19	4.18
0:06:45	8,691.65	120.72	8.66	0:13:45	6,822.87	189.52	5.49	0:20:45	3,883.72	215.76	4.82	0:27:45	2,069.26	229.92	4.57	0:34:45	230.90	230.90	4.53
0:06:50	3,015.08	0.00	6.44	0:13:50	1,832.49	0.00	5.42	0:20:50	1,088.63	0.00	4.69	0:27:50	511.50	0.00	4.93	0:34:50	1.68	0.00	4.90
0:06:55	0.00	0.00	0.00	0:13:55	0.00	0.00	0.00	0:20:55	0.00	0.00	0.00	0:27:55	0.00	0.00	0.00	0:34:55	0.00	0.00	0.00

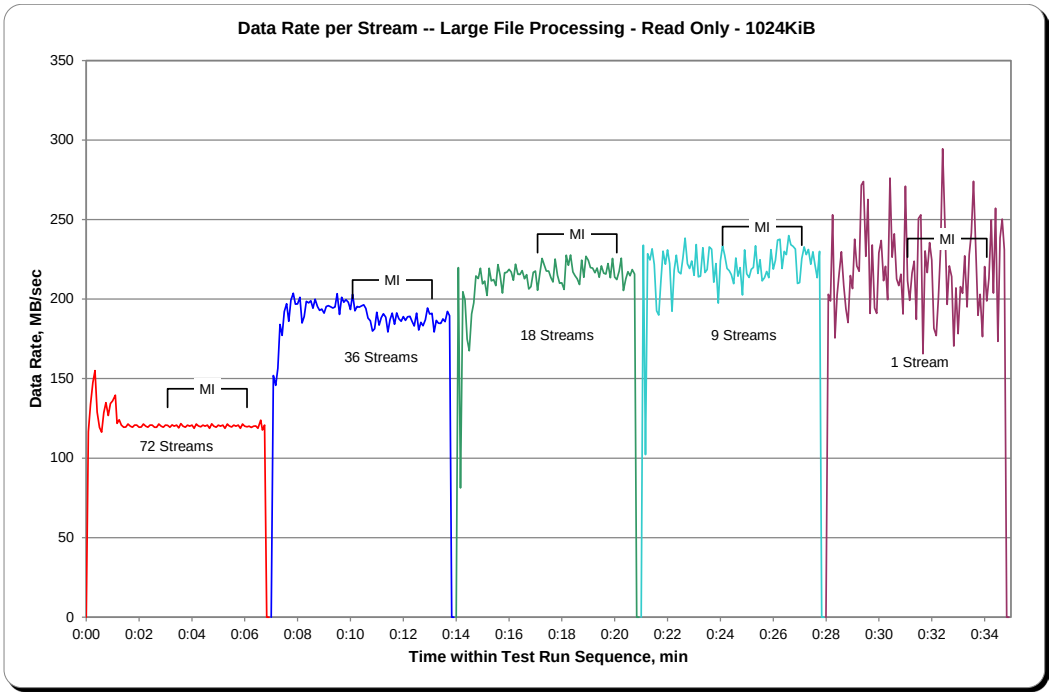
SPC-2 "Large File Processing/READ ONLY/1024 KiB Transfer Size" Average Data Rate Graph – Complete Test Run



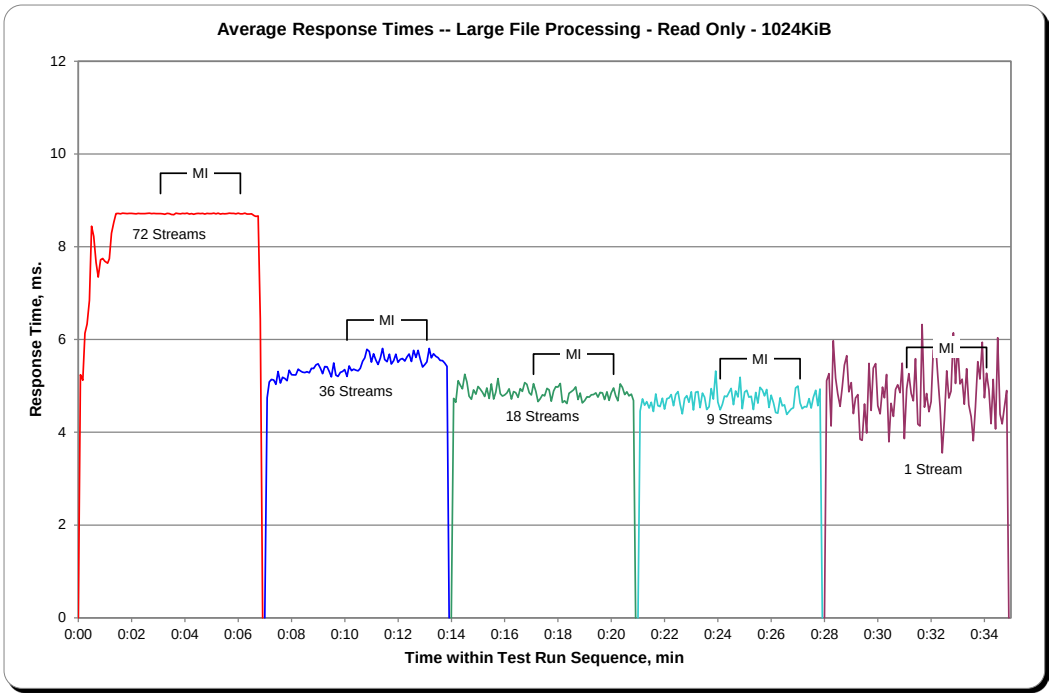
SPC-2 "Large File Processing/READ ONLY/1024 KiB Transfer Size" Average Data Rate Graph – Measurement Interval (MI) Only



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



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



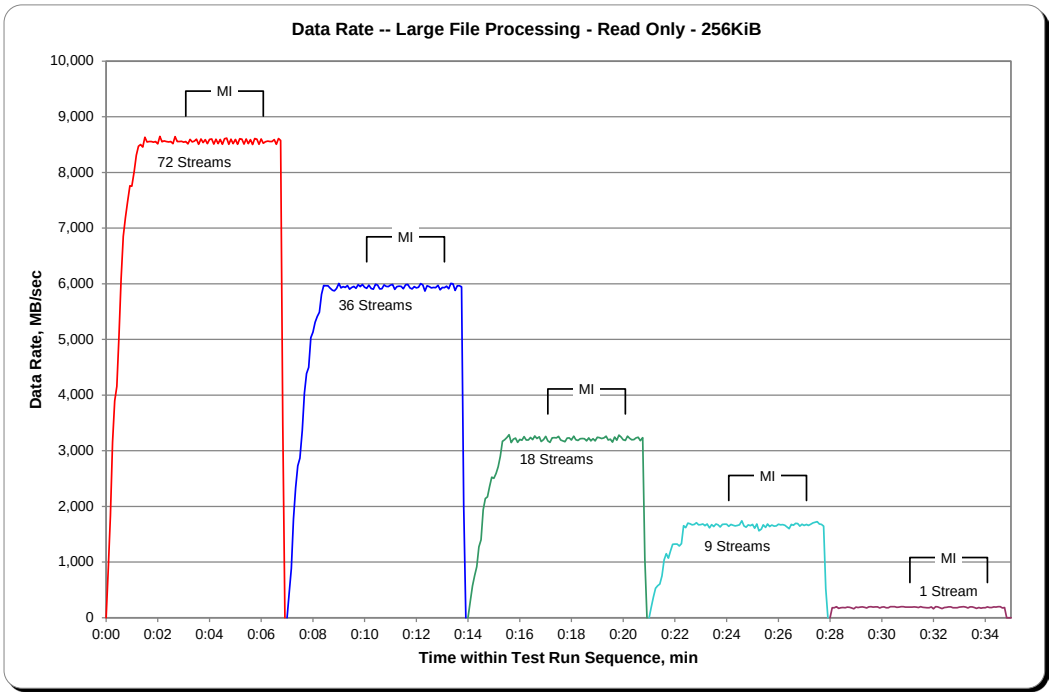
SPC-2 "Large File Processing/READ ONLY/256 KiB Transfer Size" Test Run Data – Ramp-Up Period

TR26	72 Streams			TR27	36 Streams			TR28	18 Streams			TR29	9 Streams			TR30	1 Stream		
Test Run Sequence Time	Data Rate, MB/sec	Data Rate / Stream, MB/sec	Response Time, ms	Test Run Sequence Time	Data Rate, MB/sec	Data Rate / Stream, MB/sec	Response Time, ms	Test Run Sequence Time	Data Rate, MB/sec	Data Rate / Stream, MB/sec	Response Time, ms	Test Run Sequence Time	Data Rate, MB/sec	Data Rate / Stream, MB/sec	Response Time, ms	Test Run Sequence Time	Data Rate, MB/sec	Data Rate / Stream, MB/sec	Response Time, ms
0:00:00	0.00	0.00	0.00	0:07:00	0.00	0.00	0.00	0:14:00	0.00	0.00	0.00	0:21:00	0.00	0.00	0.00	0:28:00	0.00	0.00	0.00
0:00:05	884.00	110.50	1.45	0:07:05	449.26	112.32	1.37	0:14:05	304.56	152.28	1.44	0:21:05	193.10	193.10	1.34	0:28:05	181.67	181.67	1.43
0:00:10	1,829.19	101.62	1.49	0:07:10	885.42	126.49	1.44	0:14:10	573.52	143.38	1.36	0:21:10	371.83	185.91	1.33	0:28:10	180.56	180.56	1.45
0:00:15	3,153.33	131.39	1.67	0:07:15	1,778.49	148.21	1.47	0:14:15	754.71	150.94	1.45	0:21:15	530.74	176.91	1.36	0:28:15	198.23	198.23	1.32
0:00:20	3,895.56	134.33	1.81	0:07:20	2,335.02	145.94	1.49	0:14:20	918.19	131.17	1.49	0:21:20	576.98	192.33	1.36	0:28:20	168.56	168.56	1.55
0:00:25	4,157.13	115.48	2.07	0:07:25	2,726.82	160.40	1.54	0:14:25	1,272.50	181.79	1.44	0:21:25	605.66	151.41	1.42	0:28:25	178.78	178.78	1.45
0:00:30	5,061.84	112.49	2.08	0:07:30	2,864.97	143.25	1.57	0:14:30	1,401.79	155.75	1.46	0:21:30	751.99	188.00	1.39	0:28:30	185.55	185.55	1.41
0:00:35	6,094.43	124.38	1.99	0:07:35	3,362.94	168.15	1.55	0:14:35	1,936.93	176.08	1.45	0:21:35	1,040.19	173.36	1.37	0:28:35	181.98	181.98	1.43
0:00:40	6,851.76	131.76	1.93	0:07:40	4,032.04	155.08	1.54	0:14:40	2,142.92	178.58	1.43	0:21:40	1,149.82	191.64	1.37	0:28:40	191.89	191.89	1.36
0:00:45	7,184.74	130.63	1.95	0:07:45	4,386.82	168.72	1.54	0:14:45	2,173.38	181.12	1.44	0:21:45	1,070.60	178.43	1.46	0:28:45	187.59	187.59	1.39
0:00:50	7,469.69	131.05	1.97	0:07:50	4,498.44	160.66	1.55	0:14:50	2,358.77	168.48	1.44	0:21:50	1,200.93	171.56	1.37	0:28:50	175.11	175.11	1.49
0:00:55	7,762.35	131.57	1.97	0:07:55	5,033.43	167.78	1.54	0:14:55	2,526.44	180.46	1.45	0:21:55	1,318.43	188.35	1.39	0:28:55	160.69	160.69	1.62
0:01:00	7,754.48	129.24	1.98	0:08:00	5,132.73	165.57	1.55	0:15:00	2,505.89	178.99	1.46	0:22:00	1,324.51	189.22	1.37	0:29:00	190.32	190.32	1.37
0:01:05	8,017.99	131.44	1.99	0:08:05	5,307.84	165.87	1.54	0:15:05	2,591.08	172.74	1.48	0:22:05	1,323.88	189.13	1.38	0:29:05	182.77	182.77	1.43
0:01:10	8,310.80	122.22	2.05	0:08:10	5,412.54	169.14	1.55	0:15:10	2,715.13	181.01	1.44	0:22:10	1,289.33	184.19	1.41	0:29:10	190.21	190.21	1.37
0:01:15	8,468.72	122.74	2.10	0:08:15	5,487.46	161.40	1.55	0:15:15	2,900.89	170.64	1.44	0:22:15	1,333.26	148.14	1.43	0:29:15	194.14	194.14	1.34
0:01:20	8,499.70	123.18	2.12	0:08:20	5,809.53	161.38	1.58	0:15:20	3,169.69	176.09	1.46	0:22:20	1,654.71	183.86	1.41	0:29:20	187.90	187.90	1.39
0:01:25	8,455.87	120.80	2.12	0:08:25	5,967.97	165.78	1.57	0:15:25	3,195.06	177.50	1.47	0:22:25	1,620.26	180.03	1.45	0:29:25	175.11	175.11	1.49
0:01:30	8,631.67	119.88	2.18	0:08:30	5,965.35	165.70	1.57	0:15:30	3,237.64	179.87	1.45	0:22:30	1,701.21	189.02	1.38	0:29:30	193.72	193.72	1.35
0:01:35	8,548.10	118.72	2.20	0:08:35	5,964.25	165.67	1.58	0:15:35	3,289.75	182.76	1.44	0:22:35	1,688.89	187.65	1.38	0:29:35	197.55	197.55	1.32
0:01:40	8,555.54	118.83	2.20	0:08:40	5,920.57	164.46	1.58	0:15:40	3,146.41	174.80	1.48	0:22:40	1,670.64	185.63	1.41	0:29:40	192.57	192.57	1.35
0:01:45	8,554.86	118.82	2.20	0:08:45	5,883.40	163.43	1.59	0:15:45	3,207.54	178.20	1.46	0:22:45	1,676.57	186.29	1.39	0:29:45	195.30	195.30	1.34
0:01:50	8,544.01	118.67	2.20	0:08:50	5,873.28	163.15	1.59	0:15:50	3,228.15	179.34	1.47	0:22:50	1,706.56	189.62	1.39	0:29:50	197.39	197.39	1.32
0:01:55	8,554.86	118.82	2.20	0:08:55	5,914.96	164.30	1.59	0:15:55	3,151.13	175.06	1.48	0:22:55	1,669.02	185.45	1.40	0:29:55	175.85	175.85	1.48
0:02:00	8,513.81	118.25	2.20	0:09:00	6,004.57	166.79	1.57	0:16:00	3,204.71	178.04	1.46	0:23:00	1,674.52	186.06	1.40	0:30:00	189.95	189.95	1.37
0:02:05	8,645.51	120.08	2.20	0:09:05	5,925.61	164.60	1.58	0:16:05	3,188.67	177.15	1.47	0:23:05	1,684.80	187.20	1.40	0:30:05	196.71	196.71	1.33
0:02:10	8,551.40	118.77	2.20	0:09:10	5,950.77	165.30	1.59	0:16:10	3,254.94	180.83	1.46	0:23:10	1,653.34	183.70	1.41	0:30:10	179.99	179.99	1.45
0:02:15	8,565.19	118.96	2.20	0:09:15	5,932.58	164.79	1.58	0:16:15	3,191.50	177.31	1.46	0:23:15	1,685.64	187.29	1.39	0:30:15	178.42	178.42	1.46
0:02:20	8,555.33	118.82	2.20	0:09:20	5,967.97	165.78	1.58	0:16:20	3,193.44	177.41	1.47	0:23:20	1,616.59	179.62	1.44	0:30:20	200.02	200.02	1.30
0:02:25	8,548.52	118.73	2.20	0:09:25	5,904.48	164.01	1.58	0:16:25	3,237.90	179.88	1.46	0:23:25	1,672.64	185.85	1.42	0:30:25	199.39	199.39	1.31
0:02:30	8,553.60	118.80	2.20	0:09:30	5,933.79	164.83	1.58	0:16:30	3,200.94	177.83	1.46	0:23:30	1,638.50	182.06	1.42	0:30:30	200.54	200.54	1.30
0:02:35	8,516.17	118.28	2.20	0:09:35	5,954.55	165.40	1.59	0:16:35	3,266.21	181.46	1.44	0:23:35	1,685.74	187.30	1.39	0:30:35	188.64	188.64	1.38
0:02:40	8,642.89	120.04	2.20	0:09:40	5,916.64	164.35	1.58	0:16:40	3,220.39	178.91	1.46	0:23:40	1,669.91	185.55	1.41	0:30:40	193.04	193.04	1.35
0:02:45	8,556.28	118.84	2.20	0:09:45	5,981.86	166.16	1.58	0:16:45	3,249.96	180.55	1.46	0:23:45	1,631.32	181.26	1.43	0:30:45	198.55	198.55	1.31
0:02:50	8,556.48	118.84	2.20	0:09:50	5,948.68	165.24	1.58	0:16:50	3,166.59	175.92	1.47	0:23:50	1,675.68	186.19	1.40	0:30:50	197.60	197.60	1.32
0:02:55	8,558.95	118.87	2.20	0:09:55	5,988.68	166.35	1.58	0:16:55	3,200.73	177.82	1.47	0:23:55	1,680.61	186.73	1.39	0:30:55	191.47	191.47	1.36
0:03:00	8,542.59	118.65	2.20	0:10:00	5,936.36	164.90	1.57	0:17:00	3,259.55	181.09	1.45	0:24:00	1,682.70	186.97	1.41	0:31:00	192.73	192.73	1.35

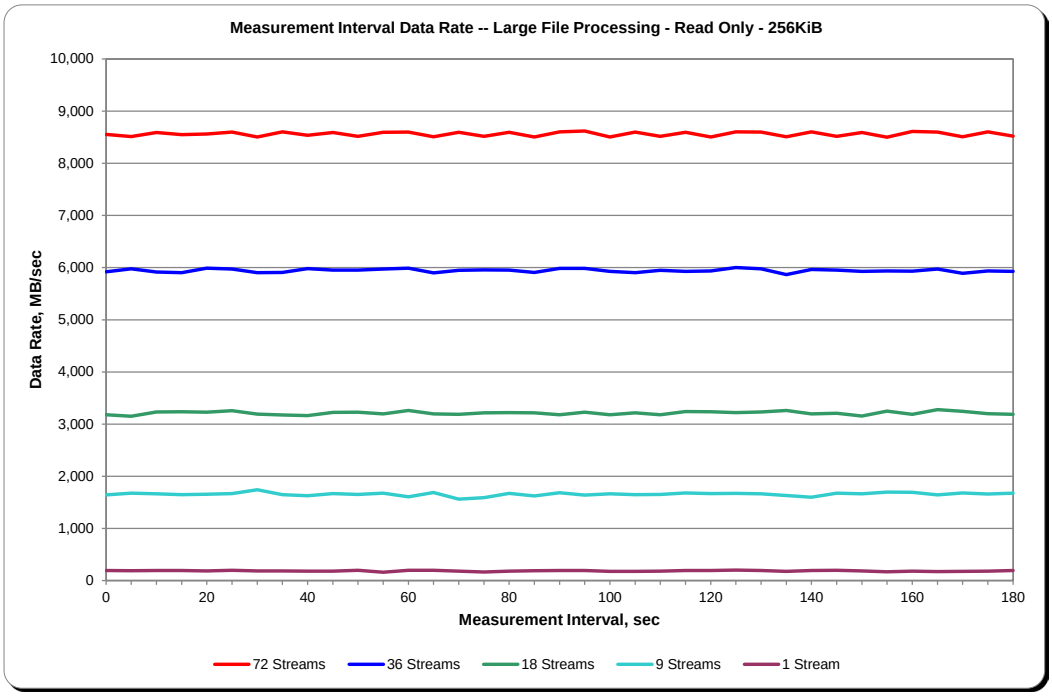
SPC-2 "Large File Processing/READ ONLY/256 KiB Transfer Size" Test Run Data Measurement Interval, Run-Out, and Ramp-Down Periods

TR26	72 Streams			TR27	36 Streams			TR28	18 Streams			TR29	9 Streams			TR30	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	8,553.76	118.80	2.20	0:10:05	5,919.79	164.44	1.58	0:17:05	3,178.81	176.60	1.47	0:24:05	1,643.70	182.63	1.42	0:31:05	193.30	193.30	1.35
0:03:10	8,512.08	118.22	2.20	0:10:10	5,976.67	166.02	1.58	0:17:10	3,151.91	175.11	1.49	0:24:10	1,675.21	186.13	1.40	0:31:10	190.47	190.47	1.37
0:03:15	8,592.40	119.34	2.20	0:10:15	5,915.80	164.33	1.59	0:17:15	3,231.40	179.52	1.45	0:24:15	1,663.09	184.79	1.42	0:31:15	195.04	195.04	1.33
0:03:20	8,548.99	118.74	2.20	0:10:20	5,902.59	163.96	1.58	0:17:20	3,236.53	179.81	1.46	0:24:20	1,649.51	183.28	1.41	0:31:20	191.57	191.57	1.36
0:03:25	8,561.41	118.91	2.20	0:10:25	5,990.25	166.40	1.57	0:17:25	3,229.88	179.44	1.45	0:24:25	1,656.28	184.03	1.42	0:31:25	185.23	185.23	1.40
0:03:30	8,597.96	119.42	2.20	0:10:30	5,974.89	165.97	1.58	0:17:30	3,257.03	180.95	1.45	0:24:30	1,669.49	185.50	1.39	0:31:30	198.29	198.29	1.31
0:03:35	8,503.79	118.11	2.20	0:10:35	5,905.21	164.03	1.58	0:17:35	3,193.23	177.40	1.48	0:24:35	1,743.15	193.68	1.36	0:31:35	186.23	186.23	1.40
0:03:40	8,600.68	119.45	2.20	0:10:40	5,908.78	164.13	1.59	0:17:40	3,176.14	176.45	1.47	0:24:40	1,649.10	183.23	1.42	0:31:40	185.81	185.81	1.40
0:03:45	8,537.40	118.58	2.19	0:10:45	5,980.50	166.13	1.58	0:17:45	3,163.71	175.76	1.48	0:24:45	1,626.97	180.77	1.44	0:31:45	179.99	179.99	1.44
0:03:50	8,589.31	119.30	2.20	0:10:50	5,951.35	165.32	1.58	0:17:50	3,225.84	179.21	1.46	0:24:50	1,667.50	185.28	1.41	0:31:50	180.88	180.88	1.44
0:03:55	8,516.43	118.28	2.20	0:10:55	5,950.56	165.29	1.57	0:17:55	3,230.09	179.45	1.46	0:24:55	1,653.13	183.68	1.41	0:31:55	195.82	195.82	1.33
0:04:00	8,594.34	119.37	2.20	0:11:00	5,974.42	165.96	1.58	0:18:00	3,194.70	177.48	1.46	0:25:00	1,677.25	186.36	1.40	0:32:00	162.53	162.53	1.61
0:04:05	8,599.79	119.44	2.20	0:11:05	5,988.21	166.34	1.58	0:18:05	3,260.76	181.15	1.45	0:25:05	1,606.42	178.49	1.45	0:32:05	198.76	198.76	1.31
0:04:10	8,508.57	118.17	2.20	0:11:10	5,898.08	163.84	1.58	0:18:10	3,195.06	177.50	1.48	0:25:10	1,686.58	187.40	1.41	0:32:10	196.40	196.40	1.33
0:04:15	8,595.91	119.39	2.20	0:11:15	5,947.16	165.20	1.58	0:18:15	3,186.94	177.05	1.47	0:25:15	1,561.07	173.45	1.50	0:32:15	181.30	181.30	1.44
0:04:20	8,515.38	118.27	2.20	0:11:20	5,957.64	165.49	1.58	0:18:20	3,217.08	178.73	1.46	0:25:21	1,592.05	176.89	1.49	0:32:20	165.94	165.94	1.57
0:04:25	8,593.76	119.36	2.20	0:11:25	5,951.51	165.32	1.58	0:18:25	3,218.50	178.81	1.46	0:25:25	1,671.27	185.70	1.39	0:32:25	182.61	182.61	1.42
0:04:30	8,505.05	118.13	2.20	0:11:30	5,908.78	164.13	1.58	0:18:30	3,214.41	178.58	1.47	0:25:30	1,624.87	180.54	1.44	0:32:30	187.85	187.85	1.39
0:04:35	8,603.57	119.49	2.20	0:11:35	5,984.54	166.24	1.58	0:18:35	3,177.87	176.55	1.47	0:25:35	1,684.43	187.16	1.40	0:32:35	193.78	193.78	1.35
0:04:40	8,617.77	119.69	2.19	0:11:40	5,986.48	166.29	1.58	0:18:40	3,230.19	179.46	1.46	0:25:40	1,639.87	182.21	1.42	0:32:40	193.99	193.99	1.34
0:04:45	8,505.94	118.14	2.20	0:11:45	5,927.44	164.65	1.58	0:18:45	3,179.44	176.64	1.48	0:25:45	1,665.98	185.11	1.43	0:32:45	178.94	178.94	1.46
0:04:50	8,598.32	119.42	2.20	0:11:50	5,905.21	164.03	1.59	0:18:50	3,215.20	178.62	1.45	0:25:50	1,647.26	183.03	1.42	0:32:50	178.73	178.73	1.46
0:04:55	8,517.90	118.30	2.20	0:11:55	5,949.20	165.26	1.59	0:18:55	3,178.50	176.58	1.48	0:25:55	1,649.93	183.33	1.42	0:32:55	179.67	179.67	1.45
0:05:00	8,594.97	119.37	2.20	0:12:00	5,927.44	164.65	1.58	0:19:00	3,241.73	180.10	1.45	0:26:00	1,680.40	186.71	1.40	0:33:00	191.47	191.47	1.36
0:05:05	8,503.69	118.11	2.20	0:12:05	5,936.51	164.90	1.57	0:19:05	3,235.22	179.73	1.46	0:26:05	1,668.91	185.43	1.40	0:33:05	195.09	195.09	1.34
0:05:10	8,603.36	119.49	2.20	0:12:10	6,000.90	166.69	1.57	0:19:10	3,219.39	178.86	1.45	0:26:10	1,673.37	185.93	1.41	0:33:10	200.85	200.85	1.30
0:05:15	8,597.75	119.41	2.20	0:12:15	5,977.77	166.05	1.58	0:19:15	3,231.40	179.52	1.46	0:26:15	1,662.52	184.72	1.40	0:33:15	193.25	193.25	1.35
0:05:20	8,507.36	118.16	2.20	0:12:20	5,867.57	162.99	1.59	0:19:20	3,262.38	181.24	1.45	0:26:20	1,631.90	181.32	1.46	0:33:20	178.15	178.15	1.46
0:05:25	8,602.73	119.48	2.20	0:12:25	5,963.72	165.66	1.57	0:19:25	3,194.33	177.46	1.46	0:26:25	1,598.87	177.65	1.46	0:33:25	194.20	194.20	1.34
0:05:30	8,516.59	118.29	2.20	0:12:30	5,950.51	165.29	1.59	0:19:30	3,208.07	178.23	1.46	0:26:30	1,676.57	186.29	1.40	0:33:30	196.35	196.35	1.33
0:05:35	8,591.25	119.32	2.20	0:12:35	5,927.02	164.64	1.58	0:19:35	3,156.53	175.36	1.49	0:26:35	1,662.67	184.74	1.42	0:33:35	183.50	183.50	1.42
0:05:40	8,501.54	118.08	2.20	0:12:40	5,935.05	164.86	1.57	0:19:40	3,248.65	180.48	1.45	0:26:40	1,695.34	188.37	1.38	0:33:40	166.88	166.88	1.56
0:05:45	8,609.54	119.58	2.20	0:12:45	5,931.32	164.76	1.59	0:19:45	3,188.72	177.15	1.46	0:26:45	1,694.18	188.24	1.39	0:33:45	183.03	183.03	1.43
0:05:50	8,597.06	119.40	2.20	0:12:50	5,971.85	165.88	1.58	0:19:50	3,279.84	182.21	1.44	0:26:50	1,645.43	182.83	1.41	0:33:50	174.33	174.33	1.50
0:05:55	8,506.78	118.15	2.20	0:12:55	5,890.74	163.63	1.58	0:19:55	3,246.65	180.37	1.45	0:26:55	1,681.34	186.82	1.41	0:33:55	178.47	178.47	1.46
0:06:00	8,602.47	119.48	2.20	0:13:00	5,934.47	164.85	1.58	0:20:00	3,198.10	177.67	1.46	0:27:00	1,658.53	184.28	1.41	0:34:00	180.62	180.62	1.45
0:06:05	8,522.83	118.37	2.20	0:13:05	5,929.85	164.72	1.59	0:20:05	3,185.84	176.99	1.47	0:27:05	1,676.46	186.27	1.40	0:34:05	193.78	193.78	1.34
0:06:10	8,549.30	118.74	2.20	0:13:10	5,955.70	165.44	1.58	0:20:10	3,261.75	181.21	1.45	0:27:10	1,656.38	184.04	1.42	0:34:10	182.61	182.61	1.43
0:06:15	8,563.62	118.94	2.20	0:13:15	5,909.56	164.15	1.58	0:20:15	3,225.05	179.17	1.46	0:27:15	1,681.02	186.78	1.40	0:34:15	185.02	185.02	1.41
0:06:20	8,556.69	118.84	2.20	0:13:20	6,004.88	166.80	1.57	0:20:20	3,196.85	177.60	1.47	0:27:20	1,704.67	189.41	1.37	0:34:20	194.77	194.77	1.34
0:06:25	8,554.02	118.81	2.20	0:13:25	5,998.85	166.63	1.57	0:20:25	3,201.46	177.86	1.46	0:27:25	1,715.47	190.61	1.37	0:34:25	192.94	192.94	1.35
0:06:30	8,591.25	119.32	2.20	0:13:30	5,881.25	163.37	1.58	0:20:30	3,232.24	179.57	1.46	0:27:30	1,725.22	191.69	1.37	0:34:30	199.75	199.75	1.31
0:06:35	8,505.84	118.14	2.20	0:13:35	5,962.62	165.63	1.58	0:20:35	3,244.14	180.23	1.45	0:27:35	1,685.27	187.25	1.39	0:34:35	199.12	199.12	1.31
0:06:40	8,607.60	119.55	2.20	0:13:40	5,963.51	165.65	1.58	0:20:40	3,183.27	176.85	1.47	0:27:40	1,677.72	186.41	1.40	0:34:40	175.53	175.53	1.49
0:06:45	8,573.42	119.08	2.19	0:13:45	5,946.16	165.17	1.58	0:20:45	3,234.91	179.72	1.46	0:27:45	1,646.26	182.92	1.43	0:34:45	185.70	185.70	1.40
0:06:50	3,480.54	0.00	1.79	0:13:50	2,021.39	0.00	1.50	0:20:50	1,058.12	0.00	1.44	0:27:50	521.61	0.00	1.47	0:34:50	1.31	0.00	1.34
0:06:55	0.00	0.00	0.00	0:13:55	0.00	0.00	0.00	0:20:55	0.00	0.00	0.00	0:27:55	0.00	0.00	0.00	0:34:55	0.00	0.00	0.00
																0:35:00	0.00	0.00	0.00

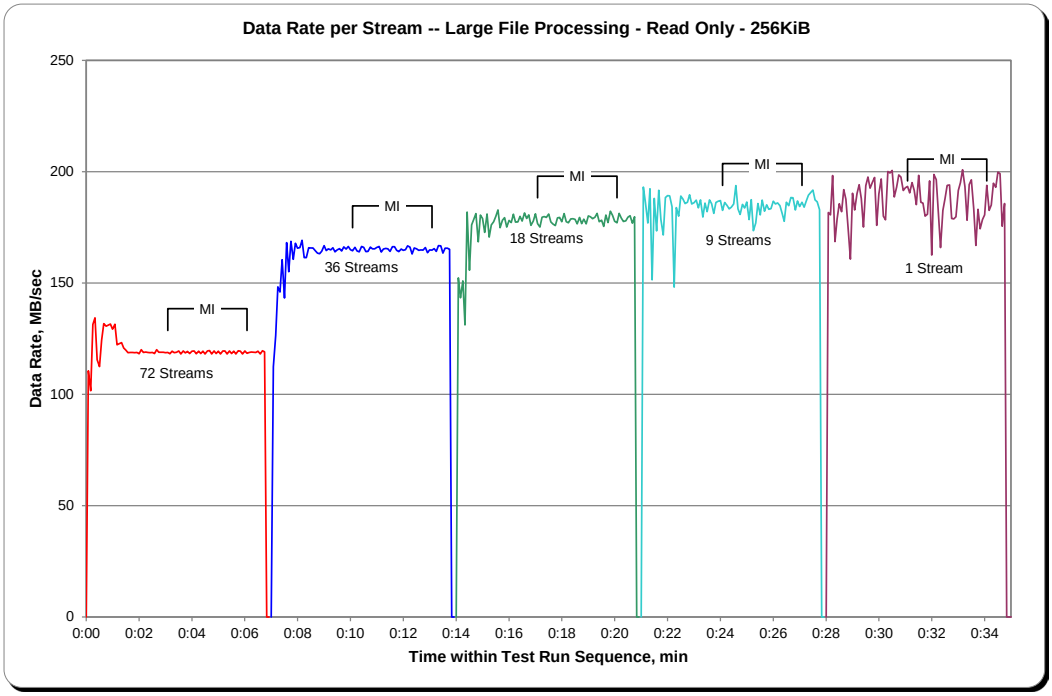
SPC-2 "Large File Processing/READ ONLY/256 KiB Transfer Size" Average Data Rate Graph – Complete Test Run



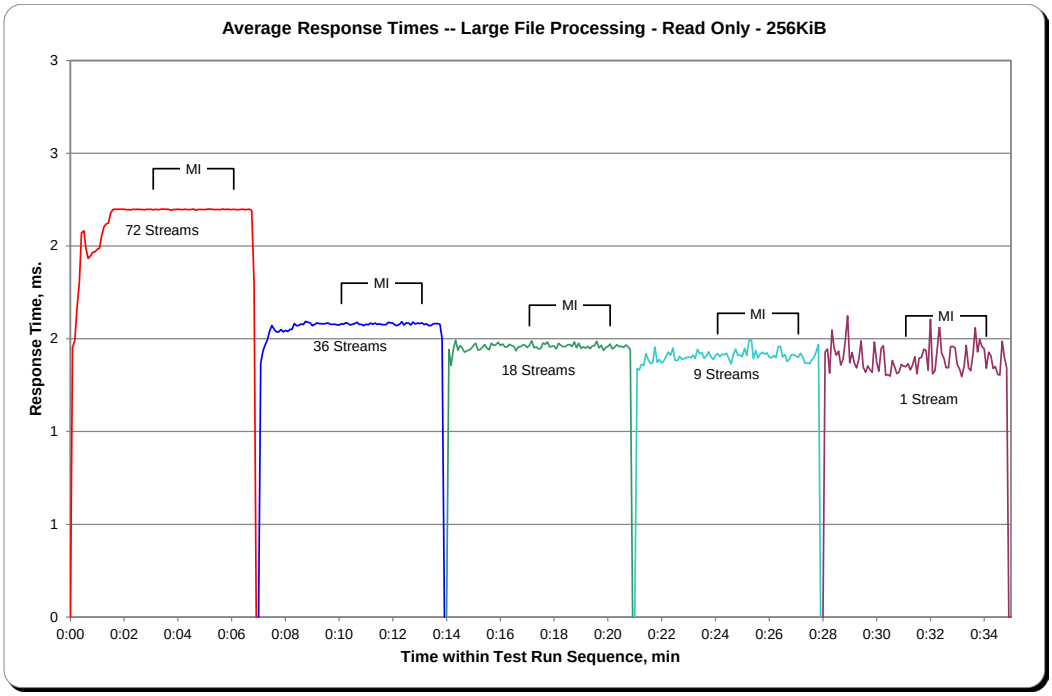
SPC-2 "Large File Processing/READ ONLY/256 KiB Transfer Size" Average Data Rate Graph – Measurement Interval (MI) Only



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 107.

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.

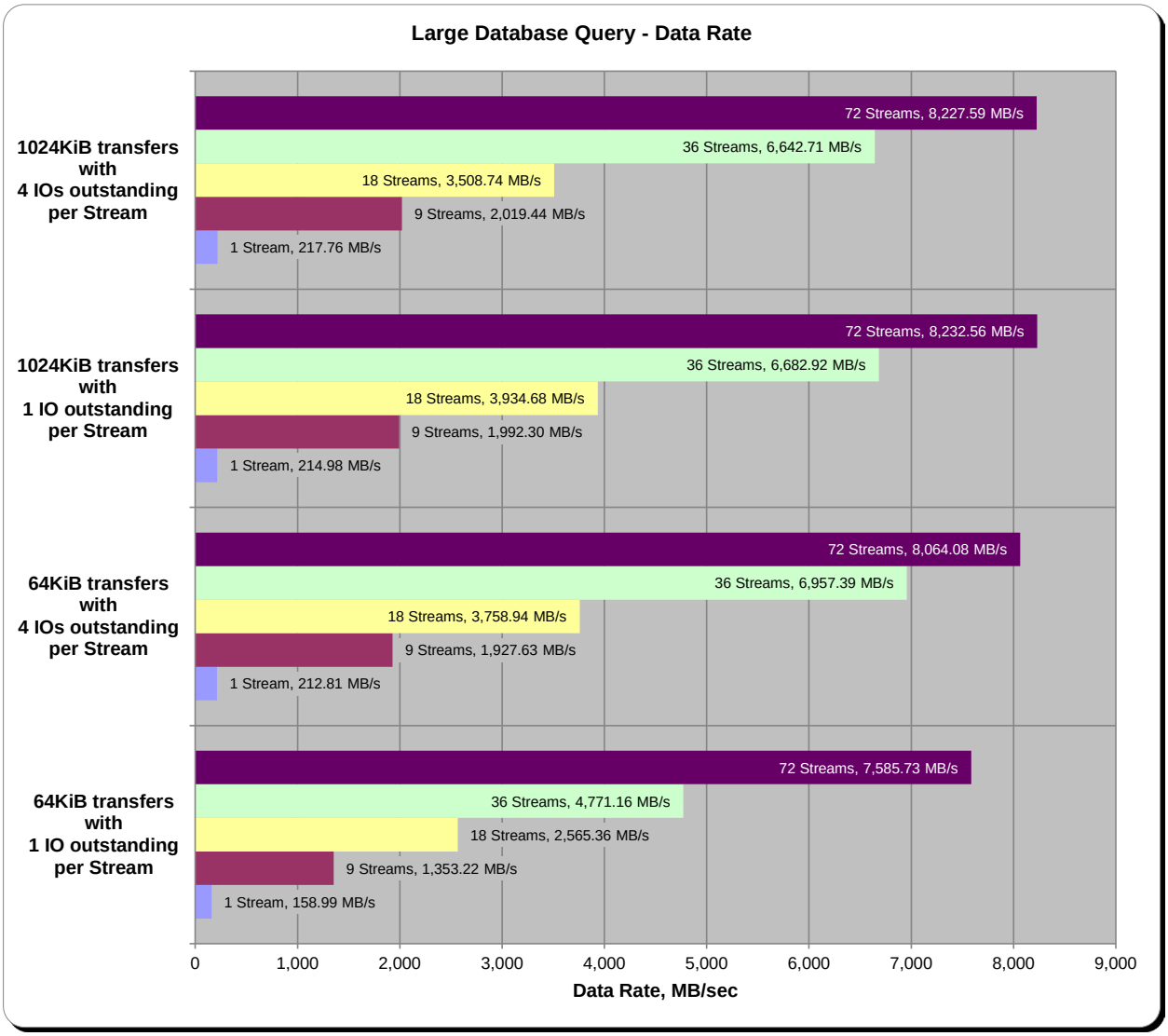
SPC-2 Large Database Query Test Results File

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	9 Streams	18 Streams	36 Streams	72 Streams
1024KiB w/ 4 IOs/Stream	217.76	2,019.44	3,508.74	6,642.71	8,227.59
1024KiB w/ 1 IO/Stream	214.98	1,992.30	3,934.68	6,682.92	8,232.56
64KiB w/ 4 IOs/Stream	212.81	1,927.63	3,758.94	6,957.39	8,064.08
64KiB w/ 1 IO/Stream	158.99	1,353.22	2,565.36	4,771.16	7,585.73

SPC-2 Large Database Query Average Data Rates Graph

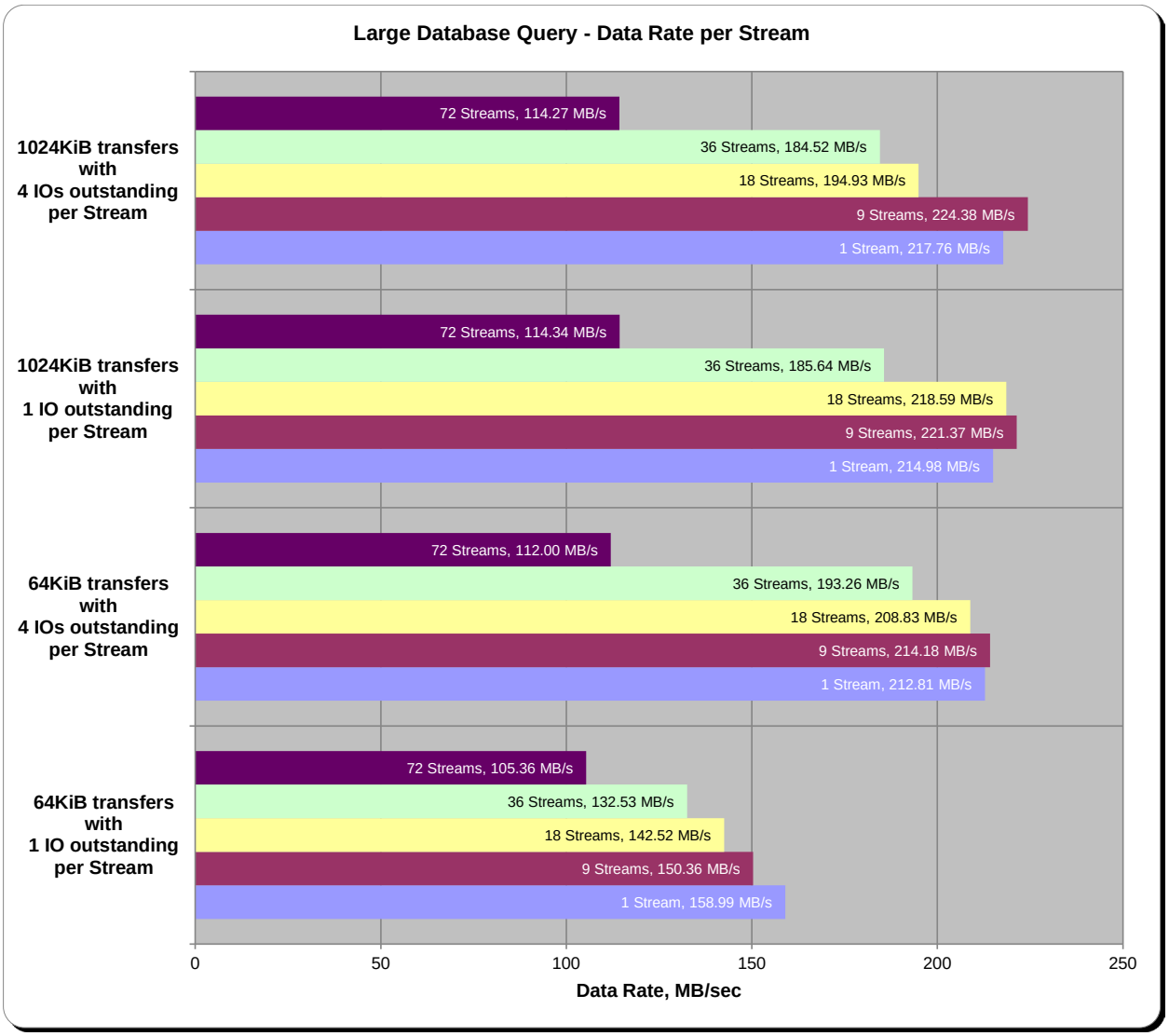


SPC-2 Large Database Query Average Data Rate per Stream

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	9 Streams	18 Streams	36 Streams	72 Streams
1024KiB w/ 4 IOs/Stream	217.76	224.38	194.93	184.52	114.27
1024KiB w/ 1 IO/Stream	214.98	221.37	218.59	185.64	114.34
64KiB w/ 4 IOs/Stream	212.81	214.18	208.83	193.26	112.00
64KiB w/ 1 IO/Stream	158.99	150.36	142.52	132.53	105.36

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

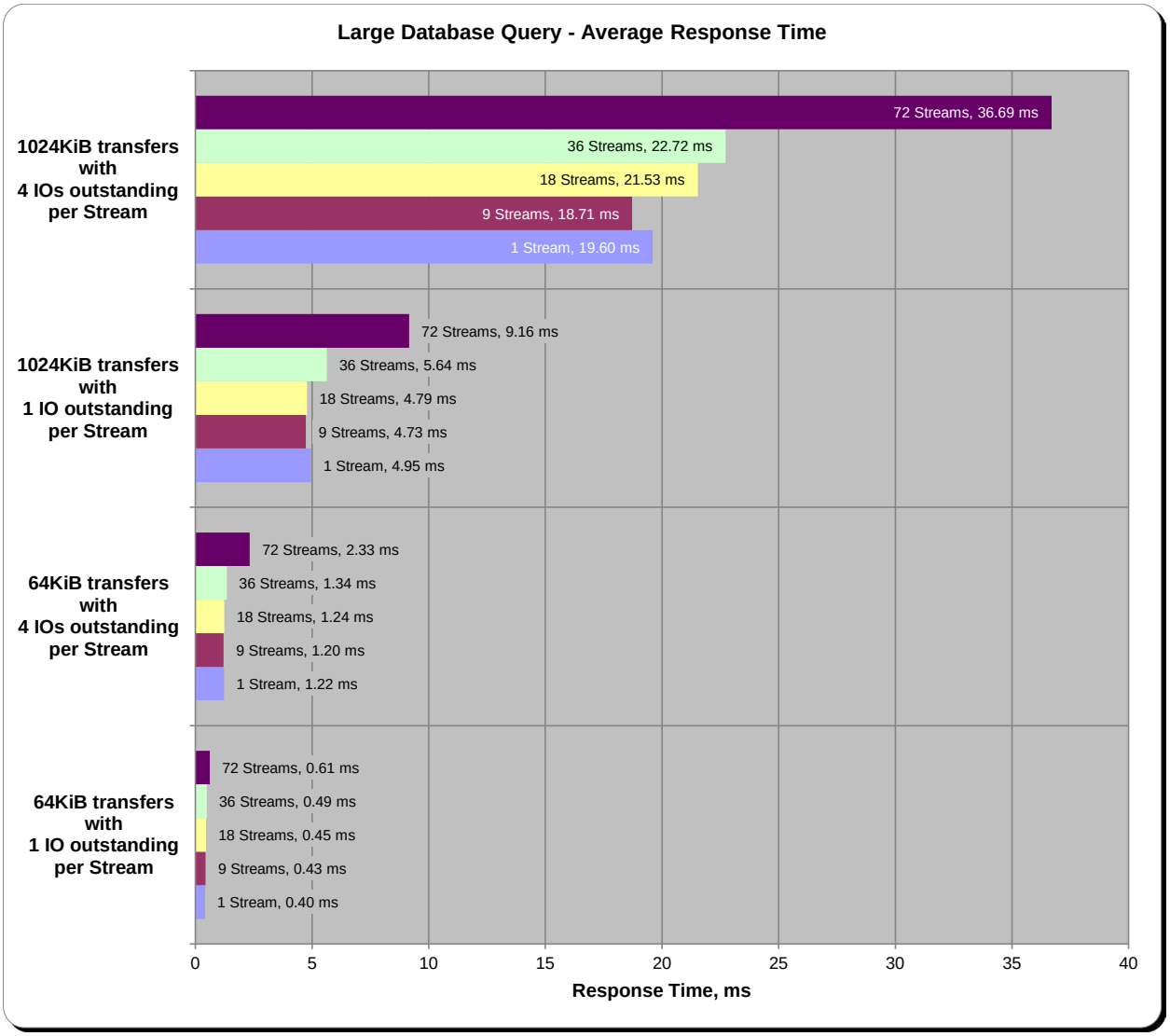


SPC-2 Large Database Query Average Response Time

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

Test Run Sequence	1 Stream	9 Streams	18 Streams	36 Streams	72 Streams
1024KiB w/ 4 IOs/Stream	19.60	18.71	21.53	22.72	36.69
1024KiB w/ 1 IO/Stream	4.95	4.73	4.79	5.64	9.16
64KiB w/ 4 IOs/Stream	1.22	1.20	1.24	1.34	2.33
64KiB w/ 1 IO/Stream	0.40	0.43	0.45	0.49	0.61

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

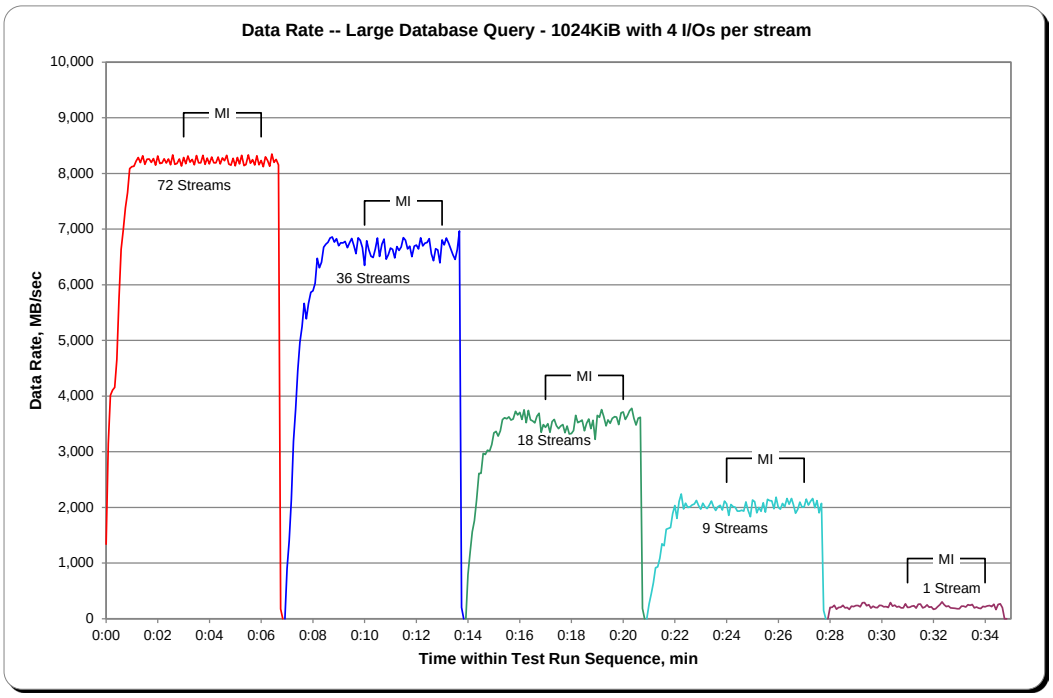
SPC-2 "Large Database Query/1024 KiB Transfer Size/4 Outstanding I/Os" Test Run Data – Ramp-Up Period

TR1	72 Streams			TR2	36 Streams			TR3	18 Streams			TR4	9 Streams			TR5	1 Stream		
Test Run Sequence Time	Data Rate, MB/sec	Data Rate / Stream, MB/sec	Response Time, ms	Test Run Sequence Time	Data Rate, MB/sec	Data Rate / Stream, MB/sec	Response Time, ms	Test Run Sequence Time	Data Rate, MB/sec	Data Rate / Stream, MB/sec	Response Time, ms	Test Run Sequence Time	Data Rate, MB/sec	Data Rate / Stream, MB/sec	Response Time, ms	Test Run Sequence Time	Data Rate, MB/sec	Data Rate / Stream, MB/sec	Response Time, ms
0:00:00	1,340.08	103.08	19.14	0:06:55	0.00	0.00	0.00	0:13:55	0.00	0.00	0.00	0:20:55	0.00	0.00	0.00	0:27:55	0.00	0.00	0.00
0:00:05	3,142.79	142.85	23.88	0:07:00	902.61	150.44	18.52	0:14:00	799.01	159.80	19.67	0:21:00	266.55	133.27	17.40	0:28:00	202.38	202.38	20.58
0:00:10	4,014.37	143.37	27.17	0:07:05	1,402.78	175.35	19.90	0:14:05	1,193.70	170.53	19.57	0:21:05	449.84	224.92	18.82	0:28:05	207.62	207.62	20.20
0:00:15	4,105.80	124.42	31.31	0:07:10	2,137.84	142.52	22.05	0:14:10	1,560.49	195.06	20.87	0:21:10	648.86	162.21	19.12	0:28:10	240.96	240.96	17.27
0:00:20	4,155.09	118.72	34.36	0:07:15	3,189.77	187.63	21.91	0:14:15	1,762.45	195.83	20.28	0:21:15	916.46	229.11	17.95	0:28:15	171.97	171.97	24.55
0:00:25	4,657.15	110.88	33.98	0:07:20	3,762.29	171.01	21.75	0:14:20	2,124.83	193.17	19.71	0:21:20	932.39	186.48	19.22	0:28:20	203.42	203.42	20.63
0:00:30	5,746.83	127.71	31.55	0:07:25	4,459.59	178.38	21.10	0:14:25	2,607.81	217.32	18.38	0:21:25	1,086.53	217.31	18.75	0:28:25	207.62	207.62	20.19
0:00:35	6,634.97	132.70	30.44	0:07:30	4,967.94	198.72	21.21	0:14:30	2,615.15	217.93	19.12	0:21:30	1,347.21	224.54	18.38	0:28:30	239.91	239.91	16.21
0:00:40	6,986.87	127.03	31.76	0:07:35	5,247.91	187.43	20.99	0:14:35	2,971.04	212.22	18.41	0:21:35	1,311.56	218.59	19.46	0:28:35	196.29	196.29	22.90
0:00:45	7,379.04	131.77	31.70	0:07:40	5,664.20	202.29	20.60	0:14:40	2,951.53	210.82	19.85	0:21:40	1,609.14	229.88	17.13	0:28:40	201.33	201.33	19.84
0:00:50	7,654.40	127.57	31.46	0:07:45	5,388.00	185.79	22.06	0:14:45	3,028.08	216.29	19.52	0:21:45	1,621.73	231.68	18.39	0:28:45	167.56	167.56	26.19
0:00:55	8,086.83	126.36	32.13	0:07:50	5,661.68	188.72	21.99	0:14:50	3,014.03	200.94	19.95	0:21:50	1,638.71	204.84	18.12	0:28:50	226.70	226.70	18.51
0:01:00	8,122.27	121.23	33.66	0:07:55	5,864.69	195.49	21.29	0:14:55	3,126.22	208.41	20.13	0:21:55	1,888.70	209.86	18.37	0:28:55	217.47	217.47	19.28
0:01:05	8,130.66	116.15	35.32	0:08:00	5,891.32	190.04	21.66	0:15:00	3,340.55	208.78	19.36	0:22:00	2,035.71	226.19	18.23	0:29:00	238.45	238.45	17.59
0:01:10	8,222.93	114.21	35.75	0:08:05	6,027.21	182.64	22.22	0:15:05	3,364.88	210.31	20.10	0:22:05	1,802.71	200.30	21.67	0:29:05	238.66	238.66	16.50
0:01:15	8,286.90	115.10	36.61	0:08:10	6,473.28	196.16	21.45	0:15:10	3,280.57	205.04	19.98	0:22:10	2,108.69	234.30	17.85	0:29:10	214.96	214.96	20.69
0:01:20	8,195.67	113.83	36.66	0:08:15	6,306.14	191.10	21.81	0:15:15	3,375.16	210.95	20.00	0:22:15	2,243.11	249.23	16.86	0:29:15	287.73	287.73	14.56
0:01:25	8,317.51	115.52	36.63	0:08:20	6,406.59	194.14	21.56	0:15:20	3,578.79	223.67	19.09	0:22:20	1,974.05	219.34	18.86	0:29:20	291.08	291.08	14.40
0:01:30	8,164.84	113.40	36.74	0:08:25	6,673.77	185.38	21.49	0:15:25	3,610.67	200.59	19.23	0:22:25	2,074.92	230.55	18.07	0:29:25	232.15	232.15	16.03
0:01:35	8,255.44	114.66	36.53	0:08:30	6,727.66	186.88	22.27	0:15:30	3,591.79	199.54	20.95	0:22:30	2,000.05	222.23	19.09	0:29:30	253.76	253.76	17.92
0:01:40	8,260.05	114.72	36.70	0:08:35	6,762.48	187.85	22.41	0:15:35	3,628.49	201.58	21.05	0:22:35	2,010.75	223.42	18.69	0:29:35	190.21	190.21	22.65
0:01:45	8,198.19	113.86	36.56	0:08:40	6,839.44	189.98	22.15	0:15:40	3,568.09	198.23	21.10	0:22:40	2,045.35	227.26	18.66	0:29:40	227.75	227.75	18.40
0:01:50	8,266.55	114.81	36.71	0:08:45	6,856.64	190.46	21.90	0:15:45	3,588.86	199.38	20.99	0:22:45	2,060.24	228.92	18.19	0:29:45	201.75	201.75	20.76
0:01:55	8,148.69	113.18	36.85	0:08:50	6,765.20	187.92	22.27	0:15:50	3,726.43	207.02	20.27	0:22:50	2,126.09	236.23	17.90	0:29:50	200.28	200.28	20.95
0:02:00	8,312.27	115.45	36.66	0:08:55	6,827.07	189.64	22.22	0:15:55	3,662.68	203.48	20.74	0:22:55	2,034.66	226.07	18.17	0:29:55	240.12	240.12	17.48
0:02:05	8,178.68	113.59	36.66	0:09:00	6,700.82	186.13	22.59	0:16:00	3,708.81	206.05	20.10	0:23:00	1,970.48	218.94	18.79	0:30:00	237.40	237.40	17.46
0:02:10	8,188.33	113.73	36.89	0:09:05	6,755.14	187.64	22.15	0:16:05	3,581.94	199.00	21.00	0:23:05	2,076.81	230.76	18.53	0:30:05	214.75	214.75	19.65
0:02:15	8,262.36	114.75	36.68	0:09:10	6,752.83	187.58	22.40	0:16:10	3,752.85	208.49	20.33	0:23:10	2,009.49	223.28	18.50	0:30:10	218.10	218.10	19.10
0:02:20	8,188.33	113.73	36.60	0:09:15	6,776.32	188.23	22.37	0:16:15	3,523.22	195.73	21.29	0:23:15	1,980.13	220.01	19.32	0:30:15	202.17	202.17	20.94
0:02:25	8,259.00	114.71	36.76	0:09:20	6,664.75	185.13	22.55	0:16:20	3,743.21	207.96	20.04	0:23:20	2,042.84	226.98	18.71	0:30:20	290.67	290.67	14.43
0:02:30	8,154.78	113.26	36.81	0:09:25	6,753.88	187.61	22.32	0:16:25	3,573.13	198.51	21.40	0:23:25	2,115.61	235.07	17.92	0:30:25	226.07	226.07	18.54
0:02:35	8,334.08	115.75	36.56	0:09:30	6,830.42	189.73	22.20	0:16:30	3,555.30	197.52	21.30	0:23:30	2,009.91	223.32	18.82	0:30:30	244.95	244.95	17.11
0:02:40	8,164.63	113.40	36.76	0:09:35	6,703.34	186.20	22.60	0:16:35	3,518.39	195.47	20.98	0:23:35	1,944.27	216.03	18.89	0:30:35	209.92	209.92	19.97
0:02:45	8,177.01	113.57	36.89	0:09:40	6,557.37	182.15	22.78	0:16:40	3,638.14	202.12	20.94	0:23:40	2,011.38	223.49	18.55	0:30:40	222.72	222.72	18.83
0:02:50	8,257.96	114.69	36.71	0:09:45	6,841.96	190.05	22.15	0:16:45	3,691.20	205.07	20.62	0:23:45	2,036.96	226.33	19.09	0:30:45	195.24	195.24	21.46
0:02:55	8,133.59	112.97	36.77	0:09:50	6,797.92	188.83	22.30	0:16:50	3,348.94	186.05	22.43	0:23:50	1,954.34	217.15	18.96	0:30:50	196.50	196.50	19.89
				0:09:55	6,665.59	185.16	22.51	0:16:55	3,487.98	193.78	21.54	0:23:55	2,112.88	234.76	18.12	0:30:55	267.39	267.39	16.70

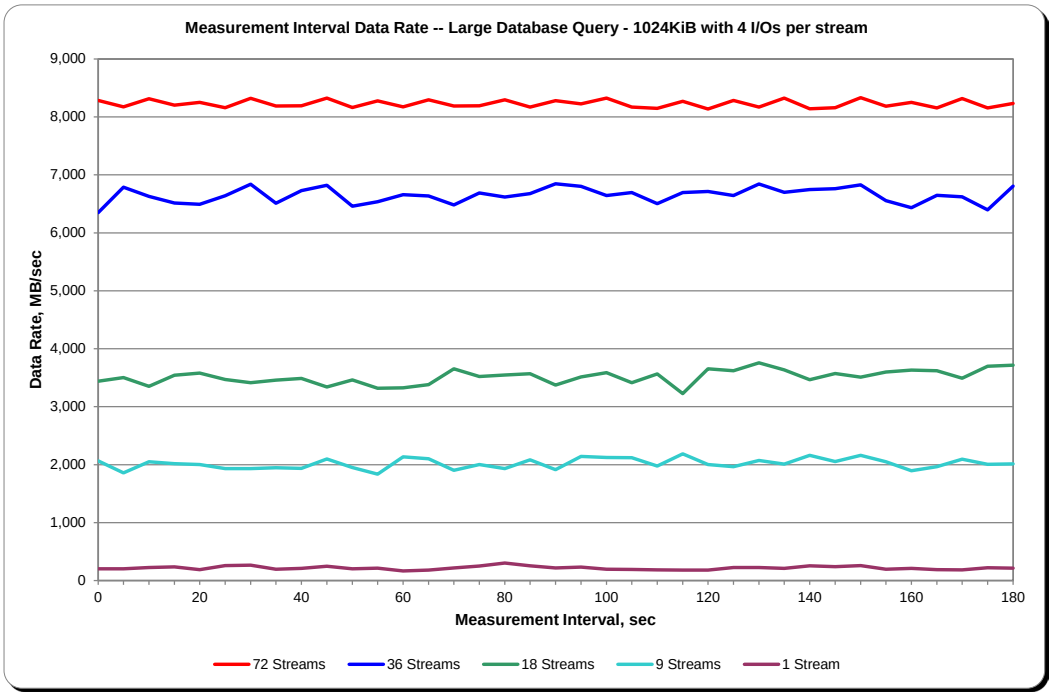
SPC-2 "Large Database Query/1024 KiB Transfer Size/4 Outstanding I/Os" Test Run Data Measurement Interval, Run-Out, and Ramp-Down Periods

TR1	72 Streams			TR2	36 Streams			TR3	18 Streams			TR4	9 Streams			TR5	1 Stream		
Test Run Sequence Time	Data Rate, MB/sec	Data Rate / Stream, MB/sec	Response Time, ms	Test Run Sequence Time	Data Rate, MB/sec	Data Rate / Stream, MB/sec	Response Time, ms	Test Run Sequence Time	Data Rate, MB/sec	Data Rate / Stream, MB/sec	Response Time, ms	Test Run Sequence Time	Data Rate, MB/sec	Data Rate / Stream, MB/sec	Response Time, ms	Test Run Sequence Time	Data Rate, MB/sec	Data Rate / Stream, MB/sec	Response Time, ms
0:03:00	8,285.01	115.07	36.65	0:10:00	6,348.92	176.36	23.55	0:17:00	3,439.12	191.06	22.08	0:24:00	2,064.86	229.43	18.13	0:31:00	203.21	203.21	20.61
0:03:05	8,173.65	113.52	36.71	0:10:05	6,788.48	188.57	22.30	0:17:05	3,502.45	194.58	21.65	0:24:05	1,857.03	206.34	20.21	0:31:05	205.31	205.31	20.41
0:03:10	8,314.58	115.48	36.67	0:10:10	6,628.89	184.14	22.88	0:17:10	3,350.20	186.12	22.39	0:24:10	2,051.43	227.94	18.58	0:31:10	225.02	225.02	18.66
0:03:15	8,201.54	113.91	36.51	0:10:15	6,513.33	180.93	23.17	0:17:15	3,543.35	196.85	21.20	0:24:15	2,016.41	224.05	18.69	0:31:15	235.09	235.09	17.73
0:03:20	8,251.87	114.61	36.78	0:10:20	6,491.10	180.31	23.23	0:17:20	3,579.63	198.87	21.23	0:24:20	2,003.62	222.62	18.91	0:31:20	190.00	190.00	22.17
0:03:25	8,157.50	113.30	36.83	0:10:25	6,639.16	184.42	22.83	0:17:25	3,471.00	192.83	21.66	0:24:25	1,933.99	214.89	19.47	0:31:25	259.42	259.42	15.86
0:03:30	8,322.13	115.59	36.62	0:10:30	6,839.44	189.98	22.04	0:17:30	3,413.95	189.66	22.07	0:24:30	1,934.20	214.91	19.65	0:31:30	265.50	265.50	16.10
0:03:35	8,190.22	113.75	36.59	0:10:35	6,510.61	180.85	22.93	0:17:35	3,460.30	192.24	21.94	0:24:35	1,948.67	216.52	19.07	0:31:35	194.83	194.83	20.37
0:03:40	8,190.43	113.76	36.67	0:10:40	6,727.66	186.88	22.54	0:17:40	3,487.98	193.78	21.65	0:24:40	1,935.88	215.10	18.97	0:31:40	210.55	210.55	20.96
0:03:45	8,324.44	115.62	36.62	0:10:45	6,821.62	189.49	22.22	0:17:45	3,341.81	185.66	22.53	0:24:45	2,099.04	233.23	18.42	0:31:45	249.14	249.14	16.84
0:03:50	8,164.21	113.39	36.70	0:10:50	6,460.91	179.47	23.32	0:17:50	3,463.66	192.43	21.65	0:24:50	1,951.40	216.82	19.41	0:31:50	205.31	205.31	18.89
0:03:55	8,276.20	114.95	36.67	0:10:55	6,538.29	181.62	23.08	0:17:55	3,318.53	184.36	22.90	0:24:55	1,836.27	204.03	20.82	0:31:55	212.86	212.86	21.14
0:04:00	8,173.02	113.51	36.76	0:11:00	6,659.51	184.99	22.74	0:18:00	3,325.87	184.77	22.55	0:25:00	2,135.53	237.28	17.59	0:32:00	168.40	168.40	24.61
0:04:05	8,295.28	115.21	36.73	0:11:05	6,637.49	184.37	22.73	0:18:05	3,380.82	187.82	22.34	0:25:05	2,102.60	233.62	17.83	0:32:05	180.36	180.36	23.51
0:04:10	8,190.22	113.75	36.61	0:11:10	6,481.67	180.05	23.01	0:18:10	3,654.92	203.05	20.72	0:25:10	1,904.42	211.60	19.95	0:32:10	217.06	217.06	19.34
0:04:15	8,192.10	113.78	36.68	0:11:15	6,686.77	185.74	22.70	0:18:15	3,521.75	195.65	21.50	0:25:15	2,000.89	222.32	18.33	0:32:15	252.92	252.92	16.53
0:04:20	8,294.66	115.20	36.73	0:11:20	6,616.72	183.80	22.91	0:18:20	3,547.12	197.06	21.20	0:25:20	1,932.11	214.68	20.00	0:32:20	304.51	304.51	13.80
0:04:25	8,170.71	113.48	36.65	0:11:25	6,677.75	185.49	22.55	0:18:25	3,569.98	198.33	20.96	0:25:25	2,083.31	231.48	18.00	0:32:25	253.76	253.76	16.07
0:04:30	8,279.56	114.99	36.67	0:11:30	6,845.94	190.17	22.02	0:18:30	3,375.58	187.53	22.56	0:25:30	1,914.91	212.77	19.84	0:32:30	218.52	218.52	18.28
0:04:35	8,226.92	114.26	36.49	0:11:35	6,800.85	188.91	22.31	0:18:35	3,513.15	195.17	21.36	0:25:35	2,143.71	238.19	17.23	0:32:35	231.32	231.32	19.46
0:04:40	8,325.06	115.63	36.63	0:11:40	6,643.15	184.53	22.68	0:18:40	3,589.28	199.40	21.00	0:25:40	2,123.16	235.91	18.18	0:32:40	196.71	196.71	19.59
0:04:45	8,168.41	113.45	36.71	0:11:45	6,694.53	185.96	22.32	0:18:45	3,414.58	189.70	22.23	0:25:45	2,119.17	235.46	17.68	0:32:45	191.89	191.89	23.63
0:04:50	8,146.81	113.15	36.87	0:11:50	6,503.69	180.66	23.30	0:18:50	3,566.00	198.11	21.24	0:25:50	1,977.61	219.73	18.90	0:32:50	186.65	186.65	22.43
0:04:55	8,269.70	114.86	36.84	0:11:55	6,694.11	185.95	22.62	0:18:55	3,225.00	179.17	23.29	0:25:55	2,185.44	242.83	17.53	0:32:55	180.36	180.36	23.27
0:05:00	8,137.37	113.02	36.81	0:12:00	6,714.24	186.51	22.52	0:19:00	3,653.03	202.95	20.55	0:26:00	2,002.15	222.46	18.90	0:33:00	181.61	181.61	23.06
0:05:05	8,284.38	115.06	36.66	0:12:05	6,642.10	184.50	22.68	0:19:05	3,619.89	201.11	21.05	0:26:05	1,967.55	218.62	19.13	0:33:05	225.86	225.86	18.59
0:05:10	8,170.71	113.48	36.74	0:12:10	6,842.59	190.07	22.15	0:19:10	3,756.21	208.68	19.88	0:26:10	2,073.87	230.43	18.14	0:33:10	225.86	225.86	17.52
0:05:15	8,324.64	115.62	36.63	0:12:15	6,698.72	186.08	22.52	0:19:15	3,635.20	201.96	20.78	0:26:15	2,010.54	223.39	18.81	0:33:15	211.81	211.81	20.69
0:05:20	8,139.26	113.05	36.83	0:12:20	6,748.43	187.46	22.12	0:19:20	3,465.54	192.53	21.80	0:26:20	2,160.91	240.10	17.42	0:33:20	254.17	254.17	14.13
0:05:25	8,160.44	113.34	36.80	0:12:25	6,760.38	187.79	22.42	0:19:25	3,573.34	198.52	21.26	0:26:25	2,055.84	228.43	17.86	0:33:25	241.59	241.59	20.02
0:05:30	8,331.78	115.72	36.57	0:12:30	6,827.49	189.65	22.20	0:19:30	3,511.89	195.11	21.42	0:26:30	2,159.65	239.96	17.93	0:33:30	258.58	258.58	16.07
0:05:35	8,183.93	113.67	36.60	0:12:35	6,554.02	182.06	22.98	0:19:35	3,599.34	199.96	20.84	0:26:35	2,049.55	227.73	18.34	0:33:35	195.66	195.66	21.60
0:05:40	8,249.36	114.57	36.81	0:12:40	6,432.80	178.69	23.46	0:19:40	3,631.64	201.76	20.93	0:26:40	1,895.20	210.58	19.79	0:33:40	209.51	209.51	20.03
0:05:45	8,153.52	113.24	36.84	0:12:45	6,648.18	184.67	22.80	0:19:45	3,622.41	201.25	20.79	0:26:45	1,965.03	218.34	19.56	0:33:45	190.42	190.42	21.99
0:05:50	8,317.93	115.53	36.63	0:12:50	6,622.81	183.97	22.75	0:19:50	3,490.29	193.91	21.45	0:26:50	2,096.52	232.95	17.83	0:33:50	183.92	183.92	21.93
0:05:55	8,155.82	113.28	36.71	0:12:55	6,395.27	177.65	23.36	0:19:55	3,699.80	205.54	20.56	0:26:55	2,007.39	223.04	18.56	0:33:55	221.67	221.67	19.64
0:06:00	8,234.26	114.36	36.81	0:13:00	6,804.42	189.01	22.27	0:20:00	3,716.99	206.50	20.39	0:27:00	2,012.64	223.63	18.63	0:34:00	214.54	214.54	19.49
0:06:05	8,120.38	112.78	36.96	0:13:05	6,714.66	186.52	22.55	0:20:05	3,579.84	198.88	20.89	0:27:05	2,149.79	238.87	17.86	0:34:05	231.53	231.53	18.06
0:06:10	8,297.17	115.24	36.73	0:13:10	6,839.65	189.99	22.16	0:20:10	3,649.46	202.75	20.50	0:27:10	2,043.46	227.05	18.35	0:34:10	238.03	238.03	17.56
0:06:15	8,231.32	114.32	36.62	0:13:15	6,742.13	187.28	22.13	0:20:15	3,736.50	207.58	20.54	0:27:15	2,111.83	234.65	17.77	0:34:15	219.99	219.99	17.99
0:06:20	8,130.45	112.92	36.78	0:13:20	6,640.42	184.46	22.95	0:20:20	3,782.00	210.11	19.79	0:27:20	2,159.65	239.96	17.12	0:34:20	260.47	260.47	16.62
0:06:25	8,348.76	115.96	36.46	0:13:25	6,536.19	181.56	23.08	0:20:25	3,598.71	199.93	20.58	0:27:25	1,994.60	221.62	19.66	0:34:25	165.05	165.05	25.65
0:06:30	8,198.82	113.87	36.56	0:13:30	6,455.24	179.31	23.37	0:20:30	3,480.22	193.35	22.14	0:27:30	2,121.48	235.72	17.62	0:34:30	258.58	258.58	16.25
0:06:35	8,252.29	114.62	36.80	0:13:35	6,631.40	184.21	22.64	0:20:35	3,603.33	200.18	20.84	0:27:35	1,903.79	211.53	19.70	0:34:35	270.32	270.32	14.15
0:06:40	8,150.58	119.86	36.69	0:13:40	6,964.43	193.46	21.72	0:20:40	3,620.73	201.15	20.96	0:27:40	2,073.24	230.36	17.89	0:34:40	200.07	200.07	22.83
0:06:45	175.74	0.00	26.55	0:13:45	201.54	0.00	24.81	0:20:45	185.81	0.00	21.34	0:27:45	149.74	0.00	26.46	0:34:45	1.47	0.00	17.73
0:06:50	0.00	0.00	0.00	0:13:50	0.00	0.00	0.00	0:20:50	0.00	0.00	0.00	0:27:50	0.00	0.00	0.00	0:34:50	0.00	0.00	0.00

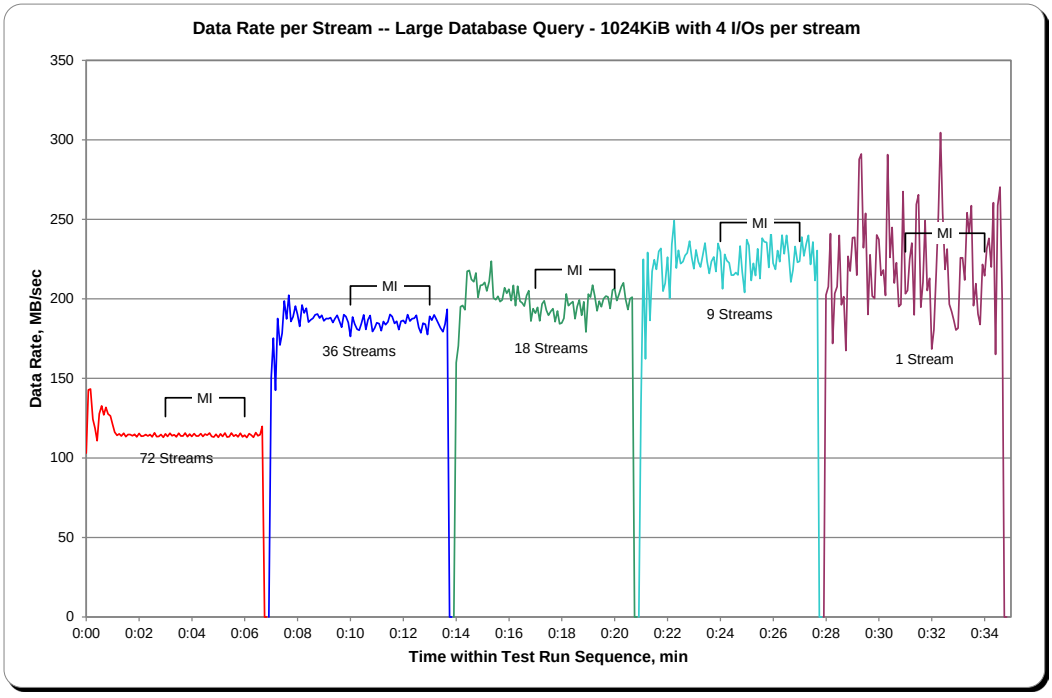
SPC-2 "Large Database Query/1024 KiB Transfer Size/4 Outstanding I/Os" Average Data Rate Graph – Complete Test Run



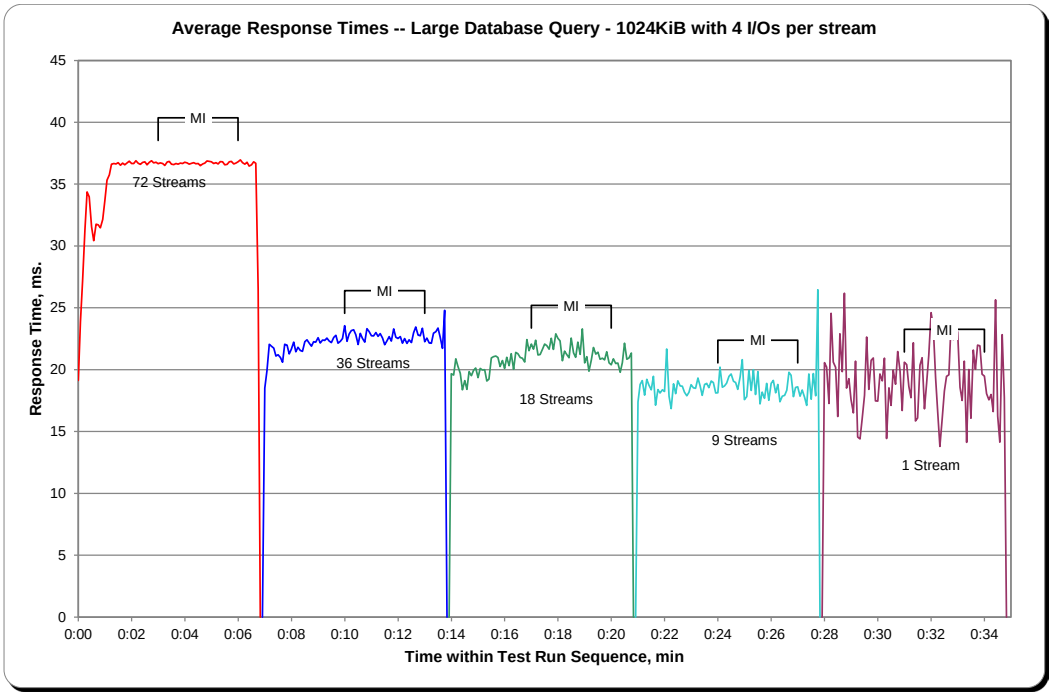
SPC-2 "Large Database Query/1024 KiB Transfer Size/4 Outstanding I/Os" Average Data Rate Graph – Measurement Interval (MI) Only



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



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



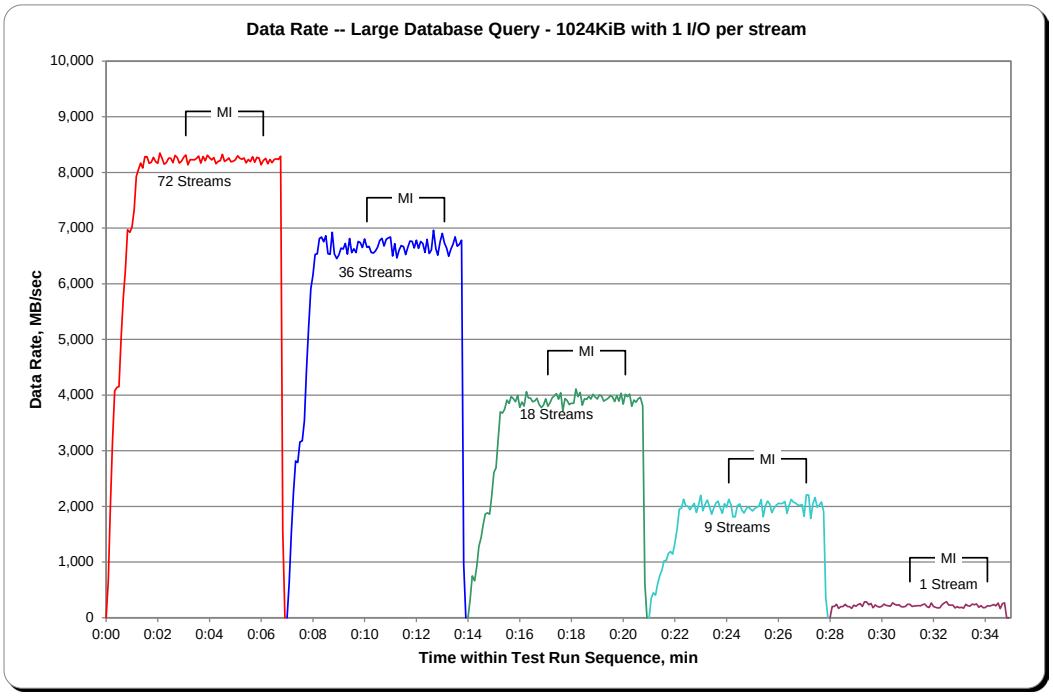
SPC-2 "Large Database Query/1024 KiB Transfer Size/1 Outstanding I/O" Test Run Data – Ramp-Up Period

TR6	72 Streams			TR7	36 Streams			TR8	18 Streams			TR9	9 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
0:00:00	0.00	0.00	0.00	0:07:00	0.00	0.00	0.00	0:14:00	0.00	0.00	0.00	0:21:00	0.00	0.00	0.00	0:28:00	0.00	0.00	0.00
0:00:05	662.70	110.45	5.08	0:07:05	630.19	105.03	4.63	0:14:05	326.53	108.84	5.07	0:21:05	352.32	176.16	4.75	0:28:05	201.54	201.54	5.17
0:00:10	2,018.51	134.57	5.08	0:07:10	1,522.74	190.34	5.04	0:14:10	750.99	250.33	4.18	0:21:10	450.68	225.34	4.65	0:28:10	203.84	203.84	5.13
0:00:15	3,194.59	127.78	6.25	0:07:15	2,252.13	160.87	5.50	0:14:15	664.80	166.20	5.13	0:21:15	407.27	203.63	5.14	0:28:15	240.75	240.75	4.35
0:00:20	4,074.98	131.45	7.16	0:07:20	2,815.43	187.70	5.36	0:14:20	919.81	153.30	4.94	0:21:20	614.68	204.89	4.72	0:28:20	167.35	167.35	6.25
0:00:25	4,138.10	118.23	8.52	0:07:25	2,790.89	174.43	5.76	0:14:25	1,286.39	214.40	4.86	0:21:25	761.27	190.32	4.62	0:28:25	197.76	197.76	5.30
0:00:30	4,154.04	109.32	8.98	0:07:30	3,157.68	197.36	5.30	0:14:30	1,436.13	179.52	5.25	0:21:30	860.04	215.01	4.87	0:28:30	204.89	204.89	5.11
0:00:35	5,027.92	119.71	8.29	0:07:35	3,179.07	198.69	5.27	0:14:35	1,671.43	208.93	5.03	0:21:35	1,023.41	204.68	4.31	0:28:35	240.54	240.54	4.35
0:00:40	5,737.18	127.49	7.94	0:07:40	3,537.48	176.87	5.42	0:14:40	1,864.79	207.20	4.95	0:21:40	1,026.77	205.35	5.08	0:28:40	202.38	202.38	5.17
0:00:45	6,247.00	127.49	7.75	0:07:45	4,474.69	186.45	5.12	0:14:45	1,883.66	209.30	4.96	0:21:45	1,154.27	230.85	4.53	0:28:45	199.02	199.02	5.26
0:00:50	6,971.56	131.54	7.65	0:07:50	5,229.25	193.68	5.31	0:14:50	1,862.90	206.99	5.03	0:21:50	1,191.18	238.24	4.41	0:28:50	166.93	166.93	6.27
0:00:55	6,925.01	128.24	8.02	0:07:55	5,910.82	203.82	5.08	0:14:55	2,196.56	199.69	4.85	0:21:55	1,141.69	190.28	4.70	0:28:55	227.12	227.12	4.61
0:01:00	7,022.10	127.67	8.15	0:08:00	6,154.72	192.34	5.26	0:15:00	2,609.07	217.42	4.69	0:22:00	1,334.00	222.33	4.68	0:29:00	207.20	207.20	5.05
0:01:05	7,333.53	126.44	8.01	0:08:05	6,529.06	192.03	5.33	0:15:05	2,694.42	207.26	4.85	0:22:05	1,605.79	200.72	4.68	0:29:05	237.40	237.40	4.41
0:01:10	7,930.59	127.91	7.99	0:08:10	6,536.82	181.58	5.63	0:15:10	3,206.55	188.62	4.96	0:22:10	1,954.97	217.22	4.69	0:29:10	253.34	253.34	4.13
0:01:15	8,050.97	129.85	8.01	0:08:15	6,812.81	189.24	5.56	0:15:15	3,701.05	217.71	4.85	0:22:15	1,965.87	218.43	4.76	0:29:15	201.54	201.54	5.18
0:01:20	8,168.41	131.75	8.03	0:08:20	6,840.28	190.01	5.51	0:15:20	3,678.40	216.38	4.78	0:22:20	2,130.50	236.72	4.44	0:29:20	287.94	287.94	3.64
0:01:25	8,078.02	120.57	8.30	0:08:25	6,754.30	187.62	5.52	0:15:25	3,746.77	208.15	4.77	0:22:25	2,011.59	223.51	4.70	0:29:25	282.49	282.49	3.70
0:01:30	8,282.70	116.66	8.69	0:08:30	6,863.35	190.65	5.52	0:15:30	3,911.82	217.32	4.86	0:22:30	2,002.99	222.55	4.72	0:29:30	232.99	232.99	4.49
0:01:35	8,283.54	115.05	9.13	0:08:35	6,538.29	181.62	5.79	0:15:35	3,850.37	213.91	4.86	0:22:35	1,941.33	215.70	4.81	0:29:35	256.27	256.27	4.08
0:01:40	8,162.12	113.36	9.18	0:08:40	6,528.43	181.35	5.77	0:15:40	3,975.57	220.87	4.74	0:22:40	2,004.46	222.72	4.72	0:29:40	180.36	180.36	5.80
0:01:45	8,184.14	113.67	9.17	0:08:45	6,921.86	192.27	5.44	0:15:45	3,934.68	218.59	4.79	0:22:45	2,051.43	227.94	4.60	0:29:45	229.64	229.64	4.56
0:01:50	8,270.12	114.86	9.15	0:08:50	6,537.24	181.59	5.79	0:15:50	3,880.36	215.58	4.90	0:22:50	1,891.42	210.16	4.94	0:29:50	202.79	202.79	5.16
0:01:55	8,195.88	113.83	9.20	0:08:55	6,450.84	179.19	5.84	0:15:55	3,995.49	221.97	4.67	0:22:55	2,024.59	224.95	4.68	0:29:55	192.10	192.10	5.45
0:02:00	8,162.74	113.37	9.20	0:09:00	6,515.01	180.97	5.73	0:16:00	3,778.44	209.91	4.98	0:23:00	2,197.40	244.16	4.30	0:30:00	207.62	207.62	5.04
0:02:05	8,347.08	115.93	9.12	0:09:05	6,637.91	184.39	5.71	0:16:05	3,874.49	215.25	4.91	0:23:05	1,923.93	213.77	4.91	0:30:05	244.95	244.95	4.27
0:02:10	8,256.28	114.67	9.18	0:09:10	6,625.32	184.04	5.70	0:16:10	3,804.86	211.38	4.92	0:23:10	2,034.24	226.03	4.60	0:30:10	223.14	223.14	4.69
0:02:15	8,147.02	113.15	9.20	0:09:15	6,724.31	186.79	5.60	0:16:15	4,059.88	225.55	4.65	0:23:15	2,113.09	234.79	4.47	0:30:15	212.86	212.86	4.92
0:02:20	8,173.44	113.52	9.18	0:09:20	6,531.37	181.43	5.77	0:16:20	3,951.03	219.50	4.75	0:23:20	1,993.97	221.55	4.73	0:30:20	205.73	205.73	5.09
0:02:25	8,255.44	114.66	9.17	0:09:25	6,812.60	189.24	5.56	0:16:25	3,946.84	219.27	4.82	0:23:25	1,859.54	206.62	5.03	0:30:25	266.97	266.97	3.92
0:02:30	8,253.97	114.64	9.13	0:09:30	6,558.84	182.19	5.74	0:16:30	3,879.94	215.55	4.81	0:23:30	1,967.34	218.59	4.81	0:30:30	239.70	239.70	4.36
0:02:35	8,173.65	113.52	9.18	0:09:35	6,627.00	184.08	5.63	0:16:35	3,897.14	216.51	4.83	0:23:35	2,061.08	229.01	4.59	0:30:35	225.23	225.23	4.65
0:02:40	8,305.14	115.35	9.17	0:09:40	6,559.05	182.20	5.77	0:16:40	3,939.71	218.87	4.83	0:23:40	2,094.43	232.71	4.51	0:30:40	235.72	235.72	4.44
0:02:45	8,268.65	114.84	9.16	0:09:45	6,758.07	187.72	5.60	0:16:45	3,824.79	212.49	4.90	0:23:45	1,972.37	219.15	4.74	0:30:45	198.81	198.81	5.26
0:02:50	8,167.78	113.44	9.18	0:09:50	6,738.15	187.17	5.59	0:16:50	3,777.39	209.86	4.98	0:23:50	1,875.06	208.34	5.04	0:30:50	196.92	196.92	5.32
0:02:55	8,201.96	113.92	9.15	0:09:55	6,652.80	184.80	5.66	0:16:55	3,822.06	212.34	4.93	0:23:55	2,050.60	227.84	4.60	0:30:55	204.47	204.47	5.12
0:03:00	8,270.75	114.87	9.15	0:10:00	6,803.37	188.98	5.56	0:17:00	3,932.58	218.48	4.83	0:24:00	1,989.36	221.04	4.70	0:31:00	240.12	240.12	4.34

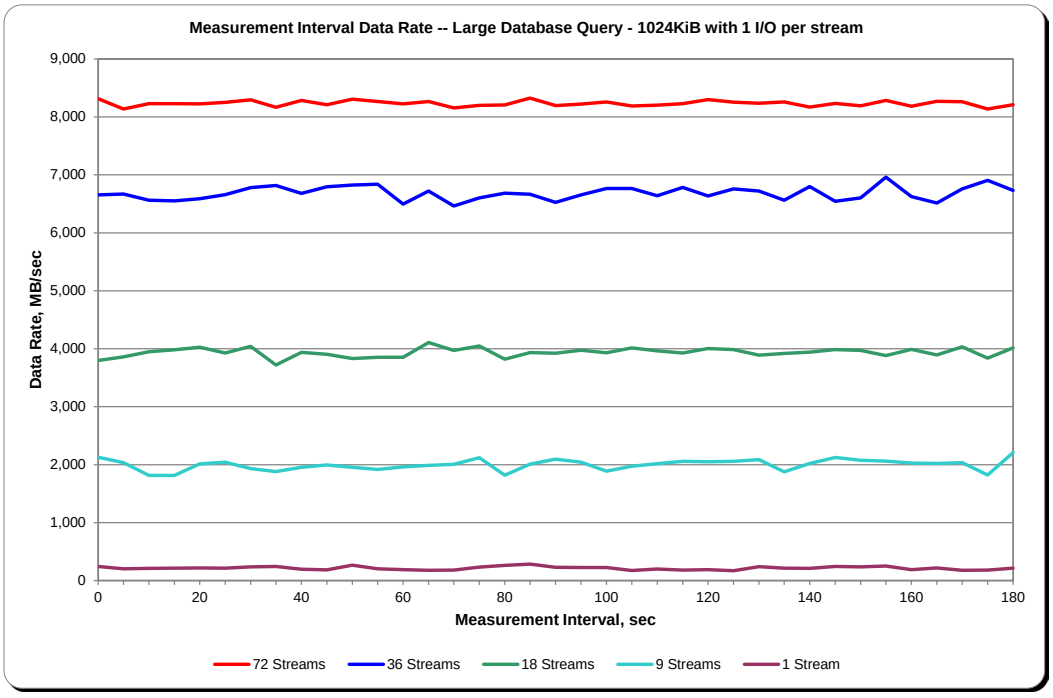
SPC-2 "Large Database Query/1024 KiB Transfer Size/1 Outstanding I/O" Test Run Data Measurement Interval, Run-Out, and Ramp-Down Periods

TR6	72 Streams			TR7	36 Streams			TR8	18 Streams			TR9	9 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	8,313.74	115.47	9.14	0:10:05	6,656.15	184.89	5.65	0:17:05	3,799.20	211.07	4.88	0:24:05	2,127.35	236.37	4.44	0:31:05	243.27	243.27	4.32
0:03:10	8,135.27	112.99	9.16	0:10:10	6,671.46	185.32	5.59	0:17:10	3,861.49	214.53	4.92	0:24:10	2,036.75	226.31	4.63	0:31:10	204.68	204.68	5.12
0:03:15	8,230.48	114.31	9.16	0:10:15	6,561.15	182.25	5.76	0:17:15	3,949.99	219.44	4.79	0:24:15	1,813.20	201.47	5.19	0:31:15	211.39	211.39	4.95
0:03:20	8,228.60	114.29	9.19	0:10:20	6,553.18	182.03	5.72	0:17:20	3,983.54	221.31	4.68	0:24:20	1,816.34	201.82	5.11	0:31:20	215.59	215.59	4.85
0:03:25	8,223.98	114.22	9.17	0:10:25	6,589.67	183.05	5.71	0:17:25	4,026.11	223.67	4.70	0:24:25	2,012.85	223.65	4.74	0:31:25	217.89	217.89	4.80
0:03:30	8,251.45	114.60	9.13	0:10:30	6,658.25	184.95	5.62	0:17:30	3,926.71	218.15	4.77	0:24:30	2,044.09	227.12	4.56	0:31:30	213.70	213.70	4.90
0:03:35	8,295.49	115.22	9.14	0:10:35	6,779.25	188.31	5.58	0:17:35	4,042.89	224.60	4.73	0:24:35	1,932.94	214.77	4.89	0:31:35	236.35	236.35	4.43
0:03:40	8,168.20	113.45	9.17	0:10:40	6,816.16	189.34	5.52	0:17:40	3,719.30	206.63	4.99	0:24:40	1,880.31	208.92	4.95	0:31:40	244.95	244.95	4.27
0:03:45	8,285.43	115.08	9.10	0:10:45	6,679.64	185.55	5.61	0:17:45	3,939.08	218.84	4.83	0:24:45	1,954.34	217.15	4.84	0:31:45	197.55	197.55	5.30
0:03:50	8,209.51	114.02	9.18	0:10:50	6,795.40	188.76	5.57	0:17:50	3,904.06	216.89	4.85	0:24:50	1,993.97	221.55	4.73	0:31:50	185.81	185.81	5.63
0:03:55	8,308.29	115.39	9.11	0:10:55	6,822.87	189.52	5.55	0:17:55	3,831.29	212.85	4.86	0:24:55	1,954.76	217.20	4.79	0:31:55	265.71	265.71	3.94
0:04:00	8,264.46	114.78	9.12	0:11:00	6,838.39	189.96	5.48	0:18:00	3,854.15	214.12	4.91	0:25:00	1,917.64	213.07	4.93	0:32:00	203.21	203.21	5.15
0:04:05	8,223.77	114.22	9.17	0:11:05	6,497.82	180.49	5.80	0:18:05	3,853.73	214.10	4.86	0:25:05	1,961.68	217.96	4.82	0:32:05	189.58	189.58	5.52
0:04:10	8,266.55	114.81	9.16	0:11:10	6,719.48	186.65	5.63	0:18:10	4,109.16	228.29	4.65	0:25:10	1,988.10	220.90	4.73	0:32:10	176.79	176.79	5.92
0:04:15	8,155.19	113.27	9.19	0:11:15	6,463.21	179.53	5.83	0:18:15	3,971.59	220.64	4.67	0:25:15	2,004.67	222.74	4.68	0:32:15	181.61	181.61	5.77
0:04:20	8,198.40	113.87	9.20	0:11:20	6,603.09	183.42	5.68	0:18:20	4,048.34	224.91	4.69	0:25:20	2,121.90	235.77	4.46	0:32:20	234.88	234.88	4.45
0:04:25	8,208.46	114.01	9.18	0:11:25	6,685.09	185.70	5.66	0:18:25	3,818.70	212.15	4.95	0:25:25	1,816.76	201.86	5.19	0:32:25	263.82	263.82	3.97
0:04:30	8,324.02	115.61	9.09	0:11:30	6,665.80	185.16	5.68	0:18:30	3,934.05	218.56	4.74	0:25:30	2,011.17	223.46	4.65	0:32:30	285.84	285.84	3.66
0:04:35	8,197.56	113.85	9.20	0:11:35	6,524.45	181.23	5.74	0:18:35	3,922.09	217.89	4.83	0:25:35	2,094.22	232.69	4.51	0:32:35	229.43	229.43	4.56
0:04:40	8,221.05	114.18	9.17	0:11:40	6,656.36	184.90	5.66	0:18:40	3,975.57	220.87	4.79	0:25:40	2,044.93	227.21	4.62	0:32:40	227.12	227.12	4.61
0:04:45	8,258.58	114.70	9.17	0:11:45	6,766.04	187.95	5.60	0:18:45	3,931.53	218.42	4.78	0:25:45	1,887.02	209.67	4.99	0:32:45	225.23	225.23	4.65
0:04:50	8,190.22	113.75	9.15	0:11:50	6,763.73	187.88	5.57	0:18:50	4,014.37	223.02	4.62	0:25:50	1,971.95	219.11	4.76	0:32:50	175.53	175.53	5.96
0:04:55	8,202.80	113.93	9.19	0:11:55	6,641.68	184.49	5.64	0:18:55	3,963.20	220.18	4.80	0:25:55	2,019.14	224.35	4.68	0:32:55	199.86	199.86	5.25
0:05:00	8,229.22	114.29	9.16	0:12:00	6,783.66	188.43	5.58	0:19:00	3,928.59	218.26	4.82	0:26:00	2,058.14	228.68	4.58	0:33:00	181.82	181.82	5.75
0:05:05	8,297.80	115.25	9.12	0:12:05	6,634.76	184.30	5.70	0:19:05	4,003.46	222.41	4.66	0:26:05	2,049.55	227.73	4.56	0:33:05	188.53	188.53	5.56
0:05:10	8,255.44	114.66	9.14	0:12:10	6,758.49	187.74	5.55	0:19:10	3,985.01	221.39	4.75	0:26:10	2,057.73	228.64	4.60	0:33:10	171.76	171.76	6.09
0:05:15	8,236.98	114.40	9.15	0:12:15	6,722.42	186.73	5.60	0:19:15	3,890.22	216.12	4.81	0:26:15	2,088.55	232.06	4.53	0:33:15	242.01	242.01	4.33
0:05:20	8,260.26	114.73	9.17	0:12:20	6,564.30	182.34	5.77	0:19:20	3,919.58	217.75	4.87	0:26:20	1,876.11	208.46	5.02	0:33:20	213.91	213.91	4.90
0:05:25	8,171.76	113.50	9.17	0:12:25	6,798.97	188.86	5.54	0:19:25	3,942.86	219.05	4.71	0:26:25	2,019.77	224.42	4.65	0:33:25	212.23	212.23	4.93
0:05:30	8,232.79	114.34	9.16	0:12:30	6,545.21	181.81	5.73	0:19:30	3,987.32	221.52	4.77	0:26:30	2,125.88	236.21	4.45	0:33:30	245.37	245.37	4.27
0:05:35	8,192.31	113.78	9.21	0:12:35	6,603.93	183.44	5.73	0:19:35	3,969.91	220.55	4.77	0:26:35	2,076.18	230.69	4.54	0:33:35	235.30	235.30	4.45
0:05:40	8,284.17	115.06	9.13	0:12:40	6,961.71	193.38	5.44	0:19:40	3,883.30	215.74	4.80	0:26:40	2,059.82	228.87	4.54	0:33:40	249.77	249.77	4.19
0:05:45	8,183.51	113.66	9.21	0:12:45	6,626.37	184.07	5.65	0:19:45	3,991.30	221.74	4.74	0:26:45	2,026.90	225.21	4.67	0:33:45	189.58	189.58	5.52
0:05:50	8,269.49	114.85	9.12	0:12:50	6,513.33	180.93	5.79	0:19:50	3,893.36	216.30	4.81	0:26:50	2,019.77	224.42	4.68	0:33:50	217.68	217.68	4.81
0:05:55	8,260.47	114.73	9.17	0:12:55	6,758.07	187.72	5.60	0:19:55	4,034.29	224.13	4.74	0:26:55	2,035.29	226.14	4.62	0:33:55	179.10	179.10	5.84
0:06:00	8,136.32	113.00	9.22	0:13:00	6,905.71	191.83	5.46	0:20:00	3,839.05	213.28	4.83	0:27:00	1,823.05	202.56	5.15	0:34:00	182.45	182.45	5.74
0:06:05	8,212.24	114.06	9.19	0:13:05	6,731.44	186.98	5.55	0:20:05	4,014.16	223.01	4.73	0:27:05	2,207.88	245.32	4.28	0:34:05	216.01	216.01	4.84
0:06:10	8,252.08	114.61	9.19	0:13:10	6,644.41	184.57	5.69	0:20:10	3,970.54	220.59	4.72	0:27:10	2,204.95	244.99	4.28	0:34:10	212.44	212.44	4.93
0:06:15	8,154.36	113.25	9.24	0:13:15	6,493.41	180.37	5.80	0:20:15	4,018.35	223.24	4.75	0:27:15	1,783.42	198.16	5.22	0:34:15	221.88	221.88	4.72
0:06:20	8,232.79	114.34	9.15	0:13:20	6,621.55	183.93	5.67	0:20:20	3,800.04	211.11	4.88	0:27:20	2,055.00	228.33	4.61	0:34:20	236.56	236.56	4.42
0:06:25	8,175.96	113.55	9.18	0:13:25	6,709.63	186.38	5.64	0:20:25	3,911.61	217.31	4.86	0:27:25	2,161.53	240.17	4.37	0:34:25	216.01	216.01	4.85
0:06:30	8,231.11	114.32	9.16	0:13:30	6,844.06	190.11	5.53	0:20:30	3,873.44	215.19	4.89	0:27:30	1,986.21	220.69	4.71	0:34:30	265.08	265.08	3.95
0:06:35	8,242.65	114.48	9.15	0:13:35	6,675.03	185.42	5.59	0:20:35	3,932.79	218.49	4.76	0:27:35	2,021.03	224.56	4.67	0:34:35	165.68	165.68	6.32
0:06:40	8,232.79	114.34	9.19	0:13:40	6,709.42	186.37	5.64	0:20:40	3,959.42	219.97	4.75	0:27:40	2,080.79	231.20	4.55	0:34:40	254.59	254.59	4.11
0:06:45	8,288.99	115.12	9.10	0:13:45	6,783.24	188.42	5.58	0:20:45	3,806.54	211.47	4.92	0:27:45	1,906.94	211.88	4.96	0:34:45	267.18	267.18	3.92
0:06:50	1,542.46	0.00	6.68	0:13:50	958.82	0.00	5.60	0:20:50	619.92	0.00	4.64	0:27:50	365.11	0.00	3.98	0:34:50	1.05	0.00	3.90
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

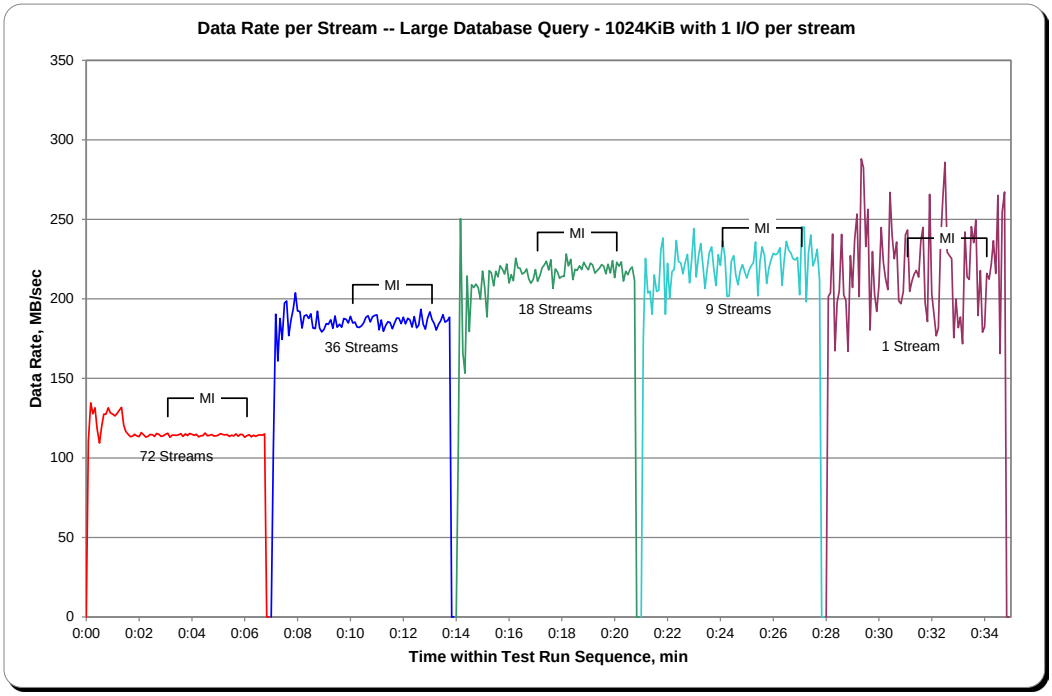
SPC-2 "Large Database Query/1024 KiB Transfer Size/1 Outstanding I/O" Average Data Rate Graph – Complete Test Run



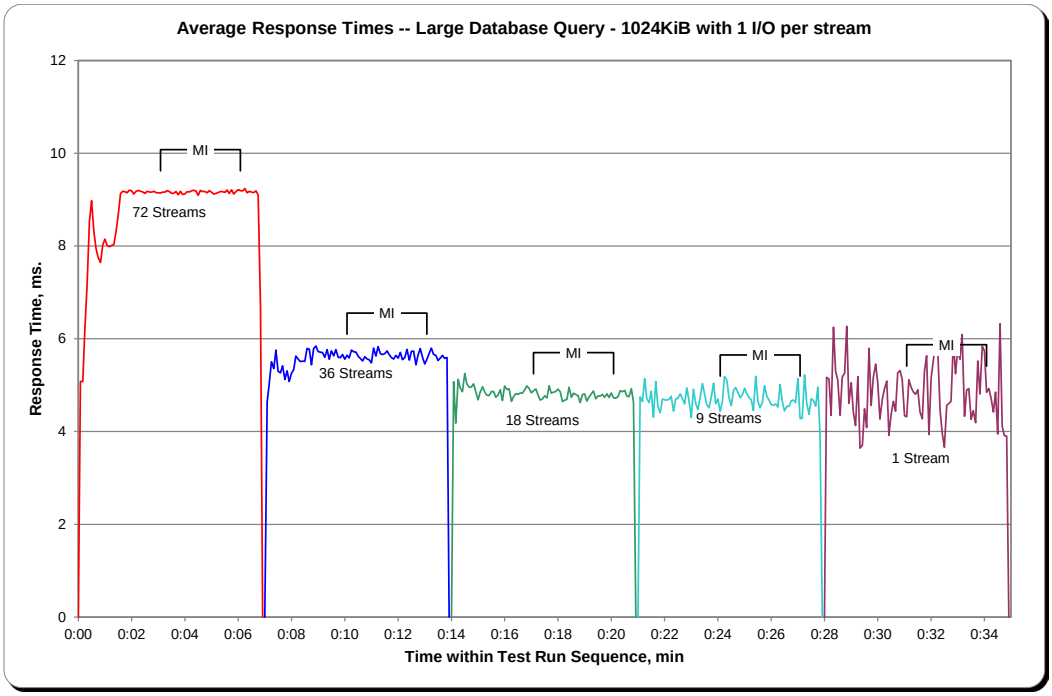
SPC-2 "Large Database Query/1024 KiB Transfer Size/1 Outstanding I/O" Average Data Rate Graph – Measurement Interval (MI) Only



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

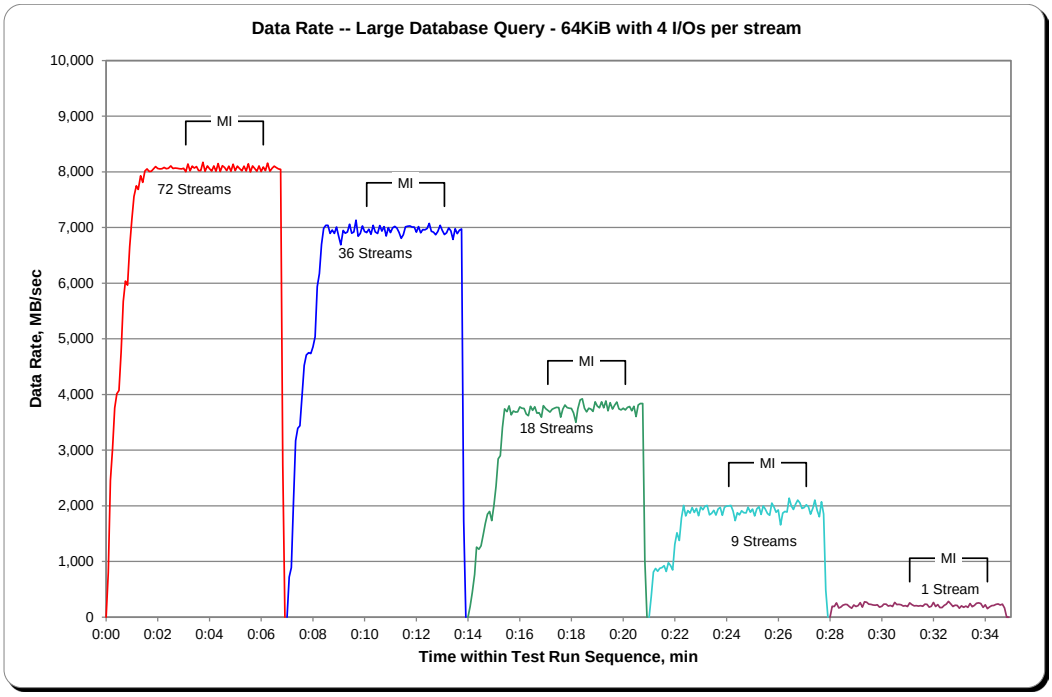
SPC-2 "Large Database Query/64 KiB Transfer Size/4 Outstanding I/Os" Test Run Data – Ramp-Up Period

TR11	72 Streams			TR12	36 Streams			TR13	18 Streams			TR14	9 Streams			TR15	1 Stream		
Test Run Sequence Time	Data Rate, MB/sec	Data Rate / Stream, MB/sec	Response Time, ms	Test Run Sequence Time	Data Rate, MB/sec	Data Rate / Stream, MB/sec	Response Time, ms	Test Run Sequence Time	Data Rate, MB/sec	Data Rate / Stream, MB/sec	Response Time, ms	Test Run Sequence Time	Data Rate, MB/sec	Data Rate / Stream, MB/sec	Response Time, ms	Test Run Sequence Time	Data Rate, MB/sec	Data Rate / Stream, MB/sec	Response Time, ms
0:00:00	0.00	0.00	0.00	0:07:00	0.00	0.00	0.00	0:14:00	0.00	0.00	0.00	0:21:00	0.00	0.00	0.00	0:28:00	0.00	0.00	0.00
0:00:05	802.74	89.19	1.35	0:07:05	721.38	240.46	1.02	0:14:05	193.37	193.37	1.32	0:21:05	377.36	188.68	1.20	0:28:05	194.45	194.45	1.32
0:00:10	2,456.19	144.48	1.37	0:07:10	891.16	127.31	1.26	0:14:10	439.86	146.62	1.09	0:21:10	808.89	202.22	1.15	0:28:10	193.00	193.00	1.33
0:00:15	3,027.04	151.35	1.55	0:07:15	2,069.85	147.85	1.29	0:14:15	768.62	192.15	1.22	0:21:15	876.10	219.02	1.18	0:28:15	255.14	255.14	1.00
0:00:20	3,758.39	150.34	1.51	0:07:20	3,169.02	186.41	1.31	0:14:20	1,258.91	209.82	1.21	0:21:20	826.90	206.72	1.25	0:28:20	164.44	164.44	1.57
0:00:25	4,014.62	133.82	1.76	0:07:25	3,394.09	188.56	1.32	0:14:25	1,218.74	203.12	1.28	0:21:25	877.25	219.31	1.17	0:28:25	180.69	180.69	1.42
0:00:30	4,070.90	113.08	2.15	0:07:30	3,438.68	180.98	1.37	0:14:30	1,282.97	213.83	1.21	0:21:30	891.44	222.86	1.15	0:28:30	214.34	214.34	1.19
0:00:35	4,764.26	116.20	2.13	0:07:35	3,974.75	189.27	1.29	0:14:35	1,477.33	211.05	1.15	0:21:35	924.53	231.13	1.11	0:28:35	231.43	231.43	1.10
0:00:40	5,674.15	120.73	2.02	0:07:40	4,519.66	188.32	1.30	0:14:40	1,684.86	187.21	1.22	0:21:40	819.84	204.96	1.26	0:28:40	225.67	225.67	1.12
0:00:45	6,036.70	125.76	2.06	0:07:45	4,708.69	196.20	1.32	0:14:45	1,849.38	205.49	1.27	0:21:45	977.31	244.33	1.05	0:28:45	187.21	187.21	1.38
0:00:50	5,965.66	112.56	2.17	0:07:50	4,752.19	198.01	1.32	0:14:50	1,900.02	211.11	1.23	0:21:50	927.93	231.98	1.11	0:28:50	161.27	161.27	1.60
0:00:55	6,655.54	114.75	2.20	0:07:55	4,735.33	197.31	1.31	0:14:55	1,736.14	192.90	1.33	0:21:55	848.86	169.77	1.24	0:28:55	219.01	219.01	1.17
0:01:00	7,137.93	118.97	2.15	0:08:00	4,854.37	194.17	1.32	0:15:00	2,003.52	200.35	1.25	0:22:00	1,307.57	186.80	1.15	0:29:00	192.40	192.40	1.33
0:01:05	7,555.61	119.93	2.12	0:08:05	5,036.89	186.55	1.34	0:15:05	2,350.70	195.89	1.22	0:22:05	1,516.26	216.61	1.18	0:29:05	207.37	207.37	1.23
0:01:10	7,750.74	113.98	2.20	0:08:10	5,937.98	197.93	1.30	0:15:10	2,844.43	203.17	1.24	0:22:10	1,377.16	196.74	1.30	0:29:10	261.45	261.45	0.97
0:01:15	7,683.73	111.36	2.29	0:08:15	6,171.45	187.01	1.34	0:15:15	2,901.98	193.47	1.26	0:22:15	1,781.64	197.96	1.13	0:29:15	178.69	178.69	1.44
0:01:20	7,930.97	113.30	2.30	0:08:20	6,695.39	185.98	1.34	0:15:20	3,409.05	189.39	1.24	0:22:20	2,007.76	223.08	1.16	0:29:20	276.35	276.35	0.92
0:01:25	7,809.05	111.56	2.32	0:08:25	6,983.32	193.98	1.32	0:15:25	3,743.74	207.99	1.23	0:22:25	1,818.88	202.10	1.26	0:29:25	266.90	266.90	0.95
0:01:30	8,012.96	111.29	2.31	0:08:30	7,040.30	195.56	1.33	0:15:30	3,692.25	205.12	1.27	0:22:30	1,916.79	212.98	1.21	0:29:30	234.56	234.56	1.09
0:01:35	8,053.12	111.85	2.33	0:08:35	7,040.79	195.58	1.33	0:15:35	3,796.36	210.91	1.22	0:22:35	1,867.19	207.47	1.24	0:29:35	230.01	230.01	1.11
0:01:40	8,007.61	111.22	2.33	0:08:40	6,894.11	191.50	1.35	0:15:40	3,635.62	201.98	1.28	0:22:40	1,967.04	218.56	1.18	0:29:40	217.79	217.79	1.17
0:01:45	8,009.65	111.25	2.33	0:08:45	6,956.13	193.23	1.34	0:15:45	3,704.57	205.81	1.24	0:22:45	1,881.10	209.01	1.22	0:29:45	213.64	213.64	1.20
0:01:50	8,050.49	111.81	2.33	0:08:50	6,892.69	191.46	1.36	0:15:50	3,683.58	204.64	1.27	0:22:50	1,951.77	216.86	1.19	0:29:50	223.55	223.55	1.14
0:01:55	8,095.30	112.43	2.33	0:08:55	7,008.59	194.68	1.33	0:15:55	3,686.49	204.80	1.25	0:22:55	1,823.91	202.66	1.28	0:29:55	179.25	179.25	1.43
0:02:00	8,057.94	111.92	2.33	0:09:00	6,844.73	190.13	1.35	0:16:00	3,776.05	209.78	1.23	0:23:00	1,980.82	220.09	1.16	0:30:00	196.23	196.23	1.31
0:02:05	8,053.82	111.86	2.33	0:09:05	6,689.65	185.82	1.40	0:16:05	3,753.23	208.51	1.25	0:23:05	1,928.94	214.33	1.20	0:30:05	233.50	233.50	1.09
0:02:10	8,054.58	111.87	2.33	0:09:10	6,946.23	192.95	1.35	0:16:10	3,750.21	208.35	1.23	0:23:10	1,993.54	221.50	1.16	0:30:10	234.93	234.93	1.09
0:02:15	8,078.60	112.20	2.32	0:09:15	6,897.10	191.59	1.35	0:16:15	3,651.33	202.85	1.28	0:23:15	2,006.86	222.98	1.15	0:30:15	197.65	197.65	1.30
0:02:20	8,055.37	111.88	2.33	0:09:20	6,919.03	192.20	1.35	0:16:20	3,620.31	201.13	1.28	0:23:20	1,838.45	204.27	1.25	0:30:20	212.63	212.63	1.21
0:02:25	8,062.76	111.98	2.33	0:09:25	7,058.16	196.06	1.33	0:16:25	3,788.19	210.46	1.24	0:23:25	1,863.61	207.07	1.24	0:30:25	191.07	191.07	1.34
0:02:30	8,105.02	112.57	2.33	0:09:30	6,896.70	191.58	1.35	0:16:30	3,713.43	206.30	1.25	0:23:30	1,919.75	213.31	1.21	0:30:30	266.53	266.53	0.95
0:02:35	8,059.97	111.94	2.33	0:09:35	6,919.76	192.22	1.34	0:16:35	3,781.92	210.11	1.23	0:23:35	1,834.96	203.88	1.25	0:30:35	228.08	228.08	1.12
0:02:40	8,067.31	112.05	2.33	0:09:40	7,129.64	198.05	1.32	0:16:40	3,664.89	203.60	1.28	0:23:40	1,940.66	215.63	1.20	0:30:40	229.91	229.91	1.10
0:02:45	8,065.43	112.02	2.33	0:09:45	6,844.47	190.12	1.37	0:16:45	3,671.86	203.99	1.26	0:23:45	1,970.91	218.99	1.18	0:30:45	221.16	221.16	1.16
0:02:50	8,055.62	111.88	2.33	0:09:50	6,893.07	191.47	1.35	0:16:50	3,590.66	199.48	1.30	0:23:50	1,829.13	203.24	1.27	0:30:50	198.24	198.24	1.29
0:02:55	8,051.71	111.83	2.33	0:09:55	7,026.67	195.19	1.33	0:16:55	3,797.90	210.99	1.22	0:23:55	1,978.31	219.81	1.16	0:30:55	207.89	207.89	1.23
0:03:00	8,061.78	111.97	2.33	0:10:00	6,926.89	192.41	1.35	0:17:00	3,745.92	208.11	1.25	0:24:00	1,997.11	221.90	1.16	0:31:00	190.86	190.86	1.34

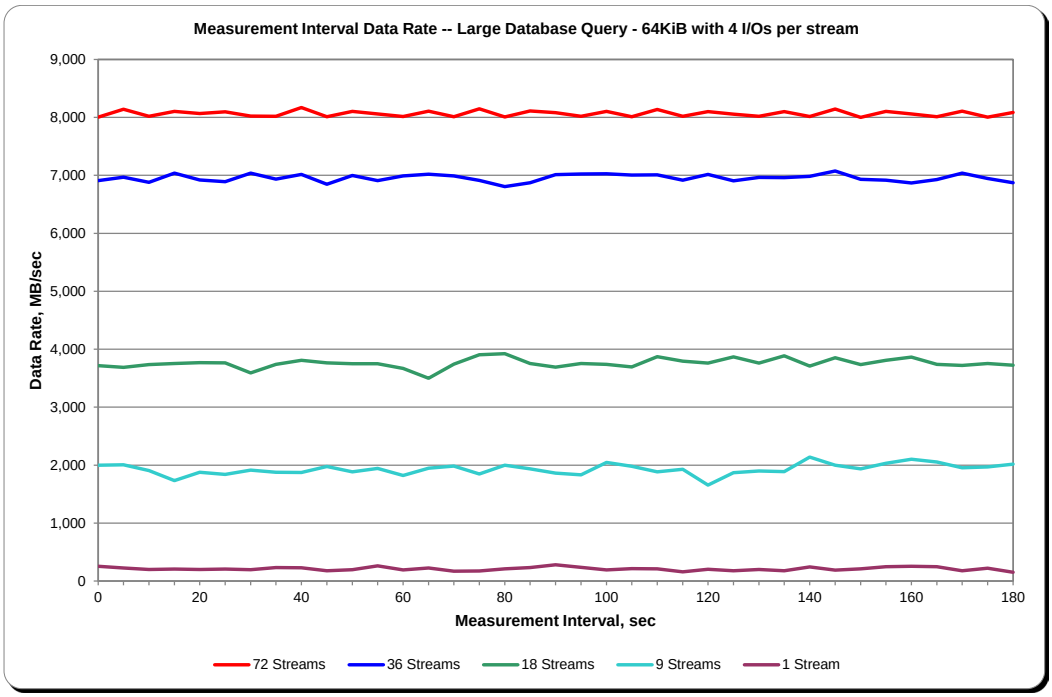
SPC-2 "Large Database Query/64 KiB Transfer Size/4 Outstanding I/Os" Test Run Data Measurement Interval, Run-Out, and Ramp-Down Periods

TR11	72 Streams			TR12	36 Streams			TR13	18 Streams			TR14	9 Streams			TR15	1 Stream		
Test Run Sequence Time	Data Rate, MB/sec	Data Rate / Stream, MB/sec	Response Time, ms	Test Run Sequence Time	Data Rate, MB/sec	Data Rate / Stream, MB/sec	Response Time, ms	Test Run Sequence Time	Data Rate, MB/sec	Data Rate / Stream, MB/sec	Response Time, ms	Test Run Sequence Time	Data Rate, MB/sec	Data Rate / Stream, MB/sec	Response Time, ms	Test Run Sequence Time	Data Rate, MB/sec	Data Rate / Stream, MB/sec	Response Time, ms
0:03:05	8,003.37	111.16	2.33	0:10:05	6,910.12	191.95	1.35	0:17:05	3,716.47	206.47	1.24	0:24:05	1,999.54	222.17	1.16	0:31:05	255.83	255.83	0.99
0:03:10	8,139.55	113.05	2.33	0:10:10	6,968.16	193.56	1.35	0:17:10	3,685.58	204.75	1.27	0:24:10	2,005.81	222.87	1.14	0:31:10	225.22	225.22	1.12
0:03:15	8,018.41	111.37	2.33	0:10:15	6,879.33	191.09	1.34	0:17:15	3,735.64	207.54	1.25	0:24:15	1,907.40	211.93	1.22	0:31:15	201.68	201.68	1.27
0:03:20	8,103.37	112.55	2.33	0:10:20	7,039.46	195.54	1.33	0:17:20	3,753.06	208.50	1.23	0:24:20	1,733.80	192.64	1.34	0:31:20	206.55	206.55	1.24
0:03:25	8,067.45	112.05	2.32	0:10:25	6,921.27	192.26	1.34	0:17:25	3,769.11	209.39	1.24	0:24:25	1,876.90	208.54	1.24	0:31:25	201.20	201.20	1.27
0:03:30	8,095.49	112.44	2.33	0:10:30	6,892.14	191.45	1.36	0:17:30	3,766.42	209.25	1.24	0:24:30	1,839.52	204.39	1.25	0:31:30	206.35	206.35	1.24
0:03:35	8,021.72	111.41	2.33	0:10:35	7,036.93	195.47	1.33	0:17:35	3,592.41	199.58	1.30	0:24:35	1,912.98	212.55	1.21	0:31:35	197.09	197.09	1.30
0:03:40	8,020.36	111.39	2.33	0:10:40	6,936.88	192.69	1.35	0:17:40	3,739.74	207.76	1.24	0:24:40	1,877.53	208.61	1.24	0:31:40	233.61	233.61	1.09
0:03:45	8,169.27	113.46	2.32	0:10:45	7,015.80	194.88	1.34	0:17:45	3,809.79	211.66	1.23	0:24:45	1,872.33	208.04	1.22	0:31:45	230.02	230.02	1.10
0:03:50	8,011.27	111.27	2.33	0:10:50	6,847.75	190.22	1.35	0:17:50	3,765.42	209.19	1.24	0:24:50	1,977.59	219.73	1.17	0:31:50	179.31	179.31	1.43
0:03:55	8,105.32	112.57	2.33	0:10:55	6,996.52	194.35	1.34	0:17:55	3,751.64	208.42	1.23	0:24:55	1,885.91	209.55	1.23	0:31:55	196.14	196.14	1.31
0:04:00	8,057.85	111.91	2.33	0:11:00	6,910.21	191.95	1.34	0:18:00	3,749.18	208.29	1.25	0:25:00	1,943.20	215.91	1.20	0:32:00	263.36	263.36	0.97
0:04:05	8,014.12	111.31	2.33	0:11:05	6,991.21	194.20	1.34	0:18:05	3,669.12	203.84	1.26	0:25:05	1,820.39	202.27	1.26	0:32:05	192.50	192.50	1.33
0:04:10	8,106.00	112.58	2.33	0:11:10	7,019.57	194.99	1.34	0:18:10	3,499.22	194.40	1.34	0:25:10	1,946.87	216.32	1.19	0:32:10	226.16	226.16	1.13
0:04:15	8,011.70	111.27	2.33	0:11:15	6,990.22	194.17	1.33	0:18:15	3,742.48	207.92	1.24	0:25:15	1,985.85	220.65	1.17	0:32:15	170.97	170.97	1.50
0:04:20	8,149.16	113.18	2.33	0:11:20	6,912.38	192.01	1.36	0:18:20	3,903.43	216.86	1.20	0:25:20	1,846.48	205.16	1.24	0:32:20	174.29	174.29	1.47
0:04:25	8,007.51	111.22	2.33	0:11:25	6,806.16	189.06	1.36	0:18:25	3,921.79	217.88	1.19	0:25:25	1,997.73	221.97	1.16	0:32:25	212.00	212.00	1.21
0:04:30	8,110.52	112.65	2.33	0:11:30	6,871.59	190.88	1.36	0:18:30	3,753.82	208.55	1.23	0:25:30	1,937.37	215.26	1.20	0:32:30	234.76	234.76	1.09
0:04:35	8,080.62	112.23	2.32	0:11:35	7,012.09	194.78	1.32	0:18:35	3,689.95	205.00	1.27	0:25:35	1,862.82	206.98	1.25	0:32:35	282.76	282.76	0.90
0:04:40	8,020.43	111.39	2.33	0:11:40	7,023.45	195.10	1.34	0:18:40	3,754.12	208.56	1.23	0:25:40	1,832.17	203.57	1.25	0:32:40	237.45	237.45	1.07
0:04:45	8,103.12	112.54	2.33	0:11:45	7,028.10	195.23	1.33	0:18:45	3,737.36	207.63	1.25	0:25:45	2,048.28	227.59	1.13	0:32:45	190.75	190.75	1.34
0:04:50	8,011.08	111.26	2.33	0:11:50	7,006.56	194.63	1.33	0:18:50	3,696.28	205.35	1.25	0:25:50	1,979.49	219.94	1.17	0:32:50	214.94	214.94	1.19
0:04:55	8,137.14	113.02	2.33	0:11:55	7,007.38	194.65	1.34	0:18:55	3,869.94	215.00	1.21	0:25:55	1,885.74	209.53	1.22	0:32:55	212.03	212.03	1.21
0:05:00	8,019.60	111.38	2.33	0:12:00	6,915.19	192.09	1.34	0:19:00	3,792.85	210.71	1.23	0:26:00	1,927.70	214.19	1.21	0:33:00	160.75	160.75	1.60
0:05:05	8,100.14	112.50	2.33	0:12:05	7,015.55	194.88	1.34	0:19:05	3,759.78	208.88	1.23	0:26:05	1,657.55	184.17	1.40	0:33:05	203.74	203.74	1.26
0:05:10	8,055.81	111.89	2.33	0:12:10	6,904.79	191.80	1.34	0:19:10	3,866.89	214.83	1.21	0:26:10	1,868.67	207.63	1.24	0:33:10	176.79	176.79	1.45
0:05:15	8,018.79	111.37	2.33	0:12:15	6,962.88	193.41	1.35	0:19:15	3,760.28	208.90	1.23	0:26:15	1,899.35	211.04	1.21	0:33:15	200.45	200.45	1.28
0:05:20	8,101.40	112.52	2.33	0:12:20	6,959.80	193.33	1.35	0:19:20	3,885.30	215.85	1.20	0:26:20	1,886.64	209.63	1.23	0:33:20	177.29	177.29	1.45
0:05:25	8,015.17	111.32	2.33	0:12:25	6,982.48	193.96	1.34	0:19:25	3,708.98	206.05	1.25	0:26:25	2,137.54	237.50	1.08	0:33:25	245.68	245.68	1.04
0:05:30	8,143.15	113.10	2.33	0:12:30	7,073.91	196.50	1.33	0:19:30	3,852.97	214.05	1.21	0:26:30	1,999.36	222.15	1.15	0:33:30	189.32	189.32	1.35
0:05:35	8,000.28	111.11	2.34	0:12:35	6,929.91	192.50	1.33	0:19:35	3,736.73	207.60	1.25	0:26:35	1,934.88	214.99	1.20	0:33:35	212.78	212.78	1.20
0:05:40	8,105.19	112.57	2.33	0:12:40	6,916.52	192.13	1.36	0:19:40	3,808.49	211.58	1.21	0:26:40	2,030.69	225.63	1.14	0:33:40	247.83	247.83	1.03
0:05:45	8,059.13	111.93	2.33	0:12:45	6,869.14	190.81	1.35	0:19:45	3,863.15	214.62	1.21	0:26:45	2,101.66	233.52	1.10	0:33:45	257.05	257.05	0.99
0:05:50	8,010.74	111.26	2.33	0:12:50	6,926.95	192.42	1.35	0:19:50	3,740.63	207.81	1.24	0:26:50	2,052.81	228.09	1.12	0:33:50	247.15	247.15	1.03
0:05:55	8,106.83	112.59	2.33	0:12:55	7,039.50	195.54	1.33	0:19:55	3,720.97	206.72	1.26	0:26:55	1,952.98	217.00	1.19	0:33:55	175.97	175.97	1.46
0:06:00	8,005.93	111.19	2.33	0:13:00	6,946.12	192.95	1.34	0:20:00	3,753.01	208.50	1.23	0:27:00	1,969.03	218.78	1.18	0:34:00	221.36	221.36	1.15
0:06:05	8,086.25	112.31	2.33	0:13:05	6,873.46	190.93	1.35	0:20:05	3,722.54	206.81	1.25	0:27:05	2,017.21	224.13	1.15	0:34:05	152.82	152.82	1.69
0:06:10	8,021.61	111.41	2.33	0:13:10	6,905.24	191.81	1.35	0:20:10	3,769.40	209.41	1.23	0:27:10	1,982.65	220.29	1.16	0:34:10	182.86	182.86	1.40
0:06:15	8,155.13	113.27	2.33	0:13:15	6,994.36	194.29	1.33	0:20:15	3,782.49	210.14	1.24	0:27:15	1,850.46	205.61	1.26	0:34:15	206.40	206.40	1.24
0:06:20	8,008.40	111.23	2.33	0:13:20	6,939.54	192.76	1.35	0:20:20	3,706.08	205.89	1.24	0:27:20	1,961.36	217.93	1.18	0:34:20	210.83	210.83	1.21
0:06:25	8,062.46	111.98	2.33	0:13:25	6,787.44	188.54	1.38	0:20:25	3,788.51	210.47	1.24	0:27:25	2,103.04	233.67	1.09	0:34:25	228.34	228.34	1.12
0:06:30	8,101.71	112.52	2.33	0:13:30	6,977.62	193.82	1.33	0:20:30	3,603.58	200.20	1.29	0:27:30	1,916.00	212.89	1.21	0:34:30	238.24	238.24	1.07
0:06:35	8,073.99	112.14	2.32	0:13:35	6,889.68	191.38	1.36	0:20:35	3,812.32	211.80	1.22	0:27:35	1,804.44	200.49	1.29	0:34:35	217.85	217.85	1.17
0:06:40	8,053.02	111.85	2.33	0:13:40	6,949.56	193.04	1.34	0:20:40	3,837.91	213.22	1.21	0:27:40	2,071.16	230.13	1.11	0:34:40	235.49	235.49	1.08
0:06:45	8,046.29	111.75	2.32	0:13:45	6,972.99	193.69	1.34	0:20:45	3,839.41	213.30	1.21	0:27:45	1,853.57	205.95	1.25	0:34:45	163.77	163.77	1.57
0:06:50	2,730.61	0.00	1.70	0:13:50	1,732.05	0.00	1.32	0:20:50	1,021.20	0.00	1.23	0:27:50	488.91	0.00	1.19	0:34:50	0.73	0.00	1.26
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

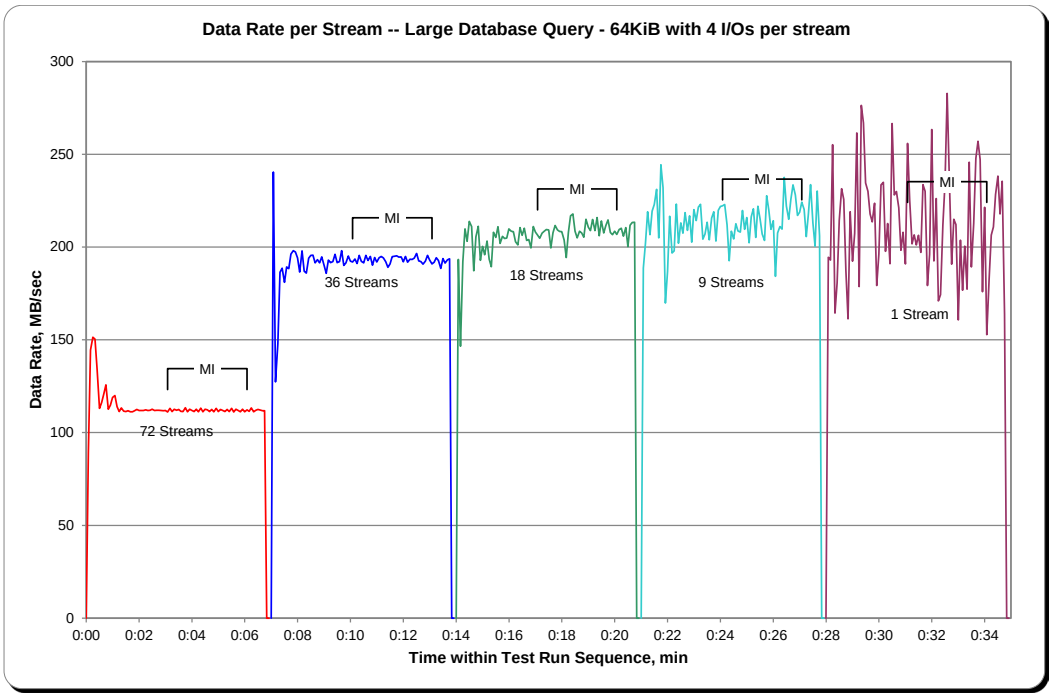
SPC-2 "Large Database Query/64 KiB Transfer Size/4 Outstanding I/Os" Average Data Rate Graph – Complete Test Run



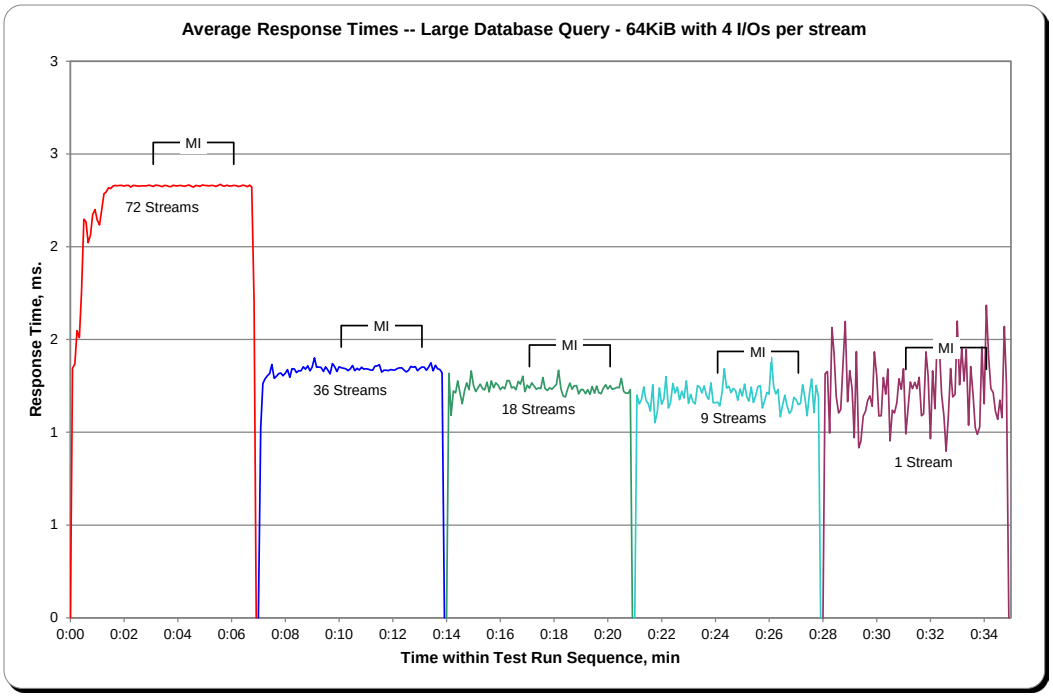
SPC-2 "Large Database Query/64 KiB Transfer Size/4 Outstanding I/Os" Average Data Rate Graph – Measurement Interval (MI) Only



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



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



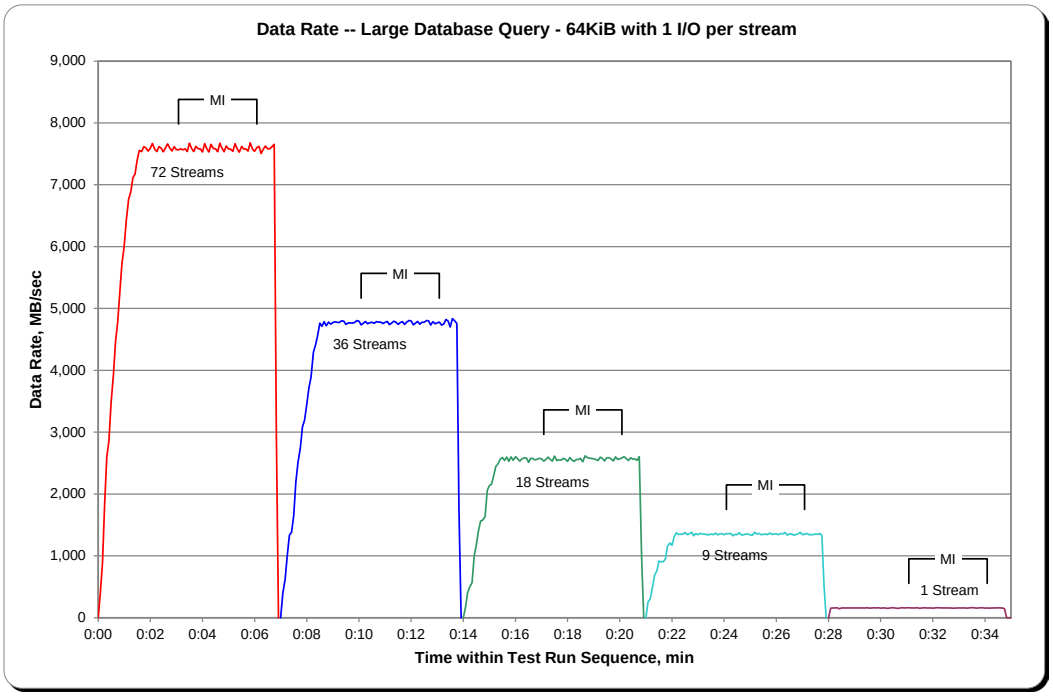
SPC-2 "Large Database Query/64 KiB Transfer Size/1 Outstanding I/O" Test Run Data – Ramp-Up Period

TR16	72 Streams			TR17	36 Streams			TR18	18 Streams			TR19	9 Streams			TR20	1 Stream		
Test Run Sequence Time	Data Rate, MB/sec	Data Rate / Stream, MB/sec	Response Time, ms	Test Run Sequence Time	Data Rate, MB/sec	Data Rate / Stream, MB/sec	Response Time, ms	Test Run Sequence Time	Data Rate, MB/sec	Data Rate / Stream, MB/sec	Response Time, ms	Test Run Sequence Time	Data Rate, MB/sec	Data Rate / Stream, MB/sec	Response Time, ms	Test Run Sequence Time	Data Rate, MB/sec	Data Rate / Stream, MB/sec	Response Time, ms
0:00:00	0.00	0.00	0.00	0:07:00	0.00	0.00	0.00	0:14:00	0.00	0.00	0.00	0:21:00	0.00	0.00	0.00	0:28:00	0.00	0.00	0.00
0:00:05	404.96	101.24	0.45	0:07:05	389.45	97.36	0.45	0:14:05	157.83	78.92	0.41	0:21:05	259.96	129.98	0.42	0:28:05	154.04	154.04	0.42
0:00:10	887.01	110.88	0.47	0:07:10	620.77	124.15	0.46	0:14:10	401.04	133.68	0.44	0:21:10	304.77	152.38	0.42	0:28:10	160.31	160.31	0.40
0:00:15	1,835.83	91.79	0.50	0:07:15	1,009.82	112.20	0.46	0:14:15	496.62	124.15	0.45	0:21:15	478.56	119.64	0.43	0:28:15	159.54	159.54	0.40
0:00:20	2,599.94	123.81	0.51	0:07:20	1,331.69	133.17	0.47	0:14:20	566.90	113.38	0.46	0:21:20	693.84	138.77	0.43	0:28:20	162.61	162.61	0.40
0:00:25	2,860.12	110.00	0.52	0:07:25	1,383.90	125.81	0.47	0:14:25	997.77	124.72	0.46	0:21:25	756.09	126.01	0.43	0:28:25	145.00	145.00	0.45
0:00:30	3,472.37	96.45	0.57	0:07:30	1,647.44	117.67	0.47	0:14:30	1,176.38	130.71	0.45	0:21:30	916.13	152.69	0.42	0:28:30	157.65	157.65	0.41
0:00:35	3,925.83	103.31	0.60	0:07:35	2,193.53	129.03	0.48	0:14:35	1,405.03	127.73	0.45	0:21:35	904.50	150.75	0.43	0:28:35	158.80	158.80	0.41
0:00:40	4,468.81	106.40	0.59	0:07:40	2,511.40	125.57	0.48	0:14:40	1,564.05	142.19	0.45	0:21:40	904.82	150.80	0.43	0:28:40	158.99	158.99	0.41
0:00:45	4,780.05	103.91	0.58	0:07:45	2,744.56	130.69	0.48	0:14:45	1,578.61	143.51	0.46	0:21:45	952.38	136.05	0.43	0:28:45	158.22	158.22	0.41
0:00:50	5,268.09	109.75	0.57	0:07:50	3,088.94	134.30	0.47	0:14:50	1,637.62	125.97	0.46	0:21:50	1,158.47	144.81	0.43	0:28:50	159.30	159.30	0.40
0:00:55	5,734.04	110.27	0.57	0:07:55	3,199.98	133.33	0.48	0:14:55	2,057.58	137.17	0.45	0:21:55	1,208.67	151.08	0.43	0:28:55	159.11	159.11	0.41
0:01:00	5,997.74	111.07	0.57	0:08:00	3,449.80	132.68	0.48	0:15:00	2,136.91	142.46	0.45	0:22:00	1,171.14	146.39	0.44	0:29:00	157.73	157.73	0.41
0:01:05	6,416.65	108.76	0.57	0:08:05	3,713.64	132.63	0.48	0:15:05	2,159.34	143.96	0.45	0:22:05	1,309.94	145.55	0.43	0:29:05	157.06	157.06	0.41
0:01:10	6,767.34	110.94	0.57	0:08:10	3,893.78	129.79	0.47	0:15:10	2,298.16	135.19	0.45	0:22:10	1,375.75	152.86	0.42	0:29:10	159.93	159.93	0.40
0:01:15	6,885.53	107.59	0.58	0:08:15	4,289.26	129.98	0.48	0:15:15	2,446.33	143.90	0.45	0:22:15	1,348.27	149.81	0.43	0:29:15	159.09	159.09	0.41
0:01:20	7,110.59	109.39	0.58	0:08:20	4,411.25	129.74	0.48	0:15:20	2,488.08	138.23	0.45	0:22:20	1,351.10	150.12	0.43	0:29:20	158.17	158.17	0.41
0:01:25	7,174.08	107.08	0.59	0:08:25	4,565.82	130.45	0.48	0:15:25	2,565.88	142.55	0.45	0:22:25	1,351.87	150.21	0.43	0:29:25	158.11	158.11	0.41
0:01:30	7,397.38	108.78	0.59	0:08:30	4,762.12	132.28	0.49	0:15:30	2,589.21	143.84	0.45	0:22:30	1,378.46	153.16	0.43	0:29:30	160.60	160.60	0.40
0:01:35	7,554.59	104.92	0.61	0:08:35	4,711.77	130.88	0.49	0:15:35	2,543.90	141.33	0.45	0:22:35	1,343.50	149.28	0.43	0:29:35	155.51	155.51	0.41
0:01:40	7,537.79	104.69	0.61	0:08:40	4,789.05	133.03	0.49	0:15:40	2,597.42	144.30	0.45	0:22:40	1,358.28	150.92	0.43	0:29:40	157.38	157.38	0.41
0:01:45	7,614.95	105.76	0.62	0:08:45	4,722.93	131.19	0.49	0:15:45	2,527.42	140.41	0.45	0:22:45	1,382.34	153.59	0.43	0:29:45	162.72	162.72	0.40
0:01:50	7,594.50	105.48	0.61	0:08:50	4,781.67	132.82	0.49	0:15:50	2,602.61	144.59	0.45	0:22:50	1,325.38	147.26	0.43	0:29:50	159.93	159.93	0.40
0:01:55	7,543.15	104.77	0.61	0:08:55	4,746.46	131.85	0.49	0:15:55	2,546.66	141.48	0.45	0:22:55	1,359.19	151.02	0.43	0:29:55	161.23	161.23	0.40
0:02:00	7,587.38	105.38	0.62	0:09:00	4,772.01	132.56	0.49	0:16:00	2,604.79	144.71	0.45	0:23:00	1,342.59	149.18	0.43	0:30:00	155.98	155.98	0.41
0:02:05	7,667.21	106.49	0.61	0:09:05	4,783.52	132.88	0.49	0:16:05	2,570.47	142.80	0.45	0:23:05	1,365.98	151.78	0.43	0:30:05	158.85	158.85	0.41
0:02:10	7,575.35	105.21	0.62	0:09:10	4,775.95	132.67	0.49	0:16:10	2,533.19	140.73	0.46	0:23:10	1,354.44	150.49	0.43	0:30:10	157.89	157.89	0.41
0:02:15	7,538.31	104.70	0.61	0:09:15	4,772.65	132.57	0.49	0:16:15	2,570.94	142.83	0.45	0:23:15	1,355.09	150.57	0.43	0:30:15	152.26	152.26	0.42
0:02:20	7,615.01	105.76	0.62	0:09:20	4,800.22	133.34	0.49	0:16:20	2,582.02	143.45	0.45	0:23:20	1,345.02	149.45	0.43	0:30:20	153.68	153.68	0.42
0:02:25	7,590.98	105.43	0.61	0:09:25	4,793.89	133.16	0.49	0:16:25	2,584.05	143.56	0.45	0:23:25	1,338.53	148.73	0.43	0:30:25	161.88	161.88	0.40
0:02:30	7,533.38	104.63	0.61	0:09:30	4,743.65	131.77	0.49	0:16:30	2,512.51	139.58	0.46	0:23:30	1,352.76	150.31	0.43	0:30:30	162.70	162.70	0.40
0:02:35	7,595.47	105.49	0.61	0:09:35	4,765.23	132.37	0.49	0:16:35	2,580.08	143.34	0.45	0:23:35	1,341.99	149.11	0.43	0:30:35	156.41	156.41	0.41
0:02:40	7,660.95	106.40	0.61	0:09:40	4,768.44	132.46	0.49	0:16:40	2,573.51	142.97	0.45	0:23:40	1,368.52	152.06	0.43	0:30:40	152.59	152.59	0.42
0:02:45	7,590.45	105.42	0.61	0:09:45	4,764.09	132.34	0.49	0:16:45	2,551.83	141.77	0.45	0:23:45	1,339.34	148.82	0.43	0:30:45	159.81	159.81	0.40
0:02:50	7,546.14	104.81	0.61	0:09:50	4,773.68	132.60	0.49	0:16:50	2,563.08	142.39	0.45	0:23:50	1,356.61	150.73	0.43	0:30:50	160.70	160.70	0.40
0:02:55	7,617.64	105.80	0.62	0:09:55	4,803.69	133.44	0.49	0:16:55	2,578.33	143.24	0.45	0:23:55	1,358.66	150.96	0.43	0:30:55	159.57	159.57	0.40
0:03:00	7,568.16	105.11	0.62	0:10:00	4,793.88	133.16	0.49	0:17:00	2,569.73	142.76	0.45	0:24:00	1,344.09	149.34	0.43	0:31:00	160.70	160.70	0.40

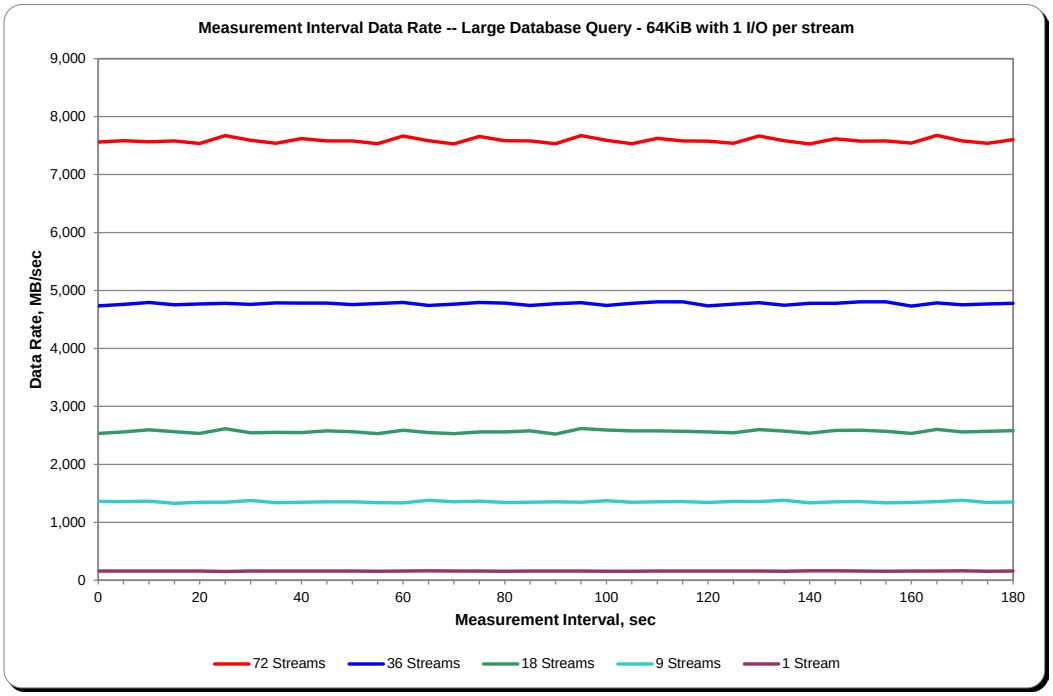
SPC-2 "Large Database Query/64 KiB Transfer Size/1 Outstanding I/O" Test Run Data Measurement Interval, Run-Out, and Ramp-Down Period

TR16	72 Streams			TR17	36 Streams			TR18	18 Streams			TR19	9 Streams			TR20	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	7,563.09	105.04	0.61	0:10:05	4,735.24	131.53	0.49	0:17:05	2,531.98	140.67	0.45	0:24:05	1,361.36	151.26	0.43	0:31:05	160.77	160.77	0.40
0:03:10	7,582.99	105.32	0.61	0:10:10	4,760.42	132.23	0.49	0:17:10	2,557.94	142.11	0.45	0:24:10	1,356.44	150.72	0.43	0:31:10	158.56	158.56	0.41
0:03:15	7,564.37	105.06	0.62	0:10:15	4,791.46	133.10	0.49	0:17:15	2,597.23	144.29	0.45	0:24:15	1,365.79	151.75	0.43	0:31:15	160.11	160.11	0.40
0:03:20	7,580.88	105.29	0.61	0:10:20	4,752.04	132.00	0.49	0:17:20	2,563.76	142.43	0.45	0:24:20	1,326.68	147.41	0.44	0:31:20	159.96	159.96	0.40
0:03:25	7,536.77	104.68	0.62	0:10:25	4,768.91	132.47	0.49	0:17:25	2,532.31	140.68	0.45	0:24:25	1,345.36	149.48	0.43	0:31:25	160.94	160.94	0.40
0:03:30	7,672.94	106.57	0.61	0:10:30	4,777.43	132.71	0.49	0:17:30	2,615.44	145.30	0.45	0:24:30	1,344.79	149.42	0.43	0:31:30	151.29	151.29	0.43
0:03:35	7,590.05	105.42	0.61	0:10:35	4,759.84	132.22	0.49	0:17:35	2,543.54	141.31	0.46	0:24:35	1,375.79	152.87	0.43	0:31:35	159.55	159.55	0.40
0:03:40	7,538.00	104.69	0.62	0:10:40	4,787.53	132.99	0.49	0:17:40	2,551.49	141.75	0.46	0:24:40	1,337.65	148.63	0.43	0:31:40	160.56	160.56	0.40
0:03:45	7,619.14	105.82	0.62	0:10:45	4,780.42	132.79	0.49	0:17:45	2,547.84	141.55	0.46	0:24:45	1,344.90	149.43	0.43	0:31:45	158.61	158.61	0.41
0:03:50	7,582.00	105.31	0.62	0:10:50	4,782.02	132.83	0.49	0:17:50	2,577.88	143.22	0.45	0:24:50	1,354.49	150.50	0.43	0:31:50	158.33	158.33	0.41
0:03:55	7,580.28	105.28	0.61	0:10:55	4,754.79	132.08	0.49	0:17:55	2,564.57	142.48	0.45	0:24:55	1,353.15	150.35	0.43	0:31:55	159.43	159.43	0.40
0:04:00	7,531.73	104.61	0.62	0:11:00	4,776.22	132.67	0.49	0:18:00	2,529.75	140.54	0.45	0:25:00	1,339.45	148.83	0.43	0:32:00	155.17	155.17	0.42
0:04:05	7,665.68	106.47	0.62	0:11:05	4,791.99	133.11	0.49	0:18:05	2,590.55	143.92	0.45	0:25:05	1,334.20	148.24	0.43	0:32:05	159.90	159.90	0.40
0:04:10	7,584.46	105.34	0.62	0:11:10	4,740.28	131.67	0.49	0:18:10	2,549.10	141.62	0.46	0:25:10	1,381.00	153.44	0.43	0:32:10	161.65	161.65	0.40
0:04:15	7,528.86	104.57	0.62	0:11:15	4,762.94	132.30	0.49	0:18:15	2,529.46	140.53	0.46	0:25:15	1,355.50	150.61	0.43	0:32:15	160.73	160.73	0.40
0:04:20	7,656.19	106.34	0.61	0:11:20	4,795.10	133.20	0.49	0:18:20	2,559.67	142.20	0.45	0:25:20	1,365.90	151.77	0.43	0:32:20	158.11	158.11	0.41
0:04:25	7,584.79	105.34	0.62	0:11:25	4,780.62	132.79	0.49	0:18:25	2,558.00	142.11	0.46	0:25:25	1,344.13	149.35	0.43	0:32:25	157.37	157.37	0.41
0:04:30	7,581.46	105.30	0.61	0:11:30	4,741.35	131.70	0.49	0:18:30	2,576.93	143.16	0.45	0:25:30	1,345.64	149.52	0.43	0:32:30	159.66	159.66	0.40
0:04:35	7,533.90	104.64	0.62	0:11:35	4,772.96	132.58	0.49	0:18:35	2,520.71	140.04	0.46	0:25:35	1,355.52	150.61	0.43	0:32:35	160.10	160.10	0.40
0:04:40	7,671.07	106.54	0.61	0:11:40	4,788.76	133.02	0.49	0:18:40	2,618.88	145.49	0.45	0:25:40	1,344.76	149.42	0.43	0:32:40	160.12	160.12	0.40
0:04:45	7,590.89	105.43	0.61	0:11:45	4,741.53	131.71	0.49	0:18:45	2,590.74	143.93	0.45	0:25:45	1,372.25	152.47	0.43	0:32:45	154.89	154.89	0.42
0:04:50	7,532.80	104.62	0.62	0:11:50	4,780.09	132.78	0.49	0:18:50	2,578.70	143.26	0.45	0:25:50	1,346.37	149.60	0.43	0:32:50	156.50	156.50	0.41
0:04:55	7,625.88	105.92	0.61	0:11:55	4,803.64	133.43	0.49	0:18:55	2,578.05	143.22	0.45	0:25:55	1,355.01	150.56	0.43	0:32:55	159.24	159.24	0.40
0:05:00	7,579.88	105.28	0.62	0:12:00	4,802.69	133.41	0.49	0:19:00	2,569.44	142.75	0.45	0:26:00	1,356.90	150.77	0.43	0:33:00	160.43	160.43	0.40
0:05:05	7,575.02	105.21	0.62	0:12:05	4,735.26	131.54	0.49	0:19:05	2,558.00	142.11	0.45	0:26:05	1,343.48	149.28	0.43	0:33:05	157.65	157.65	0.41
0:05:10	7,540.99	104.74	0.61	0:12:10	4,762.96	132.30	0.49	0:19:10	2,542.82	141.27	0.45	0:26:10	1,360.76	151.20	0.43	0:33:10	159.93	159.93	0.40
0:05:15	7,663.60	106.44	0.62	0:12:15	4,789.39	133.04	0.49	0:19:15	2,598.08	144.34	0.45	0:26:15	1,357.26	150.81	0.42	0:33:15	159.53	159.53	0.40
0:05:20	7,582.59	105.31	0.62	0:12:20	4,744.71	131.80	0.49	0:19:20	2,572.49	142.92	0.45	0:26:20	1,378.62	153.18	0.43	0:33:20	154.50	154.50	0.42
0:05:25	7,527.79	104.55	0.62	0:12:25	4,778.80	132.74	0.49	0:19:25	2,535.47	140.86	0.46	0:26:25	1,337.04	148.56	0.43	0:33:25	162.24	162.24	0.40
0:05:30	7,618.66	105.81	0.62	0:12:30	4,777.79	132.72	0.49	0:19:30	2,586.26	143.68	0.45	0:26:30	1,355.59	150.62	0.43	0:33:30	162.32	162.32	0.40
0:05:35	7,577.56	105.24	0.62	0:12:35	4,806.04	133.50	0.49	0:19:35	2,587.27	143.74	0.45	0:26:35	1,356.19	150.69	0.43	0:33:35	160.70	160.70	0.40
0:05:40	7,579.11	105.27	0.61	0:12:40	4,802.98	133.42	0.49	0:19:40	2,571.00	142.83	0.45	0:26:40	1,337.20	148.58	0.43	0:33:40	155.41	155.41	0.41
0:05:45	7,545.14	104.79	0.61	0:12:45	4,731.08	131.42	0.49	0:19:45	2,534.30	140.79	0.45	0:26:45	1,343.65	149.29	0.43	0:33:45	160.34	160.34	0.40
0:05:50	7,677.47	106.63	0.61	0:12:50	4,786.10	132.95	0.49	0:19:50	2,601.83	144.55	0.45	0:26:50	1,358.63	150.96	0.42	0:33:50	161.21	161.21	0.40
0:05:55	7,580.85	105.29	0.62	0:12:55	4,752.25	132.01	0.49	0:19:55	2,560.26	142.24	0.45	0:26:55	1,381.35	153.48	0.43	0:33:55	161.52	161.52	0.40
0:06:00	7,539.27	104.71	0.61	0:13:00	4,766.24	132.40	0.49	0:20:00	2,571.17	142.84	0.45	0:27:00	1,343.02	149.22	0.43	0:34:00	156.45	156.45	0.41
0:06:05	7,602.43	105.59	0.62	0:13:05	4,778.99	132.75	0.49	0:20:05	2,582.33	143.46	0.45	0:27:05	1,350.03	150.00	0.43	0:34:05	160.33	160.33	0.40
0:06:10	7,620.74	105.84	0.62	0:13:10	4,732.85	131.47	0.49	0:20:10	2,604.86	144.71	0.45	0:27:10	1,364.73	151.64	0.43	0:34:10	155.52	155.52	0.41
0:06:15	7,507.37	104.27	0.61	0:13:15	4,750.63	131.96	0.49	0:20:15	2,569.23	142.74	0.45	0:27:15	1,342.50	149.17	0.43	0:34:15	158.19	158.19	0.41
0:06:20	7,574.98	105.21	0.61	0:13:20	4,823.61	133.99	0.49	0:20:20	2,540.76	141.15	0.45	0:27:20	1,343.31	149.26	0.43	0:34:20	158.53	158.53	0.41
0:06:25	7,626.99	105.93	0.62	0:13:25	4,798.07	133.28	0.49	0:20:25	2,587.46	143.75	0.45	0:27:25	1,343.20	149.24	0.43	0:34:25	158.99	158.99	0.41
0:06:30	7,583.18	105.32	0.61	0:13:30	4,699.82	130.55	0.49	0:20:30	2,562.71	142.37	0.45	0:27:30	1,358.96	151.00	0.43	0:34:30	160.97	160.97	0.40
0:06:35	7,580.36	105.28	0.62	0:13:35	4,834.15	134.28	0.49	0:20:35	2,569.68	142.76	0.45	0:27:35	1,348.37	149.82	0.43	0:34:35	158.95	158.95	0.41
0:06:40	7,617.19	105.79	0.62	0:13:40	4,800.75	133.35	0.49	0:20:40	2,546.07	141.45	0.45	0:27:40	1,365.10	151.68	0.43	0:34:40	157.12	157.12	0.41
0:06:45	7,653.70	106.30	0.61	0:13:45	4,755.86	132.11	0.49	0:20:45	2,602.69	144.59	0.45	0:27:45	1,331.02	147.89	0.43	0:34:45	143.50	143.50	0.45
0:06:50	2,979.73	0.00	0.54	0:13:50	1,728.20	0.00	0.47	0:20:50	967.68	0.00	0.44	0:27:50	511.97	0.00	0.43	0:34:50	0.57	0.00	0.39
0:06:55	0.00	0.00	0.00	0:13:55	0.00	0.00	0.00	0:20:55	0.00	0.00	0.00	0:27:55	0.00	0.00	0.00	0:34:55	0.00	0.00	0.00
																0:35:00	0.00	0.00	0.00

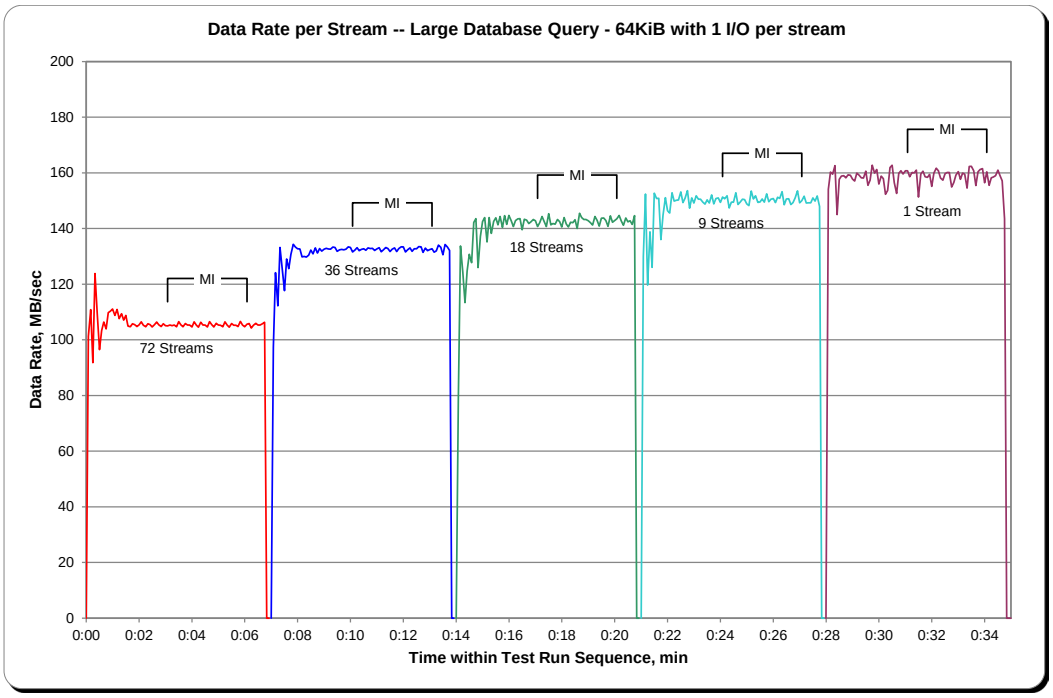
SPC-2 "Large Database Query/64 KiB Transfer Size/1 Outstanding I/O" Average Data Rate Graph – Complete Test Run



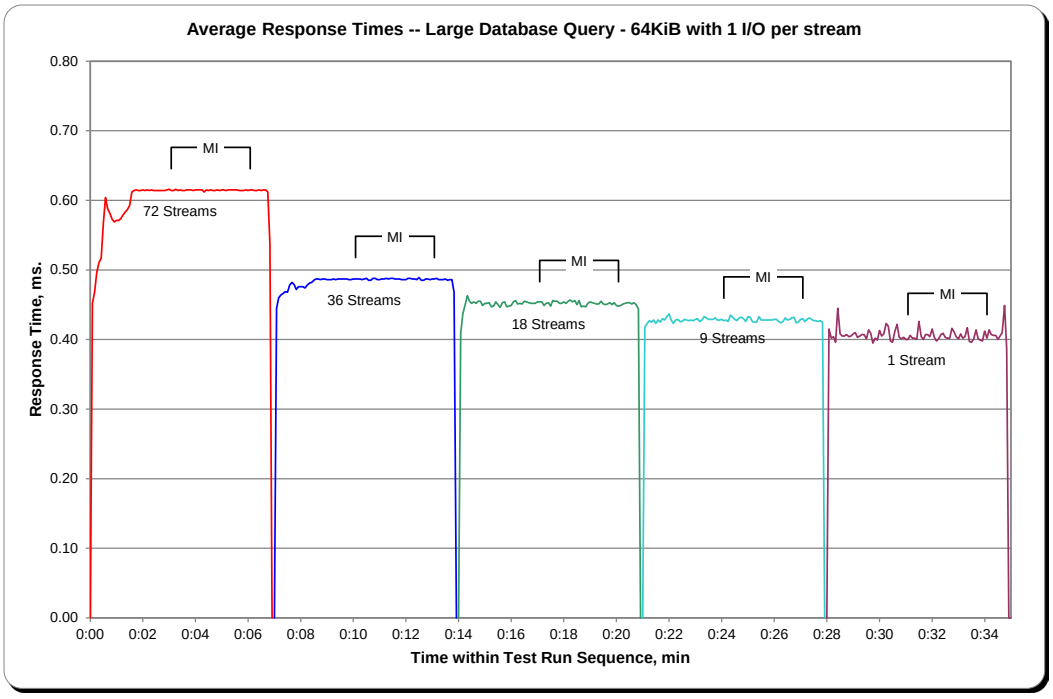
SPC-2 "Large Database Query/64 KiB Transfer Size/1 Outstanding I/O" Average Data Rate Graph – Measurement Interval (MI) Only



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



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



Video on Demand Delivery Test

Clause 6.4.4.1

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

Clause 6.4.2.2

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

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

Clause 10.6.8.3

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

1. *A listing of the SPC-2 Workload Generator commands and parameters used to execute the Test Run in the Video on Demand Delivery Test.*
2. *The human readable SPC-2 Test Results File for the Test Run in the Video on Demand Delivery Test.*
3. *A table that contains the following information for the Test Run in the Video on Demand Delivery Test:*
    - *The number Streams specified.*
    - *The Ramp-Up duration in seconds.*
    - *The Measurement Interval duration in seconds.*
    - *The average data rate, in MB per second, for the Measurement Interval.*
    - *The average data rate, in MB per second, per Stream for the Measurement Interval.*
4. *A table that contains the following information for the single Video on Demand Delivery Test Run:*
    - *The number Streams specified.*
    - *The average data rate, average data rate per stream, average Response Time, and Maximum Response Time reported at 60 second intervals.*
5. *Average Data Rate (intervals), Average Data Rate per Stream (intervals), and Average Response Time (intervals) graphs for the single Video on Demand Delivery Test Run as specified in Clauses 10.1.4-2-10.1.6.*
6. *A Maximum Response Time (intervals) graph, which will utilize the format defined in Clause 10.1.6, substituting maximum Response Time data for average Response Time data.*

SPC-2 Workload Generator Commands and Parameters

The SPC-2 Workload Generator commands and parameters for the Video on Demand Delivery Test Run are documented in "Appendix E: SPC-2 Workload Generator Execution Commands and Parameters" on Page 107.

SPC-2 Test Results File

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

SPC-2 Video on Demand Delivery Test Results File

SPC-2 Video on Demand Delivery Test Run Data

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

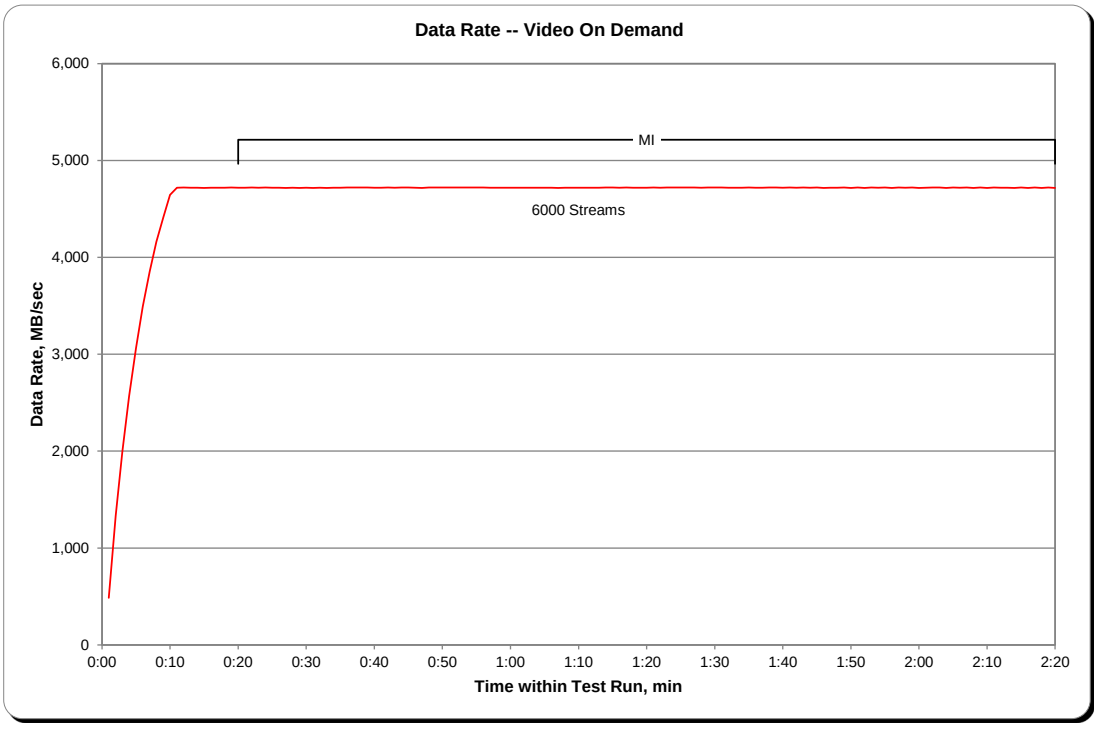
SPC-2-VOD	TR1
Number of Streams	6000
Ramp-up Time, sec	1200
Measurement Interval, sec	7200
Average Data Rate, MB/sec	4,718.58
Per Stream Data Rate, MB/sec	0.79
Average Response Time, ms	17.99
Average Max Response Time, ms	211.61

Video on Demand Delivery Test – TEST RUN DATA BY INTERVAL

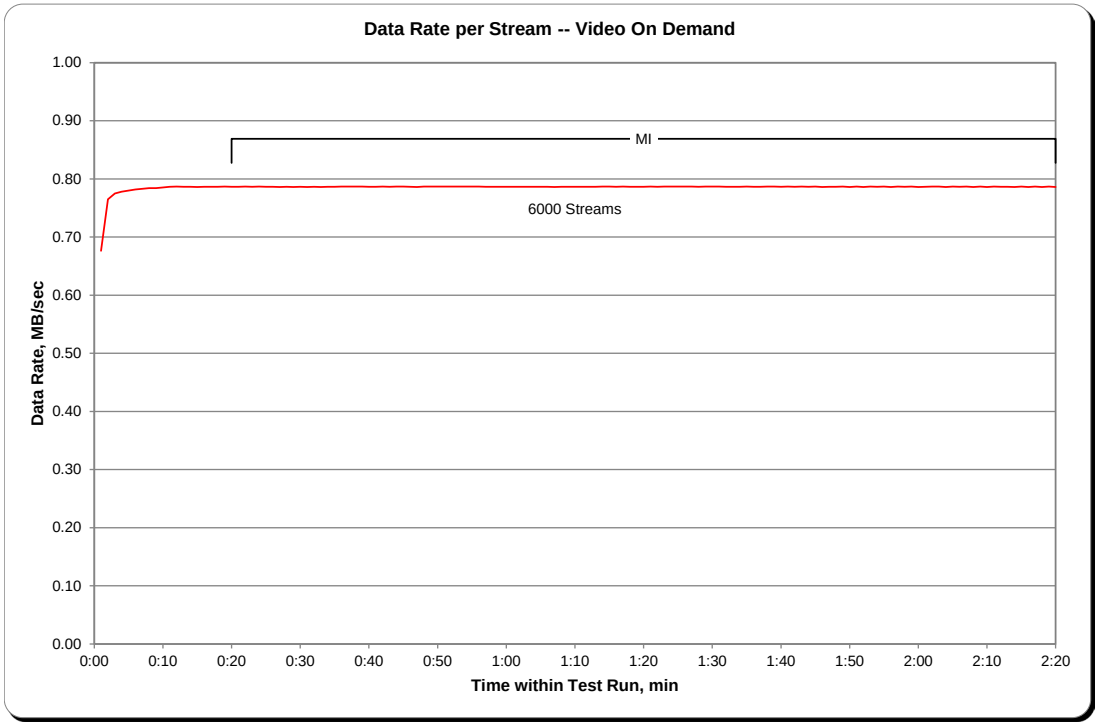
The SPC-2 Video on Demand Delivery Test Run data is contained in the table that appears below. That table is followed by graphs illustrating the average Data Rate and average Data Rate per Stream produced by the same Test Runs. The table and graphs present the data at sixty second intervals.

TR1	6000 Streams				TR1	6000 Streams				TR1	6000 Streams			
Test Run Sequence Time	Data Rate, MB/sec	Data Rate / Stream, MB/sec	Response Time, ms	Maximum Response Time, ms	Test Run Sequence Time	Data Rate, MB/sec	Data Rate / Stream, MB/sec	Response Time, ms	Maximum Response Time, ms	Test Run Sequence Time	Data Rate, MB/sec	Data Rate / Stream, MB/sec	Response Time, ms	Maximum Response Time, ms
0:01:00	486.12	0.68	2.92	77.78	0:51:00	4,719.67	0.79	17.85	172.98	1:41:00	4,720.07	0.79	17.61	180.47
0:02:00	1,333.58	0.77	5.10	83.63	0:52:00	4,719.79	0.79	17.87	204.42	1:42:00	4,717.84	0.79	17.67	180.91
0:03:00	1,999.59	0.77	7.74	83.70	0:53:00	4,719.89	0.79	17.82	181.18	1:43:00	4,719.70	0.79	17.80	221.98
0:04:00	2,568.07	0.78	9.61	107.74	0:54:00	4,719.82	0.79	17.77	181.82	1:44:00	4,717.75	0.79	17.68	176.72
0:05:00	3,064.88	0.78	11.24	113.40	0:55:00	4,719.94	0.79	17.73	222.97	1:45:00	4,719.90	0.79	17.71	176.15
0:06:00	3,490.07	0.78	12.72	118.82	0:56:00	4,719.90	0.79	17.66	190.28	1:46:00	4,715.70	0.79	17.79	235.60
0:07:00	3,853.01	0.78	14.10	152.07	0:57:00	4,719.52	0.79	17.83	215.15	1:47:00	4,718.91	0.79	17.82	177.60
0:08:00	4,161.35	0.78	15.37	163.09	0:58:00	4,718.42	0.79	17.95	245.45	1:48:00	4,717.74	0.79	17.75	183.27
0:09:00	4,412.88	0.78	16.33	170.62	0:59:00	4,718.98	0.79	17.72	176.97	1:49:00	4,719.73	0.79	17.74	218.16
0:10:00	4,643.96	0.79	17.31	218.66	1:00:00	4,718.31	0.79	17.72	172.45	1:50:00	4,715.57	0.79	17.70	194.64
0:11:00	4,717.84	0.79	17.71	187.33	1:01:00	4,717.69	0.79	17.66	198.50	1:51:00	4,719.96	0.79	17.69	189.73
0:12:00	4,719.96	0.79	17.71	182.88	1:02:00	4,718.04	0.79	17.60	176.57	1:52:00	4,715.88	0.79	17.78	293.95
0:13:00	4,717.89	0.79	17.72	217.56	1:03:00	4,717.44	0.79	17.43	184.07	1:53:00	4,720.04	0.79	17.66	178.01
0:14:00	4,717.59	0.79	17.70	196.03	1:04:00	4,717.92	0.79	17.35	187.22	1:54:00	4,717.91	0.79	17.66	179.76
0:15:00	4,715.70	0.79	17.71	185.07	1:05:00	4,718.00	0.79	17.47	171.65	1:55:00	4,719.82	0.79	17.68	223.67
0:16:00	4,719.54	0.79	17.73	230.98	1:06:00	4,717.92	0.79	17.50	175.79	1:56:00	4,715.67	0.79	17.79	178.03
0:17:00	4,717.96	0.79	17.69	188.05	1:07:00	4,715.06	0.79	17.71	206.14	1:57:00	4,719.75	0.79	17.73	177.37
0:18:00	4,719.55	0.79	17.68	182.50	1:08:00	4,717.72	0.79	17.95	192.19	1:58:00	4,717.73	0.79	17.73	242.90
0:19:00	4,721.82	0.79	17.67	201.00	1:09:00	4,718.33	0.79	18.03	204.50	1:59:00	4,719.87	0.79	17.79	227.75
0:20:00	4,717.60	0.79	17.69	185.64	1:10:00	4,717.74	0.79	18.10	199.26	2:00:00	4,715.96	0.79	17.91	229.85
0:21:00	4,717.72	0.79	17.65	181.68	1:11:00	4,717.72	0.79	18.17	189.52	2:01:00	4,717.65	0.79	17.74	203.43
0:22:00	4,719.72	0.79	17.75	206.20	1:12:00	4,717.70	0.79	18.20	186.52	2:02:00	4,719.78	0.79	17.64	178.52
0:23:00	4,717.86	0.79	18.14	221.98	1:13:00	4,717.76	0.79	18.20	205.88	2:03:00	4,719.90	0.79	17.64	178.29
0:24:00	4,720.76	0.79	18.10	225.51	1:14:00	4,719.61	0.79	18.22	185.37	2:04:00	4,715.44	0.79	17.80	226.42
0:25:00	4,717.62	0.79	18.45	243.57	1:15:00	4,719.88	0.79	18.24	193.79	2:05:00	4,719.85	0.79	17.67	204.71
0:26:00	4,718.04	0.79	18.97	265.00	1:16:00	4,718.73	0.79	18.25	216.50	2:06:00	4,717.59	0.79	17.58	189.38
0:27:00	4,715.67	0.79	18.94	266.62	1:17:00	4,719.83	0.79	18.22	178.90	2:07:00	4,719.73	0.79	17.67	254.25
0:28:00	4,717.86	0.79	18.98	281.35	1:18:00	4,718.24	0.79	18.27	189.57	2:08:00	4,715.68	0.79	17.66	184.54
0:29:00	4,715.79	0.79	18.97	339.63	1:19:00	4,717.41	0.79	18.27	253.62	2:09:00	4,719.84	0.79	17.72	169.55
0:30:00	4,717.62	0.79	18.97	232.93	1:20:00	4,718.57	0.79	18.21	179.36	2:10:00	4,715.52	0.79	17.68	221.52
0:31:00	4,715.69	0.79	19.09	288.63	1:21:00	4,719.82	0.79	17.98	187.88	2:11:00	4,719.75	0.79	17.61	178.79
0:32:00	4,717.71	0.79	19.07	283.54	1:22:00	4,717.79	0.79	18.13	224.11	2:12:00	4,717.99	0.79	17.65	181.78
0:33:00	4,715.75	0.79	19.06	311.89	1:23:00	4,719.86	0.79	17.96	202.76	2:13:00	4,719.46	0.79	17.67	185.90
0:34:00	4,719.59	0.79	19.03	292.31	1:24:00	4,719.80	0.79	17.81	183.23	2:14:00	4,715.62	0.79	17.72	177.73
0:35:00	4,717.65	0.79	19.02	305.68	1:25:00	4,719.74	0.79	17.88	224.10	2:15:00	4,719.89	0.79	17.64	180.22
0:36:00	4,719.86	0.79	19.00	297.47	1:26:00	4,719.90	0.79	17.93	191.35	2:16:00	4,715.68	0.79	17.71	232.68
0:37:00	4,719.92	0.79	19.04	281.31	1:27:00	4,719.83	0.79	18.00	186.54	2:17:00	4,719.95	0.79	17.69	181.99
0:38:00	4,719.91	0.79	19.01	297.64	1:28:00	4,717.88	0.79	17.90	244.77	2:18:00	4,715.53	0.79	17.68	180.97
0:39:00	4,719.85	0.79	19.00	329.90	1:29:00	4,719.80	0.79	17.70	182.36	2:19:00	4,719.92	0.79	17.76	209.28
0:40:00	4,718.25	0.79	19.08	319.28	1:30:00	4,719.65	0.79	17.55	197.92	2:20:00	4,715.60	0.79	17.74	201.35
0:41:00	4,717.62	0.79	19.05	238.73	1:31:00	4,720.90	0.79	17.50	246.55					
0:42:00	4,719.76	0.79	19.36	294.11	1:32:00	4,717.65	0.79	17.45	185.79					
0:43:00	4,717.98	0.79	18.88	251.51	1:33:00	4,717.75	0.79	17.50	180.05					
0:44:00	4,719.78	0.79	18.50	204.43	1:34:00	4,719.60	0.79	17.53	253.24					
0:45:00	4,719.88	0.79	18.49	223.64	1:35:00	4,719.92	0.79	17.53	169.49					
0:46:00	4,717.72	0.79	18.15	207.79	1:36:00	4,717.59	0.79	17.49	175.91					
0:47:00	4,717.28	0.79	17.90	201.41	1:37:00	4,717.78	0.79	17.52	197.58					
0:48:00	4,719.73	0.79	17.87	190.70	1:38:00	4,719.73	0.79	17.55	192.55					
0:49:00	4,719.88	0.79	17.88	186.77	1:39:00	4,720.73	0.79	17.58	183.50					
0:50:00	4,719.76	0.79	17.89	213.66	1:40:00	4,717.77	0.79	17.60	194.76					

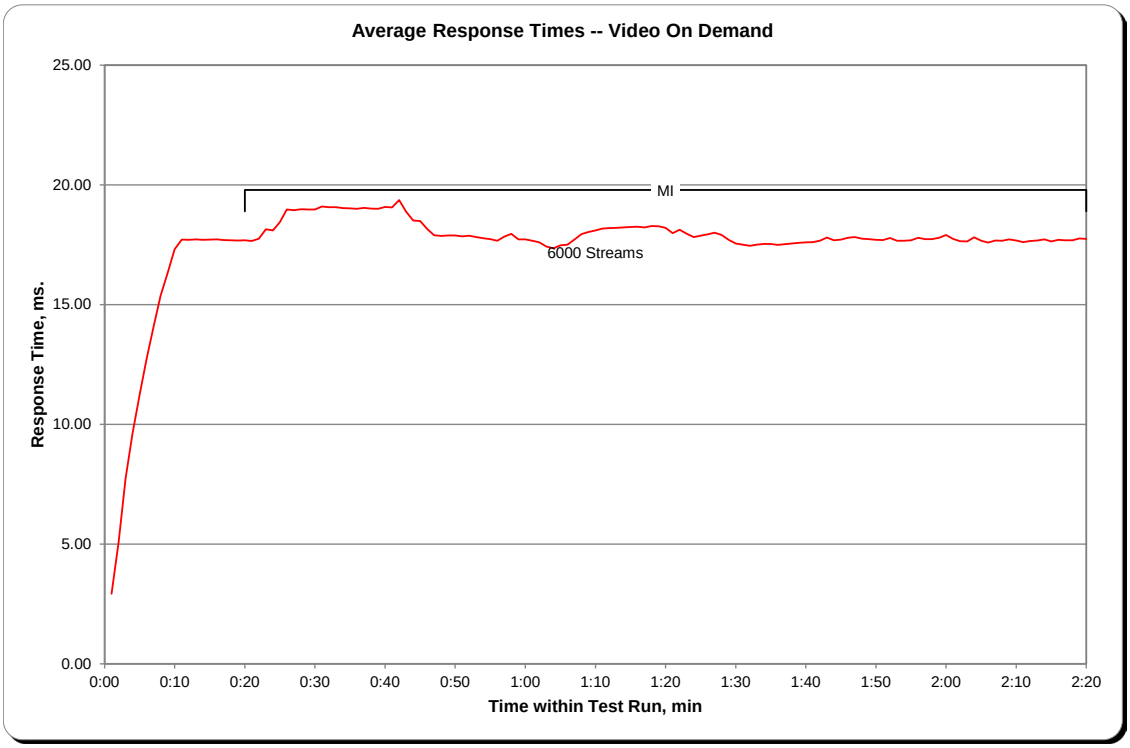
SPC-2 Video on Demand Delivery Average Data Rate Graph



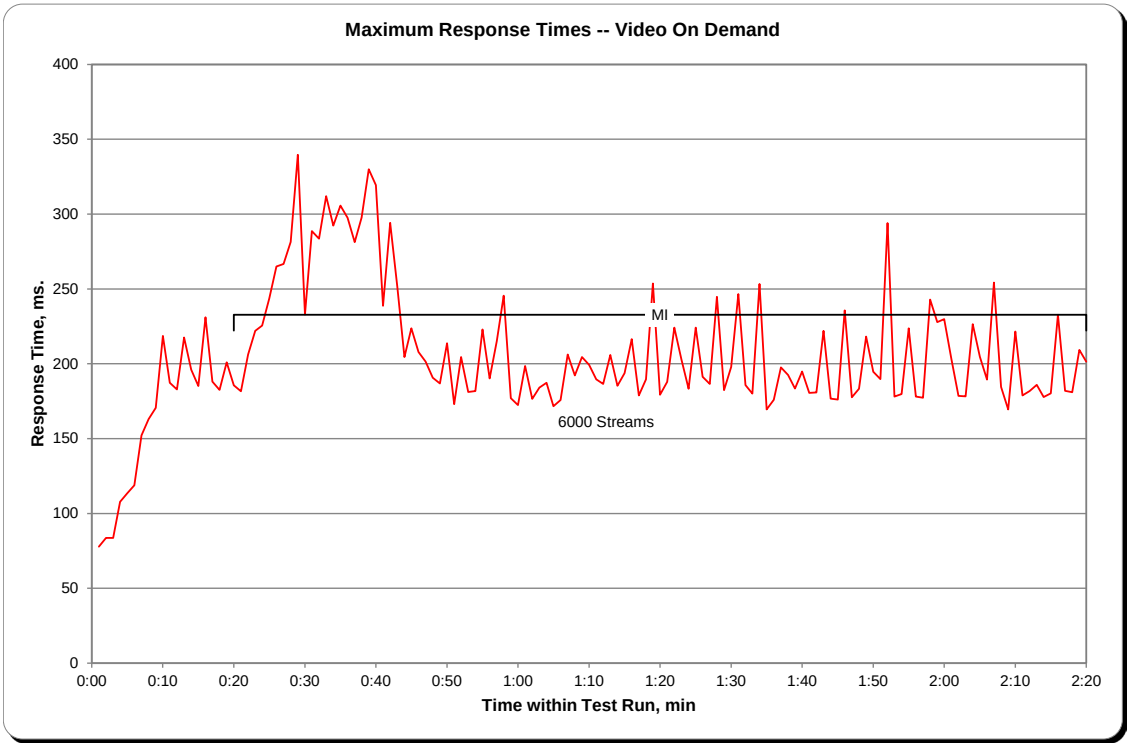
SPC-2 Video on Demand Delivery Average Data Rate per Stream Graph



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 107.

Data Persistence Test Results File

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

Persistence 1 Test Run Results File

Persistence 2 Test Run Results File

Data Persistence Test Results

Data Persistence Test Results	
Data Persistence Test Number: 1	
Total Number of Logical Blocks Written	905,419
Total Number of Logical Blocks Re-referenced	10,509
Total Number of Logical Blocks Verified	894,910
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 Fujitsu Storage Systems ETERNUS DX440 S2, as documented in this SPC-2 Full Disclosure Report, is currently available for customer purchase and shipment.

ANOMALIES OR IRREGULARITIES

Clause 10.6.11

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

There were no anomalies or irregularities encountered during the SPC-2 Onsite/Remote Audit of the Fujitsu Storage Systems ETERNUS DX440 S2.

APPENDIX A: SPC-2 GLOSSARY

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

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

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

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

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

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

SPC-2 Data Repository Definitions

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

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

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

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

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

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

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

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

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

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

SPC-2 Data Protection Levels

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

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

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

Unprotected: There is no data protection provided.

SPC-2 Test Execution Definitions

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

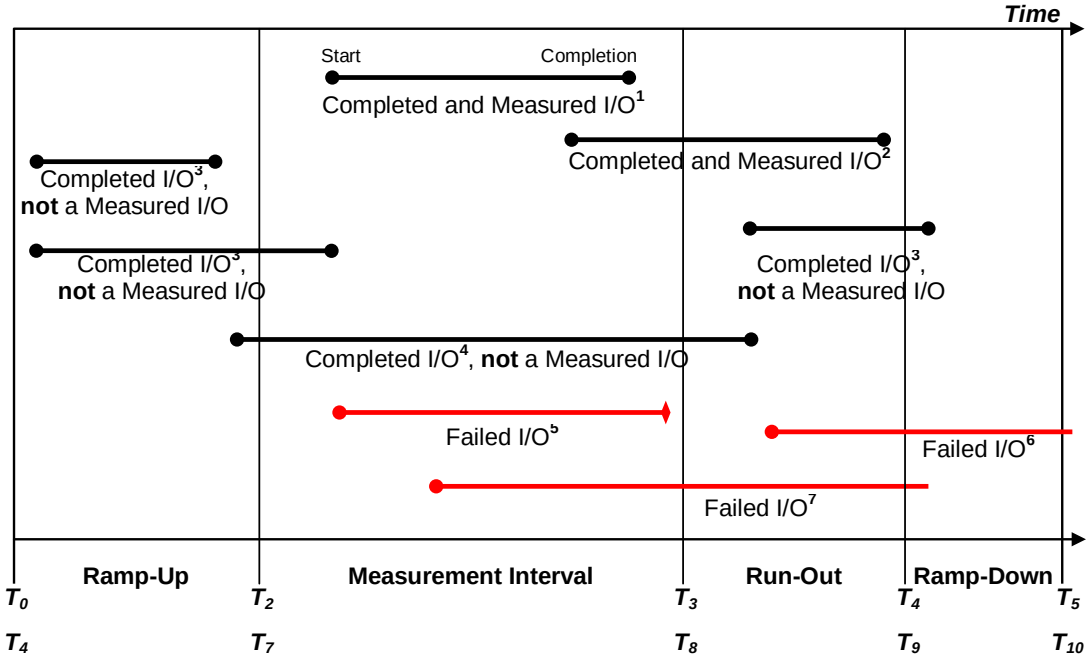
- Test Run 1: Maximum number of Streams, which is selected by the Test Sponsor
- Test Run 2: 50% of the maximum number of Streams used in Test Run 1.
- Test Run 3: 25% of the maximum number of Streams used in Test Run 1.
- Test Run 4: 12.5% of the maximum number of Streams used in Test Run 1.
- Test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

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

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

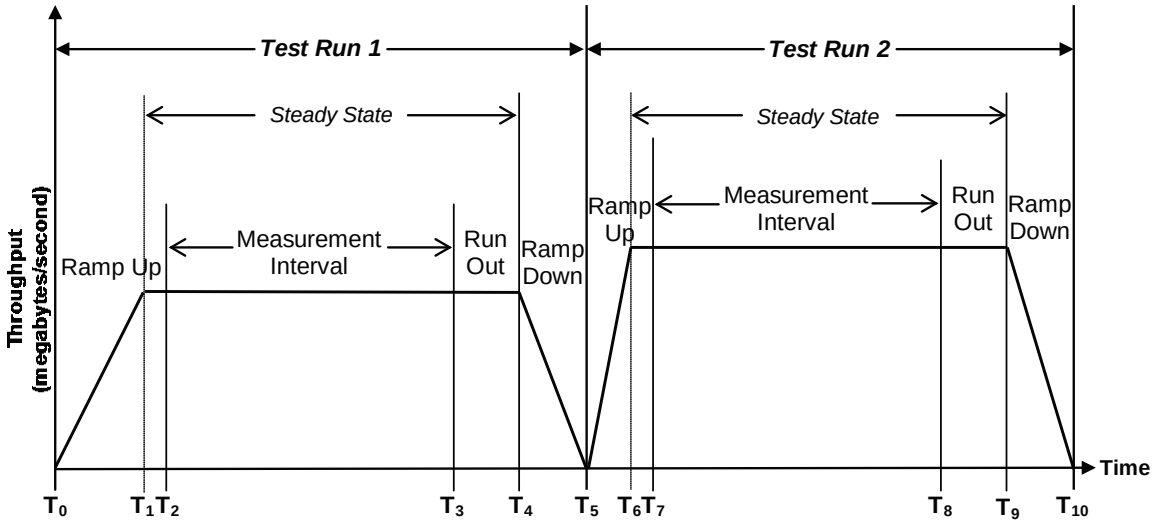
Transfer Size: The Transfer Size parameter specifies the number of bytes in KiB to transfer. *(Clause 3.4.7 of the SPC-2 Benchmark Specification)*

I/O Completion Types



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

SPC-2 Test Run Components



APPENDIX B: CUSTOMER TUNABLE PARAMETERS AND OPTIONS

No customer tunable parameters and/or options were changed from their default values for the benchmark measurements.

APPENDIX C: TESTED STORAGE CONFIGURATION (TSC) CREATION

The standard Fujitsu Command Line tool (CLI) was used to create the ETERNUS DX440 S2 SPC-2 configuration. The Master Host System (Host #1) had the **cygwin** packages, **expect** and **openssh**, installed to enable execution the CLI script, **1125_DX440S2_SPC2_72RG_72LUN.exp**, listed below, which contained the CLI commands to create SPC-2 configuration.

The script included the **docli** procedure, which was used to issue the CLI commands to the array. That procedure used **ssh** for communication with the array. A second procedure in the script, **doexit**, was used to conclude the execution sequence at the end of the script.

The following documents the steps completed in the script to create the SPC-2 configuration:

Step 1 – Creation of RAID Groups

A total of 72 RAID Groups were created, according to the configuration plan, **DX440s2_Configuration_Plan_2011_1125.xls**, which is typically prepared in concert with a Fujitsu SE. Each RAID Group was made up of 4 disk drives in a RAID10 *(2+2)* configuration and assigned to a specific Controller Module (CM) and CPU within the CM for operational control. The RAID Groups were named R10-0 through R10-71.

Step 2 – Creation of the Logical Volumes

Within each of the RAID Groups, one Logical Volume was created with a size of 545 GiB. The names, R10-V#0 through R10-V#71, were assigned to the logical volumes as part of their creation.

Step 3 – Creation of the Global Hot Spare

A single drive was designated as the Global Hot Spare in slot 23 of DE03, per the configuration plan.

Step 4 – Assignment of LUN Mapping to the four Host Systems

First, any existing port LUN mapping was released to start from a clean unmapped configuration. Then port LUN mapping was assigned with four ports for each host system, two ports on each of the two CMs within the array. Each port had 18 Logical Volumes mapped to host LUNs 0-17, providing access to all of the storage within the array.

- Host # 1 was assigned ports 0 & 3 on CA0 on each of the two CMs.
- Host # 2 was assigned ports 0 & 3 on CA1 on each of the two CMs.
- Host # 3 was assigned ports 0 & 3 on CA2 on each of the two CMs.
- Host # 4 was assigned ports 0 & 3 on CA3 on each of the two CMs.

  Note: CA represents a Channel Adapter in the array.

The four sets of 18 LUNs were recognized as PhysicalDrive1 – PhysicalDrive72 on each of the four host Windows systems.

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

Common Command Lines

The following command lines were identical in all of the following command and parameter files, appearing as noted in each file.

```
sd=default,host=localhost,size=545.00g
sd=sd1,lun=\\.\PhysicalDrive1
sd=sd2,lun=\\.\PhysicalDrive2
sd=sd3,lun=\\.\PhysicalDrive3
sd=sd4,lun=\\.\PhysicalDrive4
sd=sd5,lun=\\.\PhysicalDrive5
sd=sd6,lun=\\.\PhysicalDrive6
sd=sd7,lun=\\.\PhysicalDrive7
sd=sd8,lun=\\.\PhysicalDrive8
sd=sd9,lun=\\.\PhysicalDrive9
sd=sd10,lun=\\.\PhysicalDrive10
sd=sd11,lun=\\.\PhysicalDrive11
sd=sd12,lun=\\.\PhysicalDrive12
sd=sd13,lun=\\.\PhysicalDrive13
sd=sd14,lun=\\.\PhysicalDrive14
sd=sd15,lun=\\.\PhysicalDrive15
sd=sd16,lun=\\.\PhysicalDrive16
sd=sd17,lun=\\.\PhysicalDrive17
sd=sd18,lun=\\.\PhysicalDrive18
sd=sd19,lun=\\.\PhysicalDrive19
sd=sd20,lun=\\.\PhysicalDrive20
sd=sd21,lun=\\.\PhysicalDrive21
sd=sd22,lun=\\.\PhysicalDrive22
sd=sd23,lun=\\.\PhysicalDrive23
sd=sd24,lun=\\.\PhysicalDrive24
sd=sd25,lun=\\.\PhysicalDrive25
sd=sd26,lun=\\.\PhysicalDrive26
sd=sd27,lun=\\.\PhysicalDrive27
sd=sd28,lun=\\.\PhysicalDrive28
sd=sd29,lun=\\.\PhysicalDrive29
sd=sd30,lun=\\.\PhysicalDrive30
sd=sd31,lun=\\.\PhysicalDrive31
sd=sd32,lun=\\.\PhysicalDrive32
sd=sd33,lun=\\.\PhysicalDrive33
sd=sd34,lun=\\.\PhysicalDrive34
sd=sd35,lun=\\.\PhysicalDrive35
sd=sd36,lun=\\.\PhysicalDrive36
sd=sd37,lun=\\.\PhysicalDrive37
sd=sd38,lun=\\.\PhysicalDrive38
sd=sd39,lun=\\.\PhysicalDrive39
sd=sd40,lun=\\.\PhysicalDrive40
sd=sd41,lun=\\.\PhysicalDrive41
sd=sd42,lun=\\.\PhysicalDrive42
sd=sd43,lun=\\.\PhysicalDrive43
sd=sd44,lun=\\.\PhysicalDrive44
sd=sd45,lun=\\.\PhysicalDrive45
sd=sd46,lun=\\.\PhysicalDrive46
sd=sd47,lun=\\.\PhysicalDrive47
sd=sd48,lun=\\.\PhysicalDrive48
sd=sd49,lun=\\.\PhysicalDrive49
sd=sd50,lun=\\.\PhysicalDrive50
sd=sd51,lun=\\.\PhysicalDrive51
```

```
sd=sd52,lun=\\.\PhysicalDrive52
sd=sd53,lun=\\.\PhysicalDrive53
sd=sd54,lun=\\.\PhysicalDrive54
sd=sd55,lun=\\.\PhysicalDrive55
sd=sd56,lun=\\.\PhysicalDrive56
sd=sd57,lun=\\.\PhysicalDrive57
sd=sd58,lun=\\.\PhysicalDrive58
sd=sd59,lun=\\.\PhysicalDrive59
sd=sd60,lun=\\.\PhysicalDrive60
sd=sd61,lun=\\.\PhysicalDrive61
sd=sd62,lun=\\.\PhysicalDrive62
sd=sd63,lun=\\.\PhysicalDrive63
sd=sd64,lun=\\.\PhysicalDrive64
sd=sd65,lun=\\.\PhysicalDrive65
sd=sd66,lun=\\.\PhysicalDrive66
sd=sd67,lun=\\.\PhysicalDrive67
sd=sd68,lun=\\.\PhysicalDrive68
sd=sd69,lun=\\.\PhysicalDrive69
sd=sd70,lun=\\.\PhysicalDrive70
sd=sd71,lun=\\.\PhysicalDrive71
sd=sd72,lun=\\.\PhysicalDrive72
```

Large File Processing Test (LFP)

```
* Large File Processing (LFP)

host=localhost,jvms=4,java=(java,"-Xmx1536m -Xms1536m -Xss96k")

host=(192.168.146.2,spc2-2),
java=("C:/Java/jre6/bin/java.exe","-Xmx1536m -Xms1536m -Xss96k" ),
shell=spc2,
jvms=4,
output=c:\SPC2\slaveoutput\p_lfp_0119_1327092414,
maxstreams=80

host=(192.168.146.3,spc2-3),
java=("C:/Java/jre6/bin/java.exe","-Xmx1536m -Xms1536m -Xss96k" ),
shell=spc2,
jvms=4,
output=c:\SPC2\slaveoutput\p_lfp_0119_1327092414,
maxstreams=80

host=(192.168.146.4,spc2-4),
java=("C:/Java/jre6/bin/java.exe","-Xmx1536m -Xms1536m -Xss96k" ),
shell=spc2,
jvms=4,
output=c:\SPC2\slaveoutput\p_lfp_0119_1327092414,
maxstreams=80
```

Common Command Lines

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

rd=default,rampup=180,periods=90,measurement=180,runout=45,rampdown=15,buffers=1

* LFP, Write Phase

rd=default,rdpct=0,xfersize=1024k
rd=TR1_SPC-2-FP,streams=32
```

```
rd=TR2_SPC-2-FP,streams=16
rd=TR3_SPC-2-FP,streams=8
rd=TR4_SPC-2-FP,streams=4
rd=TR5_SPC-2-FP,streams=1

rd=default,rdpct=0,xfersize=256k
rd=TR6_SPC-2-FP,streams=32
rd=TR7_SPC-2-FP,streams=16
rd=TR8_SPC-2-FP,streams=8
rd=TR9_SPC-2-FP,streams=4
rd=TR10_SPC-2-FP,streams=1

* LFP, Read/Write Phase

rd=default,rdpct=50,xfersize=1024k
rd=TR11_SPC-2-FP,streams=32
rd=TR12_SPC-2-FP,streams=16
rd=TR13_SPC-2-FP,streams=8
rd=TR14_SPC-2-FP,streams=4
rd=TR15_SPC-2-FP,streams=1

rd=default,rdpct=50,xfersize=256k
rd=TR16_SPC-2-FP,streams=32
rd=TR17_SPC-2-FP,streams=16
rd=TR18_SPC-2-FP,streams=8
rd=TR19_SPC-2-FP,streams=4
rd=TR20_SPC-2-FP,streams=1

* LFP, Read Phase

rd=default,rdpct=100,xfersize=1024k
rd=TR21_SPC-2-FP,streams=72
rd=TR22_SPC-2-FP,streams=36
rd=TR23_SPC-2-FP,streams=18
rd=TR24_SPC-2-FP,streams=9
rd=TR25_SPC-2-FP,streams=1

rd=default,rdpct=100,xfersize=256k
rd=TR26_SPC-2-FP,streams=72
rd=TR27_SPC-2-FP,streams=36
rd=TR28_SPC-2-FP,streams=18
rd=TR29_SPC-2-FP,streams=9
rd=TR30_SPC-2-FP,streams=1
```

Large Database Query Test *(LDQ)*

```
* Large Database Query Test (LDQ)

host=localhost,jvms=4,java=(java,"-Xmx1536m -Xms1536m -Xss96k")

host=(192.168.146.2,spc2-2),
java=("C:/Java/jre6/bin/java.exe","-Xmx1536m -Xms1536m -Xss96k" ),
shell=spc2,
jvms=4,
output=c:\SPC2\slaveoutput\p_ldq_0119_1327092414,
maxstreams=80

host=(192.168.146.3,spc2-3),
java=("C:/Java/jre6/bin/java.exe","-Xmx1536m -Xms1536m -Xss96k" ),
shell=spc2,
jvms=4,
output=c:\SPC2\slaveoutput\p_ldq_0119_1327092414,
```

```
maxstreams=80

host=(192.168.146.4,spc2-4),
java=("C:/Java/jre6/bin/java.exe","-Xmx1536m -Xms1536m -Xss96k" ),
shell=spc2,
jvms=4,
output=c:\SPC2\slaveoutput\p_ldq_0119_1327092414,
maxstreams=80
```

Common Command Lines

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

rd=default,rampup=180,periods=90,measurement=180,runout=45,rampdown=15,rdpct=99

* LDQ, 1024KiB Phase

rd=default,buffers=4,xfersize=1024k
rd=TR1_SPC-2-DQ,streams=72
rd=TR2_SPC-2-DQ,streams=36
rd=TR3_SPC-2-DQ,streams=18
rd=TR4_SPC-2-DQ,streams=9
rd=TR5_SPC-2-DQ,streams=1

rd=default,buffers=1,xfersize=1024k
rd=TR6_SPC-2-DQ,streams=72
rd=TR7_SPC-2-DQ,streams=36
rd=TR8_SPC-2-DQ,streams=18
rd=TR9_SPC-2-DQ,streams=9
rd=TR10_SPC-2-DQ,streams=1

* LDQ, 64KiB Phase

rd=default,buffers=4,xfersize=64k
rd=TR11_SPC-2-DQ,streams=72
rd=TR12_SPC-2-DQ,streams=36
rd=TR13_SPC-2-DQ,streams=18
rd=TR14_SPC-2-DQ,streams=9
rd=TR15_SPC-2-DQ,streams=1

rd=default,buffers=1,xfersize=64k
rd=TR16_SPC-2-DQ,streams=72
rd=TR17_SPC-2-DQ,streams=36
rd=TR18_SPC-2-DQ,streams=18
rd=TR19_SPC-2-DQ,streams=9
rd=TR20_SPC-2-DQ,streams=1
```

Video on Demand Delivery *(VOD)*

```
* Video On Demand Test (VOD)
host=localhost,jvms=18,java=(java,"-Xmx1536m -Xms1536m -Xss96k")
maxstreams=120

host=(192.168.146.2,spc2-2),
java=("C:/Java/jre6/bin/java.exe","-Xmx1536m -Xms1536m -Xss96k" ),
shell=spc2,
jvms=16,
output=c:\SPC2\slaveoutput\p_vod_0119_1327092414,
maxstreams=120

host=(192.168.146.3,spc2-3),
java=("C:/Java/jre6/bin/java.exe","-Xmx1536m -Xms1536m -Xss96k" ),
shell=spc2,
jvms=16,
output=c:\SPC2\slaveoutput\p_vod_0119_1327092414,
maxstreams=120

host=(192.168.146.4,spc2-4),
java=("C:/Java/jre6/bin/java.exe","-Xmx1536m -Xms1536m -Xss96k" ),
shell=spc2,
jvms=16,
output=c:\SPC2\slaveoutput\p_vod_0119_1327092414,
maxstreams=120
```

Common Command Lines

```
maxlatestart=1
reportinginterval=5
maxlatevod=0
videosegmentduration=1200

rd=default,rampup=1200,periods=600,measurement=7200,runout=45,rampdown=15,buffers=8

rd=TR1_SPC-2-VOD,streams=6000
```

Persistence Test Run 1 *(write phase)*

```
* Persistence Test - Write Phase
host=localhost,jvms=4,java=(java,"-Xmx1536m -Xms1536m -Xss96k")
```

Common Command Lines

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

rd=default,rampup=180,periods=90,measurement=300,runout=0,rampdown=0
rd=default,buffers=1,rdpct=0,xfersize=1024k

rd=TR1_SPC-2-persist-w,streams=32
```

Persistence Test Run 2 *(read phase)*

```
* Persistence Test - Read Phase

host=localhost,jvms=2,java=(java,"-Xmx1536m -Xms1536m -Xss96k")
```

Common Command Lines

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

maxpersistenceerrors=10

rd=default,buffers=1,rdpct=100,xfersize=1024k

rd=TR1_SPC-2-persist-r
```

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

Large File Processing Test, Large Database Query Tests, Video on Demand Delivery, Persistence Test Run 1 and Tested Storage Configuration (TSC) Power Off

The following master script was used to execute the Large File Processing and Large Database Query Tests, Video on Demand Delivery, Persistence Test Run 1 and the required power off of the TSC after the completion of Persistence Test Run 1.

```
# FDR run script SPC2
# Part1
#
if [ $# -eq 1 ]
then
 comment=$1
else
 echo "Usage: $0 <comment>"
 exit 1
fi
# check mutex lock
if [ -s /tmp/spc2.lock ]
then
echo "job `cat /tmp/spc2.lock` is running. Remove /tmp/spc2.lock if in error."
exit 1
fi
# define timestamp for job id.
timestamp=`date +%s`
echo Starting Job$timestamp
# apply mutex lock and jobid
echo $timestamp > /tmp/spc2.lock
./CreateJobArchive.sh 0119 $timestamp $0 $1
# Save pre Benchmark ETERNUS Log/Config
./ExportLog.exp p_before_0119_${timestamp}
# Save Disk Map before status
./SaveDiskMap.sh before ${timestamp}
# run prefill
./run_prefill.sh
#
# Run init and the lfp job
./run_spc2_job.sh p_lfp_0119 ${timestamp} doinit
#
# Run the ldq job
./run_spc2_job.sh p_ldq_0119 ${timestamp}
#
# Run the vod job
./run_spc2_job.sh p_vod_0119 ${timestamp}
#
# run Persistent write.
./run_spc2_job.sh p_pers_w_0119 ${timestamp}
#
# Perform Power Off
#
# (Use ./PowerDown.exp to shutdown completely for audit run, manual power on
required - for test runs use .PowerCycle.exp)
# ./PowerCycle.exp
./PowerDown.exp
#
```

```
echo "`date` $0 :DX440S2 Power Down started - Please wait at least 15 minutes and
Power On." > /tmp/msg.txt
ssh fjuser@eternity mail kkatsumata@us.fujitsu.com higuchi.kenji@jp.fujitsu.com <
/tmp/msg.txt
```

run_spc2_job.sh

This script executed the actual SPC-2 Workload Generator commands for each Test Run.

```
#!/usr/bin/bash -x
#run_spc2_job $parm_file $job_id
# performs same role as spc2.bat
# $parm_file = parmeter file base_name
# $job_id job id (parameter id + timestamp )
# $init = init
# check parameters
if [ $# -eq 2 ]
then
 doinit="no"
elif [ $# -eq 3 ]
then
 doinit="yes"
else
 echo "Usage: $0 <parm_file> <timestamp> {doinit}"
 exit 1
fi
spcparm=$1
jobid=${spcparm}_$2
echo Running JobStep=$jobid with Parmfile=${spcparm}.txt Init=$doinit
# location of Java executable
java=C:/Java/jre6/bin/java.exe
#Directory where this is executed from:
exdir=C:/SPC2
#Current class path is the SPC2 work directory
classpath=C:/SPC2
# generate the parameter file based on the template
sed "s/<JOBID>/$jobid/" < ${spcparm}.txt > parm_${jobid}.txt
# run initialization
if [ $doinit = "yes" ]
then
$java -Xmx1536m -Xms1536m -Xss96k -cp $classpath vdbench -w SPC2 -f
parm_${jobid}.txt -o out_${jobid}INI -init
fi
# run  benchmark
$java -Xmx1536m -Xms1536m -Xss96k -cp $classpath vdbench -w SPC2 -f
parm_${jobid}.txt -o out_${jobid}
```

PowerDown.exp

This script powered off the TSC after completion of Persistence Test Run 1.

```
#!/usr/bin/expect
# power cycle DX440S2 storage array
;# procedure to execute commands
# issue power cycle
spawn ssh dx440s2 -l root
set timeout 40
expect "password:"
send "root\r"
expect "CLI>"
send "shutdown -mode off\r" ;# Comment this line for DEBUG
expect "closed\." ;# wait of session to terminate
close
```

Persistence Test Run 2

The following script was used to execute Persistence Test Run 2 after the TSC was manually powered back on.

```
# FDR run script SPC2
# Part2 run this after Part1
#
if [ $# -ne 0 ]
then
 echo "Usage: $0 (no parameters)"
 exit 1
fi
# mutex lock saved in Part1 must exist with the timestamp.
if [ ! -s /tmp/spc2.lock ]
then
echo "/tmp/spc2.lock from Part1 does not exist. Did you run Part1?"
exit 1
fi
# define timestamp for job id.
timestamp=`cat /tmp/spc2.lock`
echo Continuing with Job_${timestamp}
#
# Run the Persistent read job
./run_spc2_job.sh p_pers_r_0119 ${timestamp}
#
# Post Processing
#
# Get the Slave Logs for lfp
./GetSlaveLogs.exp p_lfp_0119_${timestamp}
# Get the Slave Logs for ldq
./GetSlaveLogs.exp p_ldq_0119_${timestamp}
# Get the Slave Logs for vod
./GetSlaveLogs.exp p_vod_0119_${timestamp}
# Save the post Benchmark ETERNUS Log/Config
./ExportLog.exp p_after_0119_${timestamp}
# zip up
./ZipUp.sh 0119 ${timestamp} $0
# send archive to the repository server
./FtpToEternity.exp SPC2_Benchmark DX440S2 20120119 job_${timestamp}.zip
# remove mutex lock
rm -f /tmp/spc2.lock
```

APPENDIX F: THIRD-PARTY QUOTATIONS

Emulex LPe12002-M8 8Gbps Dual Port Fibre Channel HBAs

ECExpress - QUOTE INFORMATION Page 1 of 1

QUOTE INFORMATION
generated 12/7/11

Reseller Account	PO/Quote#	Pricing
156408	LP312002	Regular

Bill-to	Ship-to	General Info
FUJITSU PC CORPORATION PO BOX 58112, SANTA CLARA, CA 95054	Fujitsu America Inc 1250 East Arques Ave Sunnyvale, CA 94085	**Quote Description:** 12/7/11 11:26:48 AM PST **PO#:** LP312002 **End User PO#:** LP312002 **Confirmation#:** 32785866 **Buyer:** AL VITI **Phone:** 972-803-9178 **Email:** al.viti@us.fujitsu.com **User ID:** 108305, Old UID: 156408 **Payment Terms:** NET 30 DAYS **Ship Method:** UMIF **Freight Acct#:** **Special Pricing:** VS **Pring Ref #s:** **End User:**
Licensee Info	**Reseller**	
N/A	FUJITSU PC CORPORATION	

SKU	Mfg. P/N	Description	MSRP	Availability	Reseller Price	Qty	Ext. Price
2084215	LPE12002-M8	LightPulse LPe12002-M8 - Network adapter - Plug-in card - PCI Express x8 - 8Gb Fibre Channel	$1,785.00	18	$1,281.07	1	$1,281.07

General Information

All prices are displayed in **USD**
Available Inventory subject to change without notice.
Month Lease Payment is an estimate and subject to change prior to approval
Product Pricing/Availability updated frequently and may change without notice
PO subject to Freight and Taxes, actual Charge(s)/Wavier(s) may change during Order Processing

Sub-total:	$1,281.07
Estimated S&H fee:	$9.08
Estimated Taxes:	$0.00
TOTAL:	$1,290.15

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http://ec.synnex.com/ecexpress/order/viewEndUserQuote.do 12/7/2011