# SPC BENCHMARK 2™

# FULL DISCLOSURE REPORT

## HEWLETT-PACKARD COMPANY
## HP STORAGEWORKS 8000
## ENTERPRISE VIRTUAL ARRAY

**SPC-2™ V1.0**

**Submitted for Review: January 16, 2006**
**Submission Identifier: B00004**

**First Edition – January 2006**

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# AUDIT CERTIFICATION

Chuck Paridon
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Roseville, CA 95747-5785

December 6, 2005

The SPC Benchmark 2™ results listed below for the HP StorageWorks 8000 Enterprise Virtual Array were produced in compliance with the SPC Benchmark 2™ V1.0 Onsite Audit requirements.

| SPC Benchmark 2™ V1.0 Results | |
|---|---|
| **Tested Storage Configuration (TSC) Name:** HP StorageWorks 8000 Enterprise Virtual Array | |
| **Metric** | **Reported Result** |
| SPC-2 MBPS™ | 1,137.78 |
| SPC-2 Price-Performance | $346.42/SPC-2 MBPS™ |
| Total ASU Capacity | 6,571.275 GB |
| Data Protection Level | RAID5 |
| Total Price (including three-year maintenance) | $394,152.00 |

The following SPC Benchmark 2™ Onsite Audit requirements were reviewed and found compliant with V1.0 of the SPC Benchmark 2™ specification:

- A Letter of Good Faith, signed by a senior executive.
- The following Data Repository storage items were verified by physical inspection and information supplied by Hewlett-Packard Company:
  - ✓ Physical Storage Capacity and related requirements.
  - ✓ Configured Storage Capacity and related requirements.
  - ✓ Addressable Storage Capacity and related requirements.
  - ✓ Capacity of each Logical Volume and related requirements.
  - ✓ Capacity of the Application Storage Unit (ASU) and related requirements.
- An appropriate diagram of the Benchmark Configuration (BC)/Tested Storage Configuration (TSC).
- Physical verification of the components to match the above diagram.

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Redwood City, CA 94062
AuditService@StoragePerformance.org
650.556.9384

## AUDIT CERTIFICATION *(CONT.)*

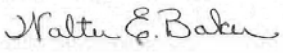


- Listings and commands to create and configure the Benchmark Configuration/Tested Storage Configuration, including each customer tunable parameter or option that was changed from its default value.
- The following Host System items were verified by physical inspection and information supplied by Hewlett-Packard Company:
  - ✓ Required Host System configuration information.
  - ✓ The TSC boundary within each Host System.
- The following SPC-2 Workload Generator information was verified by physical inspection and information supplied by Hewlett-Packard Company:
  - ✓ The presence and version number of the Workload Generator on each Host System.
  - ✓ Commands and parameters used to configure the SPC-2 Workload Generator.
- The execution of each Test, Test Phase, and Test Run was observed and found compliant with all of the requirements and constraints of Clauses 5 and 6 of the SPC-2 Benchmark Specification.
- The Test Results Files and resultant Summary Results Files received for each of the following were authentic, accurate, and compliant with all of the requirements and constraints of Clauses 5 and 6 of the SPC-2 Benchmark Specification:
  - ✓ Data Persistence Test
  - ✓ Large File Processing Test
  - ✓ Large Database Query Test
  - ✓ Video on Demand Delivery Test
- There were no differences between the Tested Storage Configuration (TSC) used for the benchmark and Priced Storage Configuration.
- The final version of the pricing spreadsheet met all of the requirements and constraints of Clause 9 of the SPC-2 Benchmark Specification.
- The Full Disclosure Report (FDR) met all of the requirements in Clause 10 of the SPC-2 Benchmark Specification.

**Audit Notes:**

There were no additional audit notes or exceptions.

Respectfully,



Walter E. Baker
SPC Auditor

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# LETTER OF GOOD FAITH

Hewlett-Packard Company
8000 Foothills Boulevard
Roseville, California 95747
916 / 786-8000

HEWLETT® PACKARD

Date: November 23, 2005

From: Chuck Paridon, Storage Performance Team; Hewlett-Packard Company

To: Walter E. Baker, SPC Auditor
Storage Performance Council (SPC)
643 Bair Island Road, Suite 103
Redwood City, CA 94063-2755

Subject: SPC-2 Letter of Good Faith for the HP StorageWorks 8000 Enterprise Virtual Array

Hewlett-Packard 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 V0.11.0 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 above SPC-2 benchmark specification.

Signed: _____ Date: 21Nov05

*Chris Powers, Director*
*Worldwide High End Array Development*
*StorageWorks Division*

*Date of Signature*

# EXECUTIVE SUMMARY

## Test Sponsor and Contact Information

| Test Sponsor and Contact Information | |
|---|---|
| **Test Sponsor Primary Contact** | Hewlett-Packard Company – http://www.hp.com<br>Chuck Paridon – chuck.paridon@hp.com<br>8000 Foothills Blvd.<br>M/S 5785<br>Roseville, CA 95747-5785<br>Phone: (916) 785-5155 |
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| **Auditor** | Storage Performance Council – http://www.storageperformance.org<br>Walter E. Baker – AuditService@StoragePerformance.org<br>643 Bair Island Road, Suite 103<br>Redwood City, CA 94063<br>Phone: (650) 556-9384<br>FAX: (650) 556-9385 |

## Revision Information and Key Dates

| Revision Information and Key Dates | |
|---|---|
| **SPC-2 Specification revision number** | V1.0 |
| **SPC-2 Workload Generator revision number** | spc2rc9g |
| **Date Results were first used publicly** | January 16, 2006 |
| **Date FDR was submitted to the SPC** | January 16, 2006 |
| **Date the TSC will be available for shipment to customers** | March 14, 2005 |
| **Date the TSC completed audit certification** | December 5 2005 |

## SPC-2 Reported Data

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

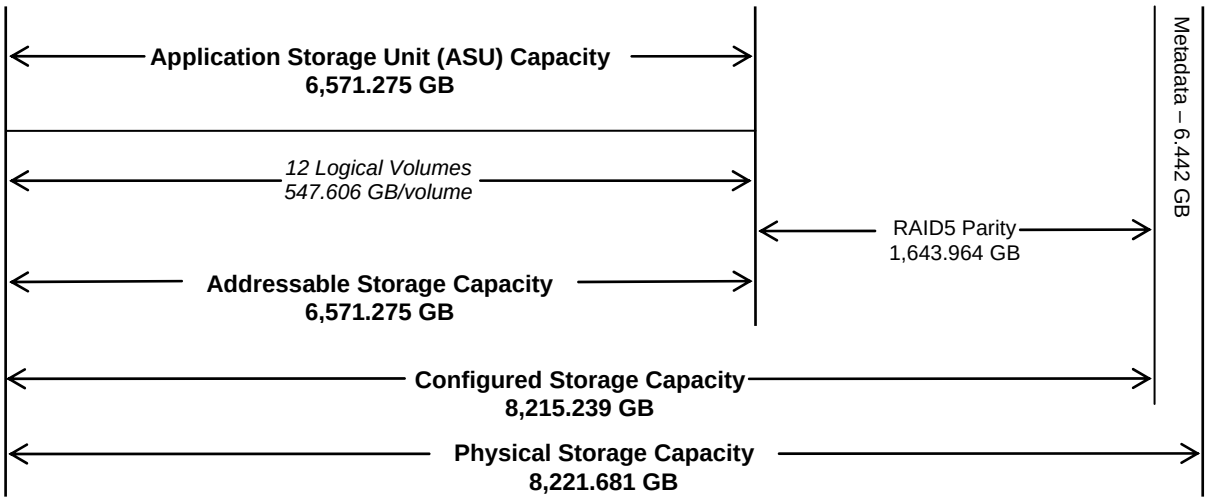
- The following SPC-2 Primary Metrics, which characterize the overall benchmark result:
  - SPC-2 MBPS™
  - SPC-2 Price Performance
  - Application Storage Unit (ASU) Capacity
- Supplemental data to the SPC-2 Primary Metrics.
  - Total Price
  - Data Protection Level

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

| SPC-2 Reported Data | | | | |
|---|---|---|---|---|
| **HP StorageWorks 8000 Enterprise Virtual Array** | | | | |
| **SPC-2 MBPS™** | **SPC-2 Price-Performance** | **ASU Capacity (GB)** | **Total Price** | **Data Protection Level** |
| 1,137.78 | $346.42 | 6,571.275 | $394,152.00 | RAID5 |
| *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** | **Number of Streams** | **Data Rate per Stream** | **Price-Performance** |
| LFP Composite | 894.64 | | | $440.57 |
| Write Only: | | | | |
| 1024 KiB Transfer | 531.13 | 80 | 6.64 | |
| 256 KiB Transfer | 533.88 | 80 | 6.67 | |
| Read-Write: | | | | |
| 1024 KiB Transfer | 832.55 | 80 | 10.41 | |
| 256 KiB Transfer | 830.24 | 80 | 10.38 | |
| Read Only: | | | | |
| 1024 KiB Transfer | 1,366.89 | 80 | 17.09 | |
| 256 KiB Transfer | 1,273.15 | 80 | 15.91 | |
| *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** | **Number of Streams** | **Data Rate per Stream** | **Price-Performance** |
| LDQ Composite | 1,260.42 | | | $312.71 |
| 1024 KiB Transfer Size | | | | |
| 4 I/Os Outstanding | 1,315.81 | 40 | 32.90 | |
| 1 I/O Outstanding | 1,238.73 | 40 | 30.97 | |
| 64 KiB Transfer Size | | | | |
| 4 I/Os Outstanding | 1,271.27 | 40 | 31.78 | |
| 1 I/O Outstanding | 1,215.87 | 40 | 30.40 | |
| *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** | **Number of Streams** | **Data Rate per Stream** | **Price-Performance** |
| | 1,258.29 | 1,600 | 0.79 | $313.24 |

## Storage Capacities and Relationships

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



## Tested Storage Configuration Pricing *(Priced Storage Configuration)*

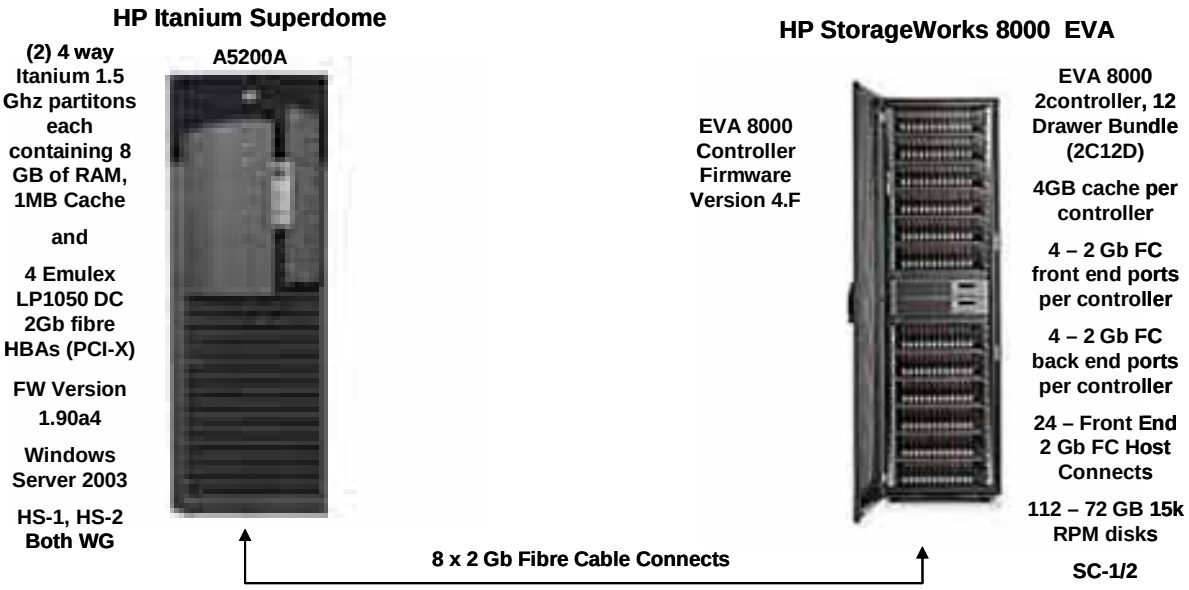
| Qty. | Part No. | Description | List Price |
|---|---|---|---|
| 1 | - | AD522A EVA8000, 2C12D-C (60 Hz) | $146,600 |
| 112 | - | 293568-B23 FC HDD INT CTO 72G 15K Fact ...$1450/per drive, or | $162,400 |
| 1 | - | T4256B HP EVA4K/6K/8K 5.0a Controller Media Kit | $100 |
| 1 | - | T3732A HP CV EVA8000 v4.0 Unlim use per EVA LTU | $36,000 |
| 8 | - | 263895-004 SPS-CA Optical Cable LC-LC 15M ...$119, or | $952 |
| 8 | - | AB466A 2GB FC HBA .....$2450, or | $19,600 |
| 1 | - | HA110A3#8WN 3rd year support (array) | $13,940 |
| 112 | - | HA110A3#8GZ 3rd year support $130 per Disk Drive | $14,560 |
| | | **Total** | **= $394,152** |

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

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

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

## Benchmark Configuration/Tested Storage Configuration Diagram




## Host System(s) and Tested Storage Configuration Components

| Host Systems: | Tested Storage Configuration (TSC): |
|---|---|
| ***UID=HS-1/2*** | 8 – Emulex LP1050 DC 2 Gb FC HBAs *(4 per Host)* |
| 2 – HP Itanium Superdome A5200A<br>4 – Intel Itanium 1.5 GHz CPU per Host<br>1 – MB cache per Host | ***UID=SC-1/2:***<br>2 – HP StorageWorks 8000 Enterprise Virtual Array<br>2 controller, 12 drawer bundle, 4 GB cache/controller |
| 8 GB main memory per Host | 4 – 2 Gb FC front-end ports per controller |
| Windows Server 2003 | 4 – 2 Gb FC backend ports per controller |
| | 24 – front-end 2 Gb FC Host connects |
| WG | 112 – 72 GB 15K RPM disk drives |

# CONFIGURATION INFORMATION

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

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

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

*Clause 10.6.5.7*

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

The Benchmark Configuration (BC)/Tested Storage Configuration (TSC) is illustrated on page 16 *(Benchmark Configuration/Tested Storage Configuration Diagram).*

## Storage Network Configuration

*Clause 9.2.4.4.2*

*If a storage network was configured as a part of the Tested Storage Configuration and the Benchmark Configuration described in Clause 10.6.5.7 contains a high-level illustration of the network configuration, the Executive Summary will contain a one page topology diagram of the storage network as illustrated in Figure 10.8.*

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

## Host System and Tested Storage Configuration Table

*Clause 10.6.5.9*

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

The components that comprise each Host System and the Tested Storage Configuration are listed in the table that appears on page 16 *(Host System(s) and Tested Storage Configuration Components).*

## Customer Tunable Parameters and Options

*Clause 10.6.6.1*

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

"Appendix B: Customer Tunable Parameters and Options" on page 90 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 91 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 91.

# 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 85 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) | 6,571.275 |
| Addressable Storage Capacity | Gigabytes (GB) | 6,571.275 |
| Configured Storage Capacity | Gigabytes (GB) | 8,215.239 |
| Physical Storage Capacity | Gigabytes (GB) | 8,221.681 |
| Data Protection Overhead (parity) | Gigabytes (GB) | 1,643,964 |
| Required Storage | Gigabytes (GB) | 0.000 |
| Global Storage Overhead | Gigabytes (GB) | 6.442 |
| Total Unused Storage | Gigabytes (GB) | 0.000 |

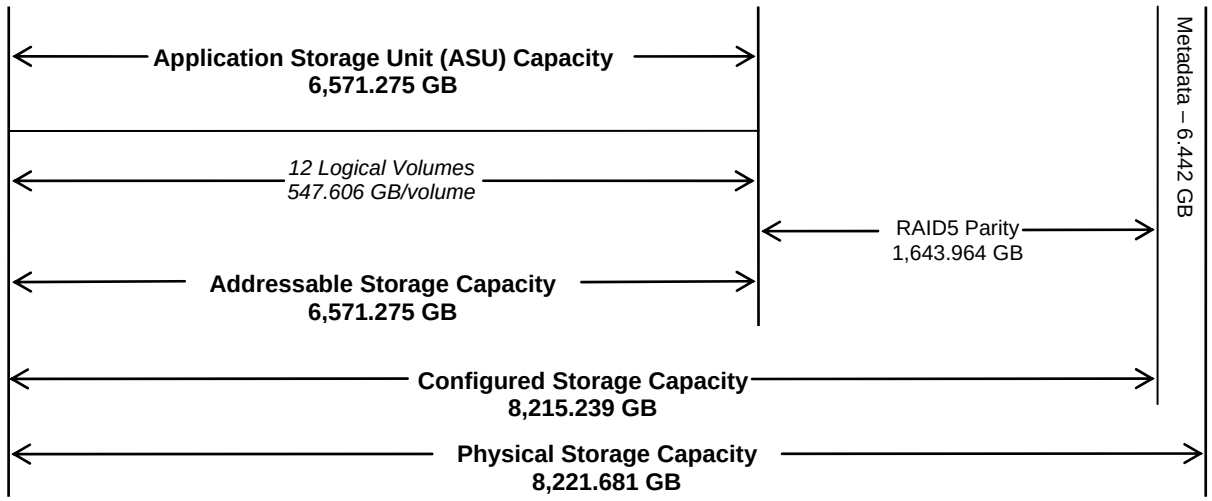
### SPC-2 Storage Hierarchy Ratios

| | **Addressable Storage Capacity** | **Configured Storage Capacity** | **Physical Storage Capacity** |
|---|---|---|---|
| **Total ASU Capacity** | 100.00% | 79.99% | 79.93% |
| **Required for Data Protection (Mirroring)** | | 20.01% | 20.00% |
| **Addressable Storage Capacity** | | 79.99% | 79.93% |
| **Required Storage** | | 0.00% | 0.00% |
| **Configured Storage Capacity** | | | 99.92% |
| **Global Storage Overhead** | | | 0.08% |
| **Unused Storage:** | | | |
| **Addressable** | 0.00% | | |
| **Configured** | | 0.00% | |
| **Physical** | | | 0.00% |

The Physical Storage Capacity consisted of 8,221.681 GB distributed over 112 disk drives each with a formatted capacity of 73.408 GB. There was 0.000 GB (0.00%) of Unused Storage within the Physical Storage Capacity. Global Storage Overhead consisted of 6.442 GB (0.08%) of Physical Storage Capacity. There was 0.000 GB (0.00%) of Unused Storage within the Configured Storage Capacity. The Total ASU Capacity utilized 100.00% of the Addressable Storage Capacity resulting in 0.000 GB (0.00%) of Unused Storage within the Addressable Storage Capacity.

### SPC-2 Storage Capacities and Relationships Illustration

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




## Logical Volume Capacity and ASU Mapping

*Clause 10.6.7.2*

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

| Logical Volume (LV) Capacity and Mapping | | | |
|---|---|---|---|
| ASU (6,571.275 GB) | | | |
| | Total Capacity *(GB)* | Capacity Used *(GB)* | Capacity Unused *(GB)* |
| Logical Volumes 1-12 | 547.606 per LV | 547.606 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 91 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 86 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 100.

### SPC-2 Test Results File

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

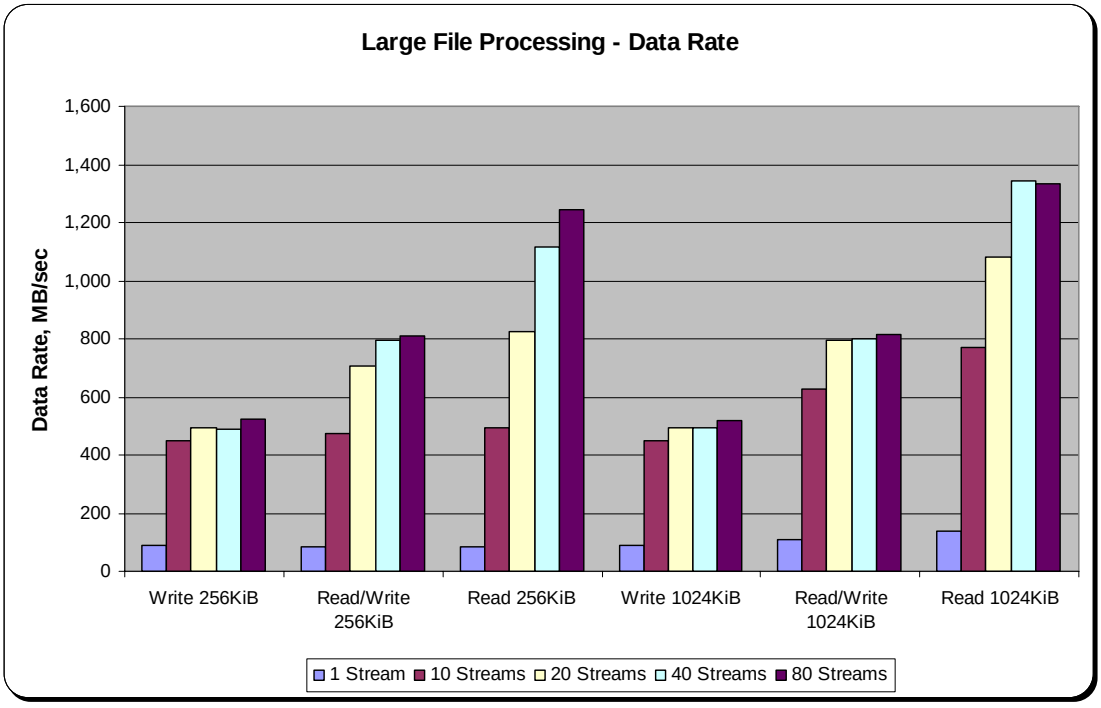
SPC-2 Large File Processing Test Results File

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

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

| Test Run Sequence | 1 Stream | 10 Streams | 20 Streams | 40 Streams | 80 Streams |
|---|---|---|---|---|---|
| Write 256KiB | 86.71 | 451.55 | 491.56 | 486.89 | 521.37 |
| Read/Write 256KiB | 82.50 | 476.46 | 707.47 | 796.34 | 810.78 |
| Read 256KiB | 85.98 | 492.43 | 823.08 | 1,117.29 | 1,243.31 |
| Write 1024KiB | 90.05 | 449.48 | 491.50 | 491.63 | 518.68 |
| Read/Write 1024KiB | 109.12 | 629.21 | 793.36 | 800.87 | 813.04 |
| Read 1024KiB | 139.36 | 769.75 | 1,083.78 | 1,343.43 | 1,334.85 |

### SPC-2 Large File Processing Average Data Rates Graph

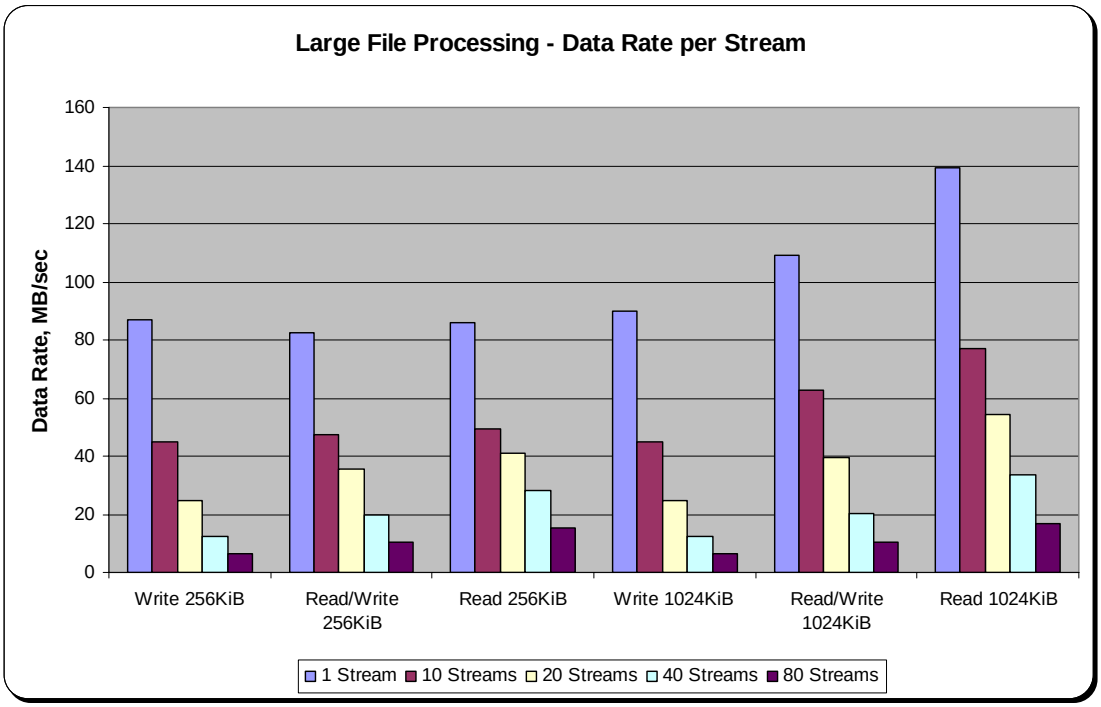


## SPC-2 Large File Processing Average Data Rate per Stream

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 | 10 Streams | 20 Streams | 40 Streams | 80 Streams |
|---|---|---|---|---|---|
| Write 256KiB | 86.71 | 45.16 | 24.58 | 12.17 | 6.52 |
| Read/Write 256KiB | 82.50 | 47.65 | 35.37 | 19.91 | 10.13 |
| Read 256KiB | 85.98 | 49.24 | 41.15 | 27.93 | 15.54 |
| Write 1024KiB | 90.05 | 44.95 | 24.57 | 12.29 | 6.48 |
| Read/Write 1024KiB | 109.12 | 62.92 | 39.67 | 20.02 | 10.16 |
| Read 1024KiB | 139.36 | 76.98 | 54.19 | 33.59 | 16.69 |

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



## Large File Processing Test – WRITE ONLY Test Phase

*Clause 10.6.8.1.1*

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

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

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

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

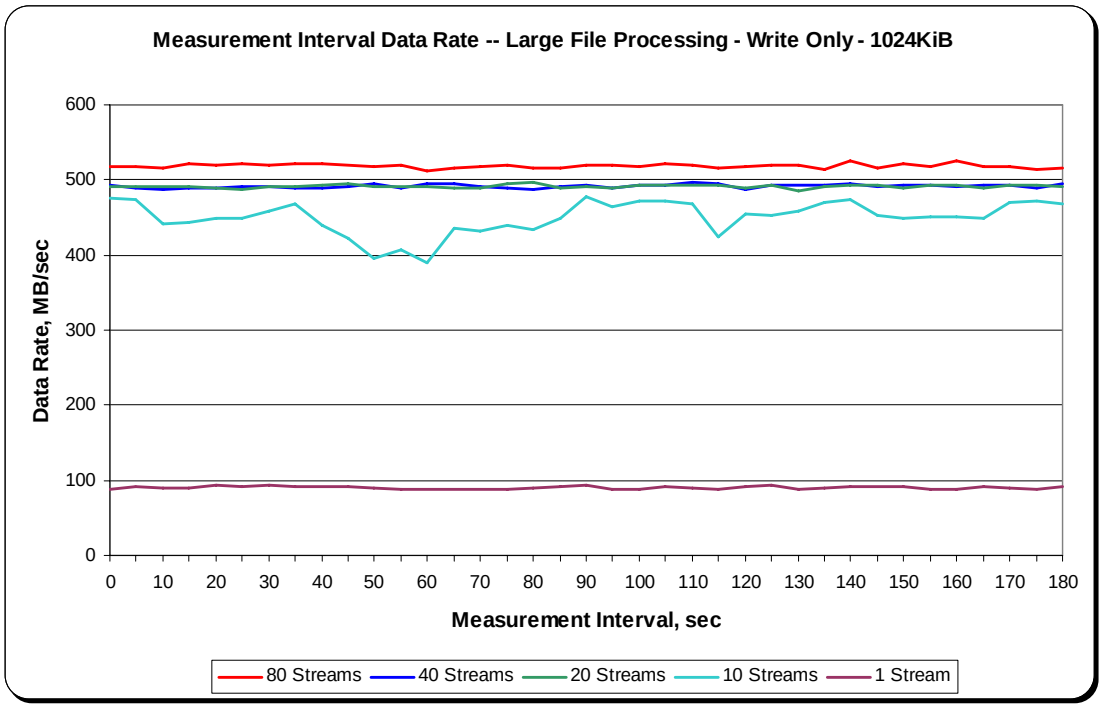
| TR1 | 80 Streams | | | TR2 | 40 Streams | | | TR3 | 20 Streams | | | TR4 | 10 Streams | | | TR5 | 1 Stream | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Test Run Sequence Time | Data Rate, MB/sec | Data Rate / Stream, MB/sec | Response Time, ms | Test Run 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 | 134.01 | 22.33 | 17.18 | 0:07:00 | 66.27 | 66.27 | 11.87 | 0:14:00 | 120.38 | 30.09 | 14.30 | 0:21:00 | 93.74 | 46.87 | 12.32 | 0:28:00 | 70.25 | 70.25 | 11.18 |
| 0:00:05 | 297.80 | 19.85 | 39.32 | 0:07:05 | 171.76 | 34.35 | 15.26 | 0:14:05 | 266.76 | 44.46 | 19.39 | 0:21:05 | 279.97 | 55.99 | 15.23 | 0:28:05 | 91.23 | 91.23 | 11.50 |
| 0:00:10 | 333.87 | 15.18 | 59.81 | 0:07:10 | 339.32 | 30.85 | 26.02 | 0:14:10 | 393.43 | 49.18 | 19.53 | 0:21:10 | 331.35 | 66.27 | 15.77 | 0:28:10 | 89.97 | 89.97 | 11.66 |
| 0:00:15 | 483.18 | 16.11 | 56.89 | 0:07:15 | 408.32 | 29.17 | 31.08 | 0:14:15 | 416.70 | 52.09 | 20.08 | 0:21:15 | 386.51 | 55.22 | 17.05 | 0:28:15 | 89.34 | 89.34 | 11.71 |
| 0:00:20 | 500.80 | 13.54 | 67.65 | 0:07:20 | 465.57 | 27.39 | 32.23 | 0:14:20 | 428.87 | 47.65 | 20.39 | 0:21:20 | 429.08 | 47.68 | 18.87 | 0:28:20 | 92.27 | 92.27 | 11.37 |
| 0:00:25 | 491.15 | 11.69 | 85.53 | 0:07:25 | 500.17 | 25.01 | 38.62 | 0:14:25 | 478.57 | 34.18 | 27.19 | 0:21:25 | 461.58 | 51.29 | 20.42 | 0:28:25 | 88.08 | 88.08 | 11.87 |
| 0:00:30 | 499.33 | 10.40 | 95.53 | 0:07:30 | 495.56 | 23.60 | 42.38 | 0:14:30 | 475.63 | 33.97 | 30.83 | 0:21:30 | 462.00 | 46.20 | 22.09 | 0:28:30 | 87.66 | 87.66 | 11.96 |
| 0:00:35 | 493.25 | 9.67 | 106.11 | 0:07:35 | 500.59 | 21.76 | 44.80 | 0:14:35 | 473.12 | 33.79 | 31.04 | 0:21:35 | 451.94 | 45.19 | 23.18 | 0:28:35 | 90.39 | 90.39 | 11.60 |
| 0:00:40 | 495.98 | 8.70 | 113.55 | 0:07:40 | 501.64 | 20.90 | 49.15 | 0:14:40 | 472.91 | 33.78 | 30.98 | 0:21:40 | 451.31 | 45.13 | 23.23 | 0:28:40 | 91.44 | 91.44 | 11.46 |
| 0:00:45 | 483.81 | 7.93 | 126.82 | 0:07:45 | 487.59 | 19.50 | 52.24 | 0:14:45 | 471.86 | 33.70 | 31.16 | 0:21:45 | 450.26 | 45.03 | 23.25 | 0:28:45 | 92.48 | 92.48 | 11.32 |
| 0:00:50 | 499.96 | 7.69 | 132.87 | 0:07:50 | 492.20 | 15.88 | 55.96 | 0:14:50 | 474.38 | 31.63 | 31.54 | 0:21:50 | 451.94 | 45.19 | 23.17 | 0:28:50 | 91.86 | 91.86 | 11.41 |
| 0:00:55 | 497.03 | 7.42 | 138.15 | 0:07:55 | 488.64 | 14.81 | 68.18 | 0:14:55 | 473.12 | 29.57 | 34.44 | 0:21:55 | 446.27 | 44.63 | 23.49 | 0:28:55 | 87.66 | 87.66 | 11.96 |
| 0:01:00 | 503.53 | 7.19 | 142.97 | 0:08:00 | 485.49 | 14.28 | 73.00 | 0:15:00 | 491.36 | 28.90 | 36.09 | 0:22:00 | 450.89 | 45.09 | 23.23 | 0:29:00 | 87.66 | 87.66 | 11.96 |
| 0:01:05 | 508.98 | 6.97 | 147.09 | 0:08:05 | 485.49 | 13.87 | 74.01 | 0:15:05 | 493.04 | 29.00 | 36.12 | 0:22:05 | 444.18 | 44.42 | 23.64 | 0:29:05 | 89.55 | 89.55 | 11.69 |
| 0:01:10 | 508.35 | 6.78 | 152.69 | 0:08:10 | 481.51 | 13.38 | 78.35 | 0:15:10 | 489.27 | 27.18 | 36.54 | 0:22:10 | 450.26 | 45.03 | 23.26 | 0:29:10 | 91.86 | 91.86 | 11.40 |
| 0:01:15 | 517.16 | 6.72 | 154.76 | 0:08:15 | 488.64 | 12.22 | 81.97 | 0:15:15 | 483.18 | 26.84 | 38.99 | 0:22:15 | 446.48 | 44.65 | 23.47 | 0:29:15 | 91.86 | 91.86 | 11.42 |
| 0:01:20 | 513.59 | 6.50 | 159.03 | 0:08:20 | 489.06 | 12.23 | 85.87 | 0:15:20 | 489.89 | 24.49 | 40.95 | 0:22:20 | 448.37 | 44.84 | 23.38 | 0:29:20 | 91.23 | 91.23 | 11.47 |
| 0:01:25 | 516.11 | 6.45 | 161.50 | 0:08:25 | 491.36 | 12.28 | 85.14 | 0:15:25 | 488.64 | 24.43 | 42.84 | 0:22:25 | 451.31 | 45.13 | 23.22 | 0:29:25 | 87.87 | 87.87 | 11.94 |
| 0:01:30 | 514.22 | 6.43 | 164.18 | 0:08:30 | 490.52 | 12.26 | 85.56 | 0:15:30 | 487.38 | 24.37 | 43.05 | 0:22:30 | 448.79 | 44.88 | 23.36 | 0:29:30 | 92.27 | 92.27 | 11.36 |
| 0:01:35 | 519.46 | 6.49 | 161.57 | 0:08:35 | 491.57 | 12.29 | 85.12 | 0:15:35 | 492.83 | 24.64 | 42.55 | 0:22:35 | 452.15 | 45.21 | 23.17 | 0:29:35 | 90.81 | 90.81 | 11.54 |
| 0:01:40 | 522.40 | 6.53 | 160.32 | 0:08:40 | 493.04 | 12.33 | 85.05 | 0:15:40 | 494.93 | 24.75 | 42.32 | 0:22:40 | 455.08 | 45.51 | 23.02 | 0:29:40 | 93.53 | 93.53 | 11.20 |
| 0:01:45 | 513.38 | 6.42 | 162.82 | 0:08:45 | 491.57 | 12.29 | 85.49 | 0:15:45 | 490.94 | 24.55 | 42.70 | 0:22:45 | 474.80 | 47.48 | 22.08 | 0:29:45 | 91.86 | 91.86 | 11.42 |
| 0:01:50 | 519.46 | 6.49 | 161.26 | 0:08:50 | 496.19 | 12.40 | 84.36 | 0:15:50 | 489.89 | 24.49 | 42.84 | 0:22:50 | 449.84 | 44.98 | 23.31 | 0:29:50 | 90.81 | 90.81 | 11.53 |
| 0:01:55 | 516.74 | 6.46 | 163.11 | 0:08:55 | 491.57 | 12.29 | 85.48 | 0:15:55 | 490.94 | 24.55 | 42.71 | 0:22:55 | 436.21 | 43.62 | 23.99 | 0:29:55 | 87.66 | 87.66 | 11.96 |
| 0:02:00 | 519.05 | 6.49 | 161.29 | 0:09:00 | 487.38 | 12.18 | 85.88 | 0:16:00 | 494.93 | 24.75 | 42.32 | 0:23:00 | 445.85 | 44.59 | 23.53 | 0:30:00 | 88.08 | 88.08 | 11.87 |
| 0:02:05 | 519.25 | 6.49 | 161.81 | 0:09:05 | 490.10 | 12.25 | 85.65 | 0:16:05 | 487.59 | 24.38 | 42.99 | 0:23:05 | 462.63 | 46.26 | 22.64 | 0:30:05 | 92.69 | 92.69 | 11.33 |
| 0:02:10 | 518.00 | 6.47 | 161.70 | 0:09:10 | 487.17 | 12.18 | 86.12 | 0:16:10 | 492.20 | 24.61 | 42.61 | 0:23:10 | 455.29 | 45.53 | 23.03 | 0:30:10 | 92.06 | 92.06 | 11.36 |
| 0:02:15 | 512.96 | 6.41 | 163.08 | 0:09:15 | 494.30 | 12.36 | 84.87 | 0:16:15 | 492.41 | 24.62 | 42.56 | 0:23:15 | 439.14 | 43.91 | 23.87 | 0:30:15 | 91.02 | 91.02 | 11.52 |
| 0:02:20 | 519.88 | 6.50 | 161.30 | 0:09:20 | 486.54 | 12.16 | 86.20 | 0:16:20 | 494.51 | 24.73 | 42.39 | 0:23:20 | 456.34 | 45.63 | 22.95 | 0:30:20 | 91.86 | 91.86 | 11.39 |
| 0:02:25 | 520.93 | 6.51 | 161.21 | 0:09:25 | 488.85 | 12.22 | 85.60 | 0:16:25 | 495.77 | 24.79 | 42.32 | 0:23:25 | 458.86 | 45.89 | 22.84 | 0:30:25 | 91.44 | 91.44 | 11.48 |
| 0:02:30 | 518.63 | 6.48 | 161.38 | 0:09:30 | 493.88 | 12.35 | 85.08 | 0:16:30 | 491.99 | 24.60 | 42.58 | 0:23:30 | 457.81 | 45.78 | 22.88 | 0:30:30 | 87.87 | 87.87 | 11.91 |
| 0:02:35 | 516.53 | 6.46 | 163.09 | 0:09:35 | 493.46 | 12.34 | 85.10 | 0:16:35 | 490.94 | 24.55 | 42.66 | 0:23:35 | 447.74 | 44.77 | 23.39 | 0:30:35 | 88.08 | 88.08 | 11.90 |
| 0:02:40 | 516.95 | 6.46 | 162.16 | 0:09:40 | 493.46 | 12.34 | 84.97 | 0:16:40 | 494.93 | 24.75 | 42.45 | 0:23:40 | 451.31 | 45.13 | 23.22 | 0:30:40 | 87.66 | 87.66 | 11.96 |
| 0:02:45 | 520.30 | 6.50 | 161.29 | 0:09:45 | 493.88 | 12.35 | 84.92 | 0:16:45 | 495.35 | 24.77 | 42.30 | 0:23:45 | 466.83 | 46.68 | 22.47 | 0:30:45 | 88.29 | 88.29 | 11.88 |
| 0:02:50 | 516.74 | 6.46 | 161.73 | 0:09:50 | 493.25 | 12.33 | 85.05 | 0:16:50 | 489.06 | 24.45 | 42.81 | 0:23:50 | 475.84 | 47.58 | 22.03 | 0:30:50 | 87.66 | 87.66 | 11.94 |
| 0:02:55 | 520.72 | 6.51 | 161.45 | 0:09:55 | 491.36 | 12.28 | 85.17 | 0:16:55 | 492.20 | 24.61 | 42.61 | 0:23:55 | 472.91 | 47.29 | 22.12 | 0:30:55 | 87.45 | 87.45 | 11.97 |

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

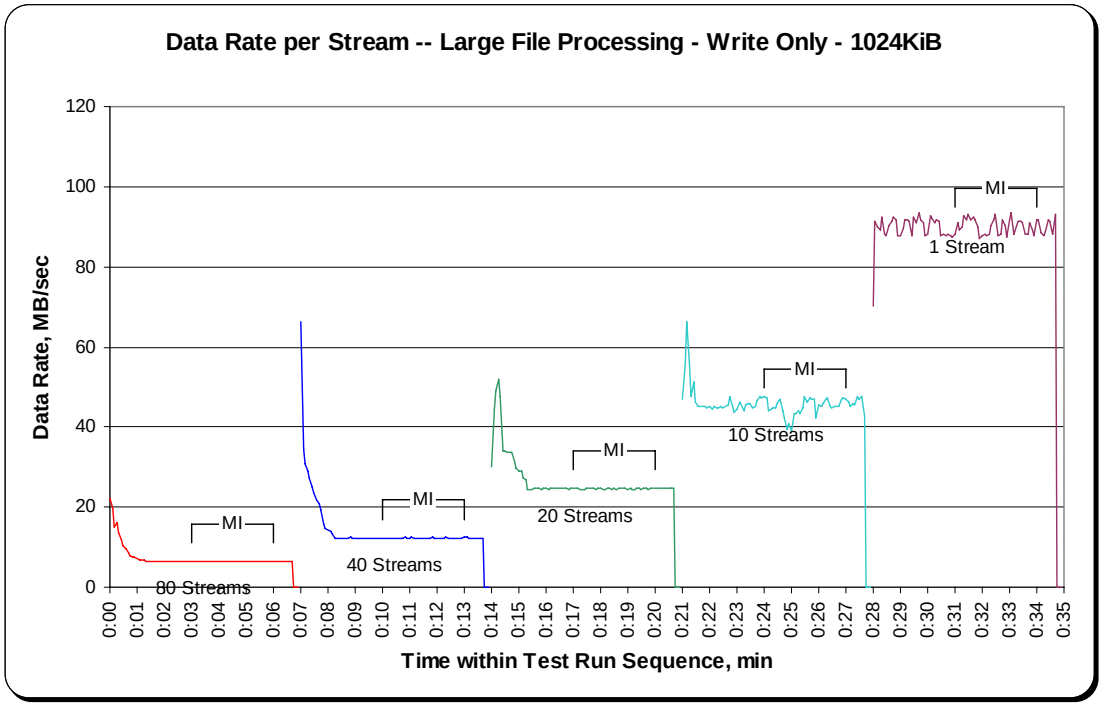
| TR1 | 80 Streams | | | TR2 | 40 Streams | | | TR3 | 20 Streams | | | TR4 | 10 Streams | | | TR5 | 1 Stream | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Test Run Sequence Time | Data Rate, MB/sec | Data Rate / Stream, MB/sec | Response Time, ms | Test Run 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 | 517.16 | 6.46 | 161.73 | 0:10:00 | 492.83 | 12.32 | 85.22 | 0:17:00 | 490.94 | 24.55 | 42.75 | 0:24:00 | 476.05 | 47.61 | 22.05 | 0:31:00 | 88.29 | 88.29 | 11.89 |
| 0:03:05 | 517.58 | 6.47 | 162.27 | 0:10:05 | 489.27 | 12.23 | 85.51 | 0:17:05 | 490.94 | 24.55 | 42.67 | 0:24:05 | 473.96 | 47.40 | 22.09 | 0:31:05 | 90.81 | 90.81 | 11.52 |
| 0:03:10 | 516.11 | 6.45 | 162.65 | 0:10:10 | 487.80 | 12.19 | 86.13 | 0:17:10 | 491.15 | 24.56 | 42.66 | 0:24:10 | 441.24 | 44.12 | 23.76 | 0:31:10 | 89.13 | 89.13 | 11.76 |
| 0:03:15 | 520.72 | 6.51 | 161.10 | 0:10:15 | 489.06 | 12.23 | 85.81 | 0:17:15 | 490.73 | 24.54 | 42.75 | 0:24:15 | 443.34 | 44.33 | 23.64 | 0:31:15 | 89.76 | 89.76 | 11.69 |
| 0:03:20 | 519.88 | 6.50 | 161.42 | 0:10:20 | 488.85 | 12.22 | 85.61 | 0:17:20 | 489.06 | 24.45 | 42.84 | 0:24:20 | 448.79 | 44.88 | 23.35 | 0:31:20 | 92.69 | 92.69 | 11.29 |
| 0:03:25 | 521.14 | 6.51 | 160.74 | 0:10:25 | 491.78 | 12.29 | 85.55 | 0:17:25 | 487.80 | 24.39 | 42.98 | 0:24:25 | 448.37 | 44.84 | 23.36 | 0:31:25 | 91.65 | 91.65 | 11.44 |
| 0:03:30 | 519.05 | 6.49 | 161.58 | 0:10:30 | 491.99 | 12.30 | 85.14 | 0:17:30 | 491.36 | 24.57 | 42.66 | 0:24:30 | 458.02 | 45.80 | 22.88 | 0:31:30 | 93.11 | 93.11 | 11.26 |
| 0:03:35 | 521.14 | 6.51 | 160.80 | 0:10:35 | 488.85 | 12.22 | 85.84 | 0:17:35 | 491.99 | 24.60 | 42.64 | 0:24:35 | 468.71 | 46.87 | 22.35 | 0:31:35 | 91.86 | 91.86 | 11.41 |
| 0:03:40 | 521.35 | 6.52 | 160.74 | 0:10:40 | 489.89 | 12.25 | 85.39 | 0:17:40 | 493.04 | 24.65 | 42.49 | 0:24:40 | 439.56 | 43.96 | 23.85 | 0:31:40 | 92.27 | 92.27 | 11.35 |
| 0:03:45 | 519.88 | 6.50 | 161.33 | 0:10:45 | 491.99 | 12.30 | 85.44 | 0:17:45 | 494.09 | 24.70 | 42.38 | 0:24:45 | 421.53 | 42.15 | 24.86 | 0:31:45 | 91.86 | 91.86 | 11.41 |
| 0:03:50 | 516.95 | 6.46 | 162.69 | 0:10:50 | 494.93 | 12.37 | 84.74 | 0:17:50 | 490.31 | 24.52 | 42.82 | 0:24:50 | 394.89 | 39.49 | 26.53 | 0:31:50 | 89.76 | 89.76 | 11.68 |
| 0:03:55 | 520.51 | 6.51 | 161.41 | 0:10:55 | 488.85 | 12.22 | 85.67 | 0:17:55 | 491.57 | 24.58 | 42.62 | 0:24:55 | 406.64 | 40.66 | 25.77 | 0:31:55 | 87.03 | 87.03 | 12.02 |
| 0:04:00 | 512.12 | 6.40 | 163.18 | 0:11:00 | 494.30 | 12.36 | 84.79 | 0:18:00 | 491.78 | 24.59 | 42.62 | 0:25:00 | 390.49 | 39.05 | 26.82 | 0:32:00 | 87.87 | 87.87 | 11.95 |
| 0:04:05 | 516.32 | 6.45 | 162.36 | 0:11:05 | 494.51 | 12.36 | 84.96 | 0:18:05 | 490.10 | 24.51 | 42.81 | 0:25:05 | 434.95 | 43.49 | 24.13 | 0:32:05 | 88.08 | 88.08 | 11.87 |
| 0:04:10 | 518.21 | 6.48 | 162.13 | 0:11:10 | 490.52 | 12.26 | 85.54 | 0:18:10 | 488.85 | 24.44 | 42.82 | 0:25:10 | 432.64 | 43.26 | 24.20 | 0:32:10 | 87.66 | 87.66 | 11.96 |
| 0:04:15 | 519.88 | 6.50 | 161.48 | 0:11:15 | 490.10 | 12.25 | 85.52 | 0:18:15 | 494.30 | 24.71 | 42.50 | 0:25:15 | 438.93 | 43.89 | 23.88 | 0:32:15 | 88.08 | 88.08 | 11.90 |
| 0:04:20 | 516.74 | 6.46 | 162.45 | 0:11:20 | 486.54 | 12.16 | 86.12 | 0:18:20 | 496.61 | 24.83 | 42.15 | 0:25:20 | 433.48 | 43.35 | 24.19 | 0:32:20 | 90.18 | 90.18 | 11.62 |
| 0:04:25 | 515.27 | 6.44 | 162.00 | 0:11:25 | 490.73 | 12.27 | 85.37 | 0:18:25 | 490.10 | 24.51 | 42.81 | 0:25:25 | 449.00 | 44.90 | 23.34 | 0:32:25 | 91.65 | 91.65 | 11.45 |
| 0:04:30 | 519.67 | 6.50 | 161.46 | 0:11:30 | 492.83 | 12.32 | 85.12 | 0:18:30 | 491.99 | 24.60 | 42.60 | 0:25:30 | 477.94 | 47.79 | 21.94 | 0:32:30 | 93.11 | 93.11 | 11.25 |
| 0:04:35 | 519.67 | 6.50 | 161.69 | 0:11:35 | 489.89 | 12.25 | 85.62 | 0:18:35 | 489.27 | 24.46 | 42.86 | 0:25:35 | 463.68 | 46.37 | 22.60 | 0:32:35 | 87.66 | 87.66 | 11.95 |
| 0:04:40 | 518.00 | 6.47 | 162.27 | 0:11:40 | 492.62 | 12.32 | 85.27 | 0:18:40 | 492.20 | 24.61 | 42.53 | 0:25:40 | 471.44 | 47.14 | 22.23 | 0:32:40 | 88.08 | 88.08 | 11.90 |
| 0:04:45 | 520.93 | 6.51 | 161.01 | 0:11:45 | 493.67 | 12.34 | 84.87 | 0:18:45 | 493.25 | 24.66 | 42.54 | 0:25:45 | 471.02 | 47.10 | 22.24 | 0:32:45 | 91.86 | 91.86 | 11.42 |
| 0:04:50 | 520.09 | 6.50 | 161.27 | 0:11:50 | 495.98 | 12.40 | 84.52 | 0:18:50 | 492.41 | 24.62 | 42.59 | 0:25:50 | 468.08 | 46.81 | 22.38 | 0:32:50 | 90.39 | 90.39 | 11.58 |
| 0:04:55 | 516.53 | 6.46 | 161.93 | 0:11:55 | 494.30 | 12.36 | 84.93 | 0:18:55 | 493.67 | 24.68 | 42.40 | 0:25:55 | 423.83 | 42.38 | 24.74 | 0:32:55 | 87.24 | 87.24 | 12.01 |
| 0:05:00 | 518.00 | 6.47 | 161.99 | 0:12:00 | 488.01 | 12.20 | 85.83 | 0:19:00 | 489.27 | 24.46 | 42.87 | 0:26:00 | 454.45 | 45.45 | 23.05 | 0:33:00 | 91.86 | 91.86 | 11.42 |
| 0:05:05 | 519.25 | 6.49 | 161.09 | 0:12:05 | 493.67 | 12.34 | 85.12 | 0:19:05 | 492.41 | 24.62 | 42.58 | 0:26:05 | 452.78 | 45.28 | 23.15 | 0:33:05 | 93.53 | 93.53 | 11.19 |
| 0:05:10 | 520.30 | 6.50 | 161.69 | 0:12:10 | 493.04 | 12.33 | 84.88 | 0:19:10 | 485.49 | 24.27 | 43.18 | 0:26:10 | 458.65 | 45.86 | 22.86 | 0:33:10 | 88.08 | 88.08 | 11.90 |
| 0:05:15 | 513.80 | 6.42 | 163.56 | 0:12:15 | 493.04 | 12.33 | 85.23 | 0:19:15 | 490.31 | 24.52 | 42.78 | 0:26:15 | 470.18 | 47.02 | 22.28 | 0:33:15 | 90.18 | 90.18 | 11.62 |
| 0:05:20 | 525.34 | 6.57 | 159.57 | 0:12:20 | 494.51 | 12.36 | 84.81 | 0:19:20 | 492.62 | 24.63 | 42.53 | 0:26:20 | 474.38 | 47.44 | 22.09 | 0:33:20 | 91.44 | 91.44 | 11.46 |
| 0:05:25 | 515.90 | 6.45 | 162.75 | 0:12:25 | 491.36 | 12.28 | 85.32 | 0:19:25 | 492.83 | 24.64 | 42.56 | 0:26:25 | 452.78 | 45.28 | 23.16 | 0:33:25 | 91.44 | 91.44 | 11.45 |
| 0:05:30 | 520.72 | 6.51 | 161.09 | 0:12:30 | 493.04 | 12.33 | 85.06 | 0:19:30 | 490.10 | 24.51 | 42.81 | 0:26:30 | 448.79 | 44.88 | 23.33 | 0:33:30 | 91.02 | 91.02 | 11.50 |
| 0:05:35 | 518.42 | 6.48 | 161.35 | 0:12:35 | 492.41 | 12.31 | 85.18 | 0:19:35 | 493.88 | 24.69 | 42.40 | 0:26:35 | 450.05 | 45.00 | 23.27 | 0:33:35 | 88.08 | 88.08 | 11.90 |
| 0:05:40 | 526.39 | 6.58 | 160.13 | 0:12:40 | 490.73 | 12.27 | 85.42 | 0:19:40 | 493.25 | 24.66 | 42.54 | 0:26:40 | 450.68 | 45.07 | 23.25 | 0:33:40 | 88.29 | 88.29 | 11.89 |
| 0:05:45 | 517.58 | 6.47 | 161.93 | 0:12:45 | 493.04 | 12.33 | 84.86 | 0:19:45 | 490.10 | 24.51 | 42.79 | 0:26:45 | 449.84 | 44.98 | 23.33 | 0:33:45 | 90.81 | 90.81 | 11.53 |
| 0:05:50 | 517.58 | 6.47 | 161.59 | 0:12:50 | 493.67 | 12.34 | 85.15 | 0:19:50 | 492.83 | 24.64 | 42.48 | 0:26:50 | 470.60 | 47.06 | 22.23 | 0:33:50 | 89.34 | 89.34 | 11.72 |
| 0:05:55 | 514.43 | 6.43 | 162.37 | 0:12:55 | 490.10 | 12.25 | 85.55 | 0:19:55 | 493.25 | 24.66 | 42.54 | 0:26:55 | 471.65 | 47.16 | 22.24 | 0:33:55 | 87.66 | 87.66 | 11.95 |
| 0:06:00 | 515.90 | 6.45 | 163.38 | 0:13:00 | 495.56 | 12.39 | 84.51 | 0:20:00 | 491.15 | 24.56 | 42.67 | 0:27:00 | 468.92 | 46.89 | 22.35 | 0:34:00 | 91.65 | 91.65 | 11.45 |
| 0:06:05 | 513.38 | 6.42 | 163.41 | 0:13:05 | 495.35 | 12.38 | 84.80 | 0:20:05 | 491.15 | 24.56 | 42.69 | 0:27:05 | 460.95 | 46.10 | 22.71 | 0:34:05 | 91.86 | 91.86 | 11.39 |
| 0:06:10 | 518.00 | 6.47 | 161.43 | 0:13:10 | 491.57 | 12.29 | 85.22 | 0:20:10 | 491.78 | 24.59 | 42.62 | 0:27:10 | 452.57 | 45.26 | 23.16 | 0:34:10 | 88.50 | 88.50 | 11.85 |
| 0:06:15 | 520.72 | 6.51 | 161.60 | 0:13:15 | 490.31 | 12.26 | 85.67 | 0:20:15 | 495.35 | 24.77 | 42.33 | 0:27:15 | 459.07 | 45.91 | 22.83 | 0:34:15 | 87.66 | 87.66 | 11.95 |
| 0:06:20 | 515.48 | 6.44 | 162.14 | 0:13:20 | 488.85 | 12.22 | 85.56 | 0:20:20 | 491.57 | 24.58 | 42.66 | 0:27:20 | 455.92 | 45.59 | 22.99 | 0:34:20 | 88.92 | 88.92 | 11.78 |
| 0:06:25 | 521.77 | 6.52 | 160.91 | 0:13:25 | 491.57 | 12.29 | 85.54 | 0:20:25 | 495.14 | 24.76 | 42.28 | 0:27:25 | 478.15 | 47.82 | 21.93 | 0:34:25 | 91.86 | 91.86 | 11.41 |
| 0:06:30 | 518.63 | 6.48 | 161.64 | 0:13:30 | 491.15 | 12.28 | 85.32 | 0:20:30 | 494.51 | 24.73 | 42.44 | 0:27:30 | 469.13 | 46.91 | 22.32 | 0:34:30 | 91.23 | 91.23 | 11.48 |
| 0:06:35 | 518.42 | 6.48 | 161.90 | 0:13:35 | 493.25 | 12.33 | 84.94 | 0:20:35 | 491.36 | 24.57 | 42.64 | 0:27:35 | 476.26 | 47.63 | 21.98 | 0:34:35 | 88.08 | 88.08 | 11.90 |
| 0:06:40 | 520.09 | 6.50 | 161.06 | 0:13:40 | 492.62 | 12.32 | 85.39 | 0:20:40 | 491.78 | 24.59 | 42.60 | 0:27:40 | 424.67 | 42.47 | 24.71 | 0:34:40 | 93.11 | 93.11 | 11.25 |
| 0:06:45 | 208.04 | 0.00 | 138.25 | 0:13:45 | 194.20 | 0.00 | 70.91 | 0:20:45 | 188.74 | 0.00 | 36.59 | 0:27:45 | 156.03 | 0.00 | 21.57 | 0:34:45 | 22.86 | 0.00 | 11.46 |
| 0:06:50 | 0.00 | 0.00 | 0.00 | 0:13:50 | 0.00 | 0.00 | 0.00 | 0:20:50 | 0.00 | 0.00 | 0.00 | 0:27:50 | 0.00 | 0.00 | 0.00 | 0:34:50 | 0.00 | 0.00 | 0.00 |
| 0:06:55 | 0.00 | 0.00 | 0.00 | 0:13:55 | 0.00 | 0.00 | 0.00 | 0:20:55 | 0.00 | 0.00 | 0.00 | 0:27:55 | 0.00 | 0.00 | 0.00 | 0:34:55 | 0.00 | 0.00 | 0.00 |

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

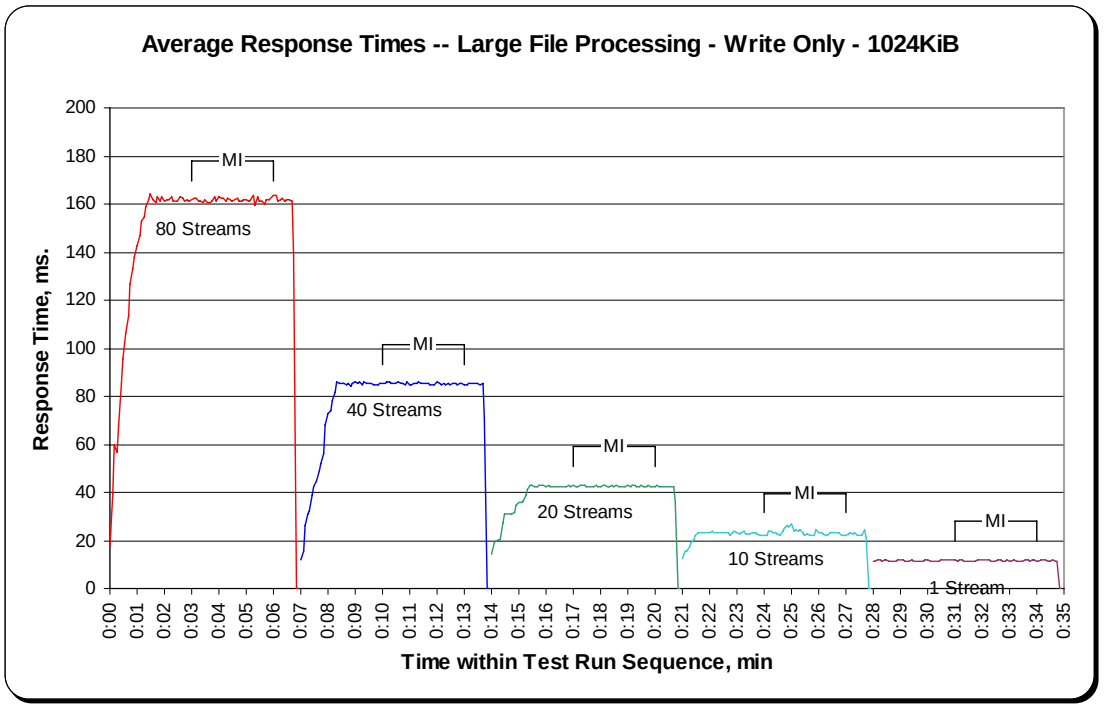
## SPC-2 "Large File Processing/ WRITE ONLY /1024 KiB Transfer Size" Average Data Rate Graph – Measurement Interval (MI) Only



## 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

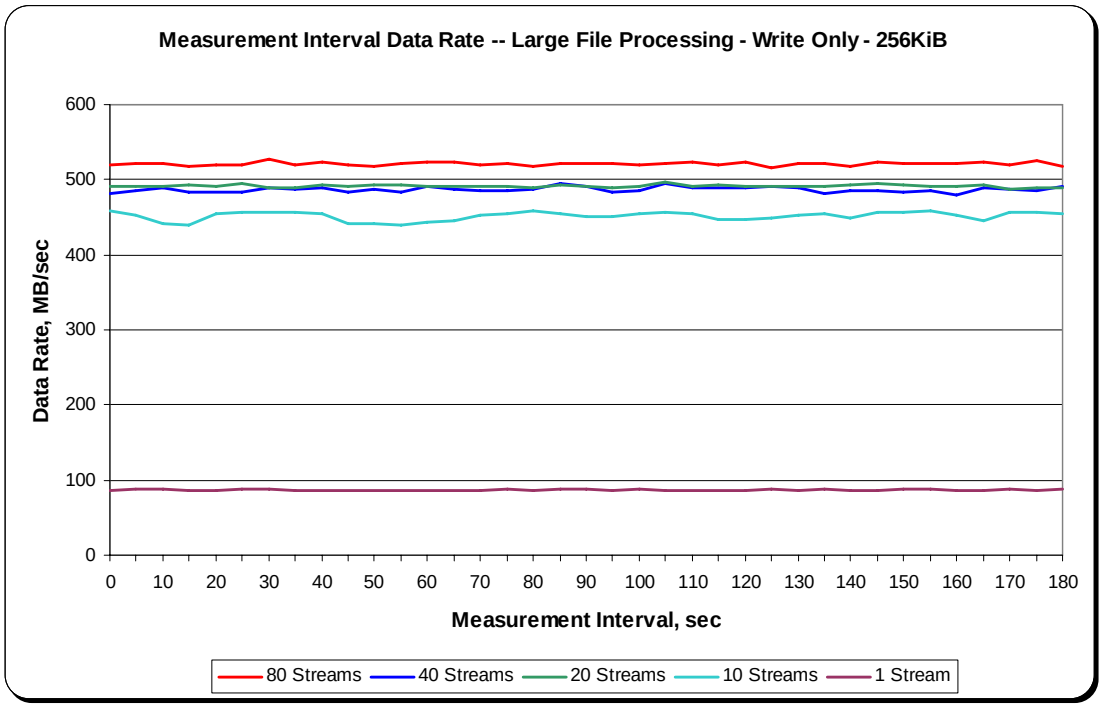
| TR6 | 80 Streams | | | TR7 | 40 Streams | | | TR8 | 20 Streams | | | TR9 | 10 Streams | | | TR10 | 1 Stream | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Test Run Sequence Time | Data Rate, MB/sec | Data Rate / Stream, MB/sec | Response Time, ms | Test Run 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 | 211.08 | 23.45 | 5.64 | 0:07:00 | 95.79 | 19.16 | 3.95 | 0:14:00 | 89.97 | 44.98 | 3.80 | 0:21:00 | 88.55 | 44.28 | 3.80 | 0:28:00 | 65.59 | 65.59 | 3.00 |
| 0:00:05 | 274.52 | 19.61 | 10.75 | 0:07:05 | 305.40 | 33.93 | 5.44 | 0:14:05 | 210.87 | 35.14 | 4.48 | 0:21:05 | 129.13 | 64.57 | 4.05 | 0:28:05 | 87.08 | 87.08 | 3.00 |
| 0:00:10 | 317.46 | 14.43 | 14.81 | 0:07:10 | 344.20 | 28.68 | 7.63 | 0:14:10 | 385.51 | 42.83 | 5.24 | 0:21:10 | 130.23 | 65.12 | 4.02 | 0:28:10 | 87.14 | 87.14 | 3.00 |
| 0:00:15 | 426.88 | 15.81 | 14.52 | 0:07:15 | 452.09 | 30.14 | 8.27 | 0:14:15 | 431.28 | 47.92 | 5.46 | 0:21:15 | 188.80 | 62.93 | 3.96 | 0:28:15 | 86.87 | 86.87 | 3.01 |
| 0:00:20 | 490.37 | 15.82 | 16.00 | 0:07:20 | 464.31 | 30.95 | 8.46 | 0:14:20 | 448.21 | 44.82 | 5.72 | 0:21:20 | 194.20 | 64.73 | 4.03 | 0:28:20 | 87.14 | 87.14 | 3.00 |
| 0:00:25 | 491.94 | 12.61 | 18.22 | 0:07:25 | 465.83 | 29.11 | 8.44 | 0:14:25 | 467.61 | 38.97 | 6.34 | 0:21:25 | 230.69 | 57.67 | 4.23 | 0:28:25 | 86.61 | 86.61 | 3.02 |
| 0:00:30 | 489.27 | 11.93 | 21.18 | 0:07:30 | 488.64 | 25.72 | 9.44 | 0:14:30 | 471.28 | 39.27 | 6.67 | 0:21:30 | 247.46 | 49.49 | 4.28 | 0:28:30 | 86.40 | 86.40 | 3.03 |
| 0:00:35 | 500.17 | 11.11 | 22.51 | 0:07:35 | 496.29 | 24.81 | 10.47 | 0:14:35 | 472.07 | 39.34 | 6.65 | 0:21:35 | 314.78 | 62.96 | 4.16 | 0:28:35 | 87.03 | 87.03 | 3.01 |
| 0:00:40 | 503.05 | 10.27 | 24.51 | 0:07:40 | 505.15 | 21.05 | 11.02 | 0:14:40 | 470.76 | 36.21 | 7.16 | 0:21:40 | 315.41 | 63.08 | 4.15 | 0:28:40 | 87.03 | 87.03 | 3.01 |
| 0:00:45 | 493.41 | 9.49 | 26.32 | 0:07:45 | 492.25 | 18.93 | 12.91 | 0:14:45 | 468.82 | 33.49 | 7.45 | 0:21:45 | 323.12 | 53.85 | 4.17 | 0:28:45 | 87.03 | 87.03 | 3.01 |
| 0:00:50 | 494.56 | 8.83 | 28.25 | 0:07:50 | 482.40 | 16.08 | 15.03 | 0:14:50 | 458.86 | 30.59 | 8.39 | 0:21:50 | 391.75 | 55.96 | 4.58 | 0:28:50 | 87.08 | 87.08 | 3.00 |
| 0:00:55 | 495.03 | 8.25 | 30.43 | 0:07:55 | 480.88 | 14.57 | 17.31 | 0:14:55 | 451.20 | 30.08 | 8.71 | 0:21:55 | 410.62 | 45.62 | 4.99 | 0:28:55 | 86.66 | 86.66 | 3.02 |
| 0:01:00 | 498.34 | 7.55 | 33.22 | 0:08:00 | 484.34 | 13.84 | 18.38 | 0:15:00 | 463.84 | 28.99 | 8.87 | 0:22:00 | 440.77 | 48.97 | 5.34 | 0:29:00 | 86.25 | 86.25 | 3.03 |
| 0:01:05 | 504.16 | 7.31 | 35.25 | 0:08:05 | 483.71 | 13.82 | 18.94 | 0:15:05 | 477.31 | 28.08 | 9.22 | 0:22:05 | 442.50 | 49.17 | 5.33 | 0:29:05 | 86.46 | 86.46 | 3.03 |
| 0:01:10 | 512.39 | 7.02 | 36.37 | 0:08:10 | 485.44 | 13.48 | 19.34 | 0:15:10 | 485.02 | 25.53 | 10.07 | 0:22:10 | 440.77 | 44.08 | 5.81 | 0:29:10 | 86.98 | 86.98 | 3.01 |
| 0:01:15 | 515.64 | 7.06 | 37.10 | 0:08:15 | 483.03 | 13.05 | 19.65 | 0:15:15 | 487.01 | 24.35 | 10.53 | 0:22:15 | 441.19 | 44.12 | 5.93 | 0:29:15 | 87.08 | 87.08 | 3.00 |
| 0:01:20 | 515.17 | 6.87 | 37.63 | 0:08:20 | 491.26 | 13.28 | 19.74 | 0:15:20 | 490.73 | 24.54 | 10.68 | 0:22:20 | 442.24 | 44.22 | 5.92 | 0:29:20 | 86.72 | 86.72 | 3.02 |
| 0:01:25 | 522.45 | 6.53 | 39.23 | 0:08:25 | 489.48 | 12.24 | 20.31 | 0:15:25 | 493.62 | 24.68 | 10.61 | 0:22:25 | 443.34 | 44.33 | 5.91 | 0:29:25 | 86.98 | 86.98 | 3.01 |
| 0:01:30 | 525.44 | 6.57 | 39.91 | 0:08:30 | 485.39 | 12.13 | 21.61 | 0:15:30 | 486.12 | 24.31 | 10.78 | 0:22:30 | 442.24 | 44.22 | 5.92 | 0:29:30 | 86.35 | 86.35 | 3.03 |
| 0:01:35 | 515.95 | 6.45 | 40.65 | 0:08:35 | 486.80 | 12.17 | 21.51 | 0:15:35 | 493.46 | 24.67 | 10.62 | 0:22:35 | 442.97 | 44.30 | 5.91 | 0:29:35 | 86.72 | 86.72 | 3.02 |
| 0:01:40 | 509.66 | 6.37 | 41.13 | 0:08:40 | 490.89 | 12.27 | 21.36 | 0:15:40 | 492.04 | 24.60 | 10.65 | 0:22:40 | 440.40 | 44.04 | 5.94 | 0:29:40 | 86.98 | 86.98 | 3.01 |
| 0:01:45 | 523.34 | 6.54 | 40.06 | 0:08:45 | 487.59 | 12.19 | 21.50 | 0:15:45 | 490.58 | 24.53 | 10.68 | 0:22:45 | 442.34 | 44.23 | 5.92 | 0:29:45 | 87.08 | 87.08 | 3.00 |
| 0:01:50 | 518.05 | 6.48 | 40.46 | 0:08:50 | 487.54 | 12.19 | 21.51 | 0:15:50 | 491.21 | 24.56 | 10.66 | 0:22:50 | 439.77 | 43.98 | 5.95 | 0:29:50 | 86.40 | 86.40 | 3.03 |
| 0:01:55 | 521.56 | 6.52 | 40.18 | 0:08:55 | 488.69 | 12.22 | 21.45 | 0:15:55 | 491.73 | 24.59 | 10.65 | 0:22:55 | 440.40 | 44.04 | 5.95 | 0:29:55 | 86.56 | 86.56 | 3.02 |
| 0:02:00 | 523.66 | 6.55 | 40.08 | 0:09:00 | 488.22 | 12.21 | 21.47 | 0:16:00 | 494.51 | 24.73 | 10.60 | 0:23:00 | 440.56 | 44.06 | 5.94 | 0:30:00 | 86.93 | 86.93 | 3.01 |
| 0:02:05 | 523.82 | 6.55 | 40.01 | 0:09:05 | 487.59 | 12.19 | 21.49 | 0:16:05 | 490.42 | 24.52 | 10.69 | 0:23:05 | 443.34 | 44.33 | 5.91 | 0:30:05 | 86.93 | 86.93 | 3.01 |
| 0:02:10 | 523.55 | 6.54 | 40.08 | 0:09:10 | 477.99 | 11.95 | 21.94 | 0:16:10 | 493.41 | 24.67 | 10.61 | 0:23:10 | 449.47 | 44.95 | 5.82 | 0:30:10 | 87.03 | 87.03 | 3.01 |
| 0:02:15 | 520.41 | 6.51 | 40.25 | 0:09:15 | 490.94 | 12.27 | 21.34 | 0:16:15 | 491.36 | 24.57 | 10.66 | 0:23:15 | 453.35 | 45.34 | 5.78 | 0:30:15 | 86.56 | 86.56 | 3.02 |
| 0:02:20 | 523.97 | 6.55 | 40.06 | 0:09:20 | 484.02 | 12.10 | 21.65 | 0:16:20 | 487.48 | 24.37 | 10.75 | 0:23:20 | 446.64 | 44.66 | 5.86 | 0:30:20 | 86.46 | 86.46 | 3.03 |
| 0:02:25 | 516.48 | 6.46 | 40.57 | 0:09:25 | 480.61 | 12.02 | 21.80 | 0:16:25 | 489.89 | 24.49 | 10.69 | 0:23:25 | 445.85 | 44.59 | 5.87 | 0:30:25 | 87.08 | 87.08 | 3.00 |
| 0:02:30 | 516.53 | 6.46 | 40.60 | 0:09:30 | 485.33 | 12.13 | 21.60 | 0:16:30 | 491.15 | 24.56 | 10.67 | 0:23:30 | 452.62 | 45.26 | 5.79 | 0:30:30 | 86.93 | 86.93 | 3.01 |
| 0:02:35 | 524.66 | 6.56 | 39.99 | 0:09:35 | 482.03 | 12.05 | 21.75 | 0:16:35 | 492.99 | 24.65 | 10.62 | 0:23:35 | 446.54 | 44.65 | 5.86 | 0:30:35 | 87.03 | 87.03 | 3.01 |
| 0:02:40 | 519.78 | 6.50 | 40.33 | 0:09:40 | 485.75 | 12.14 | 21.56 | 0:16:40 | 492.36 | 24.62 | 10.64 | 0:23:40 | 440.66 | 44.07 | 5.94 | 0:30:40 | 86.98 | 86.98 | 3.01 |
| 0:02:45 | 518.21 | 6.48 | 40.44 | 0:09:45 | 486.12 | 12.15 | 21.58 | 0:16:45 | 491.52 | 24.58 | 10.66 | 0:23:45 | 456.76 | 45.68 | 5.73 | 0:30:45 | 86.35 | 86.35 | 3.03 |
| 0:02:50 | 519.20 | 6.49 | 40.38 | 0:09:50 | 482.24 | 12.06 | 21.73 | 0:16:50 | 490.52 | 24.53 | 10.68 | 0:23:50 | 456.86 | 45.69 | 5.73 | 0:30:50 | 87.08 | 87.08 | 3.00 |
| 0:02:55 | 529.01 | 6.61 | 39.64 | 0:09:55 | 482.08 | 12.05 | 21.73 | 0:16:55 | 491.10 | 24.56 | 10.67 | 0:23:55 | 455.87 | 45.59 | 5.74 | 0:30:55 | 86.30 | 86.30 | 3.03 |

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

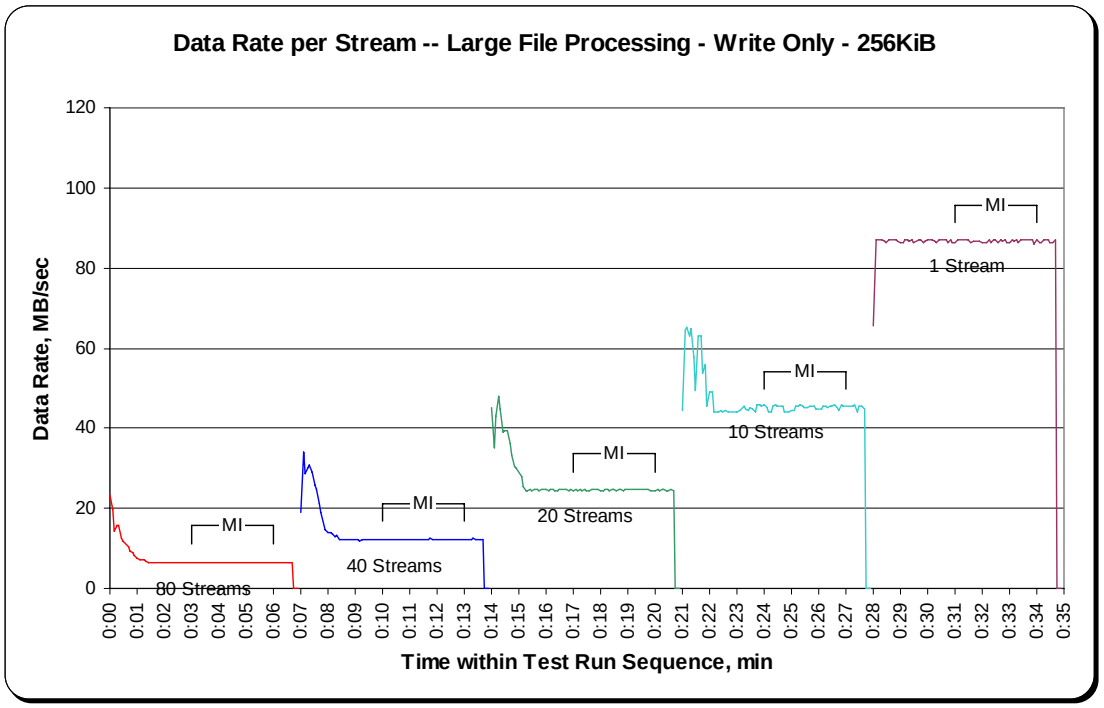
| TR6 | 80 Streams | | | TR7 | 40 Streams | | | TR8 | 20 Streams | | | TR9 | 10 Streams | | | TR10 | 1 Stream | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Test Run Sequence Time | Data Rate, MB/sec | Data Rate / Stream, MB/sec | Response Time, ms | Test Run 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 |
| 0:03:00 | 518.94 | 6.49 | 40.40 | 0:10:00 | 481.35 | 12.03 | 21.78 | 0:17:00 | 490.58 | 24.53 | 10.68 | 0:24:00 | 458.38 | 45.84 | 5.71 | 0:31:00 | 86.40 | 86.40 | 3.03 |
| 0:03:05 | 520.93 | 6.51 | 40.24 | 0:10:05 | 485.18 | 12.13 | 21.60 | 0:17:05 | 491.99 | 24.60 | 10.65 | 0:24:05 | 452.51 | 45.25 | 5.79 | 0:31:05 | 86.98 | 86.98 | 3.01 |
| 0:03:10 | 521.82 | 6.52 | 40.20 | 0:10:10 | 490.10 | 12.25 | 21.38 | 0:17:10 | 490.47 | 24.52 | 10.68 | 0:24:10 | 440.87 | 44.09 | 5.94 | 0:31:10 | 86.98 | 86.98 | 3.01 |
| 0:03:15 | 518.42 | 6.48 | 40.43 | 0:10:15 | 482.50 | 12.06 | 21.73 | 0:17:15 | 493.25 | 24.66 | 10.62 | 0:24:15 | 439.41 | 43.94 | 5.96 | 0:31:15 | 86.93 | 86.93 | 3.01 |
| 0:03:20 | 520.46 | 6.51 | 40.28 | 0:10:20 | 484.18 | 12.10 | 21.65 | 0:17:20 | 490.21 | 24.51 | 10.69 | 0:24:20 | 455.13 | 45.51 | 5.75 | 0:31:20 | 86.87 | 86.87 | 3.01 |
| 0:03:25 | 519.31 | 6.49 | 40.38 | 0:10:25 | 483.66 | 12.09 | 21.69 | 0:17:25 | 495.14 | 24.76 | 10.58 | 0:24:25 | 457.23 | 45.72 | 5.73 | 0:31:25 | 87.08 | 87.08 | 3.00 |
| 0:03:30 | 527.75 | 6.60 | 39.72 | 0:10:30 | 489.37 | 12.23 | 21.41 | 0:17:30 | 490.10 | 24.51 | 10.69 | 0:24:30 | 456.71 | 45.67 | 5.73 | 0:31:30 | 87.08 | 87.08 | 3.00 |
| 0:03:35 | 519.46 | 6.49 | 40.37 | 0:10:35 | 487.85 | 12.20 | 21.49 | 0:17:35 | 488.85 | 24.44 | 10.72 | 0:24:35 | 456.08 | 45.61 | 5.74 | 0:31:35 | 86.40 | 86.40 | 3.03 |
| 0:03:40 | 523.66 | 6.55 | 40.02 | 0:10:40 | 489.16 | 12.23 | 21.44 | 0:17:40 | 492.94 | 24.65 | 10.63 | 0:24:40 | 455.34 | 45.53 | 5.75 | 0:31:40 | 86.51 | 86.51 | 3.02 |
| 0:03:45 | 519.57 | 6.49 | 40.41 | 0:10:45 | 482.66 | 12.07 | 21.70 | 0:17:45 | 491.78 | 24.59 | 10.65 | 0:24:45 | 440.45 | 44.05 | 5.94 | 0:31:45 | 86.66 | 86.66 | 3.02 |
| 0:03:50 | 518.15 | 6.48 | 40.43 | 0:10:50 | 487.01 | 12.18 | 21.52 | 0:17:50 | 492.57 | 24.63 | 10.63 | 0:24:50 | 442.03 | 44.20 | 5.92 | 0:31:50 | 86.77 | 86.77 | 3.01 |
| 0:03:55 | 521.51 | 6.52 | 40.19 | 0:10:55 | 482.61 | 12.07 | 21.73 | 0:17:55 | 492.04 | 24.60 | 10.65 | 0:24:55 | 438.88 | 43.89 | 5.97 | 0:31:55 | 86.56 | 86.56 | 3.02 |
| 0:04:00 | 523.87 | 6.55 | 40.03 | 0:11:00 | 490.79 | 12.27 | 21.36 | 0:18:00 | 490.37 | 24.52 | 10.68 | 0:25:00 | 442.39 | 44.24 | 5.92 | 0:32:00 | 86.40 | 86.40 | 3.03 |
| 0:04:05 | 523.45 | 6.54 | 40.05 | 0:11:05 | 487.22 | 12.18 | 21.52 | 0:18:05 | 490.31 | 24.52 | 10.69 | 0:25:05 | 444.44 | 44.44 | 5.89 | 0:32:05 | 86.46 | 86.46 | 3.03 |
| 0:04:10 | 520.20 | 6.50 | 40.33 | 0:11:10 | 486.12 | 12.15 | 21.56 | 0:18:10 | 491.73 | 24.59 | 10.66 | 0:25:10 | 453.14 | 45.31 | 5.78 | 0:32:10 | 86.40 | 86.40 | 3.03 |
| 0:04:15 | 522.24 | 6.53 | 40.12 | 0:11:15 | 485.70 | 12.14 | 21.58 | 0:18:15 | 491.26 | 24.56 | 10.66 | 0:25:15 | 453.93 | 45.39 | 5.77 | 0:32:15 | 87.03 | 87.03 | 3.01 |
| 0:04:20 | 517.37 | 6.47 | 40.54 | 0:11:20 | 487.33 | 12.18 | 21.50 | 0:18:20 | 488.58 | 24.43 | 10.72 | 0:25:20 | 457.70 | 45.77 | 5.72 | 0:32:20 | 86.40 | 86.40 | 3.03 |
| 0:04:25 | 522.24 | 6.53 | 40.15 | 0:11:25 | 494.30 | 12.36 | 21.23 | 0:18:25 | 492.04 | 24.60 | 10.65 | 0:25:25 | 455.29 | 45.53 | 5.75 | 0:32:25 | 87.03 | 87.03 | 3.01 |
| 0:04:30 | 521.04 | 6.51 | 40.26 | 0:11:30 | 491.52 | 12.29 | 21.31 | 0:18:30 | 491.99 | 24.60 | 10.65 | 0:25:30 | 451.67 | 45.17 | 5.80 | 0:32:30 | 87.03 | 87.03 | 3.01 |
| 0:04:35 | 521.88 | 6.52 | 40.15 | 0:11:35 | 483.55 | 12.09 | 21.67 | 0:18:35 | 489.74 | 24.49 | 10.70 | 0:25:35 | 451.20 | 45.12 | 5.80 | 0:32:35 | 86.30 | 86.30 | 3.03 |
| 0:04:40 | 519.67 | 6.50 | 40.33 | 0:11:40 | 485.96 | 12.15 | 21.58 | 0:18:40 | 491.21 | 24.56 | 10.66 | 0:25:40 | 454.92 | 45.49 | 5.76 | 0:32:40 | 87.03 | 87.03 | 3.01 |
| 0:04:45 | 521.93 | 6.52 | 40.20 | 0:11:45 | 495.35 | 12.38 | 21.17 | 0:18:45 | 496.08 | 24.80 | 10.56 | 0:25:45 | 456.24 | 45.62 | 5.74 | 0:32:45 | 86.51 | 86.51 | 3.02 |
| 0:04:50 | 523.55 | 6.54 | 40.07 | 0:11:50 | 489.00 | 12.23 | 21.44 | 0:18:50 | 490.37 | 24.52 | 10.68 | 0:25:50 | 455.50 | 45.55 | 5.75 | 0:32:50 | 86.87 | 86.87 | 3.01 |
| 0:04:55 | 520.62 | 6.51 | 40.24 | 0:11:55 | 489.16 | 12.23 | 21.42 | 0:18:55 | 493.20 | 24.66 | 10.62 | 0:25:55 | 447.90 | 44.79 | 5.85 | 0:32:55 | 86.19 | 86.19 | 3.03 |
| 0:05:00 | 523.71 | 6.55 | 40.05 | 0:12:00 | 489.74 | 12.24 | 21.41 | 0:19:00 | 491.05 | 24.55 | 10.67 | 0:26:00 | 447.32 | 44.73 | 5.85 | 0:33:00 | 86.30 | 86.30 | 3.03 |
| 0:05:05 | 516.74 | 6.46 | 40.55 | 0:12:05 | 490.37 | 12.26 | 21.38 | 0:19:05 | 491.68 | 24.58 | 10.65 | 0:26:05 | 449.05 | 44.91 | 5.83 | 0:33:05 | 86.98 | 86.98 | 3.01 |
| 0:05:10 | 522.24 | 6.53 | 40.17 | 0:12:10 | 489.48 | 12.24 | 21.41 | 0:19:10 | 491.47 | 24.57 | 10.66 | 0:26:10 | 453.51 | 45.35 | 5.77 | 0:33:10 | 86.51 | 86.51 | 3.02 |
| 0:05:15 | 521.61 | 6.52 | 40.19 | 0:12:15 | 481.51 | 12.04 | 21.77 | 0:19:15 | 491.73 | 24.59 | 10.66 | 0:26:15 | 455.55 | 45.56 | 5.75 | 0:33:15 | 86.98 | 86.98 | 3.01 |
| 0:05:20 | 518.68 | 6.48 | 40.44 | 0:12:20 | 485.60 | 12.14 | 21.58 | 0:19:20 | 492.20 | 24.61 | 10.65 | 0:26:20 | 449.68 | 44.97 | 5.82 | 0:33:20 | 86.35 | 86.35 | 3.03 |
| 0:05:25 | 523.50 | 6.54 | 40.06 | 0:12:25 | 485.60 | 12.14 | 21.60 | 0:19:25 | 494.67 | 24.73 | 10.58 | 0:26:25 | 456.39 | 45.64 | 5.74 | 0:33:25 | 86.87 | 86.87 | 3.01 |
| 0:05:30 | 521.72 | 6.52 | 40.20 | 0:12:30 | 484.02 | 12.10 | 21.65 | 0:19:30 | 493.46 | 24.67 | 10.62 | 0:26:30 | 456.71 | 45.67 | 5.73 | 0:33:30 | 86.98 | 86.98 | 3.01 |
| 0:05:35 | 521.56 | 6.52 | 40.21 | 0:12:35 | 486.17 | 12.15 | 21.57 | 0:19:35 | 491.89 | 24.59 | 10.65 | 0:26:35 | 459.12 | 45.91 | 5.70 | 0:33:35 | 86.98 | 86.98 | 3.01 |
| 0:05:40 | 522.19 | 6.53 | 40.11 | 0:12:40 | 480.51 | 12.01 | 21.82 | 0:19:40 | 491.05 | 24.55 | 10.67 | 0:26:40 | 453.04 | 45.30 | 5.78 | 0:33:40 | 86.93 | 86.93 | 3.01 |
| 0:05:45 | 522.92 | 6.54 | 40.14 | 0:12:45 | 489.79 | 12.24 | 21.40 | 0:19:45 | 493.72 | 24.69 | 10.61 | 0:26:45 | 445.02 | 44.50 | 5.88 | 0:33:45 | 86.87 | 86.87 | 3.01 |
| 0:05:50 | 520.09 | 6.50 | 40.28 | 0:12:50 | 487.38 | 12.18 | 21.50 | 0:19:50 | 487.12 | 24.36 | 10.76 | 0:26:50 | 457.07 | 45.71 | 5.73 | 0:33:50 | 86.98 | 86.98 | 3.01 |
| 0:05:55 | 526.12 | 6.58 | 39.85 | 0:12:55 | 486.28 | 12.16 | 21.54 | 0:19:55 | 489.42 | 24.47 | 10.71 | 0:26:55 | 456.13 | 45.61 | 5.74 | 0:33:55 | 85.83 | 85.83 | 3.05 |
| 0:06:00 | 517.37 | 6.47 | 40.53 | 0:13:00 | 490.37 | 12.26 | 21.39 | 0:20:00 | 489.16 | 24.46 | 10.71 | 0:27:00 | 455.66 | 45.57 | 5.75 | 0:34:00 | 87.03 | 87.03 | 3.00 |
| 0:06:05 | 525.81 | 6.57 | 39.87 | 0:13:05 | 487.80 | 12.19 | 21.50 | 0:20:05 | 491.00 | 24.55 | 10.67 | 0:27:05 | 454.82 | 45.48 | 5.76 | 0:34:05 | 86.19 | 86.19 | 3.04 |
| 0:06:10 | 524.71 | 6.56 | 39.99 | 0:13:10 | 489.06 | 12.23 | 21.42 | 0:20:10 | 488.95 | 24.45 | 10.71 | 0:27:10 | 454.87 | 45.49 | 5.76 | 0:34:10 | 86.35 | 86.35 | 3.03 |
| 0:06:15 | 519.46 | 6.49 | 40.35 | 0:13:15 | 485.33 | 12.13 | 21.60 | 0:20:15 | 492.78 | 24.64 | 10.64 | 0:27:15 | 455.66 | 45.57 | 5.74 | 0:34:15 | 86.87 | 86.87 | 3.01 |
| 0:06:20 | 520.04 | 6.50 | 40.29 | 0:13:20 | 494.77 | 12.37 | 21.19 | 0:20:20 | 491.99 | 24.60 | 10.65 | 0:27:20 | 458.59 | 45.86 | 5.71 | 0:34:20 | 86.98 | 86.98 | 3.01 |
| 0:06:25 | 527.75 | 6.60 | 39.73 | 0:13:25 | 489.42 | 12.24 | 21.40 | 0:20:25 | 488.64 | 24.43 | 10.72 | 0:27:25 | 442.29 | 44.23 | 5.92 | 0:34:25 | 87.08 | 87.08 | 3.00 |
| 0:06:30 | 521.04 | 6.51 | 40.26 | 0:13:30 | 490.79 | 12.27 | 21.37 | 0:20:30 | 489.58 | 24.48 | 10.70 | 0:27:30 | 456.03 | 45.60 | 5.74 | 0:34:30 | 86.46 | 86.46 | 3.03 |
| 0:06:35 | 523.08 | 6.54 | 40.08 | 0:13:35 | 481.66 | 12.04 | 21.75 | 0:20:35 | 493.09 | 24.65 | 10.62 | 0:27:35 | 455.08 | 45.51 | 5.75 | 0:34:35 | 86.35 | 86.35 | 3.03 |
| 0:06:40 | 520.78 | 6.51 | 40.27 | 0:13:40 | 488.01 | 12.20 | 21.48 | 0:20:40 | 490.31 | 24.52 | 10.68 | 0:27:40 | 449.16 | 44.92 | 5.83 | 0:34:40 | 86.93 | 86.93 | 3.01 |
| 0:06:45 | 195.04 | 0.00 | 34.11 | 0:13:45 | 188.53 | 0.00 | 17.73 | 0:20:45 | 182.24 | 0.00 | 9.25 | 0:27:45 | 154.30 | 0.00 | 5.40 | 0:34:45 | 21.50 | 0.00 | 3.03 |
| 0:06:50 | 0.00 | 0.00 | 0.00 | 0:13:50 | 0.00 | 0.00 | 0.00 | 0:20:50 | 0.00 | 0.00 | 0.00 | 0:27:50 | 0.00 | 0.00 | 0.00 | 0:34:50 | 0.00 | 0.00 | 0.00 |
| 0:06:55 | 0.00 | 0.00 | 0.00 | 0:13:55 | 0.00 | 0.00 | 0.00 | 0:20:55 | 0.00 | 0.00 | 0.00 | 0:27:55 | 0.00 | 0.00 | 0.00 | 0:34:55 | 0.00 | 0.00 | 0.00 |

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

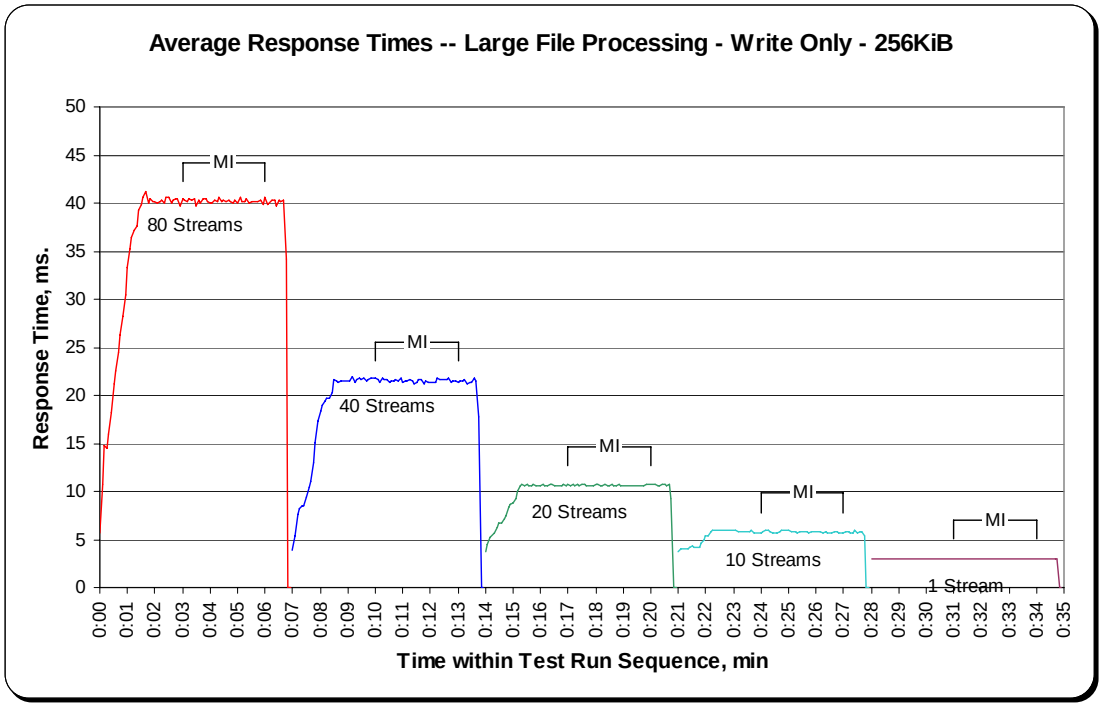
## SPC-2 "Large File Processing/ WRITE ONLY /256 KiB Transfer Size" Average Data Rate Graph – Measurement Interval (MI) Only



## 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.

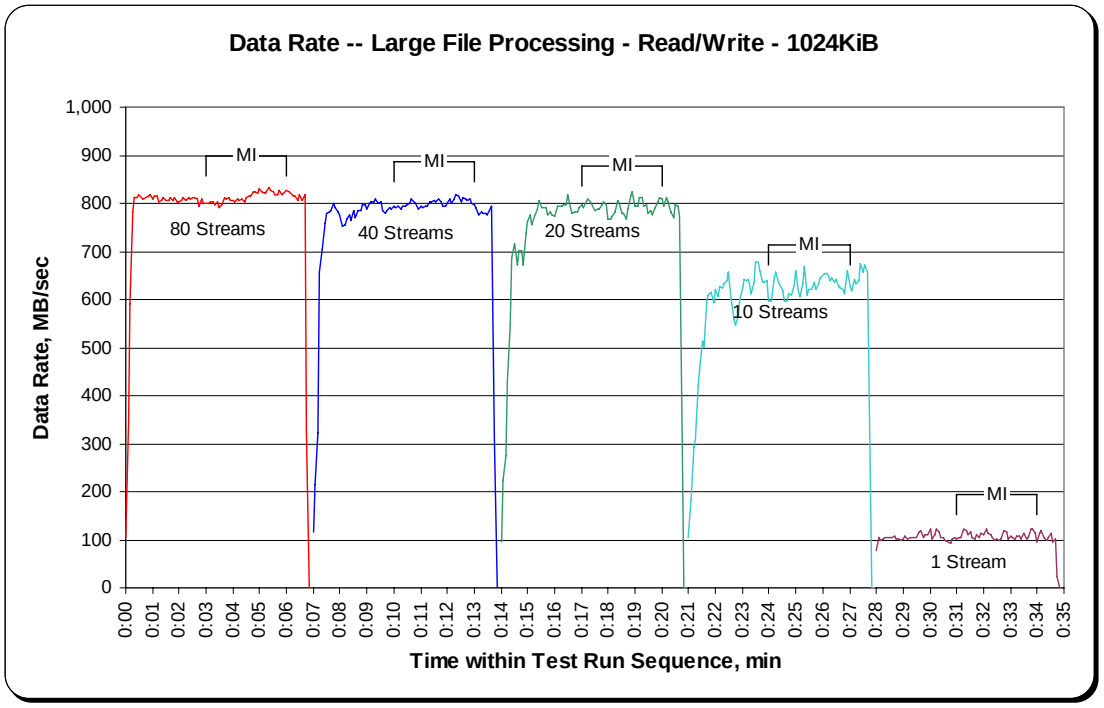
## SPC-2 "Large File Processing/READ-WRITE/1024 KiB Transfer Size" Test Run Data – Ramp-Up Period

| TR11 | 80 Streams | | | TR12 | 40 Streams | | | TR13 | 20 Streams | | | TR14 | 10 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 | 104.86 | 26.21 | 11.15 | 0:07:00 | 115.13 | 38.38 | 11.08 | 0:14:00 | 95.84 | 47.92 | 10.11 | 0:21:00 | 105.49 | 52.74 | 9.99 | 0:28:00 | 77.38 | 77.38 | 10.16 |
| 0:00:05 | 350.22 | 23.35 | 29.08 | 0:07:05 | 215.38 | 71.79 | 14.61 | 0:14:05 | 223.35 | 55.84 | 15.37 | 0:21:05 | 182.03 | 91.02 | 11.50 | 0:28:05 | 103.18 | 103.18 | 10.15 |
| 0:00:10 | 590.14 | 23.61 | 37.01 | 0:07:10 | 321.49 | 32.15 | 17.71 | 0:14:10 | 273.89 | 54.78 | 16.21 | 0:21:10 | 292.55 | 73.14 | 13.18 | 0:28:10 | 98.15 | 98.15 | 10.65 |
| 0:00:15 | 782.03 | 23.00 | 40.09 | 0:07:15 | 656.83 | 43.79 | 21.49 | 0:14:15 | 429.50 | 53.69 | 14.34 | 0:21:15 | 307.44 | 61.49 | 13.71 | 0:28:15 | 100.03 | 100.03 | 10.49 |
| 0:00:20 | 813.07 | 20.33 | 47.91 | 0:07:20 | 703.38 | 41.38 | 23.54 | 0:14:20 | 544.84 | 60.54 | 15.78 | 0:21:20 | 419.64 | 69.94 | 13.92 | 0:28:20 | 104.02 | 104.02 | 10.07 |
| 0:00:25 | 812.02 | 18.04 | 53.60 | 0:07:25 | 758.96 | 39.95 | 25.69 | 0:14:25 | 687.24 | 57.27 | 17.08 | 0:21:25 | 457.39 | 65.34 | 14.98 | 0:28:25 | 103.81 | 103.81 | 10.09 |
| 0:00:30 | 818.52 | 17.42 | 59.73 | 0:07:30 | 778.04 | 35.37 | 26.73 | 0:14:30 | 715.76 | 59.65 | 17.57 | 0:21:30 | 512.54 | 73.22 | 14.30 | 0:28:30 | 105.28 | 105.28 | 9.95 |
| 0:00:35 | 812.23 | 16.24 | 62.16 | 0:07:35 | 782.45 | 31.30 | 32.28 | 0:14:35 | 672.77 | 51.75 | 19.88 | 0:21:35 | 500.80 | 71.54 | 14.66 | 0:28:35 | 103.39 | 103.39 | 10.14 |
| 0:00:40 | 810.34 | 14.47 | 69.54 | 0:07:40 | 785.59 | 31.42 | 33.33 | 0:14:40 | 701.71 | 53.98 | 19.42 | 0:21:40 | 594.96 | 66.11 | 14.70 | 0:28:40 | 106.95 | 106.95 | 9.80 |
| 0:00:45 | 812.23 | 14.50 | 72.22 | 0:07:45 | 798.60 | 30.72 | 34.09 | 0:14:45 | 700.87 | 50.06 | 19.71 | 0:21:45 | 610.06 | 67.78 | 15.45 | 0:28:45 | 101.71 | 101.71 | 10.29 |
| 0:00:50 | 815.58 | 14.06 | 73.72 | 0:07:50 | 792.51 | 29.35 | 34.61 | 0:14:50 | 671.30 | 44.75 | 22.67 | 0:21:50 | 615.51 | 68.39 | 15.33 | 0:28:50 | 100.66 | 100.66 | 10.42 |
| 0:00:55 | 817.26 | 12.57 | 79.39 | 0:07:55 | 780.98 | 25.19 | 38.42 | 0:14:55 | 736.52 | 46.03 | 22.60 | 0:21:55 | 594.33 | 66.04 | 15.87 | 0:28:55 | 98.36 | 98.36 | 10.66 |
| 0:01:00 | 809.92 | 11.57 | 87.54 | 0:08:00 | 774.69 | 24.21 | 43.19 | 0:15:00 | 761.48 | 44.79 | 23.11 | 0:22:00 | 619.92 | 61.99 | 15.65 | 0:29:00 | 102.13 | 102.13 | 10.25 |
| 0:01:05 | 813.69 | 11.15 | 91.98 | 0:08:05 | 752.04 | 22.12 | 46.42 | 0:15:05 | 776.99 | 43.17 | 23.87 | 0:22:05 | 606.71 | 60.67 | 17.23 | 0:29:05 | 106.75 | 106.75 | 9.83 |
| 0:01:10 | 815.79 | 10.73 | 95.03 | 0:08:10 | 756.65 | 21.62 | 47.87 | 0:15:10 | 755.81 | 41.99 | 24.92 | 0:22:10 | 627.47 | 62.75 | 16.73 | 0:29:10 | 101.71 | 101.71 | 10.30 |
| 0:01:15 | 801.74 | 10.15 | 100.55 | 0:08:15 | 766.30 | 21.29 | 48.25 | 0:15:15 | 772.17 | 42.90 | 24.44 | 0:22:15 | 624.95 | 62.50 | 16.77 | 0:29:15 | 104.44 | 104.44 | 10.02 |
| 0:01:20 | 805.31 | 10.19 | 102.65 | 0:08:20 | 777.20 | 19.93 | 48.93 | 0:15:20 | 789.37 | 41.55 | 24.93 | 0:22:20 | 632.50 | 63.25 | 16.56 | 0:29:20 | 105.91 | 105.91 | 9.91 |
| 0:01:25 | 810.55 | 10.13 | 102.39 | 0:08:25 | 765.25 | 19.13 | 54.79 | 0:15:25 | 804.68 | 42.35 | 24.79 | 0:22:25 | 638.58 | 63.86 | 16.42 | 0:29:25 | 105.49 | 105.49 | 9.92 |
| 0:01:30 | 806.98 | 10.09 | 104.02 | 0:08:30 | 783.92 | 19.60 | 53.53 | 0:15:30 | 792.09 | 39.60 | 26.36 | 0:22:30 | 658.09 | 65.81 | 15.91 | 0:29:30 | 104.23 | 104.23 | 10.05 |
| 0:01:35 | 805.94 | 10.07 | 103.74 | 0:08:35 | 769.86 | 19.25 | 54.35 | 0:15:35 | 790.42 | 39.52 | 26.52 | 0:22:35 | 600.83 | 60.08 | 17.44 | 0:29:35 | 115.76 | 115.76 | 9.06 |
| 0:01:40 | 812.65 | 10.16 | 103.56 | 0:08:40 | 786.43 | 19.66 | 53.43 | 0:15:40 | 791.05 | 39.55 | 26.50 | 0:22:40 | 557.42 | 55.74 | 18.80 | 0:29:40 | 118.28 | 118.28 | 8.84 |
| 0:01:45 | 805.52 | 10.07 | 103.94 | 0:08:45 | 784.75 | 19.62 | 53.28 | 0:15:45 | 776.99 | 38.85 | 26.97 | 0:22:45 | 545.05 | 54.50 | 19.23 | 0:29:45 | 104.23 | 104.23 | 10.06 |
| 0:01:50 | 810.76 | 10.13 | 103.70 | 0:08:50 | 797.13 | 19.93 | 52.63 | 0:15:50 | 783.50 | 39.17 | 26.77 | 0:22:50 | 567.28 | 56.73 | 18.47 | 0:29:50 | 110.73 | 110.73 | 9.45 |
| 0:01:55 | 803.63 | 10.05 | 104.28 | 0:08:55 | 796.50 | 19.91 | 52.67 | 0:15:55 | 775.95 | 38.80 | 27.01 | 0:22:55 | 600.20 | 60.02 | 17.49 | 0:29:55 | 110.52 | 110.52 | 9.50 |
| 0:02:00 | 802.79 | 10.03 | 104.52 | 0:09:00 | 787.06 | 19.68 | 53.30 | 0:16:00 | 774.06 | 38.70 | 27.10 | 0:23:00 | 624.53 | 62.45 | 16.76 | 0:30:00 | 121.01 | 121.01 | 8.66 |
| 0:02:05 | 805.31 | 10.07 | 103.97 | 0:09:05 | 799.64 | 19.99 | 52.50 | 0:16:05 | 793.98 | 39.70 | 26.39 | 0:23:05 | 642.99 | 64.30 | 16.31 | 0:30:05 | 101.08 | 101.08 | 10.35 |
| 0:02:10 | 813.28 | 10.17 | 103.31 | 0:09:10 | 804.26 | 20.11 | 52.21 | 0:16:10 | 793.98 | 39.70 | 26.41 | 0:23:10 | 639.42 | 63.94 | 16.39 | 0:30:10 | 109.89 | 109.89 | 9.55 |
| 0:02:15 | 806.56 | 10.08 | 103.99 | 0:09:15 | 804.47 | 20.11 | 52.10 | 0:16:15 | 793.35 | 39.67 | 26.42 | 0:23:15 | 642.78 | 64.28 | 16.31 | 0:30:15 | 121.63 | 121.63 | 8.61 |
| 0:02:20 | 811.81 | 10.15 | 103.24 | 0:09:20 | 809.92 | 20.25 | 51.76 | 0:16:20 | 796.29 | 39.81 | 26.35 | 0:23:20 | 611.11 | 61.11 | 17.15 | 0:30:20 | 115.13 | 115.13 | 9.10 |
| 0:02:25 | 810.34 | 10.13 | 103.60 | 0:09:25 | 800.27 | 20.01 | 52.31 | 0:16:25 | 796.29 | 39.81 | 26.33 | 0:23:25 | 635.23 | 63.52 | 16.51 | 0:30:25 | 103.81 | 103.81 | 10.11 |
| 0:02:30 | 813.28 | 10.17 | 103.23 | 0:09:30 | 802.37 | 20.06 | 52.28 | 0:16:30 | 816.63 | 40.83 | 25.66 | 0:23:30 | 677.17 | 67.72 | 15.47 | 0:30:30 | 104.44 | 104.44 | 10.03 |
| 0:02:35 | 812.02 | 10.15 | 103.16 | 0:09:35 | 786.43 | 19.66 | 53.36 | 0:16:35 | 791.47 | 39.57 | 26.50 | 0:23:35 | 676.75 | 67.68 | 15.49 | 0:30:35 | 98.99 | 98.99 | 10.58 |
| 0:02:40 | 808.87 | 10.11 | 103.85 | 0:09:40 | 780.35 | 19.51 | 53.75 | 0:16:40 | 778.88 | 38.94 | 26.93 | 0:23:40 | 658.93 | 65.89 | 15.92 | 0:30:40 | 96.89 | 96.89 | 10.82 |
| 0:02:45 | 794.61 | 9.93 | 105.62 | 0:09:45 | 784.96 | 19.62 | 53.42 | 0:16:45 | 782.66 | 39.13 | 26.78 | 0:23:45 | 636.28 | 63.63 | 16.46 | 0:30:45 | 91.44 | 91.44 | 11.46 |
| 0:02:50 | 808.45 | 10.11 | 103.53 | 0:09:50 | 790.00 | 19.75 | 53.04 | 0:16:50 | 780.98 | 39.05 | 26.83 | 0:23:50 | 636.28 | 63.63 | 16.48 | 0:30:50 | 102.55 | 102.55 | 10.20 |
| 0:02:55 | 799.85 | 10.00 | 104.84 | 0:09:55 | 789.37 | 19.73 | 53.22 | 0:16:55 | 790.63 | 39.53 | 26.52 | 0:23:55 | 639.84 | 63.98 | 16.37 | 0:30:55 | 104.44 | 104.44 | 10.06 |

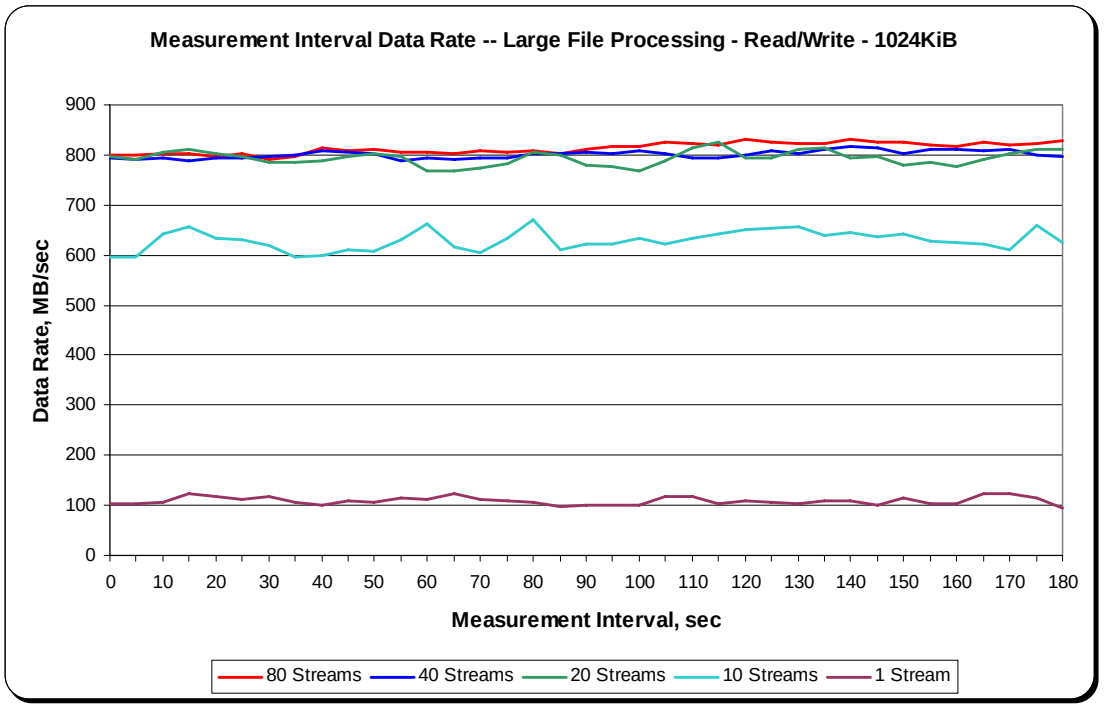
## SPC-2 "Large File Processing/READ-WRITE/1024 KiB Transfer Size" Test Run Data Measurement Interval, Run-Out, and Ramp-Down Periods

| TR11 | 80 Streams | | | TR12 | 40 Streams | | | TR13 | 20 Streams | | | TR14 | 10 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 |
| 0:03:00 | 800.69 | 10.01 | 104.63 | 0:10:00 | 792.72 | 19.82 | 52.91 | 0:17:00 | 796.71 | 39.84 | 26.32 | 0:24:00 | 597.48 | 59.75 | 17.54 | 0:31:00 | 102.97 | 102.97 | 10.18 |
| 0:03:05 | 800.06 | 10.00 | 104.76 | 0:10:05 | 791.88 | 19.80 | 52.91 | 0:17:05 | 790.42 | 39.52 | 26.48 | 0:24:05 | 595.80 | 59.58 | 17.60 | 0:31:05 | 104.23 | 104.23 | 10.05 |
| 0:03:10 | 802.58 | 10.03 | 104.82 | 0:10:10 | 794.61 | 19.87 | 52.71 | 0:17:10 | 804.05 | 40.20 | 26.13 | 0:24:10 | 643.41 | 64.34 | 16.29 | 0:31:10 | 105.07 | 105.07 | 9.96 |
| 0:03:15 | 801.53 | 10.02 | 104.53 | 0:10:15 | 787.90 | 19.70 | 53.31 | 0:17:15 | 810.13 | 40.51 | 25.87 | 0:24:15 | 655.57 | 65.56 | 15.99 | 0:31:15 | 122.89 | 122.89 | 8.54 |
| 0:03:20 | 796.71 | 9.96 | 105.21 | 0:10:20 | 793.98 | 19.85 | 52.79 | 0:17:20 | 801.95 | 40.10 | 26.14 | 0:24:20 | 634.39 | 63.44 | 16.51 | 0:31:20 | 118.70 | 118.70 | 8.82 |
| 0:03:25 | 803.00 | 10.04 | 104.75 | 0:10:25 | 793.35 | 19.83 | 52.89 | 0:17:25 | 796.71 | 39.84 | 26.32 | 0:24:25 | 629.98 | 63.00 | 16.65 | 0:31:25 | 111.15 | 111.15 | 9.42 |
| 0:03:30 | 792.51 | 9.91 | 105.71 | 0:10:30 | 796.29 | 19.91 | 52.68 | 0:17:30 | 784.54 | 39.23 | 26.71 | 0:24:30 | 618.24 | 61.82 | 16.94 | 0:31:30 | 117.44 | 117.44 | 8.93 |
| 0:03:35 | 797.97 | 9.97 | 104.89 | 0:10:35 | 800.06 | 20.00 | 52.40 | 0:17:35 | 786.64 | 39.33 | 26.67 | 0:24:35 | 596.43 | 59.64 | 17.56 | 0:31:35 | 105.70 | 105.70 | 9.92 |
| 0:03:40 | 813.28 | 10.17 | 103.06 | 0:10:40 | 808.66 | 20.22 | 51.84 | 0:17:40 | 787.06 | 39.35 | 26.62 | 0:24:40 | 598.32 | 59.83 | 17.53 | 0:31:40 | 100.03 | 100.03 | 10.48 |
| 0:03:45 | 809.08 | 10.11 | 104.11 | 0:10:45 | 804.05 | 20.10 | 52.15 | 0:17:45 | 797.97 | 39.90 | 26.24 | 0:24:45 | 611.53 | 61.15 | 17.14 | 0:31:45 | 109.05 | 109.05 | 9.61 |
| 0:03:50 | 811.60 | 10.14 | 103.26 | 0:10:50 | 801.32 | 20.03 | 52.33 | 0:17:50 | 803.84 | 40.19 | 26.13 | 0:24:50 | 607.54 | 60.75 | 17.24 | 0:31:50 | 105.70 | 105.70 | 9.89 |
| 0:03:55 | 805.10 | 10.06 | 103.94 | 0:10:55 | 789.37 | 19.73 | 53.09 | 0:17:55 | 796.50 | 39.82 | 26.31 | 0:24:55 | 629.77 | 62.98 | 16.65 | 0:31:55 | 113.46 | 113.46 | 9.24 |
| 0:04:00 | 805.94 | 10.07 | 104.31 | 0:11:00 | 794.40 | 19.86 | 52.95 | 0:18:00 | 767.14 | 38.36 | 27.33 | 0:25:00 | 661.02 | 66.10 | 15.86 | 0:32:00 | 111.57 | 111.57 | 9.40 |
| 0:04:05 | 802.16 | 10.03 | 104.17 | 0:11:05 | 791.47 | 19.79 | 52.88 | 0:18:05 | 768.61 | 38.43 | 27.28 | 0:25:05 | 615.72 | 61.57 | 17.02 | 0:32:05 | 122.05 | 122.05 | 8.59 |
| 0:04:10 | 809.08 | 10.11 | 104.14 | 0:11:10 | 792.72 | 19.82 | 52.90 | 0:18:10 | 773.22 | 38.66 | 27.12 | 0:25:10 | 605.45 | 60.54 | 17.31 | 0:32:10 | 113.04 | 113.04 | 9.25 |
| 0:04:15 | 805.94 | 10.07 | 104.00 | 0:11:15 | 795.03 | 19.88 | 52.77 | 0:18:15 | 782.87 | 39.14 | 26.76 | 0:25:15 | 632.92 | 63.29 | 16.57 | 0:32:15 | 109.68 | 109.68 | 9.57 |
| 0:04:20 | 808.87 | 10.11 | 103.42 | 0:11:20 | 802.79 | 20.07 | 52.19 | 0:18:20 | 805.10 | 40.25 | 26.06 | 0:25:20 | 669.41 | 66.94 | 15.66 | 0:32:20 | 105.70 | 105.70 | 9.90 |
| 0:04:25 | 803.21 | 10.04 | 104.81 | 0:11:25 | 802.58 | 20.06 | 52.29 | 0:18:25 | 799.85 | 39.99 | 26.20 | 0:25:25 | 609.43 | 60.94 | 17.19 | 0:32:25 | 97.94 | 97.94 | 10.69 |
| 0:04:30 | 810.55 | 10.13 | 103.19 | 0:11:30 | 805.31 | 20.13 | 52.09 | 0:18:30 | 780.35 | 39.02 | 26.89 | 0:25:30 | 621.18 | 62.12 | 16.86 | 0:32:30 | 100.45 | 100.45 | 10.43 |
| 0:04:35 | 815.79 | 10.20 | 103.05 | 0:11:35 | 803.00 | 20.07 | 52.16 | 0:18:35 | 778.04 | 38.90 | 26.96 | 0:25:35 | 621.81 | 62.18 | 16.87 | 0:32:35 | 98.99 | 98.99 | 10.59 |
| 0:04:40 | 816.00 | 10.20 | 102.70 | 0:11:40 | 808.03 | 20.20 | 51.88 | 0:18:40 | 768.61 | 38.43 | 27.25 | 0:25:40 | 634.60 | 63.46 | 16.52 | 0:32:40 | 100.03 | 100.03 | 10.47 |
| 0:04:45 | 824.39 | 10.30 | 101.83 | 0:11:45 | 802.37 | 20.06 | 52.38 | 0:18:45 | 788.74 | 39.44 | 26.57 | 0:25:45 | 621.39 | 62.14 | 16.85 | 0:32:45 | 118.07 | 118.07 | 8.89 |
| 0:04:50 | 823.76 | 10.30 | 101.67 | 0:11:50 | 792.93 | 19.82 | 52.77 | 0:18:50 | 814.95 | 40.75 | 25.71 | 0:25:50 | 632.08 | 63.21 | 16.60 | 0:32:50 | 117.86 | 117.86 | 8.87 |
| 0:04:55 | 820.41 | 10.26 | 101.94 | 0:11:55 | 794.19 | 19.85 | 52.77 | 0:18:55 | 824.39 | 41.22 | 25.47 | 0:25:55 | 643.41 | 64.34 | 16.28 | 0:32:55 | 101.92 | 101.92 | 10.28 |
| 0:05:00 | 831.31 | 10.39 | 101.20 | 0:12:00 | 799.22 | 19.98 | 52.54 | 0:19:00 | 795.03 | 39.75 | 26.36 | 0:26:00 | 650.54 | 65.05 | 16.12 | 0:33:00 | 108.63 | 108.63 | 9.64 |
| 0:05:05 | 824.60 | 10.31 | 101.58 | 0:12:05 | 807.82 | 20.20 | 51.98 | 0:19:05 | 795.24 | 39.76 | 26.36 | 0:26:05 | 654.52 | 65.45 | 16.01 | 0:33:05 | 104.65 | 104.65 | 10.03 |
| 0:05:10 | 821.45 | 10.27 | 102.11 | 0:12:10 | 801.32 | 20.03 | 52.22 | 0:19:10 | 810.97 | 40.55 | 25.85 | 0:26:10 | 654.94 | 65.49 | 16.00 | 0:33:10 | 102.97 | 102.97 | 10.17 |
| 0:05:15 | 823.13 | 10.29 | 102.04 | 0:12:15 | 809.92 | 20.25 | 51.81 | 0:19:15 | 812.65 | 40.63 | 25.79 | 0:26:15 | 637.95 | 63.80 | 16.43 | 0:33:15 | 108.00 | 108.00 | 9.70 |
| 0:05:20 | 832.15 | 10.40 | 100.77 | 0:12:20 | 817.26 | 20.43 | 51.36 | 0:19:20 | 794.61 | 39.73 | 26.40 | 0:26:20 | 644.87 | 64.49 | 16.25 | 0:33:20 | 107.79 | 107.79 | 9.72 |
| 0:05:25 | 826.28 | 10.33 | 101.48 | 0:12:25 | 815.37 | 20.38 | 51.40 | 0:19:25 | 797.97 | 39.90 | 26.29 | 0:26:25 | 636.91 | 63.69 | 16.46 | 0:33:25 | 101.71 | 101.71 | 10.29 |
| 0:05:30 | 825.02 | 10.31 | 101.86 | 0:12:30 | 802.16 | 20.05 | 52.29 | 0:19:30 | 778.46 | 38.92 | 26.89 | 0:26:30 | 641.52 | 64.15 | 16.33 | 0:33:30 | 114.92 | 114.92 | 9.13 |
| 0:05:35 | 818.73 | 10.23 | 102.29 | 0:12:35 | 811.18 | 20.28 | 51.71 | 0:19:35 | 785.38 | 39.27 | 26.73 | 0:26:35 | 627.68 | 62.77 | 16.71 | 0:33:35 | 102.13 | 102.13 | 10.24 |
| 0:05:40 | 817.89 | 10.22 | 102.17 | 0:12:40 | 809.92 | 20.25 | 51.83 | 0:19:40 | 776.99 | 38.85 | 26.96 | 0:26:40 | 624.32 | 62.43 | 16.79 | 0:33:40 | 104.44 | 104.44 | 10.04 |
| 0:05:45 | 826.70 | 10.33 | 102.20 | 0:12:45 | 807.19 | 20.18 | 51.84 | 0:19:45 | 790.63 | 39.53 | 26.54 | 0:26:45 | 621.39 | 62.14 | 16.87 | 0:33:45 | 122.47 | 122.47 | 8.56 |
| 0:05:50 | 818.52 | 10.23 | 102.27 | 0:12:50 | 810.34 | 20.26 | 51.81 | 0:19:50 | 803.42 | 40.17 | 26.07 | 0:26:50 | 611.32 | 61.13 | 17.15 | 0:33:50 | 122.68 | 122.68 | 8.54 |
| 0:05:55 | 823.34 | 10.29 | 101.74 | 0:12:55 | 800.48 | 20.01 | 52.42 | 0:19:55 | 811.39 | 40.57 | 25.85 | 0:26:55 | 658.72 | 65.87 | 15.89 | 0:33:55 | 114.29 | 114.29 | 9.17 |
| 0:06:00 | 827.75 | 10.35 | 101.21 | 0:13:00 | 796.92 | 19.92 | 52.70 | 0:20:00 | 809.92 | 40.50 | 25.89 | 0:27:00 | 625.58 | 62.56 | 16.78 | 0:34:00 | 95.84 | 95.84 | 10.93 |
| 0:06:05 | 823.34 | 10.29 | 101.89 | 0:13:05 | 791.05 | 19.78 | 52.91 | 0:20:05 | 795.24 | 39.76 | 26.38 | 0:27:05 | 617.82 | 61.78 | 16.95 | 0:34:05 | 114.50 | 114.50 | 9.14 |
| 0:06:10 | 822.08 | 10.28 | 102.27 | 0:13:10 | 774.90 | 19.37 | 54.15 | 0:20:10 | 812.02 | 40.60 | 25.80 | 0:27:10 | 642.78 | 64.28 | 16.31 | 0:34:10 | 119.12 | 119.12 | 8.79 |
| 0:06:15 | 815.79 | 10.20 | 102.64 | 0:13:15 | 780.98 | 19.52 | 53.72 | 0:20:15 | 804.05 | 40.20 | 26.08 | 0:27:15 | 633.13 | 63.31 | 16.56 | 0:34:15 | 104.02 | 104.02 | 10.08 |
| 0:06:20 | 814.74 | 10.18 | 102.94 | 0:13:20 | 780.35 | 19.51 | 53.66 | 0:20:20 | 782.24 | 39.11 | 26.81 | 0:27:20 | 639.00 | 63.90 | 16.40 | 0:34:20 | 98.78 | 98.78 | 10.59 |
| 0:06:25 | 807.19 | 10.09 | 103.71 | 0:13:25 | 778.04 | 19.45 | 53.91 | 0:20:25 | 770.49 | 38.52 | 27.20 | 0:27:25 | 674.23 | 67.42 | 15.55 | 0:34:25 | 103.81 | 103.81 | 10.10 |
| 0:06:30 | 818.31 | 10.23 | 102.85 | 0:13:30 | 776.79 | 19.42 | 53.99 | 0:20:30 | 798.39 | 39.92 | 26.27 | 0:27:30 | 656.83 | 65.68 | 15.94 | 0:34:30 | 111.99 | 111.99 | 9.36 |
| 0:06:35 | 805.10 | 10.06 | 104.06 | 0:13:35 | 787.90 | 19.70 | 53.27 | 0:20:35 | 794.40 | 39.72 | 26.41 | 0:27:35 | 672.35 | 67.23 | 15.60 | 0:34:35 | 95.21 | 95.21 | 11.02 |
| 0:06:40 | 817.68 | 10.22 | 102.70 | 0:13:40 | 793.56 | 19.84 | 52.82 | 0:20:40 | 773.22 | 38.66 | 27.07 | 0:27:40 | 656.41 | 65.64 | 15.97 | 0:34:40 | 101.50 | 101.50 | 10.31 |
| 0:06:45 | 325.27 | 0.00 | 87.86 | 0:13:45 | 308.70 | 0.00 | 44.14 | 0:20:45 | 277.87 | 0.00 | 25.03 | 0:27:45 | 218.94 | 0.00 | 15.16 | 0:34:45 | 23.49 | 0.00 | 11.38 |
| 0:06:50 | 0.00 | 0.00 | 0.00 | 0:13:50 | 0.00 | 0.00 | 0.00 | 0:20:50 | 0.00 | 0.00 | 0.00 | 0:27:50 | 0.00 | 0.00 | 0.00 | 0:34:50 | 0.00 | 0.00 | 0.00 |
| 0:06:55 | 0.00 | 0.00 | 0.00 | 0:13:55 | 0.00 | 0.00 | 0.00 | 0:20:55 | 0.00 | 0.00 | 0.00 | 0:27:55 | 0.00 | 0.00 | 0.00 | 0:34:55 | 0.00 | 0.00 | 0.00 |

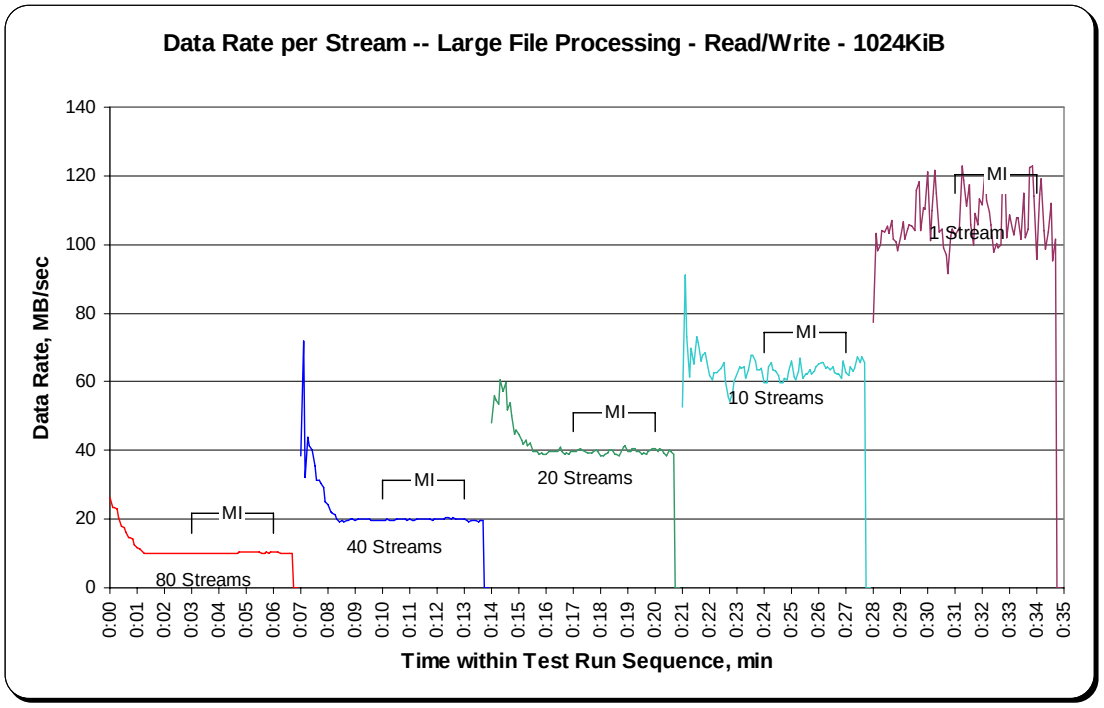
## SPC-2 "Large File Processing/ READ-WRITE/1024 KiB Transfer Size" Average Data Rate Graph – Complete Test Run



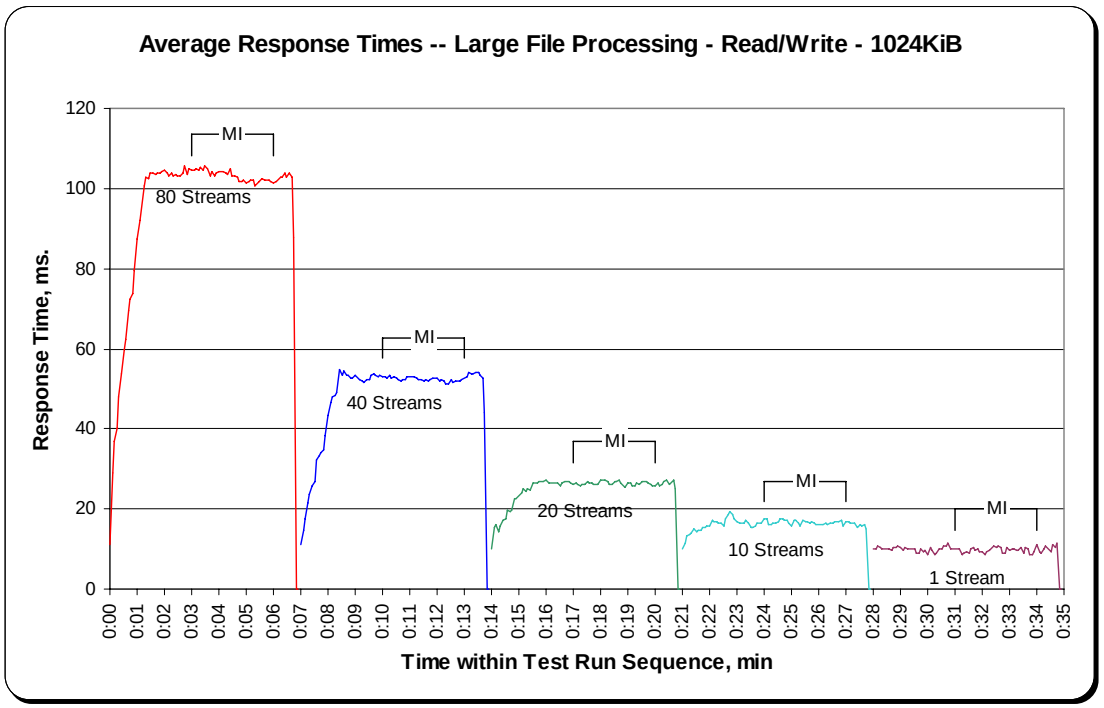

## SPC-2 "Large File Processing/ READ-WRITE/1024 KiB Transfer Size" Average Data Rate Graph – Measurement Interval (MI) Only



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




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



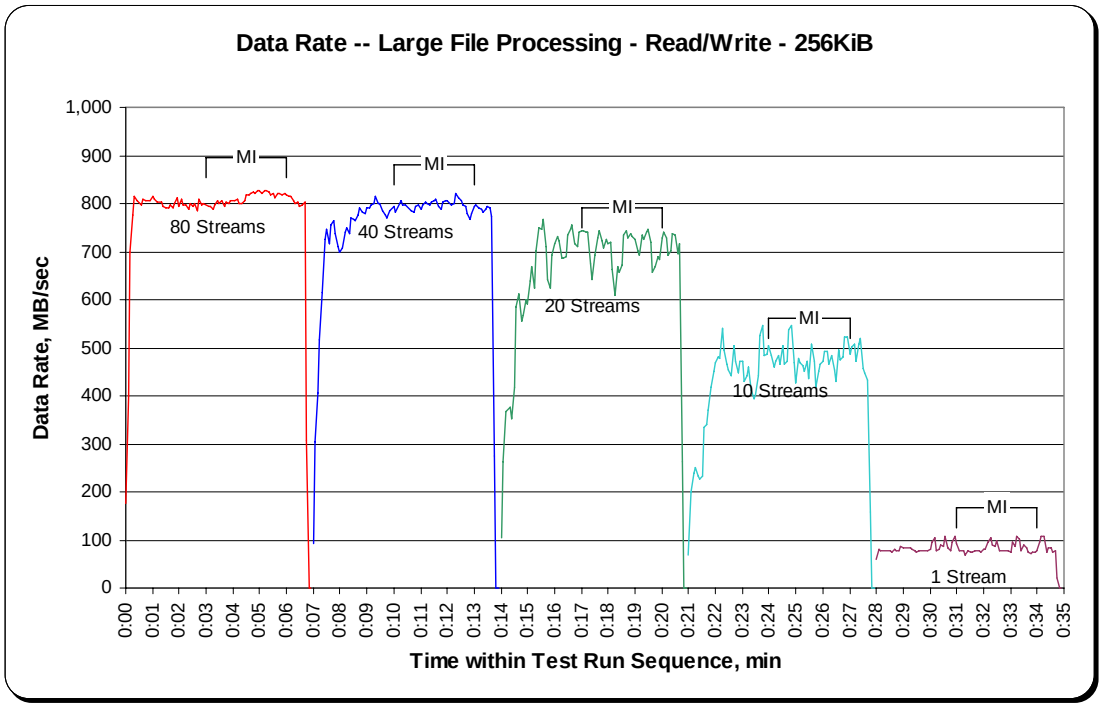
## SPC-2 "Large File Processing/READ-WRITE/256 KiB Transfer Size" Test Run Data – Ramp-Up Period

| TR16 | 80 Streams | | | TR17 | 40 Streams | | | TR18 | 20 Streams | | | TR19 | 10 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 | 177.21 | 13.63 | 6.54 | 0:07:00 | 91.91 | 18.38 | 3.25 | 0:14:00 | 103.70 | 51.85 | 3.20 | 0:21:00 | 69.36 | 34.68 | 3.19 | 0:28:00 | 59.77 | 59.77 | 3.29 |
| 0:00:05 | 400.19 | 19.06 | 10.10 | 0:07:05 | 304.56 | 30.46 | 5.72 | 0:14:05 | 262.20 | 43.70 | 4.32 | 0:21:05 | 199.96 | 66.65 | 3.81 | 0:28:05 | 79.74 | 79.74 | 3.28 |
| 0:00:10 | 698.77 | 24.10 | 9.56 | 0:07:10 | 405.27 | 40.53 | 6.45 | 0:14:10 | 365.80 | 60.97 | 4.29 | 0:21:10 | 238.29 | 59.57 | 3.88 | 0:28:10 | 77.18 | 77.18 | 3.39 |
| 0:00:15 | 775.89 | 18.92 | 11.33 | 0:07:15 | 517.42 | 36.96 | 5.99 | 0:14:15 | 371.09 | 53.01 | 4.66 | 0:21:15 | 249.51 | 62.38 | 4.19 | 0:28:15 | 78.49 | 78.49 | 3.33 |
| 0:00:20 | 814.38 | 17.33 | 14.47 | 0:07:20 | 616.35 | 32.44 | 6.91 | 0:14:20 | 377.38 | 53.91 | 4.86 | 0:21:20 | 234.04 | 58.51 | 4.47 | 0:28:20 | 78.75 | 78.75 | 3.32 |
| 0:00:25 | 807.04 | 14.67 | 16.38 | 0:07:25 | 725.35 | 31.54 | 7.79 | 0:14:25 | 351.48 | 50.21 | 5.21 | 0:21:25 | 225.65 | 56.41 | 4.64 | 0:28:25 | 78.96 | 78.96 | 3.31 |
| 0:00:30 | 802.37 | 13.83 | 18.38 | 0:07:30 | 746.59 | 31.11 | 8.25 | 0:14:30 | 417.39 | 46.38 | 4.96 | 0:21:30 | 231.84 | 57.96 | 4.51 | 0:28:30 | 76.97 | 76.97 | 3.40 |
| 0:00:35 | 795.61 | 12.63 | 19.75 | 0:07:35 | 717.02 | 28.68 | 9.05 | 0:14:35 | 583.79 | 48.65 | 4.93 | 0:21:35 | 335.23 | 67.05 | 3.84 | 0:28:35 | 74.97 | 74.97 | 3.49 |
| 0:00:40 | 807.67 | 12.43 | 20.90 | 0:07:40 | 755.45 | 29.06 | 8.76 | 0:14:40 | 611.74 | 50.98 | 5.12 | 0:21:40 | 339.95 | 56.66 | 3.91 | 0:28:40 | 80.11 | 80.11 | 3.26 |
| 0:00:45 | 807.14 | 11.87 | 21.73 | 0:07:45 | 764.67 | 28.32 | 9.21 | 0:14:45 | 554.64 | 42.66 | 5.87 | 0:21:45 | 370.62 | 52.95 | 4.37 | 0:28:45 | 78.75 | 78.75 | 3.32 |
| 0:00:50 | 806.83 | 11.53 | 22.41 | 0:07:50 | 738.30 | 27.34 | 9.59 | 0:14:50 | 566.23 | 40.45 | 6.42 | 0:21:50 | 416.91 | 52.11 | 4.91 | 0:28:50 | 78.59 | 78.59 | 3.33 |
| 0:00:55 | 807.14 | 11.06 | 23.38 | 0:07:55 | 710.04 | 24.48 | 10.28 | 0:14:55 | 598.79 | 42.77 | 6.12 | 0:21:55 | 449.63 | 49.96 | 4.88 | 0:28:55 | 86.66 | 86.66 | 3.02 |
| 0:01:00 | 814.22 | 10.86 | 23.88 | 0:08:00 | 697.46 | 22.50 | 11.12 | 0:15:00 | 590.09 | 39.34 | 6.46 | 0:22:00 | 468.35 | 52.04 | 5.02 | 0:29:00 | 83.57 | 83.57 | 3.13 |
| 0:01:05 | 808.82 | 10.78 | 24.27 | 0:08:05 | 708.52 | 22.14 | 11.75 | 0:15:05 | 638.74 | 37.57 | 6.64 | 0:22:05 | 480.61 | 53.40 | 4.91 | 0:29:05 | 82.37 | 82.37 | 3.18 |
| 0:01:10 | 804.42 | 10.73 | 24.44 | 0:08:10 | 741.13 | 20.59 | 12.19 | 0:15:10 | 667.31 | 39.25 | 6.68 | 0:22:10 | 478.94 | 47.89 | 5.28 | 0:29:10 | 82.42 | 82.42 | 3.18 |
| 0:01:15 | 803.26 | 10.43 | 24.54 | 0:08:15 | 748.32 | 20.22 | 12.70 | 0:15:15 | 623.90 | 36.70 | 7.13 | 0:22:15 | 541.33 | 54.13 | 4.84 | 0:29:15 | 82.47 | 82.47 | 3.17 |
| 0:01:20 | 803.84 | 10.18 | 25.15 | 0:08:20 | 738.62 | 18.94 | 13.53 | 0:15:20 | 700.92 | 35.05 | 7.05 | 0:22:20 | 494.56 | 49.46 | 5.29 | 0:29:20 | 79.12 | 79.12 | 3.31 |
| 0:01:25 | 793.20 | 9.91 | 26.37 | 0:08:25 | 771.49 | 19.29 | 13.50 | 0:15:25 | 749.21 | 37.46 | 6.98 | 0:22:25 | 464.78 | 46.48 | 5.64 | 0:29:25 | 77.70 | 77.70 | 3.37 |
| 0:01:30 | 790.89 | 9.89 | 26.51 | 0:08:30 | 766.82 | 19.17 | 13.67 | 0:15:30 | 747.16 | 37.36 | 7.01 | 0:22:30 | 453.19 | 45.32 | 5.78 | 0:29:30 | 75.50 | 75.50 | 3.47 |
| 0:01:35 | 791.57 | 9.89 | 26.48 | 0:08:35 | 763.84 | 19.10 | 13.70 | 0:15:35 | 766.77 | 38.34 | 6.83 | 0:22:35 | 440.93 | 44.09 | 5.94 | 0:29:35 | 78.22 | 78.22 | 3.34 |
| 0:01:40 | 795.61 | 9.95 | 26.35 | 0:08:40 | 775.58 | 19.39 | 13.53 | 0:15:40 | 709.41 | 35.47 | 7.38 | 0:22:40 | 503.47 | 50.35 | 5.20 | 0:29:40 | 76.60 | 76.60 | 3.42 |
| 0:01:45 | 792.15 | 9.90 | 26.48 | 0:08:45 | 790.42 | 19.76 | 13.26 | 0:15:45 | 641.83 | 32.09 | 8.16 | 0:22:45 | 472.86 | 47.29 | 5.54 | 0:29:45 | 77.44 | 77.44 | 3.38 |
| 0:01:50 | 799.22 | 9.99 | 26.22 | 0:08:50 | 780.77 | 19.52 | 13.38 | 0:15:50 | 622.54 | 31.13 | 8.42 | 0:22:50 | 448.63 | 44.86 | 5.84 | 0:29:50 | 77.23 | 77.23 | 3.39 |
| 0:01:55 | 812.80 | 10.16 | 25.80 | 0:08:55 | 778.78 | 19.47 | 13.49 | 0:15:55 | 692.95 | 34.65 | 7.56 | 0:22:55 | 470.60 | 47.06 | 5.56 | 0:29:55 | 76.81 | 76.81 | 3.41 |
| 0:02:00 | 793.51 | 9.92 | 26.42 | 0:09:00 | 790.57 | 19.76 | 13.27 | 0:16:00 | 717.86 | 35.89 | 7.29 | 0:23:00 | 471.28 | 47.13 | 5.56 | 0:30:00 | 80.01 | 80.01 | 3.27 |
| 0:02:05 | 808.09 | 10.10 | 25.93 | 0:09:05 | 791.05 | 19.78 | 13.25 | 0:16:05 | 732.17 | 36.61 | 7.16 | 0:23:05 | 430.65 | 43.07 | 6.08 | 0:30:05 | 95.42 | 95.42 | 2.74 |
| 0:02:10 | 796.60 | 9.96 | 26.32 | 0:09:10 | 797.02 | 19.93 | 13.12 | 0:16:10 | 723.26 | 36.16 | 7.24 | 0:23:10 | 441.29 | 44.13 | 5.93 | 0:30:10 | 103.28 | 103.28 | 2.53 |
| 0:02:15 | 797.08 | 9.96 | 26.31 | 0:09:15 | 801.27 | 20.03 | 13.05 | 0:16:15 | 686.45 | 34.32 | 7.63 | 0:23:15 | 460.59 | 46.06 | 5.69 | 0:30:15 | 78.64 | 78.64 | 3.33 |
| 0:02:20 | 787.43 | 9.84 | 26.63 | 0:09:20 | 814.11 | 20.35 | 12.93 | 0:16:20 | 686.19 | 34.31 | 7.63 | 0:23:20 | 411.46 | 41.15 | 6.36 | 0:30:20 | 80.85 | 80.85 | 3.24 |
| 0:02:25 | 800.75 | 10.01 | 26.17 | 0:09:25 | 800.38 | 20.01 | 13.08 | 0:16:25 | 689.75 | 34.49 | 7.59 | 0:23:25 | 394.95 | 39.49 | 6.64 | 0:30:25 | 88.34 | 88.34 | 2.96 |
| 0:02:30 | 793.61 | 9.92 | 26.40 | 0:09:30 | 800.75 | 20.02 | 13.10 | 0:16:30 | 734.21 | 36.71 | 7.14 | 0:23:30 | 404.28 | 40.43 | 6.47 | 0:30:31 | 85.30 | 85.30 | 3.07 |
| 0:02:35 | 799.54 | 9.99 | 26.22 | 0:09:35 | 783.60 | 19.59 | 13.36 | 0:16:35 | 746.06 | 37.30 | 7.02 | 0:23:35 | 441.92 | 44.19 | 5.93 | 0:30:35 | 107.22 | 107.22 | 2.44 |
| 0:02:40 | 786.38 | 9.83 | 26.67 | 0:09:40 | 774.95 | 19.37 | 13.53 | 0:16:40 | 756.65 | 37.83 | 6.92 | 0:23:40 | 524.08 | 52.41 | 5.00 | 0:30:40 | 84.25 | 84.25 | 3.11 |
| 0:02:45 | 807.61 | 10.10 | 25.97 | 0:09:45 | 770.23 | 19.26 | 13.61 | 0:16:45 | 715.44 | 35.77 | 7.32 | 0:23:45 | 544.79 | 54.48 | 4.80 | 0:30:45 | 78.17 | 78.17 | 3.35 |
| 0:02:50 | 797.08 | 9.96 | 26.29 | 0:09:50 | 786.48 | 19.66 | 13.33 | 0:16:50 | 709.52 | 35.48 | 7.39 | 0:23:50 | 484.91 | 48.49 | 5.40 | 0:30:50 | 96.68 | 96.68 | 2.71 |
| 0:02:55 | 798.70 | 9.98 | 26.25 | 0:09:55 | 789.32 | 19.73 | 13.27 | 0:16:55 | 739.67 | 36.98 | 7.08 | 0:23:55 | 486.38 | 48.64 | 5.38 | 0:30:55 | 106.01 | 106.01 | 2.47 |

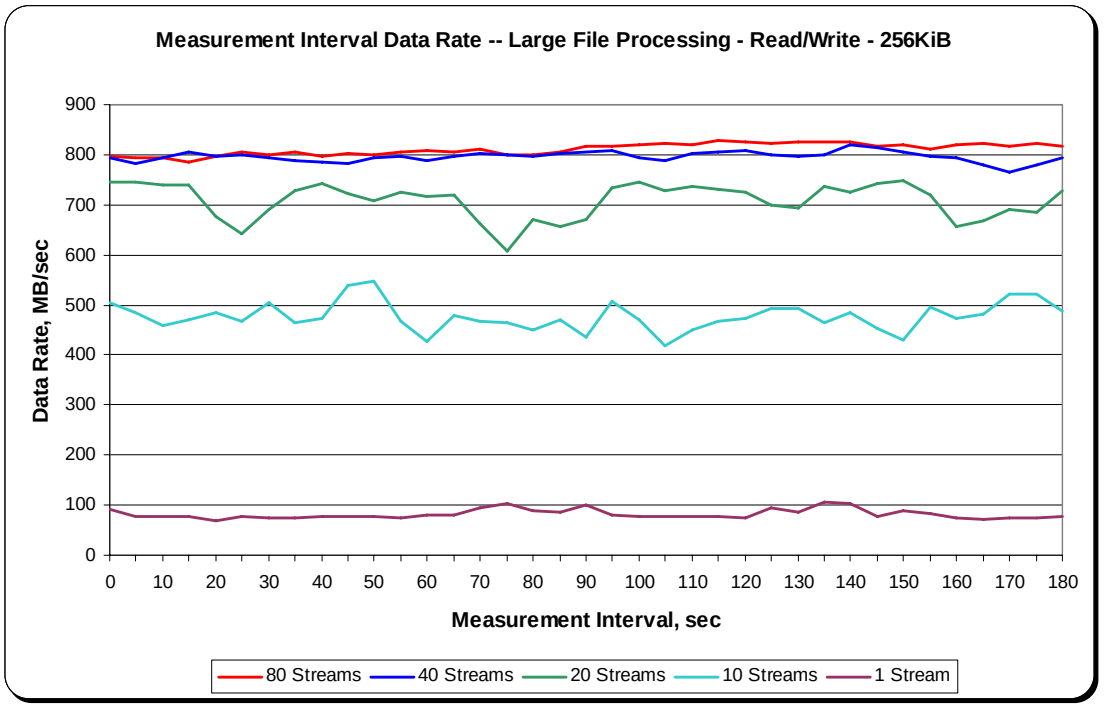
## SPC-2 "Large File Processing/READ-WRITE/256 KiB Transfer Size" Test Run Data Measurement Interval, Run-Out, and Ramp-Down Periods

| TR16 | 80 Streams | | | TR17 | 40 Streams | | | TR18 | 20 Streams | | | TR19 | 10 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 |
| 0:03:00 | 797.81 | 9.97 | 26.28 | 0:10:00 | 793.35 | 19.83 | 13.20 | 0:17:00 | 744.28 | 37.21 | 7.03 | 0:24:00 | 505.62 | 50.56 | 5.18 | 0:31:00 | 92.69 | 92.69 | 2.82 |
| 0:03:05 | 792.93 | 9.91 | 26.45 | 0:10:05 | 783.23 | 19.58 | 13.38 | 0:17:05 | 744.38 | 37.22 | 7.04 | 0:24:05 | 484.60 | 48.46 | 5.40 | 0:31:05 | 77.96 | 77.96 | 3.36 |
| 0:03:10 | 793.51 | 9.92 | 26.44 | 0:10:10 | 794.24 | 19.86 | 13.20 | 0:17:10 | 740.19 | 37.01 | 7.08 | 0:24:10 | 458.96 | 45.90 | 5.71 | 0:31:10 | 77.38 | 77.38 | 3.38 |
| 0:03:15 | 786.75 | 9.83 | 26.62 | 0:10:15 | 806.30 | 20.16 | 12.99 | 0:17:15 | 740.87 | 37.04 | 7.07 | 0:24:15 | 471.02 | 47.10 | 5.55 | 0:31:15 | 77.96 | 77.96 | 3.36 |
| 0:03:20 | 795.97 | 9.95 | 26.34 | 0:10:20 | 797.49 | 19.94 | 13.14 | 0:17:20 | 675.55 | 33.78 | 7.75 | 0:24:20 | 484.81 | 48.48 | 5.40 | 0:31:20 | 69.31 | 69.31 | 3.78 |
| 0:03:25 | 805.20 | 10.07 | 26.05 | 0:10:25 | 798.39 | 19.96 | 13.13 | 0:17:25 | 641.36 | 32.07 | 8.16 | 0:24:25 | 466.35 | 46.64 | 5.62 | 0:31:25 | 78.12 | 78.12 | 3.35 |
| 0:03:30 | 800.17 | 10.00 | 26.19 | 0:10:30 | 794.51 | 19.86 | 13.19 | 0:17:30 | 692.01 | 34.60 | 7.59 | 0:24:30 | 503.21 | 50.32 | 5.20 | 0:31:30 | 74.66 | 74.66 | 3.51 |
| 0:03:35 | 806.15 | 10.08 | 26.01 | 0:10:35 | 789.00 | 19.73 | 13.28 | 0:17:35 | 729.23 | 36.46 | 7.18 | 0:24:35 | 464.83 | 46.48 | 5.63 | 0:31:35 | 75.50 | 75.50 | 3.47 |
| 0:03:40 | 795.45 | 9.94 | 26.36 | 0:10:40 | 784.91 | 19.62 | 13.36 | 0:17:40 | 743.18 | 37.16 | 7.05 | 0:24:40 | 472.59 | 47.26 | 5.54 | 0:31:40 | 77.23 | 77.23 | 3.39 |
| 0:03:45 | 801.85 | 10.02 | 26.13 | 0:10:45 | 783.50 | 19.59 | 13.37 | 0:17:45 | 723.10 | 36.15 | 7.24 | 0:24:45 | 538.34 | 53.83 | 4.86 | 0:31:45 | 78.12 | 78.12 | 3.35 |
| 0:03:50 | 800.43 | 10.01 | 26.20 | 0:10:50 | 792.72 | 19.82 | 13.22 | 0:17:50 | 707.74 | 35.39 | 7.41 | 0:24:50 | 546.88 | 54.69 | 4.79 | 0:31:50 | 78.38 | 78.38 | 3.34 |
| 0:03:55 | 804.94 | 10.06 | 26.05 | 0:10:55 | 797.97 | 19.95 | 13.14 | 0:17:55 | 724.36 | 36.22 | 7.22 | 0:24:55 | 467.72 | 46.77 | 5.60 | 0:31:55 | 75.29 | 75.29 | 3.47 |
| 0:04:00 | 806.93 | 10.09 | 25.98 | 0:11:00 | 789.32 | 19.73 | 13.27 | 0:18:00 | 717.49 | 35.87 | 7.30 | 0:25:00 | 428.29 | 42.83 | 6.12 | 0:32:00 | 79.32 | 79.32 | 3.30 |
| 0:04:05 | 805.88 | 10.07 | 26.03 | 0:11:05 | 796.34 | 19.91 | 13.16 | 0:18:05 | 718.59 | 35.93 | 7.29 | 0:25:05 | 479.04 | 47.90 | 5.46 | 0:32:05 | 79.22 | 79.22 | 3.30 |
| 0:04:10 | 809.97 | 10.12 | 25.87 | 0:11:10 | 803.31 | 20.08 | 13.04 | 0:18:10 | 663.33 | 33.17 | 7.89 | 0:25:10 | 467.35 | 46.74 | 5.60 | 0:32:10 | 95.47 | 95.47 | 2.74 |
| 0:04:15 | 799.75 | 10.00 | 26.23 | 0:11:15 | 800.48 | 20.01 | 13.09 | 0:18:15 | 608.86 | 30.44 | 8.60 | 0:25:15 | 463.99 | 46.40 | 5.65 | 0:32:15 | 103.97 | 103.97 | 2.52 |
| 0:04:20 | 799.43 | 9.99 | 26.20 | 0:11:20 | 796.55 | 19.91 | 13.17 | 0:18:20 | 670.14 | 33.51 | 7.82 | 0:25:20 | 450.89 | 45.09 | 5.80 | 0:32:20 | 89.02 | 89.02 | 2.94 |
| 0:04:25 | 806.62 | 10.08 | 26.00 | 0:11:25 | 802.68 | 20.07 | 13.05 | 0:18:25 | 655.36 | 32.77 | 7.98 | 0:25:25 | 470.65 | 47.07 | 5.57 | 0:32:25 | 87.08 | 87.08 | 3.00 |
| 0:04:30 | 816.68 | 10.21 | 25.67 | 0:11:30 | 804.78 | 20.12 | 13.02 | 0:18:30 | 671.14 | 33.56 | 7.81 | 0:25:30 | 434.95 | 43.49 | 6.02 | 0:32:30 | 99.88 | 99.88 | 2.62 |
| 0:04:35 | 817.16 | 10.21 | 25.67 | 0:11:35 | 809.55 | 20.24 | 12.95 | 0:18:35 | 733.43 | 36.67 | 7.14 | 0:25:35 | 507.83 | 50.78 | 5.16 | 0:32:35 | 78.85 | 78.85 | 3.32 |
| 0:04:40 | 820.46 | 10.26 | 25.54 | 0:11:40 | 794.98 | 19.87 | 13.18 | 0:18:40 | 744.02 | 37.20 | 7.04 | 0:25:40 | 471.33 | 47.13 | 5.55 | 0:32:40 | 76.76 | 76.76 | 3.41 |
| 0:04:45 | 822.61 | 10.28 | 25.49 | 0:11:45 | 787.85 | 19.70 | 13.30 | 0:18:45 | 728.24 | 36.41 | 7.20 | 0:25:45 | 418.01 | 41.80 | 6.26 | 0:32:45 | 78.59 | 78.59 | 3.33 |
| 0:04:50 | 819.93 | 10.25 | 25.54 | 0:11:50 | 802.68 | 20.07 | 13.06 | 0:18:50 | 736.83 | 36.84 | 7.10 | 0:25:50 | 449.89 | 44.99 | 5.82 | 0:32:50 | 76.76 | 76.76 | 3.41 |
| 0:04:55 | 827.64 | 10.35 | 25.35 | 0:11:55 | 806.04 | 20.15 | 13.00 | 0:18:55 | 731.22 | 36.56 | 7.17 | 0:25:55 | 465.78 | 46.58 | 5.62 | 0:32:55 | 76.28 | 76.28 | 3.43 |
| 0:05:00 | 826.38 | 10.33 | 25.38 | 0:12:00 | 807.25 | 20.18 | 12.97 | 0:19:00 | 724.78 | 36.24 | 7.22 | 0:26:00 | 472.59 | 47.26 | 5.54 | 0:33:00 | 75.65 | 75.65 | 3.46 |
| 0:05:05 | 821.45 | 10.27 | 25.52 | 0:12:05 | 799.91 | 20.00 | 13.11 | 0:19:05 | 700.55 | 35.03 | 7.48 | 0:26:05 | 493.25 | 49.33 | 5.31 | 0:33:05 | 95.94 | 95.94 | 2.73 |
| 0:05:10 | 825.81 | 10.32 | 25.38 | 0:12:10 | 795.82 | 19.90 | 13.17 | 0:19:10 | 692.53 | 34.63 | 7.57 | 0:26:10 | 491.89 | 49.19 | 5.32 | 0:33:10 | 86.35 | 86.35 | 3.03 |
| 0:05:15 | 826.17 | 10.33 | 25.38 | 0:12:15 | 800.48 | 20.01 | 13.09 | 0:19:15 | 735.52 | 36.78 | 7.12 | 0:26:15 | 464.20 | 46.42 | 5.64 | 0:33:15 | 107.11 | 107.11 | 2.44 |
| 0:05:20 | 824.71 | 10.31 | 25.43 | 0:12:20 | 819.41 | 20.49 | 12.79 | 0:19:20 | 724.20 | 36.21 | 7.23 | 0:26:20 | 483.87 | 48.39 | 5.41 | 0:33:20 | 101.82 | 101.82 | 2.57 |
| 0:05:25 | 816.58 | 10.21 | 25.65 | 0:12:25 | 813.22 | 20.33 | 12.89 | 0:19:25 | 741.71 | 37.09 | 7.06 | 0:26:25 | 452.93 | 45.29 | 5.78 | 0:33:25 | 78.22 | 78.22 | 3.35 |
| 0:05:30 | 820.41 | 10.26 | 25.58 | 0:12:30 | 806.41 | 20.16 | 12.99 | 0:19:30 | 746.74 | 37.34 | 7.01 | 0:26:30 | 428.71 | 42.87 | 6.11 | 0:33:30 | 89.76 | 89.76 | 2.92 |
| 0:05:35 | 811.39 | 10.14 | 25.83 | 0:12:35 | 796.13 | 19.90 | 13.16 | 0:19:35 | 718.17 | 35.91 | 7.30 | 0:26:35 | 494.67 | 49.47 | 5.29 | 0:33:35 | 84.52 | 84.52 | 3.10 |
| 0:05:40 | 820.62 | 10.26 | 25.54 | 0:12:40 | 794.51 | 19.86 | 13.19 | 0:19:40 | 657.09 | 32.85 | 7.97 | 0:26:40 | 473.80 | 47.38 | 5.53 | 0:33:40 | 74.50 | 74.50 | 3.51 |
| 0:05:45 | 821.98 | 10.27 | 25.50 | 0:12:45 | 778.99 | 19.47 | 13.46 | 0:19:45 | 667.42 | 33.37 | 7.85 | 0:26:45 | 480.61 | 48.06 | 5.45 | 0:33:45 | 73.09 | 73.09 | 3.59 |
| 0:05:50 | 816.79 | 10.21 | 25.66 | 0:12:50 | 765.98 | 19.15 | 13.68 | 0:19:50 | 690.70 | 34.53 | 7.58 | 0:26:50 | 521.88 | 52.19 | 5.02 | 0:33:50 | 73.51 | 73.51 | 3.55 |
| 0:05:55 | 821.72 | 10.27 | 25.54 | 0:12:55 | 780.09 | 19.50 | 13.43 | 0:19:55 | 684.51 | 34.23 | 7.64 | 0:26:55 | 521.09 | 52.11 | 5.02 | 0:33:55 | 75.76 | 75.76 | 3.46 |
| 0:06:00 | 817.42 | 10.22 | 25.63 | 0:13:00 | 795.24 | 19.88 | 13.18 | 0:20:00 | 728.55 | 36.43 | 7.20 | 0:27:00 | 485.91 | 48.59 | 5.39 | 0:34:00 | 76.76 | 76.76 | 3.41 |
| 0:06:05 | 813.80 | 10.17 | 25.76 | 0:13:05 | 798.44 | 19.96 | 13.13 | 0:20:05 | 739.14 | 36.96 | 7.09 | 0:27:05 | 500.80 | 50.08 | 5.23 | 0:34:05 | 94.27 | 94.27 | 2.77 |
| 0:06:10 | 813.54 | 10.17 | 25.78 | 0:13:10 | 790.15 | 19.75 | 13.26 | 0:20:10 | 728.97 | 36.45 | 7.18 | 0:27:10 | 507.67 | 50.77 | 5.16 | 0:34:10 | 107.01 | 107.01 | 2.44 |
| 0:06:15 | 806.46 | 10.08 | 25.99 | 0:13:15 | 789.21 | 19.73 | 13.27 | 0:20:15 | 691.27 | 34.56 | 7.58 | 0:27:15 | 471.39 | 47.14 | 5.55 | 0:34:15 | 107.22 | 107.22 | 2.44 |
| 0:06:20 | 800.38 | 10.00 | 26.18 | 0:13:20 | 782.34 | 19.56 | 13.39 | 0:20:20 | 702.07 | 35.10 | 7.46 | 0:27:20 | 506.51 | 50.65 | 5.17 | 0:34:20 | 74.40 | 74.40 | 3.52 |
| 0:06:25 | 801.85 | 10.02 | 26.16 | 0:13:25 | 789.53 | 19.74 | 13.27 | 0:20:25 | 738.35 | 36.92 | 7.10 | 0:27:25 | 520.20 | 52.02 | 5.03 | 0:34:25 | 84.57 | 84.57 | 3.09 |
| 0:06:30 | 793.20 | 9.91 | 26.43 | 0:13:30 | 793.88 | 19.85 | 13.20 | 0:20:30 | 735.73 | 36.79 | 7.12 | 0:27:30 | 455.87 | 45.59 | 5.75 | 0:34:30 | 82.42 | 82.42 | 3.18 |
| 0:06:35 | 796.24 | 9.95 | 26.34 | 0:13:35 | 790.36 | 19.76 | 13.26 | 0:20:35 | 696.04 | 34.80 | 7.52 | 0:27:35 | 447.85 | 44.78 | 5.85 | 0:34:35 | 75.03 | 75.03 | 3.49 |
| 0:06:40 | 801.90 | 10.02 | 26.14 | 0:13:40 | 773.32 | 19.33 | 13.55 | 0:20:40 | 715.76 | 35.79 | 7.32 | 0:27:40 | 433.48 | 43.35 | 6.04 | 0:34:40 | 76.86 | 76.86 | 3.41 |
| 0:06:45 | 307.13 | 0.00 | 21.96 | 0:13:45 | 275.93 | 0.00 | 12.28 | 0:20:45 | 262.83 | 0.00 | 6.50 | 0:27:45 | 158.49 | 0.00 | 5.20 | 0:34:45 | 19.50 | 0.00 | 3.33 |
| 0:06:50 | 0.00 | 0.00 | 0.00 | 0:13:50 | 0.00 | 0.00 | 0.00 | 0:20:50 | 0.00 | 0.00 | 0.00 | 0:27:50 | 0.00 | 0.00 | 0.00 | 0:34:50 | 0.00 | 0.00 | 0.00 |
| 0:06:55 | 0.00 | 0.00 | 0.00 | 0:13:55 | 0.00 | 0.00 | 0.00 | 0:20:55 | 0.00 | 0.00 | 0.00 | 0:27:55 | 0.00 | 0.00 | 0.00 | 0:34:55 | 0.00 | 0.00 | 0.00 |

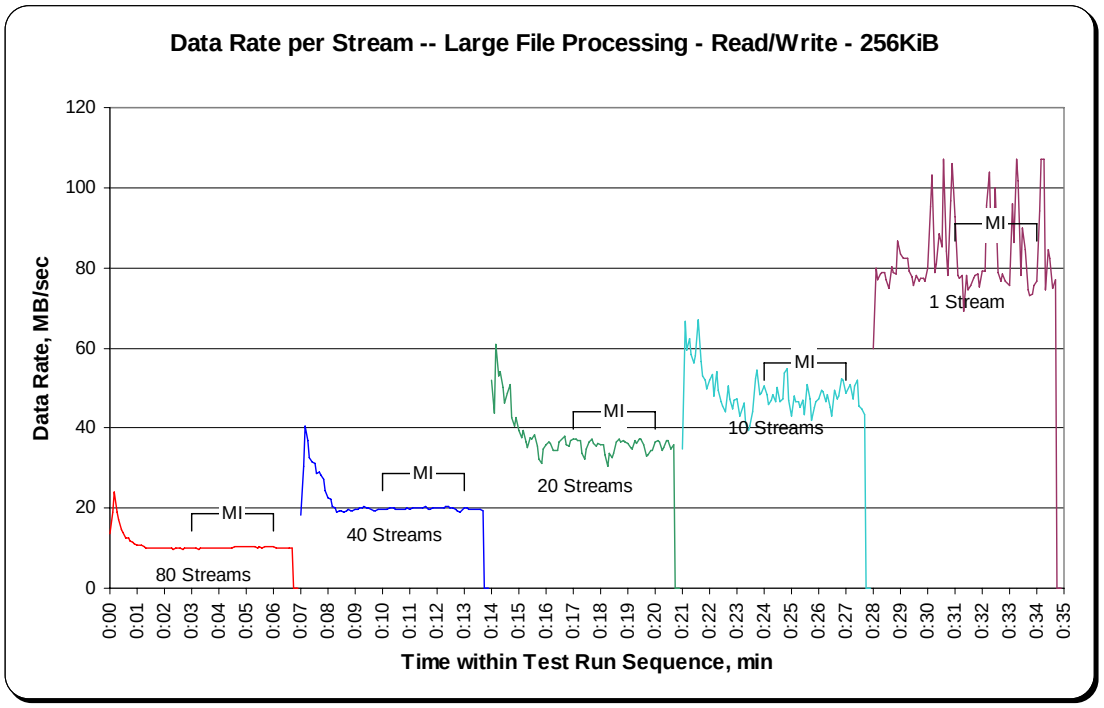
## SPC-2 "Large File Processing/READ-WRITE/256 KiB Transfer Size" Average Data Rate Graph – Complete Test Run



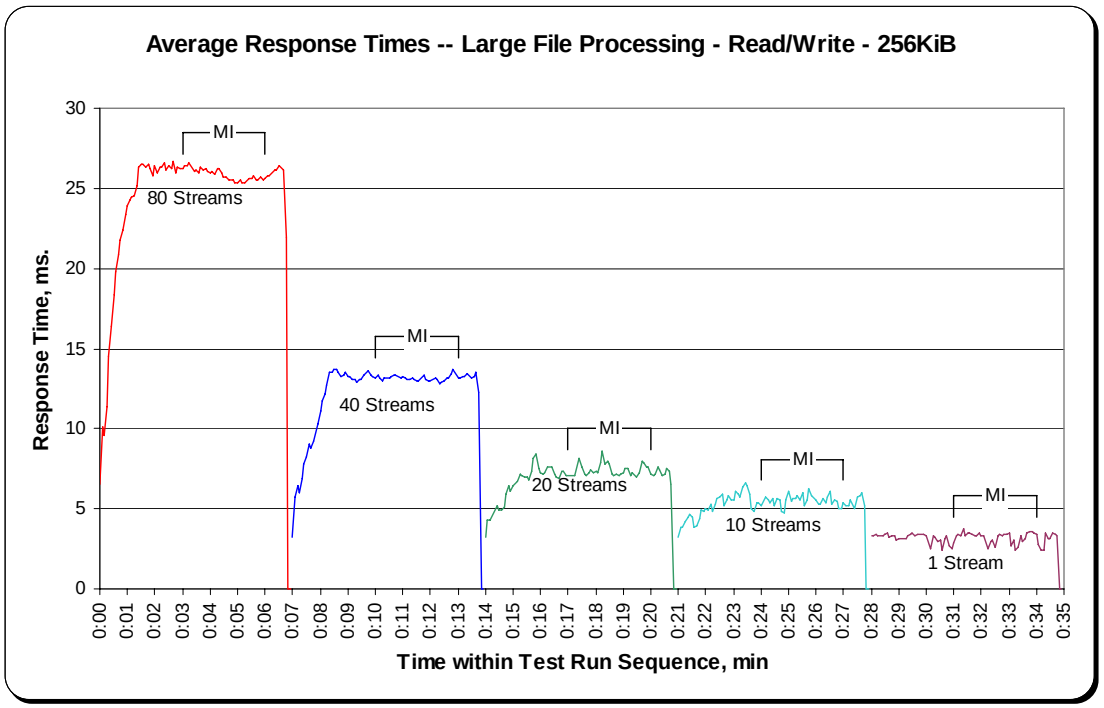

## SPC-2 "Large File Processing/READ-WRITE/256 KiB Transfer Size" Average Data Rate Graph – Measurement Interval (MI) Only



## 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 | 80 Streams | | | TR22 | 40 Streams | | | TR23 | 20 Streams | | | TR24 | 10 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 | 96.89 | 48.44 | 8.90 | 0:10:00 | 111.78 | 37.26 | 12.73 | 0:20:00 | 107.79 | 53.90 | 10.36 | 0:30:00 | 91.65 | 91.65 | 8.58 | 0:40:00 | 93.11 | 93.11 | 8.45 |
| 0:00:05 | 306.18 | 21.87 | 29.99 | 0:10:05 | 257.11 | 32.14 | 21.32 | 0:20:05 | 178.89 | 44.72 | 17.04 | 0:30:05 | 134.22 | 67.11 | 9.14 | 0:40:05 | 127.30 | 127.30 | 8.23 |
| 0:00:10 | 363.44 | 20.19 | 46.40 | 0:10:10 | 412.93 | 37.54 | 24.50 | 0:20:10 | 309.75 | 44.25 | 17.93 | 0:30:10 | 261.93 | 87.31 | 10.54 | 0:40:10 | 126.25 | 126.25 | 8.29 |
| 0:00:15 | 494.72 | 19.79 | 43.94 | 0:10:15 | 542.74 | 41.75 | 23.66 | 0:20:15 | 472.07 | 52.45 | 18.12 | 0:30:15 | 317.30 | 79.32 | 12.78 | 0:40:15 | 127.93 | 127.93 | 8.18 |
| 0:00:20 | 685.56 | 23.64 | 39.93 | 0:10:20 | 666.68 | 35.09 | 25.09 | 0:20:20 | 617.61 | 56.15 | 17.43 | 0:30:20 | 340.58 | 68.12 | 13.05 | 0:40:20 | 124.57 | 124.57 | 8.41 |
| 0:00:25 | 771.33 | 21.43 | 46.06 | 0:10:25 | 762.73 | 36.32 | 27.30 | 0:20:25 | 646.76 | 53.90 | 18.92 | 0:30:25 | 433.48 | 86.70 | 12.10 | 0:40:25 | 123.52 | 123.52 | 8.48 |
| 0:00:30 | 834.67 | 18.14 | 51.17 | 0:10:30 | 787.90 | 32.83 | 28.70 | 0:20:30 | 661.65 | 50.90 | 20.21 | 0:30:30 | 422.37 | 70.39 | 12.62 | 0:40:30 | 123.94 | 123.94 | 8.46 |
| 0:00:35 | 854.38 | 17.09 | 58.76 | 0:10:35 | 777.62 | 28.80 | 33.88 | 0:20:35 | 651.59 | 50.12 | 20.90 | 0:30:35 | 469.13 | 78.19 | 13.40 | 0:40:35 | 128.35 | 128.35 | 8.16 |
| 0:00:40 | 852.07 | 15.78 | 64.16 | 0:10:40 | 808.45 | 26.08 | 38.32 | 0:20:40 | 640.68 | 45.76 | 21.85 | 0:30:40 | 482.76 | 80.46 | 13.03 | 0:40:40 | 127.09 | 127.09 | 8.24 |
| 0:00:45 | 841.80 | 14.27 | 69.66 | 0:10:45 | 872.83 | 27.28 | 38.14 | 0:20:45 | 661.86 | 44.12 | 22.69 | 0:30:45 | 445.44 | 74.24 | 14.11 | 0:40:45 | 131.70 | 131.70 | 7.95 |
| 0:00:50 | 912.05 | 14.71 | 69.61 | 0:10:50 | 913.73 | 26.87 | 37.95 | 0:20:50 | 758.33 | 42.13 | 23.67 | 0:30:50 | 470.18 | 78.36 | 13.36 | 0:40:50 | 130.86 | 130.86 | 8.01 |
| 0:00:55 | 930.09 | 14.31 | 70.99 | 0:10:55 | 969.93 | 27.71 | 37.54 | 0:20:55 | 832.78 | 46.27 | 22.67 | 0:30:55 | 477.10 | 79.52 | 13.20 | 0:40:55 | 128.97 | 128.97 | 8.12 |
| 0:01:00 | 978.53 | 14.39 | 70.84 | 0:11:00 | 971.61 | 27.76 | 37.73 | 0:21:00 | 815.79 | 45.32 | 23.12 | 0:31:00 | 451.10 | 75.18 | 13.93 | 0:41:00 | 124.78 | 124.78 | 8.40 |
| 0:01:05 | 1,037.46 | 14.61 | 70.24 | 0:11:05 | 942.88 | 26.94 | 38.94 | 0:21:05 | 822.29 | 43.28 | 23.45 | 0:31:05 | 477.73 | 68.25 | 13.64 | 0:41:05 | 130.65 | 130.65 | 8.02 |
| 0:01:10 | 1,039.98 | 14.05 | 72.53 | 0:11:10 | 983.56 | 25.88 | 39.23 | 0:21:10 | 800.27 | 42.12 | 24.89 | 0:31:10 | 469.13 | 67.02 | 15.65 | 0:41:10 | 130.44 | 130.44 | 8.03 |
| 0:01:15 | 1,057.17 | 14.10 | 73.56 | 0:11:15 | 1,002.65 | 26.39 | 39.64 | 0:21:15 | 830.26 | 43.70 | 23.99 | 0:31:15 | 499.33 | 62.42 | 14.94 | 0:41:15 | 127.09 | 127.09 | 8.24 |
| 0:01:20 | 1,043.33 | 13.73 | 76.04 | 0:11:20 | 1,022.36 | 25.56 | 39.91 | 0:21:20 | 825.65 | 41.28 | 24.33 | 0:31:20 | 592.66 | 65.85 | 15.71 | 0:41:20 | 128.35 | 128.35 | 8.17 |
| 0:01:25 | 1,099.54 | 13.74 | 74.55 | 0:11:25 | 999.29 | 24.98 | 41.98 | 0:21:25 | 860.46 | 43.02 | 24.34 | 0:31:25 | 590.77 | 59.08 | 16.15 | 0:41:25 | 127.09 | 127.09 | 8.25 |
| 0:01:30 | 1,062.21 | 13.28 | 79.03 | 0:11:30 | 1,006.63 | 25.17 | 41.67 | 0:21:30 | 855.43 | 42.77 | 24.50 | 0:31:30 | 598.11 | 59.81 | 17.38 | 0:41:30 | 128.97 | 128.97 | 8.13 |
| 0:01:35 | 1,038.72 | 12.98 | 80.81 | 0:11:35 | 1,008.10 | 25.20 | 41.59 | 0:21:35 | 830.05 | 41.50 | 25.24 | 0:31:35 | 601.88 | 60.19 | 17.40 | 0:41:35 | 126.25 | 126.25 | 8.29 |
| 0:01:40 | 1,080.66 | 13.51 | 77.55 | 0:11:40 | 1,001.18 | 25.03 | 41.89 | 0:21:40 | 846.83 | 42.34 | 24.79 | 0:31:40 | 594.12 | 59.41 | 17.64 | 0:41:40 | 129.18 | 129.18 | 8.12 |
| 0:01:45 | 1,056.96 | 13.21 | 79.50 | 0:11:45 | 998.03 | 24.95 | 42.02 | 0:21:45 | 816.63 | 40.83 | 25.67 | 0:31:45 | 647.18 | 64.72 | 16.21 | 0:41:45 | 127.51 | 127.51 | 8.22 |
| 0:01:50 | 1,076.89 | 13.46 | 77.85 | 0:11:50 | 995.52 | 24.89 | 42.07 | 0:21:50 | 832.36 | 41.62 | 25.17 | 0:31:50 | 618.87 | 61.89 | 16.92 | 0:41:50 | 128.56 | 128.56 | 8.15 |
| 0:01:55 | 1,078.36 | 13.48 | 77.67 | 0:11:55 | 997.41 | 24.94 | 42.06 | 0:21:55 | 836.76 | 41.84 | 25.06 | 0:31:55 | 659.76 | 65.98 | 15.90 | 0:41:55 | 124.99 | 124.99 | 8.38 |
| 0:02:00 | 1,072.90 | 13.41 | 78.31 | 0:12:00 | 987.76 | 24.69 | 42.36 | 0:22:00 | 849.35 | 42.47 | 24.68 | 0:32:00 | 665.85 | 66.58 | 15.73 | 0:42:00 | 126.88 | 126.88 | 8.25 |
| 0:02:05 | 1,095.55 | 13.69 | 76.58 | 0:12:05 | 980.84 | 24.52 | 42.88 | 0:22:05 | 837.81 | 41.89 | 25.05 | 0:32:05 | 678.64 | 67.86 | 15.44 | 0:42:05 | 131.91 | 131.91 | 7.95 |
| 0:02:10 | 1,078.36 | 13.48 | 77.78 | 0:12:10 | 1,014.81 | 25.37 | 41.28 | 0:22:10 | 852.07 | 42.60 | 24.59 | 0:32:10 | 659.55 | 65.96 | 15.90 | 0:42:10 | 131.28 | 131.28 | 7.97 |
| 0:02:15 | 1,081.29 | 13.52 | 77.39 | 0:12:15 | 1,021.52 | 25.54 | 41.02 | 0:22:15 | 846.20 | 42.31 | 24.76 | 0:32:15 | 613.84 | 61.38 | 17.08 | 0:42:15 | 124.78 | 124.78 | 8.39 |
| 0:02:20 | 1,084.02 | 13.55 | 77.50 | 0:12:20 | 999.92 | 25.00 | 42.06 | 0:22:20 | 853.54 | 42.68 | 24.56 | 0:32:20 | 638.16 | 63.82 | 16.42 | 0:42:20 | 126.25 | 126.25 | 8.31 |
| 0:02:25 | 1,098.91 | 13.74 | 76.23 | 0:12:25 | 1,006.84 | 25.17 | 41.56 | 0:22:25 | 852.49 | 42.62 | 24.61 | 0:32:25 | 687.87 | 68.79 | 15.23 | 0:42:25 | 125.41 | 125.41 | 8.35 |
| 0:02:30 | 1,066.19 | 13.33 | 78.70 | 0:12:30 | 998.03 | 24.95 | 42.06 | 0:22:30 | 857.94 | 42.90 | 24.41 | 0:32:30 | 647.81 | 64.78 | 16.19 | 0:42:30 | 131.07 | 131.07 | 7.99 |
| 0:02:35 | 1,068.71 | 13.36 | 78.35 | 0:12:35 | 984.19 | 24.60 | 42.64 | 0:22:35 | 868.64 | 43.43 | 24.15 | 0:32:35 | 609.01 | 60.90 | 17.19 | 0:42:35 | 130.44 | 130.44 | 8.03 |
| 0:02:40 | 1,068.08 | 13.35 | 78.63 | 0:12:40 | 1,005.37 | 25.13 | 41.69 | 0:22:40 | 867.59 | 43.38 | 24.18 | 0:32:40 | 622.43 | 62.24 | 16.84 | 0:42:40 | 131.07 | 131.07 | 7.98 |
| 0:02:45 | 1,065.56 | 13.32 | 78.84 | 0:12:45 | 1,042.28 | 26.06 | 40.26 | 0:22:45 | 863.82 | 43.19 | 24.27 | 0:32:45 | 628.31 | 62.83 | 16.69 | 0:42:45 | 125.20 | 125.20 | 8.38 |
| 0:02:50 | 1,080.45 | 13.51 | 77.54 | 0:12:50 | 1,076.89 | 26.92 | 38.88 | 0:22:50 | 845.36 | 42.27 | 24.81 | 0:32:50 | 643.62 | 64.36 | 16.29 | 0:42:50 | 124.15 | 124.15 | 8.44 |
| 0:02:55 | 1,076.89 | 13.46 | 77.95 | 0:12:55 | 991.74 | 24.79 | 42.36 | 0:22:55 | 836.34 | 41.82 | 25.05 | 0:32:55 | 650.12 | 65.01 | 16.12 | 0:42:55 | 128.97 | 128.97 | 8.12 |

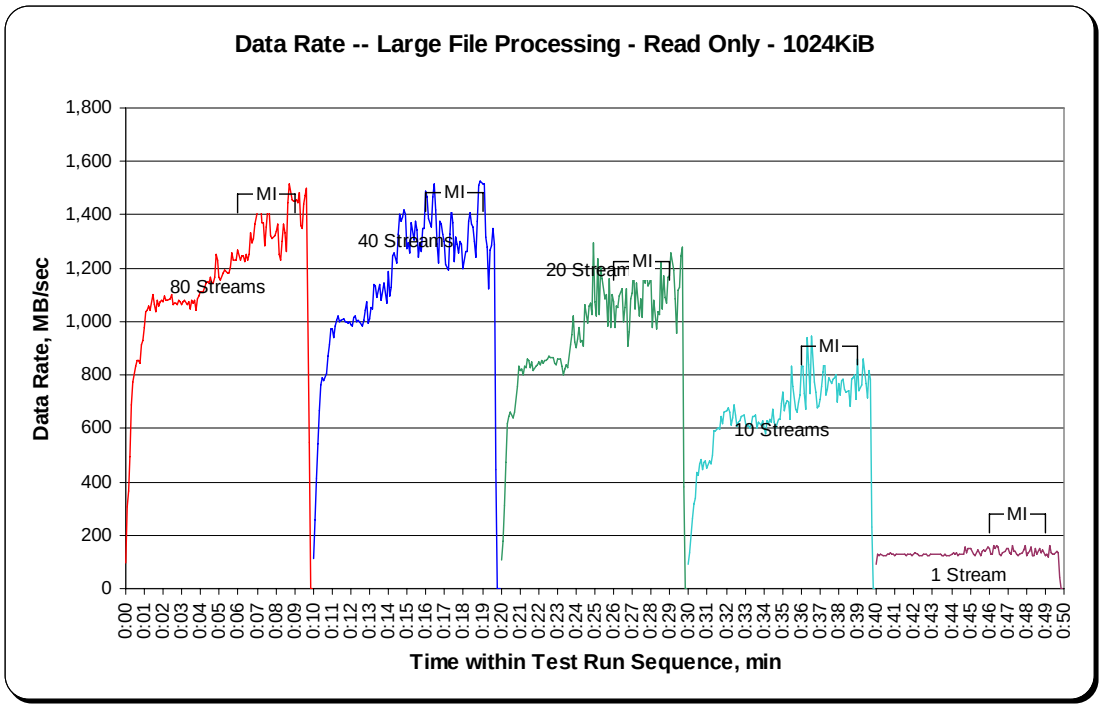
## SPC-2 "Large File Processing/READ ONLY/1024 KiB Transfer Size" Test Run Data – Ramp Up Period *(continued)*

| TR21 | 80 Streams | | | TR22 | 40 Streams | | | TR23 | 20 Streams | | | TR24 | 10 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 |
| 0:03:00 | 1,063.89 | 13.30 | 78.76 | 0:13:00 | 1,007.89 | 25.20 | 41.56 | 0:23:00 | 857.94 | 42.90 | 24.44 | 0:33:00 | 619.71 | 61.97 | 16.91 | 0:43:00 | 126.67 | 126.67 | 8.26 |
| 0:03:05 | 1,077.31 | 13.47 | 77.83 | 0:13:05 | 1,054.66 | 26.37 | 39.77 | 0:23:05 | 859.83 | 42.99 | 24.39 | 0:33:05 | 605.45 | 60.54 | 17.30 | 0:43:05 | 129.39 | 129.39 | 8.10 |
| 0:03:10 | 1,080.03 | 13.50 | 77.73 | 0:13:10 | 1,048.58 | 26.21 | 40.02 | 0:23:10 | 859.62 | 42.98 | 24.40 | 0:33:10 | 615.09 | 61.51 | 17.02 | 0:43:10 | 126.67 | 126.67 | 8.27 |
| 0:03:15 | 1,062.63 | 13.28 | 78.96 | 0:13:15 | 1,141.06 | 28.53 | 36.77 | 0:23:15 | 832.78 | 41.64 | 25.15 | 0:33:15 | 602.09 | 60.21 | 17.43 | 0:43:15 | 126.67 | 126.67 | 8.27 |
| 0:03:20 | 1,074.58 | 13.43 | 78.05 | 0:13:20 | 1,131.62 | 28.29 | 37.04 | 0:23:20 | 800.90 | 40.05 | 26.17 | 0:33:20 | 613.84 | 61.38 | 17.08 | 0:43:20 | 130.02 | 130.02 | 8.06 |
| 0:03:25 | 1,046.69 | 13.08 | 79.99 | 0:13:25 | 1,091.99 | 27.30 | 38.42 | 0:23:25 | 823.13 | 41.16 | 25.45 | 0:33:25 | 646.34 | 64.63 | 16.23 | 0:43:25 | 127.72 | 127.72 | 8.20 |
| 0:03:30 | 1,080.45 | 13.51 | 77.67 | 0:13:30 | 1,136.66 | 28.42 | 36.85 | 0:23:30 | 836.34 | 41.82 | 25.09 | 0:33:30 | 644.87 | 64.49 | 16.23 | 0:43:30 | 125.20 | 125.20 | 8.37 |
| 0:03:35 | 1,067.66 | 13.35 | 78.57 | 0:13:35 | 1,077.94 | 26.95 | 38.93 | 0:23:35 | 825.23 | 41.26 | 25.42 | 0:33:35 | 650.12 | 65.01 | 16.13 | 0:43:35 | 125.62 | 125.62 | 8.34 |
| 0:03:40 | 1,080.87 | 13.51 | 77.60 | 0:13:40 | 1,114.43 | 27.86 | 37.61 | 0:23:40 | 914.15 | 45.71 | 22.93 | 0:33:40 | 600.83 | 60.08 | 17.44 | 0:43:40 | 127.30 | 127.30 | 8.23 |
| 0:03:45 | 1,041.24 | 13.02 | 80.57 | 0:13:45 | 1,146.93 | 28.67 | 36.59 | 0:23:45 | 952.74 | 47.64 | 22.02 | 0:33:45 | 624.53 | 62.45 | 16.72 | 0:43:45 | 125.41 | 125.41 | 8.36 |
| 0:03:50 | 1,086.12 | 13.58 | 77.30 | 0:13:50 | 1,105.20 | 27.63 | 37.95 | 0:23:50 | 1,021.94 | 51.10 | 20.50 | 0:33:50 | 612.58 | 61.26 | 17.16 | 0:43:50 | 125.62 | 125.62 | 8.33 |
| 0:03:55 | 1,094.71 | 13.68 | 76.47 | 0:13:55 | 1,068.08 | 26.70 | 39.27 | 0:23:55 | 924.01 | 46.20 | 22.68 | 0:33:55 | 629.98 | 63.00 | 16.64 | 0:43:55 | 123.94 | 123.94 | 8.45 |
| 0:04:00 | 1,110.86 | 13.89 | 75.64 | 0:14:00 | 1,187.83 | 29.70 | 35.32 | 0:24:00 | 901.15 | 45.06 | 23.25 | 0:34:00 | 601.67 | 60.17 | 17.42 | 0:44:00 | 127.51 | 127.51 | 8.22 |
| 0:04:05 | 1,114.43 | 13.93 | 75.25 | 0:14:05 | 1,094.71 | 27.37 | 38.30 | 0:24:05 | 937.43 | 46.87 | 22.35 | 0:34:05 | 582.59 | 58.26 | 18.02 | 0:44:05 | 132.33 | 132.33 | 7.92 |
| 0:04:10 | 1,111.91 | 13.90 | 75.62 | 0:14:10 | 1,128.48 | 28.21 | 37.15 | 0:24:10 | 978.11 | 48.91 | 21.47 | 0:34:10 | 631.03 | 63.10 | 16.59 | 0:44:10 | 127.93 | 127.93 | 8.20 |
| 0:04:15 | 1,141.90 | 14.27 | 73.21 | 0:14:15 | 1,246.76 | 31.17 | 33.53 | 0:24:15 | 923.80 | 46.19 | 22.70 | 0:34:15 | 616.98 | 61.70 | 16.98 | 0:44:15 | 131.70 | 131.70 | 7.95 |
| 0:04:20 | 1,150.29 | 14.38 | 73.09 | 0:14:20 | 1,257.03 | 31.43 | 33.42 | 0:24:20 | 929.25 | 46.46 | 22.54 | 0:34:20 | 633.34 | 63.33 | 16.55 | 0:44:20 | 124.15 | 124.15 | 8.44 |
| 0:04:25 | 1,143.16 | 14.29 | 73.20 | 0:14:25 | 1,220.12 | 30.50 | 34.41 | 0:24:25 | 905.76 | 45.29 | 23.16 | 0:34:25 | 622.85 | 62.29 | 16.85 | 0:44:25 | 128.14 | 128.14 | 8.17 |
| 0:04:30 | 1,168.11 | 14.60 | 71.88 | 0:14:30 | 1,325.61 | 33.14 | 31.63 | 0:24:30 | 1,063.89 | 53.19 | 19.72 | 0:34:30 | 672.14 | 67.21 | 15.58 | 0:44:30 | 127.30 | 127.30 | 8.23 |
| 0:04:35 | 1,144.00 | 14.30 | 73.44 | 0:14:35 | 1,403.20 | 35.08 | 29.91 | 0:24:35 | 991.95 | 49.60 | 21.12 | 0:34:35 | 623.90 | 62.39 | 16.80 | 0:44:35 | 129.60 | 129.60 | 8.09 |
| 0:04:40 | 1,146.72 | 14.33 | 73.08 | 0:14:40 | 1,374.05 | 34.35 | 30.51 | 0:24:40 | 1,058.01 | 52.90 | 19.81 | 0:34:40 | 603.77 | 60.38 | 17.35 | 0:44:40 | 126.67 | 126.67 | 8.27 |
| 0:04:45 | 1,164.76 | 14.56 | 71.98 | 0:14:45 | 1,391.67 | 34.79 | 30.13 | 0:24:45 | 1,066.61 | 53.33 | 19.64 | 0:34:45 | 633.97 | 63.40 | 16.54 | 0:44:45 | 155.61 | 155.61 | 6.73 |
| 0:04:50 | 1,249.48 | 15.62 | 67.23 | 0:14:50 | 1,416.84 | 35.42 | 29.57 | 0:24:50 | 1,024.25 | 51.21 | 20.47 | 0:34:50 | 631.66 | 63.17 | 16.60 | 0:44:50 | 134.85 | 134.85 | 7.77 |
| 0:04:55 | 1,231.24 | 15.39 | 67.95 | 0:14:55 | 1,403.41 | 35.09 | 29.88 | 0:24:55 | 1,296.67 | 64.83 | 16.18 | 0:34:55 | 691.85 | 69.19 | 15.14 | 0:44:55 | 151.62 | 151.62 | 6.91 |
| 0:05:00 | 1,165.18 | 14.56 | 71.98 | 0:15:00 | 1,274.02 | 31.85 | 32.90 | 0:25:00 | 1,072.27 | 53.61 | 19.54 | 0:35:00 | 734.00 | 73.40 | 14.27 | 0:45:00 | 150.16 | 150.16 | 6.98 |
| 0:05:05 | 1,153.43 | 14.42 | 72.86 | 0:15:05 | 1,296.88 | 32.42 | 32.32 | 0:25:05 | 1,022.99 | 51.15 | 20.49 | 0:35:05 | 664.59 | 66.46 | 15.79 | 0:45:05 | 137.99 | 137.99 | 7.58 |
| 0:05:10 | 1,181.54 | 14.77 | 70.92 | 0:15:10 | 1,255.15 | 31.38 | 33.39 | 0:25:10 | 1,237.11 | 61.86 | 16.95 | 0:35:10 | 691.85 | 69.19 | 15.14 | 0:45:10 | 128.35 | 128.35 | 8.18 |
| 0:05:15 | 1,190.55 | 14.88 | 70.52 | 0:15:15 | 1,368.18 | 34.20 | 30.66 | 0:25:15 | 1,025.51 | 51.28 | 20.45 | 0:35:15 | 705.27 | 70.53 | 14.86 | 0:45:15 | 126.25 | 126.25 | 8.29 |
| 0:05:20 | 1,187.62 | 14.85 | 70.54 | 0:15:20 | 1,306.95 | 32.67 | 32.12 | 0:25:20 | 1,205.44 | 60.27 | 17.40 | 0:35:20 | 697.51 | 69.75 | 15.04 | 0:45:20 | 132.54 | 132.54 | 7.91 |
| 0:05:25 | 1,179.65 | 14.75 | 71.13 | 0:15:25 | 1,375.94 | 34.40 | 30.46 | 0:25:25 | 1,160.35 | 58.02 | 18.06 | 0:35:25 | 633.13 | 63.31 | 16.51 | 0:45:25 | 142.61 | 142.61 | 7.35 |
| 0:05:30 | 1,180.70 | 14.76 | 70.95 | 0:15:30 | 1,341.76 | 33.54 | 31.57 | 0:25:30 | 1,088.00 | 54.40 | 19.26 | 0:35:30 | 835.30 | 83.53 | 12.57 | 0:45:30 | 136.11 | 136.11 | 7.69 |
| 0:05:35 | 1,206.07 | 15.08 | 69.68 | 0:15:35 | 1,239.00 | 30.97 | 33.51 | 0:25:35 | 1,101.00 | 55.05 | 19.03 | 0:35:35 | 755.18 | 75.52 | 13.89 | 0:45:35 | 126.04 | 126.04 | 8.28 |
| 0:05:40 | 1,255.36 | 15.69 | 66.85 | 0:15:40 | 1,292.47 | 32.31 | 32.46 | 0:25:40 | 985.66 | 49.28 | 21.27 | 0:35:40 | 669.83 | 66.98 | 15.63 | 0:45:40 | 139.46 | 139.46 | 7.54 |
| 0:05:45 | 1,232.50 | 15.41 | 68.03 | 0:15:45 | 1,260.60 | 31.51 | 33.21 | 0:25:45 | 1,159.73 | 57.99 | 18.06 | 0:35:45 | 658.30 | 65.83 | 15.92 | 0:45:45 | 144.28 | 144.28 | 7.25 |
| 0:05:50 | 1,228.93 | 15.36 | 68.31 | 0:15:50 | 1,350.78 | 33.77 | 31.12 | 0:25:50 | 978.32 | 48.92 | 21.44 | 0:35:50 | 701.08 | 70.11 | 14.95 | 0:45:50 | 137.78 | 137.78 | 7.61 |
| 0:05:55 | 1,228.09 | 15.35 | 68.17 | 0:15:55 | 1,351.20 | 33.78 | 30.99 | 0:25:55 | 1,103.10 | 55.16 | 19.00 | 0:35:55 | 727.92 | 72.79 | 14.41 | 0:45:55 | 154.77 | 154.77 | 6.77 |

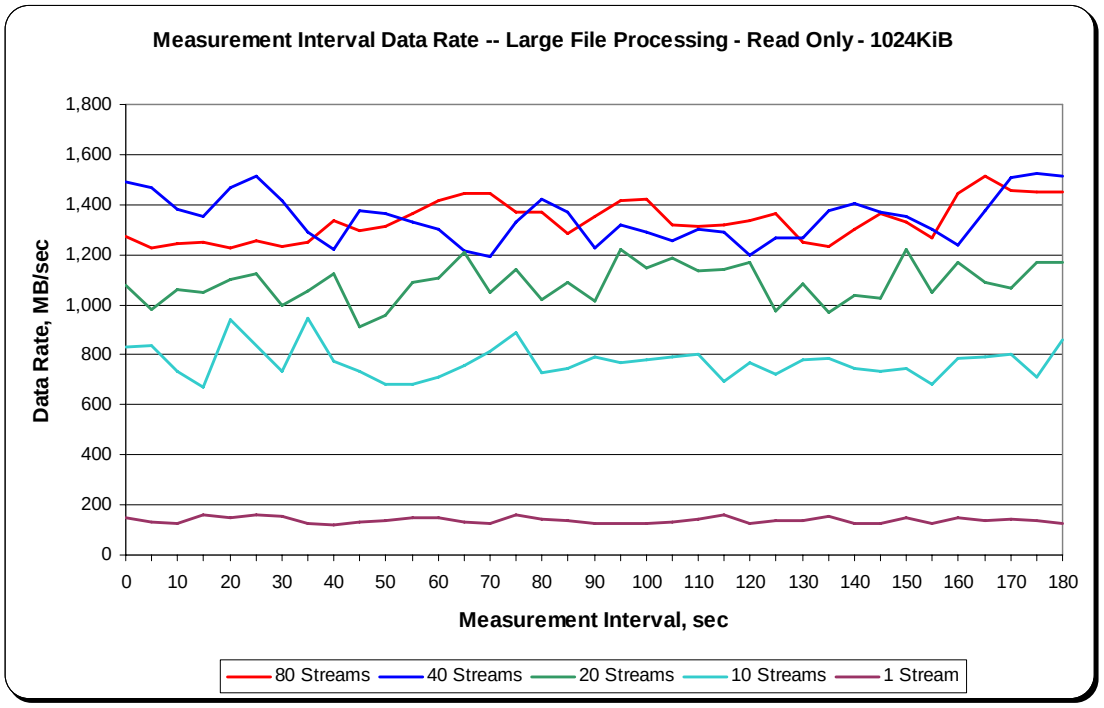
## SPC-2 "Large File Processing/READ ONLY/1024 KiB Transfer Size" Test Run Data
## **Measurement Interval, Run-Out, and Ramp-Down Periods**

| TR21 | 80 Streams | | | TR22 | 40 Streams | | | TR23 | 20 Streams | | | TR24 | 10 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 |
| 0:06:00 | 1,270.04 | 15.88 | 66.14 | 0:16:00 | 1,489.61 | 37.24 | 28.16 | 0:26:00 | 1,076.89 | 53.84 | 19.48 | 0:36:00 | 832.57 | 83.26 | 12.58 | 0:46:00 | 148.06 | 148.06 | 7.07 |
| 0:06:05 | 1,228.51 | 15.36 | 68.26 | 0:16:05 | 1,465.91 | 36.65 | 28.62 | 0:26:05 | 977.48 | 48.87 | 21.43 | 0:36:05 | 835.30 | 83.53 | 12.56 | 0:46:05 | 129.39 | 129.39 | 8.09 |
| 0:06:10 | 1,246.13 | 15.58 | 67.22 | 0:16:10 | 1,383.70 | 34.59 | 30.30 | 0:26:10 | 1,058.22 | 52.91 | 19.81 | 0:36:10 | 732.54 | 73.25 | 14.30 | 0:46:10 | 128.97 | 128.97 | 8.13 |
| 0:06:15 | 1,247.81 | 15.60 | 67.20 | 0:16:15 | 1,353.50 | 33.84 | 30.96 | 0:26:15 | 1,050.67 | 52.53 | 19.96 | 0:36:15 | 671.72 | 67.17 | 15.61 | 0:46:15 | 161.90 | 161.90 | 6.48 |
| 0:06:20 | 1,225.37 | 15.32 | 68.55 | 0:16:20 | 1,469.26 | 36.73 | 28.53 | 0:26:20 | 1,098.07 | 54.90 | 19.11 | 0:36:20 | 939.94 | 93.99 | 11.15 | 0:46:20 | 150.37 | 150.37 | 6.96 |
| 0:06:25 | 1,254.10 | 15.68 | 66.90 | 0:16:25 | 1,515.19 | 37.88 | 27.69 | 0:26:25 | 1,121.35 | 56.07 | 18.67 | 0:36:25 | 839.49 | 83.95 | 12.48 | 0:46:25 | 159.38 | 159.38 | 6.57 |
| 0:06:30 | 1,231.24 | 15.39 | 68.17 | 0:16:30 | 1,417.67 | 35.44 | 29.57 | 0:26:30 | 999.92 | 50.00 | 20.98 | 0:36:30 | 732.95 | 73.30 | 14.30 | 0:46:30 | 154.98 | 154.98 | 6.76 |
| 0:06:35 | 1,252.42 | 15.66 | 66.93 | 0:16:35 | 1,287.44 | 32.19 | 32.59 | 0:26:35 | 1,055.50 | 52.77 | 19.87 | 0:36:35 | 947.91 | 94.79 | 11.04 | 0:46:35 | 127.51 | 127.51 | 8.22 |
| 0:06:40 | 1,333.16 | 16.66 | 62.94 | 0:16:40 | 1,218.86 | 30.47 | 34.36 | 0:26:41 | 1,122.40 | 56.12 | 19.09 | 0:36:40 | 772.59 | 77.26 | 13.57 | 0:46:40 | 122.47 | 122.47 | 8.55 |
| 0:06:45 | 1,294.57 | 16.18 | 64.76 | 0:16:45 | 1,377.83 | 34.45 | 30.45 | 0:26:45 | 910.37 | 45.52 | 22.49 | 0:36:45 | 736.52 | 73.65 | 14.23 | 0:46:45 | 131.91 | 131.91 | 7.95 |
| 0:06:50 | 1,313.45 | 16.42 | 63.74 | 0:16:50 | 1,364.41 | 34.11 | 30.73 | 0:26:50 | 960.08 | 48.00 | 21.85 | 0:36:50 | 679.69 | 67.97 | 15.43 | 0:46:50 | 137.36 | 137.36 | 7.63 |
| 0:06:55 | 1,367.13 | 17.09 | 61.55 | 0:16:55 | 1,329.17 | 33.23 | 31.52 | 0:26:55 | 1,086.53 | 54.33 | 19.31 | 0:36:55 | 680.74 | 68.07 | 15.38 | 0:46:55 | 148.69 | 148.69 | 7.05 |
| 0:07:00 | 1,416.84 | 17.71 | 59.12 | 0:17:00 | 1,302.54 | 32.56 | 32.22 | 0:27:00 | 1,109.18 | 55.46 | 18.86 | 0:37:00 | 711.14 | 71.11 | 14.74 | 0:47:00 | 151.41 | 151.41 | 6.91 |
| 0:07:05 | 1,444.52 | 18.06 | 58.06 | 0:17:05 | 1,215.93 | 30.40 | 34.48 | 0:27:05 | 1,206.91 | 60.35 | 17.38 | 0:37:05 | 757.28 | 75.73 | 13.85 | 0:47:05 | 133.38 | 133.38 | 7.86 |
| 0:07:10 | 1,442.42 | 18.03 | 58.10 | 0:17:10 | 1,192.02 | 29.80 | 35.13 | 0:27:10 | 1,050.04 | 52.50 | 19.98 | 0:37:10 | 813.49 | 81.35 | 12.89 | 0:47:10 | 127.30 | 127.30 | 8.24 |
| 0:07:15 | 1,370.49 | 17.13 | 61.28 | 0:17:15 | 1,328.13 | 33.20 | 31.62 | 0:27:15 | 1,142.95 | 57.15 | 18.34 | 0:37:15 | 886.68 | 88.67 | 11.82 | 0:47:15 | 161.06 | 161.06 | 6.50 |
| 0:07:20 | 1,370.49 | 17.13 | 61.15 | 0:17:20 | 1,422.08 | 35.55 | 29.50 | 0:27:20 | 1,023.20 | 51.16 | 20.49 | 0:37:20 | 725.61 | 72.56 | 14.42 | 0:47:20 | 140.51 | 140.51 | 7.46 |
| 0:07:25 | 1,283.88 | 16.05 | 65.41 | 0:17:25 | 1,372.38 | 34.31 | 30.53 | 0:27:25 | 1,086.53 | 54.33 | 19.30 | 0:37:25 | 744.70 | 74.47 | 14.09 | 0:47:25 | 138.62 | 138.62 | 7.53 |
| 0:07:30 | 1,355.18 | 16.94 | 61.77 | 0:17:30 | 1,225.58 | 30.64 | 34.22 | 0:27:30 | 1,017.12 | 50.86 | 20.61 | 0:37:30 | 791.47 | 79.15 | 13.24 | 0:47:30 | 127.93 | 127.93 | 8.21 |
| 0:07:35 | 1,417.26 | 17.72 | 59.37 | 0:17:35 | 1,317.22 | 32.93 | 31.80 | 0:27:35 | 1,219.70 | 60.99 | 17.18 | 0:37:35 | 769.45 | 76.94 | 13.62 | 0:47:35 | 123.94 | 123.94 | 8.46 |
| 0:07:40 | 1,418.93 | 17.74 | 59.04 | 0:17:40 | 1,288.28 | 32.21 | 32.59 | 0:27:40 | 1,146.09 | 57.30 | 18.30 | 0:37:40 | 782.45 | 78.24 | 13.39 | 0:47:40 | 128.56 | 128.56 | 8.14 |
| 0:07:45 | 1,321.21 | 16.52 | 63.41 | 0:17:45 | 1,256.19 | 31.40 | 33.38 | 0:27:45 | 1,186.57 | 59.33 | 17.62 | 0:37:45 | 790.00 | 79.00 | 13.27 | 0:47:45 | 133.80 | 133.80 | 7.83 |
| 0:07:50 | 1,311.98 | 16.40 | 63.87 | 0:17:50 | 1,300.02 | 32.50 | 32.27 | 0:27:50 | 1,134.35 | 56.72 | 18.53 | 0:37:50 | 800.06 | 80.01 | 13.10 | 0:47:50 | 143.24 | 143.24 | 7.32 |
| 0:07:55 | 1,319.74 | 16.50 | 63.73 | 0:17:55 | 1,288.70 | 32.22 | 32.51 | 0:27:55 | 1,143.16 | 57.16 | 18.32 | 0:37:55 | 695.84 | 69.58 | 15.06 | 0:47:55 | 158.96 | 158.96 | 6.59 |
| 0:08:00 | 1,337.77 | 16.72 | 62.63 | 0:18:00 | 1,199.57 | 29.99 | 34.92 | 0:28:00 | 1,169.16 | 58.46 | 17.95 | 0:38:00 | 766.09 | 76.61 | 13.68 | 0:48:00 | 126.04 | 126.04 | 8.31 |
| 0:08:05 | 1,365.46 | 17.07 | 61.41 | 0:18:05 | 1,264.79 | 31.62 | 33.22 | 0:28:05 | 976.22 | 48.81 | 21.48 | 0:38:05 | 723.31 | 72.33 | 14.50 | 0:48:05 | 136.94 | 136.94 | 7.65 |
| 0:08:10 | 1,252.42 | 15.66 | 66.88 | 0:18:10 | 1,264.79 | 31.62 | 33.14 | 0:28:10 | 1,081.29 | 54.06 | 19.38 | 0:38:10 | 778.46 | 77.85 | 13.46 | 0:48:10 | 138.62 | 138.62 | 7.56 |
| 0:08:15 | 1,230.82 | 15.39 | 68.17 | 0:18:15 | 1,376.78 | 34.42 | 30.45 | 0:28:15 | 971.40 | 48.57 | 21.59 | 0:38:15 | 784.96 | 78.50 | 13.32 | 0:48:15 | 155.19 | 155.19 | 6.75 |
| 0:08:20 | 1,302.54 | 16.28 | 64.45 | 0:18:20 | 1,406.98 | 35.17 | 29.81 | 0:28:20 | 1,039.56 | 51.98 | 20.15 | 0:38:20 | 744.49 | 74.45 | 14.11 | 0:48:20 | 124.78 | 124.78 | 8.40 |
| 0:08:25 | 1,364.20 | 17.05 | 61.54 | 0:18:25 | 1,367.34 | 34.18 | 30.67 | 0:28:25 | 1,028.86 | 51.44 | 20.37 | 0:38:25 | 735.05 | 73.51 | 14.25 | 0:48:25 | 125.20 | 125.20 | 8.37 |
| 0:08:30 | 1,331.27 | 16.64 | 62.93 | 0:18:30 | 1,352.87 | 33.82 | 30.97 | 0:28:30 | 1,223.69 | 61.18 | 17.15 | 0:38:30 | 743.44 | 74.34 | 14.10 | 0:48:30 | 148.48 | 148.48 | 7.05 |
| 0:08:35 | 1,264.79 | 15.81 | 66.29 | 0:18:35 | 1,298.56 | 32.46 | 32.29 | 0:28:35 | 1,046.90 | 52.34 | 20.00 | 0:38:35 | 680.74 | 68.07 | 15.40 | 0:48:35 | 126.88 | 126.88 | 8.26 |
| 0:08:40 | 1,445.99 | 18.07 | 58.09 | 0:18:40 | 1,240.68 | 31.02 | 33.76 | 0:28:40 | 1,169.58 | 58.48 | 17.94 | 0:38:40 | 785.17 | 78.52 | 13.35 | 0:48:40 | 149.53 | 149.53 | 7.01 |
| 0:08:45 | 1,516.24 | 18.95 | 55.38 | 0:18:45 | 1,376.78 | 34.42 | 30.48 | 0:28:45 | 1,089.05 | 54.45 | 19.25 | 0:38:45 | 788.74 | 78.87 | 13.29 | 0:48:45 | 134.85 | 134.85 | 7.77 |
| 0:08:50 | 1,457.73 | 18.22 | 57.53 | 0:18:50 | 1,508.69 | 37.72 | 27.82 | 0:28:50 | 1,068.71 | 53.44 | 19.63 | 0:38:50 | 799.85 | 79.99 | 13.10 | 0:48:50 | 143.65 | 143.65 | 7.29 |
| 0:08:55 | 1,448.50 | 18.11 | 57.86 | 0:18:55 | 1,524.00 | 38.10 | 27.51 | 0:28:55 | 1,168.32 | 58.42 | 17.94 | 0:38:55 | 710.72 | 71.07 | 14.75 | 0:48:55 | 136.94 | 136.94 | 7.65 |
| 0:09:00 | 1,449.34 | 18.12 | 57.86 | 0:19:00 | 1,513.93 | 37.85 | 27.70 | 0:29:00 | 1,170.63 | 58.53 | 17.89 | 0:39:00 | 859.62 | 85.96 | 12.20 | 0:49:00 | 125.83 | 125.83 | 8.32 |
| 0:09:05 | 1,457.73 | 18.22 | 57.48 | 0:19:05 | 1,513.51 | 37.84 | 27.69 | 0:29:05 | 1,258.08 | 62.90 | 16.68 | 0:39:05 | 740.29 | 74.03 | 14.14 | 0:49:05 | 127.30 | 127.30 | 8.23 |
| 0:09:10 | 1,447.24 | 18.09 | 58.00 | 0:19:10 | 1,317.64 | 32.94 | 31.79 | 0:29:10 | 1,190.34 | 59.52 | 17.58 | 0:39:10 | 754.35 | 75.43 | 13.90 | 0:49:10 | 118.70 | 118.70 | 8.82 |
| 0:09:15 | 1,485.41 | 18.57 | 56.47 | 0:19:15 | 1,277.58 | 31.94 | 32.85 | 0:29:15 | 1,086.95 | 54.35 | 19.29 | 0:39:15 | 765.25 | 76.53 | 13.70 | 0:49:15 | 159.80 | 159.80 | 6.55 |
| 0:09:20 | 1,358.33 | 16.98 | 61.74 | 0:19:20 | 1,122.61 | 28.07 | 37.31 | 0:29:20 | 957.35 | 47.87 | 21.91 | 0:39:20 | 857.74 | 85.77 | 12.22 | 0:49:20 | 133.80 | 133.80 | 7.83 |
| 0:09:25 | 1,348.05 | 16.85 | 62.15 | 0:19:25 | 1,265.84 | 31.65 | 33.16 | 0:29:25 | 1,118.62 | 55.93 | 18.73 | 0:39:25 | 768.61 | 76.86 | 13.62 | 0:49:25 | 129.39 | 129.39 | 8.10 |
| 0:09:30 | 1,438.23 | 17.98 | 58.36 | 0:19:30 | 1,286.60 | 32.17 | 32.57 | 0:29:30 | 1,130.57 | 56.53 | 18.57 | 0:39:30 | 714.29 | 71.43 | 14.68 | 0:49:30 | 130.86 | 130.86 | 8.00 |
| 0:09:35 | 1,471.57 | 18.39 | 57.04 | 0:19:35 | 1,346.79 | 33.67 | 31.15 | 0:29:35 | 1,244.24 | 62.21 | 16.84 | 0:39:35 | 817.89 | 81.79 | 12.82 | 0:49:35 | 138.20 | 138.20 | 7.58 |
| 0:09:40 | 1,496.74 | 18.71 | 56.07 | 0:19:40 | 1,287.02 | 32.18 | 32.53 | 0:29:40 | 1,280.52 | 64.03 | 16.36 | 0:39:40 | 785.38 | 78.54 | 13.33 | 0:49:40 | 133.38 | 133.38 | 7.85 |
| 0:09:45 | 546.10 | 0.00 | 49.90 | 0:19:45 | 447.74 | 0.00 | 30.37 | 0:29:45 | 383.15 | 0.00 | 17.85 | 0:39:45 | 228.59 | 0.00 | 14.78 | 0:49:45 | 43.83 | 0.00 | 5.96 |
| 0:09:50 | 0.00 | 0.00 | 0.00 | 0:19:50 | 0.00 | 0.00 | 0.00 | 0:29:50 | 0.00 | 0.00 | 0.00 | 0:39:50 | 0.00 | 0.00 | 0.00 | 0:49:50 | 0.00 | 0.00 | 0.00 |
| 0:09:55 | 0.00 | 0.00 | 0.00 | 0:19:55 | 0.00 | 0.00 | 0.00 | 0:29:55 | 0.00 | 0.00 | 0.00 | 0:39:55 | 0.00 | 0.00 | 0.00 | 0:49:55 | 0.00 | 0.00 | 0.00 |

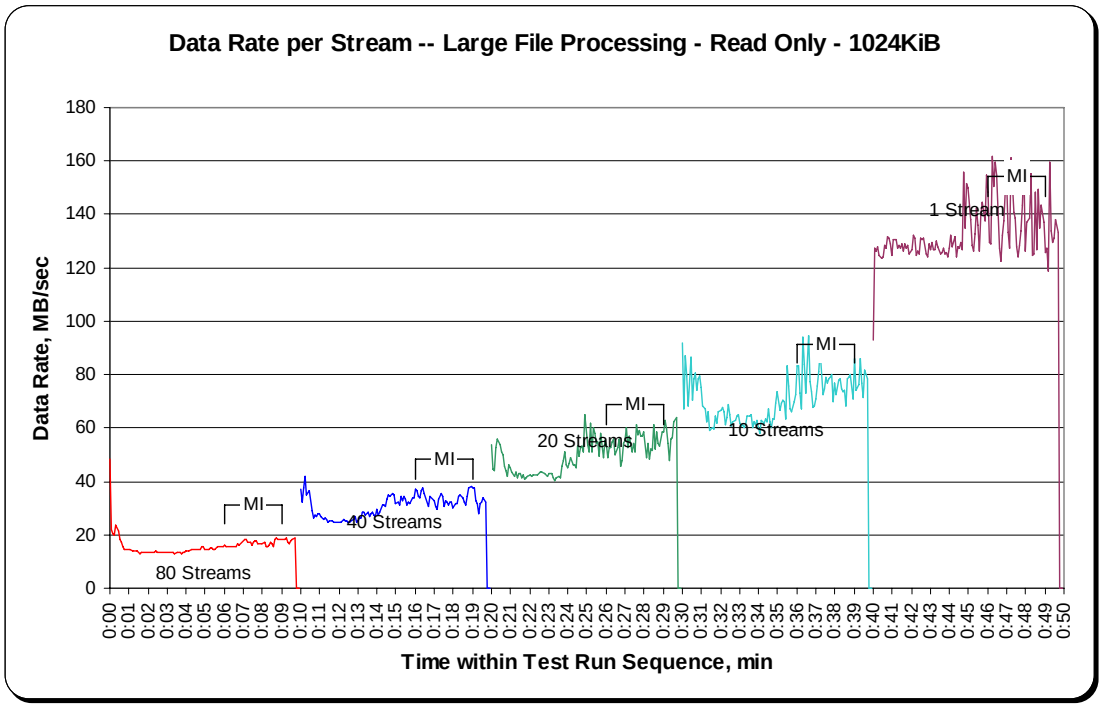
## SPC-2 "Large File Processing/READ ONLY/1024 KiB Transfer Size" Average Data Rate Graph – Complete Test Run



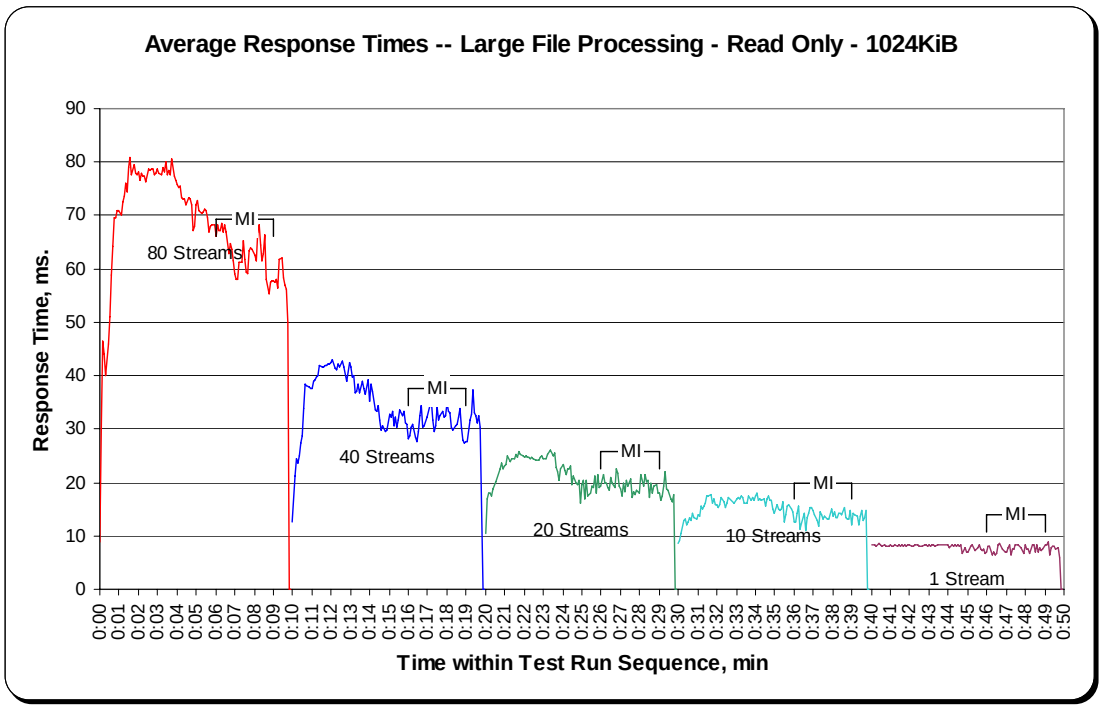

## SPC-2 "Large File Processing/READ ONLY/1024 KiB Transfer Size" Average Data Rate Graph – Measurement Interval (MI) Only



## 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 | 80 Streams | | | TR27 | 40 Streams | | | TR28 | 20 Streams | | | TR29 | 10 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 | 120.11 | 17.16 | 7.23 | 0:10:00 | 76.44 | 25.48 | 4.93 | 0:20:00 | 76.86 | 25.62 | 5.05 | 0:30:00 | 60.56 | 60.56 | 3.25 | 0:40:00 | 60.03 | 60.03 | 3.26 |
| 0:00:05 | 218.73 | 18.23 | 11.71 | 0:10:05 | 161.01 | 23.00 | 7.52 | 0:20:05 | 157.81 | 39.45 | 6.48 | 0:30:05 | 125.04 | 62.52 | 3.88 | 0:40:05 | 77.96 | 77.96 | 3.37 |
| 0:00:10 | 327.05 | 16.35 | 13.06 | 0:10:10 | 249.40 | 27.71 | 7.81 | 0:20:10 | 277.03 | 39.58 | 5.99 | 0:30:10 | 124.99 | 62.50 | 4.19 | 0:40:10 | 81.37 | 81.37 | 3.21 |
| 0:00:15 | 479.30 | 18.43 | 12.35 | 0:10:15 | 314.78 | 31.48 | 7.88 | 0:20:15 | 344.46 | 38.27 | 6.14 | 0:30:15 | 107.37 | 35.79 | 5.10 | 0:40:15 | 78.54 | 78.54 | 3.34 |
| 0:00:20 | 631.87 | 17.08 | 13.31 | 0:10:20 | 401.03 | 33.42 | 7.46 | 0:20:20 | 415.45 | 41.54 | 6.06 | 0:30:20 | 165.78 | 55.26 | 4.74 | 0:40:20 | 83.89 | 83.89 | 3.12 |
| 0:00:25 | 737.94 | 18.45 | 14.06 | 0:10:25 | 493.93 | 29.05 | 8.03 | 0:20:25 | 485.70 | 37.36 | 6.53 | 0:30:25 | 165.78 | 55.26 | 4.74 | 0:40:25 | 79.74 | 79.74 | 3.28 |
| 0:00:30 | 744.91 | 17.32 | 14.41 | 0:10:30 | 553.49 | 26.36 | 8.84 | 0:20:30 | 486.33 | 34.74 | 7.08 | 0:30:30 | 247.62 | 41.27 | 4.51 | 0:40:30 | 75.76 | 75.76 | 3.45 |
| 0:00:35 | 756.81 | 16.82 | 14.99 | 0:10:35 | 614.26 | 29.25 | 8.95 | 0:20:35 | 501.11 | 33.41 | 7.49 | 0:30:35 | 303.93 | 50.65 | 5.17 | 0:40:35 | 78.38 | 78.38 | 3.34 |
| 0:00:40 | 800.85 | 16.34 | 15.29 | 0:10:40 | 630.72 | 25.23 | 9.52 | 0:20:40 | 478.41 | 31.89 | 8.21 | 0:30:40 | 325.11 | 40.64 | 5.70 | 0:40:40 | 80.22 | 80.22 | 3.26 |
| 0:00:45 | 785.49 | 14.03 | 17.43 | 0:10:45 | 649.85 | 24.07 | 10.78 | 0:20:45 | 517.21 | 34.48 | 7.60 | 0:30:45 | 312.69 | 39.09 | 6.70 | 0:40:45 | 81.05 | 81.05 | 3.23 |
| 0:00:50 | 786.12 | 13.32 | 19.12 | 0:10:50 | 667.94 | 21.55 | 11.62 | 0:20:50 | 542.53 | 33.91 | 7.60 | 0:30:50 | 393.48 | 49.18 | 5.32 | 0:40:50 | 82.31 | 82.31 | 3.18 |
| 0:00:55 | 793.04 | 12.79 | 20.04 | 0:10:55 | 690.70 | 22.28 | 11.75 | 0:20:55 | 548.61 | 30.48 | 8.33 | 0:30:55 | 378.64 | 47.33 | 5.53 | 0:40:55 | 82.26 | 82.26 | 3.18 |
| 0:01:00 | 830.89 | 12.59 | 20.06 | 0:11:00 | 692.27 | 20.98 | 12.02 | 0:21:00 | 572.68 | 31.82 | 8.22 | 0:31:00 | 421.21 | 46.80 | 5.01 | 0:41:00 | 77.38 | 77.38 | 3.38 |
| 0:01:05 | 892.55 | 12.94 | 19.97 | 0:11:05 | 758.28 | 21.06 | 12.00 | 0:21:05 | 580.91 | 32.27 | 8.12 | 0:31:05 | 434.90 | 48.32 | 5.42 | 0:41:05 | 77.02 | 77.02 | 3.40 |
| 0:01:10 | 888.46 | 12.34 | 20.73 | 0:11:10 | 803.21 | 20.60 | 12.27 | 0:21:10 | 574.20 | 30.22 | 8.32 | 0:31:10 | 443.86 | 44.39 | 5.60 | 0:41:10 | 79.53 | 79.53 | 3.29 |
| 0:01:15 | 899.99 | 12.33 | 21.01 | 0:11:15 | 800.54 | 20.53 | 12.75 | 0:21:15 | 593.18 | 31.22 | 8.37 | 0:31:15 | 419.17 | 41.92 | 6.25 | 0:41:15 | 86.51 | 86.51 | 3.03 |
| 0:01:20 | 924.79 | 12.17 | 21.21 | 0:11:20 | 782.97 | 19.57 | 13.09 | 0:21:20 | 572.37 | 30.12 | 8.70 | 0:31:20 | 437.68 | 43.77 | 5.98 | 0:41:20 | 83.47 | 83.47 | 3.13 |
| 0:01:25 | 925.42 | 11.71 | 21.53 | 0:11:25 | 796.60 | 19.92 | 13.14 | 0:21:25 | 593.23 | 29.66 | 8.78 | 0:31:25 | 438.88 | 43.89 | 5.97 | 0:41:25 | 81.32 | 81.32 | 3.22 |
| 0:01:30 | 960.86 | 12.01 | 21.76 | 0:11:30 | 801.22 | 20.03 | 13.09 | 0:21:30 | 592.76 | 29.64 | 8.84 | 0:31:30 | 436.57 | 43.66 | 6.00 | 0:41:30 | 82.79 | 82.79 | 3.16 |
| 0:01:35 | 926.47 | 11.58 | 22.65 | 0:11:35 | 781.45 | 19.54 | 13.41 | 0:21:35 | 601.15 | 30.06 | 8.71 | 0:31:35 | 436.10 | 43.61 | 6.00 | 0:41:35 | 76.97 | 76.97 | 3.40 |
| 0:01:40 | 911.74 | 11.40 | 22.98 | 0:11:40 | 754.19 | 18.85 | 13.89 | 0:21:40 | 624.48 | 31.22 | 8.39 | 0:31:40 | 431.91 | 43.19 | 6.06 | 0:41:40 | 82.16 | 82.16 | 3.19 |
| 0:01:45 | 949.54 | 11.87 | 22.07 | 0:11:45 | 780.87 | 19.52 | 13.43 | 0:21:45 | 614.31 | 30.72 | 8.53 | 0:31:45 | 399.56 | 39.96 | 6.56 | 0:41:45 | 80.53 | 80.53 | 3.25 |
| 0:01:50 | 937.11 | 11.71 | 22.36 | 0:11:50 | 789.79 | 19.74 | 13.27 | 0:21:50 | 642.31 | 32.12 | 8.15 | 0:31:50 | 442.76 | 44.28 | 5.91 | 0:41:50 | 83.47 | 83.47 | 3.13 |
| 0:01:55 | 917.61 | 11.47 | 22.85 | 0:11:55 | 785.28 | 19.63 | 13.35 | 0:21:55 | 614.10 | 30.70 | 8.53 | 0:31:55 | 457.34 | 45.73 | 5.72 | 0:41:55 | 81.37 | 81.37 | 3.22 |
| 0:02:00 | 946.44 | 11.83 | 22.17 | 0:12:00 | 796.29 | 19.91 | 13.15 | 0:22:00 | 615.41 | 30.77 | 8.52 | 0:32:00 | 398.77 | 39.88 | 6.57 | 0:42:00 | 83.36 | 83.36 | 3.14 |
| 0:02:05 | 934.65 | 11.68 | 22.41 | 0:12:05 | 782.45 | 19.56 | 13.39 | 0:22:05 | 602.67 | 30.13 | 8.69 | 0:32:05 | 382.52 | 38.25 | 6.85 | 0:42:05 | 76.18 | 76.18 | 3.44 |
| 0:02:10 | 934.28 | 11.68 | 22.45 | 0:12:10 | 785.54 | 19.64 | 13.34 | 0:22:10 | 636.17 | 31.81 | 8.23 | 0:32:10 | 373.29 | 37.33 | 7.01 | 0:42:10 | 78.91 | 78.91 | 3.32 |
| 0:02:15 | 931.19 | 11.64 | 22.52 | 0:12:15 | 791.67 | 19.79 | 13.23 | 0:22:15 | 620.39 | 31.02 | 8.45 | 0:32:15 | 405.06 | 40.51 | 6.47 | 0:42:15 | 75.92 | 75.92 | 3.45 |
| 0:02:20 | 932.50 | 11.66 | 22.50 | 0:12:20 | 829.69 | 20.74 | 12.64 | 0:22:20 | 613.99 | 30.70 | 8.54 | 0:32:20 | 431.33 | 43.13 | 6.07 | 0:42:20 | 77.91 | 77.91 | 3.36 |
| 0:02:25 | 921.02 | 11.51 | 22.72 | 0:12:25 | 797.81 | 19.95 | 13.13 | 0:22:25 | 621.70 | 31.09 | 8.42 | 0:32:25 | 432.75 | 43.27 | 6.05 | 0:42:25 | 81.89 | 81.89 | 3.20 |
| 0:02:30 | 944.09 | 11.80 | 22.26 | 0:12:30 | 796.08 | 19.90 | 13.15 | 0:22:30 | 605.08 | 30.25 | 8.66 | 0:32:30 | 449.68 | 44.97 | 5.82 | 0:42:30 | 82.63 | 82.63 | 3.17 |
| 0:02:35 | 950.74 | 11.88 | 22.02 | 0:12:35 | 782.87 | 19.57 | 13.39 | 0:22:35 | 632.13 | 31.61 | 8.28 | 0:32:35 | 403.96 | 40.40 | 6.48 | 0:42:35 | 84.31 | 84.31 | 3.10 |
| 0:02:40 | 920.23 | 11.50 | 22.81 | 0:12:40 | 790.05 | 19.75 | 13.27 | 0:22:40 | 611.06 | 30.55 | 8.58 | 0:32:40 | 438.93 | 43.89 | 5.97 | 0:42:40 | 85.14 | 85.14 | 3.07 |
| 0:02:45 | 943.56 | 11.79 | 22.21 | 0:12:45 | 792.88 | 19.82 | 13.22 | 0:22:45 | 618.92 | 30.95 | 8.46 | 0:32:45 | 426.67 | 42.67 | 6.13 | 0:42:45 | 81.47 | 81.47 | 3.21 |
| 0:02:50 | 934.49 | 11.68 | 22.43 | 0:12:50 | 781.77 | 19.54 | 13.40 | 0:22:50 | 609.33 | 30.47 | 8.60 | 0:32:50 | 447.58 | 44.76 | 5.86 | 0:42:50 | 79.95 | 79.95 | 3.27 |
| 0:02:55 | 930.56 | 11.63 | 22.53 | 0:12:55 | 795.50 | 19.89 | 13.18 | 0:22:55 | 618.29 | 30.91 | 8.47 | 0:32:55 | 447.58 | 44.76 | 5.84 | 0:42:55 | 74.87 | 74.87 | 3.49 |

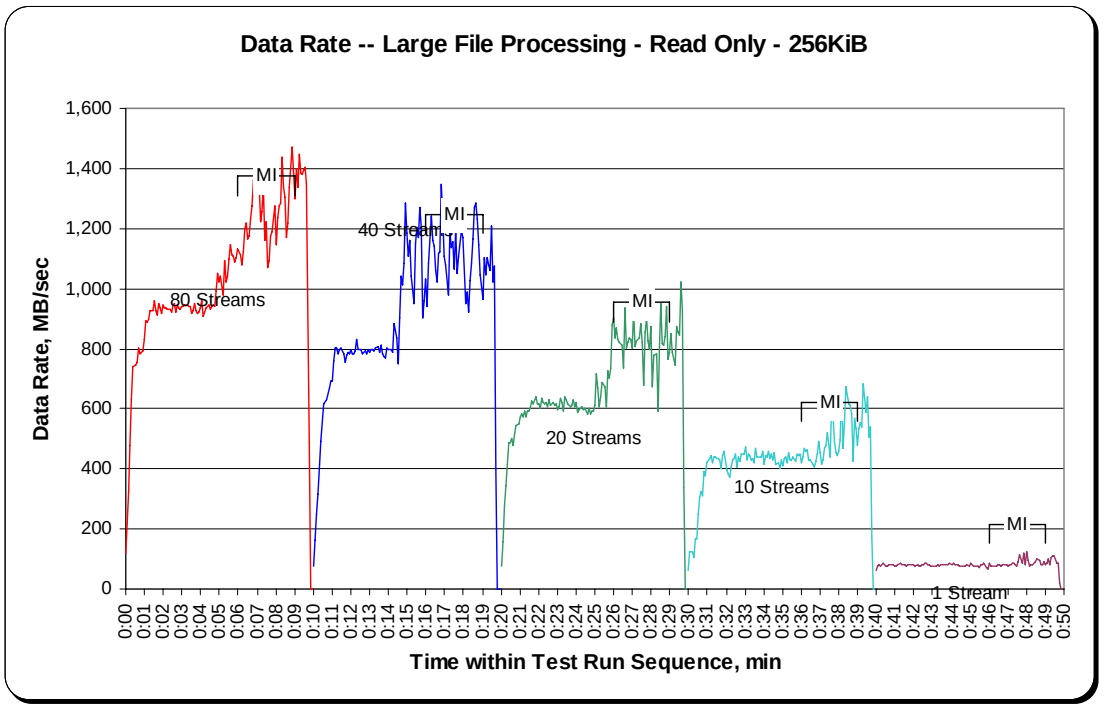
## SPC-2 "Large File Processing/READ ONLY/256 KiB Transfer Size" Test Run Data – Ramp-Up Period *(continued)*

| TR26 | 80 Streams | | | TR27 | 40 Streams | | | TR28 | 20 Streams | | | TR29 | 10 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 |
| 0:03:00 | 940.47 | 11.76 | 22.26 | 0:13:00 | 789.00 | 19.73 | 13.25 | 0:23:00 | 594.96 | 29.75 | 8.80 | 0:33:00 | 473.12 | 47.31 | 5.53 | 0:43:00 | 76.02 | 76.02 | 3.44 |
| 0:03:05 | 940.42 | 11.76 | 22.28 | 0:13:05 | 799.22 | 19.98 | 13.15 | 0:23:05 | 608.38 | 30.42 | 8.61 | 0:33:05 | 430.49 | 43.05 | 6.09 | 0:43:05 | 78.28 | 78.28 | 3.34 |
| 0:03:10 | 947.28 | 11.84 | 22.17 | 0:13:10 | 799.85 | 20.00 | 13.10 | 0:23:10 | 636.38 | 31.82 | 8.23 | 0:33:10 | 450.05 | 45.00 | 5.82 | 0:43:10 | 76.65 | 76.65 | 3.41 |
| 0:03:15 | 945.55 | 11.82 | 22.14 | 0:13:15 | 793.98 | 19.85 | 13.17 | 0:23:15 | 619.24 | 30.96 | 8.46 | 0:33:15 | 444.70 | 44.47 | 5.89 | 0:43:15 | 81.68 | 81.68 | 3.21 |
| 0:03:20 | 940.57 | 11.76 | 22.30 | 0:13:20 | 800.85 | 20.02 | 13.09 | 0:23:20 | 591.24 | 29.56 | 8.86 | 0:33:20 | 430.18 | 43.02 | 6.09 | 0:43:20 | 78.54 | 78.54 | 3.33 |
| 0:03:25 | 941.20 | 11.77 | 22.29 | 0:13:25 | 806.46 | 20.16 | 13.01 | 0:23:25 | 641.99 | 32.10 | 8.16 | 0:33:25 | 433.74 | 43.37 | 6.03 | 0:43:25 | 79.48 | 79.48 | 3.30 |
| 0:03:30 | 919.29 | 11.49 | 22.79 | 0:13:30 | 789.42 | 19.74 | 13.27 | 0:23:30 | 628.67 | 31.43 | 8.32 | 0:33:30 | 421.89 | 42.19 | 6.21 | 0:43:30 | 82.94 | 82.94 | 3.15 |
| 0:03:35 | 924.84 | 11.56 | 22.68 | 0:13:35 | 813.01 | 20.33 | 12.89 | 0:23:35 | 615.09 | 30.75 | 8.53 | 0:33:35 | 465.67 | 46.57 | 5.62 | 0:43:35 | 81.47 | 81.47 | 3.22 |
| 0:03:40 | 951.16 | 11.89 | 22.02 | 0:13:40 | 781.77 | 19.54 | 13.40 | 0:23:40 | 607.75 | 30.39 | 8.62 | 0:33:40 | 438.83 | 43.88 | 5.97 | 0:43:40 | 79.64 | 79.64 | 3.29 |
| 0:03:45 | 926.99 | 11.59 | 22.65 | 0:13:45 | 775.74 | 19.39 | 13.51 | 0:23:45 | 609.96 | 30.50 | 8.59 | 0:33:45 | 437.83 | 43.78 | 5.98 | 0:43:45 | 82.84 | 82.84 | 3.16 |
| 0:03:50 | 914.73 | 11.43 | 22.91 | 0:13:50 | 766.88 | 19.17 | 13.68 | 0:23:50 | 631.77 | 31.59 | 8.29 | 0:33:50 | 441.19 | 44.12 | 5.93 | 0:43:50 | 79.06 | 79.06 | 3.30 |
| 0:03:55 | 922.85 | 11.54 | 22.72 | 0:13:55 | 803.16 | 20.08 | 13.04 | 0:23:55 | 608.38 | 30.42 | 8.61 | 0:33:55 | 457.02 | 45.70 | 5.73 | 0:43:55 | 84.78 | 84.78 | 3.09 |
| 0:04:00 | 935.64 | 11.70 | 22.39 | 0:14:00 | 795.24 | 19.88 | 13.19 | 0:24:00 | 619.13 | 30.96 | 8.46 | 0:34:00 | 415.08 | 41.51 | 6.31 | 0:44:00 | 83.47 | 83.47 | 3.13 |
| 0:04:05 | 958.92 | 11.99 | 21.86 | 0:14:05 | 798.39 | 19.96 | 13.11 | 0:24:05 | 585.26 | 29.26 | 8.95 | 0:34:05 | 442.81 | 44.28 | 5.91 | 0:44:05 | 83.83 | 83.83 | 3.11 |
| 0:04:10 | 909.48 | 11.37 | 23.08 | 0:14:10 | 796.29 | 19.91 | 13.16 | 0:24:10 | 598.06 | 29.90 | 8.76 | 0:34:10 | 439.83 | 43.98 | 5.95 | 0:44:10 | 80.74 | 80.74 | 3.25 |
| 0:04:15 | 937.90 | 11.72 | 22.31 | 0:14:15 | 787.59 | 19.69 | 13.30 | 0:24:15 | 600.41 | 30.02 | 8.70 | 0:34:15 | 456.92 | 45.69 | 5.73 | 0:44:15 | 82.21 | 82.21 | 3.18 |
| 0:04:20 | 939.05 | 11.74 | 22.35 | 0:14:20 | 885.63 | 22.14 | 11.84 | 0:24:20 | 608.80 | 30.44 | 8.63 | 0:34:20 | 433.11 | 43.31 | 6.04 | 0:44:20 | 79.48 | 79.48 | 3.29 |
| 0:04:25 | 944.98 | 11.81 | 22.20 | 0:14:25 | 836.24 | 20.91 | 12.53 | 0:24:25 | 595.80 | 29.79 | 8.79 | 0:34:25 | 449.42 | 44.94 | 5.83 | 0:44:25 | 76.13 | 76.13 | 3.44 |
| 0:04:30 | 929.88 | 11.62 | 22.55 | 0:14:30 | 751.62 | 18.79 | 13.94 | 0:24:30 | 604.14 | 30.21 | 8.68 | 0:34:30 | 428.76 | 42.88 | 6.11 | 0:44:30 | 75.92 | 75.92 | 3.45 |
| 0:04:35 | 942.09 | 11.78 | 22.24 | 0:14:35 | 903.56 | 22.59 | 11.61 | 0:24:35 | 582.12 | 29.11 | 9.00 | 0:34:35 | 454.35 | 45.43 | 5.76 | 0:44:35 | 74.55 | 74.55 | 3.51 |
| 0:04:40 | 947.97 | 11.85 | 22.13 | 0:14:40 | 1,042.65 | 26.07 | 10.04 | 0:24:40 | 601.83 | 30.09 | 8.70 | 0:34:40 | 414.50 | 41.45 | 6.32 | 0:44:40 | 77.49 | 77.49 | 3.38 |
| 0:04:45 | 940.31 | 11.75 | 22.29 | 0:14:45 | 1,012.56 | 25.31 | 10.35 | 0:24:45 | 581.28 | 29.06 | 9.01 | 0:34:45 | 418.85 | 41.89 | 6.25 | 0:44:45 | 77.44 | 77.44 | 3.38 |
| 0:04:50 | 992.22 | 12.40 | 21.12 | 0:14:50 | 1,086.48 | 27.16 | 9.64 | 0:24:50 | 594.02 | 29.70 | 8.82 | 0:34:50 | 399.19 | 39.92 | 6.56 | 0:44:50 | 79.90 | 79.90 | 3.28 |
| 0:04:55 | 1,051.77 | 13.15 | 19.93 | 0:14:55 | 1,286.92 | 32.17 | 8.14 | 0:24:55 | 592.55 | 29.63 | 8.83 | 0:34:55 | 432.07 | 43.21 | 6.06 | 0:44:55 | 77.96 | 77.96 | 3.36 |
| 0:05:00 | 1,023.57 | 12.79 | 20.49 | 0:15:00 | 1,182.58 | 29.56 | 8.87 | 0:25:00 | 613.42 | 30.67 | 8.52 | 0:35:00 | 409.57 | 40.96 | 6.39 | 0:45:00 | 84.25 | 84.25 | 3.10 |
| 0:05:05 | 1,039.82 | 13.00 | 20.14 | 0:15:05 | 1,107.82 | 27.70 | 9.45 | 0:25:05 | 716.23 | 35.81 | 7.33 | 0:35:05 | 434.84 | 43.48 | 6.02 | 0:45:05 | 81.58 | 81.58 | 3.21 |
| 0:05:10 | 978.48 | 12.23 | 21.44 | 0:15:10 | 1,162.71 | 29.07 | 9.01 | 0:25:10 | 670.30 | 33.52 | 7.81 | 0:35:10 | 439.67 | 43.97 | 5.95 | 0:45:10 | 77.12 | 77.12 | 3.39 |
| 0:05:15 | 1,091.41 | 13.64 | 19.21 | 0:15:15 | 1,042.55 | 26.06 | 10.04 | 0:25:15 | 607.39 | 30.37 | 8.63 | 0:35:15 | 421.11 | 42.11 | 6.22 | 0:45:15 | 75.65 | 75.65 | 3.46 |
| 0:05:20 | 1,022.68 | 12.78 | 20.51 | 0:15:20 | 951.79 | 23.79 | 11.02 | 0:25:20 | 639.00 | 31.95 | 8.20 | 0:35:20 | 456.08 | 45.61 | 5.74 | 0:45:20 | 78.54 | 78.54 | 3.33 |
| 0:05:25 | 1,039.30 | 12.99 | 20.17 | 0:15:25 | 1,152.18 | 28.80 | 9.10 | 0:25:25 | 686.29 | 34.31 | 7.63 | 0:35:25 | 431.49 | 43.15 | 6.07 | 0:45:25 | 77.02 | 77.02 | 3.40 |
| 0:05:30 | 1,097.33 | 13.72 | 19.07 | 0:15:30 | 1,204.60 | 30.12 | 8.70 | 0:25:30 | 672.45 | 33.62 | 7.81 | 0:35:30 | 431.49 | 43.15 | 6.06 | 0:45:30 | 72.30 | 72.30 | 3.62 |
| 0:05:35 | 1,144.84 | 14.31 | 18.34 | 0:15:35 | 1,171.68 | 29.29 | 8.94 | 0:25:35 | 604.19 | 30.21 | 8.64 | 0:35:35 | 437.20 | 43.72 | 6.00 | 0:45:35 | 80.16 | 80.16 | 3.26 |
| 0:05:40 | 1,114.58 | 13.93 | 18.80 | 0:15:40 | 1,272.24 | 31.81 | 8.24 | 0:25:40 | 724.88 | 36.24 | 7.23 | 0:35:40 | 425.56 | 42.56 | 6.16 | 0:45:40 | 80.79 | 80.79 | 3.24 |
| 0:05:45 | 1,107.14 | 13.84 | 18.95 | 0:15:45 | 1,201.25 | 30.03 | 8.72 | 0:25:45 | 701.92 | 35.10 | 7.46 | 0:35:45 | 447.17 | 44.72 | 5.85 | 0:45:45 | 83.68 | 83.68 | 3.13 |
| 0:05:50 | 1,087.48 | 13.59 | 19.28 | 0:15:50 | 901.25 | 22.53 | 11.62 | 0:25:50 | 735.31 | 36.77 | 7.13 | 0:35:50 | 442.13 | 44.21 | 5.92 | 0:45:50 | 72.77 | 72.77 | 3.60 |
| 0:05:55 | 1,102.73 | 13.78 | 19.00 | 0:15:55 | 959.81 | 24.00 | 10.92 | 0:25:55 | 880.33 | 44.02 | 5.95 | 0:35:55 | 450.05 | 45.00 | 5.82 | 0:45:55 | 67.95 | 67.95 | 3.85 |

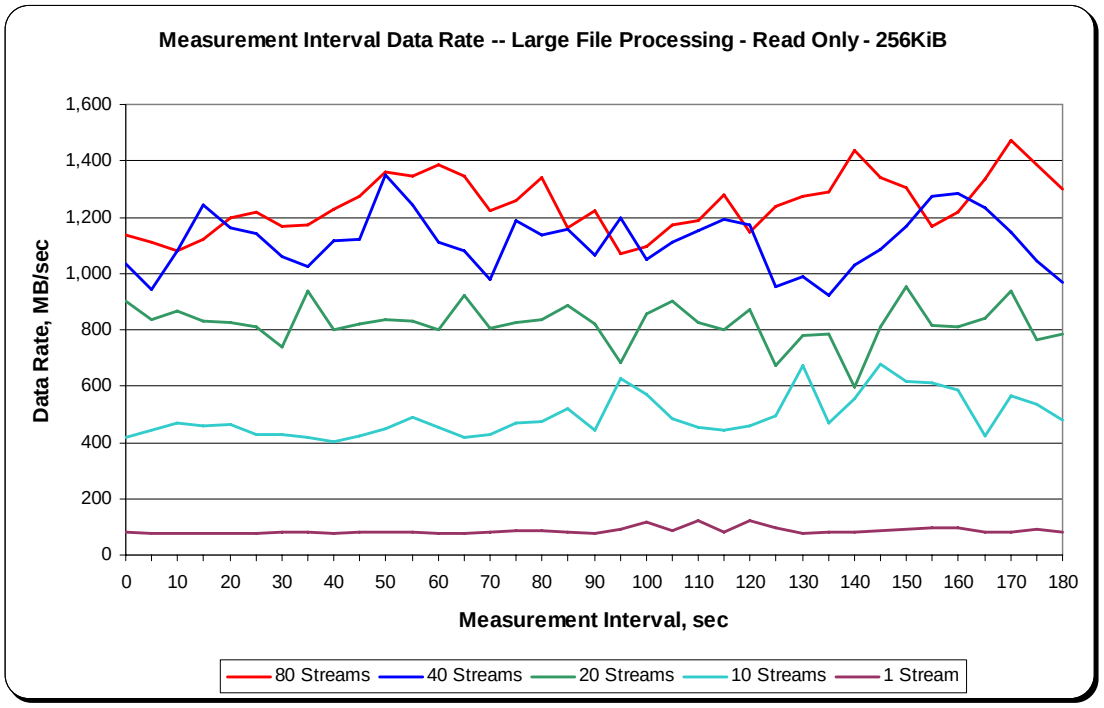
## SPC-2 "Large File Processing/READ ONLY/256 KiB Transfer Size" Test Run Data Measurement Interval, Run-Out, and Ramp-Down Periods

| TR26 | 80 Streams | | | TR27 | 40 Streams | | | TR28 | 20 Streams | | | TR29 | 10 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 |
| 0:06:00 | 1,133.98 | 14.17 | 18.49 | 0:16:00 | 1,032.38 | 25.81 | 10.15 | 0:26:00 | 902.04 | 45.10 | 5.80 | 0:36:00 | 418.12 | 41.81 | 6.26 | 0:46:00 | 83.73 | 83.73 | 3.12 |
| 0:06:05 | 1,112.96 | 13.91 | 18.84 | 0:16:05 | 942.09 | 23.55 | 11.11 | 0:26:05 | 838.18 | 41.91 | 6.25 | 0:36:05 | 441.29 | 44.13 | 5.93 | 0:46:05 | 77.07 | 77.07 | 3.39 |
| 0:06:10 | 1,079.93 | 13.50 | 19.39 | 0:16:10 | 1,082.45 | 27.06 | 9.69 | 0:26:10 | 868.64 | 43.43 | 6.03 | 0:36:10 | 466.93 | 46.69 | 5.61 | 0:46:10 | 77.80 | 77.80 | 3.37 |
| 0:06:15 | 1,120.82 | 14.01 | 18.73 | 0:16:15 | 1,241.09 | 31.03 | 8.44 | 0:26:15 | 832.36 | 41.62 | 6.29 | 0:36:15 | 456.55 | 45.65 | 5.74 | 0:46:15 | 78.38 | 78.38 | 3.34 |
| 0:06:20 | 1,198.89 | 14.99 | 17.48 | 0:16:20 | 1,161.66 | 29.04 | 9.02 | 0:26:20 | 823.81 | 41.19 | 6.36 | 0:36:20 | 461.37 | 46.14 | 5.67 | 0:46:20 | 75.50 | 75.50 | 3.47 |
| 0:06:25 | 1,217.92 | 15.22 | 17.22 | 0:16:25 | 1,142.27 | 28.56 | 9.17 | 0:26:25 | 810.39 | 40.52 | 6.46 | 0:36:25 | 427.61 | 42.76 | 6.13 | 0:46:25 | 77.23 | 77.23 | 3.38 |
| 0:06:30 | 1,164.71 | 14.56 | 18.01 | 0:16:30 | 1,059.80 | 26.49 | 9.89 | 0:26:30 | 737.10 | 36.85 | 7.10 | 0:36:30 | 427.71 | 42.77 | 6.12 | 0:46:30 | 79.59 | 79.59 | 3.30 |
| 0:06:35 | 1,173.41 | 14.67 | 17.87 | 0:16:35 | 1,024.46 | 25.61 | 10.23 | 0:26:35 | 936.33 | 46.82 | 5.60 | 0:36:35 | 415.39 | 41.54 | 6.31 | 0:46:35 | 82.26 | 82.26 | 3.18 |
| 0:06:40 | 1,230.19 | 15.38 | 17.03 | 0:16:40 | 1,116.63 | 27.92 | 9.38 | 0:26:40 | 800.69 | 40.03 | 6.54 | 0:36:40 | 403.75 | 40.38 | 6.49 | 0:46:40 | 75.45 | 75.45 | 3.47 |
| 0:06:45 | 1,274.70 | 15.93 | 16.44 | 0:16:45 | 1,123.18 | 28.08 | 9.33 | 0:26:45 | 820.83 | 41.04 | 6.38 | 0:36:45 | 424.83 | 42.48 | 6.17 | 0:46:45 | 81.74 | 81.74 | 3.20 |
| 0:06:50 | 1,362.41 | 17.03 | 15.39 | 0:16:50 | 1,348.63 | 33.72 | 7.77 | 0:26:50 | 837.81 | 41.89 | 6.25 | 0:36:50 | 449.16 | 44.92 | 5.83 | 0:46:50 | 83.15 | 83.15 | 3.15 |
| 0:06:55 | 1,344.17 | 16.80 | 15.59 | 0:16:55 | 1,241.88 | 31.05 | 8.44 | 0:26:55 | 831.99 | 41.60 | 6.29 | 0:36:55 | 491.05 | 49.10 | 5.33 | 0:46:55 | 80.32 | 80.32 | 3.26 |
| 0:07:00 | 1,387.84 | 17.35 | 15.10 | 0:17:00 | 1,109.45 | 27.74 | 9.44 | 0:27:00 | 800.54 | 40.03 | 6.54 | 0:37:00 | 454.82 | 45.48 | 5.74 | 0:47:00 | 75.13 | 75.13 | 3.48 |
| 0:07:05 | 1,344.43 | 16.81 | 15.60 | 0:17:05 | 1,080.03 | 27.00 | 9.70 | 0:27:05 | 921.86 | 46.09 | 5.67 | 0:37:05 | 417.49 | 41.75 | 6.29 | 0:47:05 | 78.96 | 78.96 | 3.32 |
| 0:07:10 | 1,222.17 | 15.28 | 17.16 | 0:17:10 | 980.00 | 24.50 | 10.69 | 0:27:10 | 807.61 | 40.38 | 6.49 | 0:37:10 | 428.40 | 42.84 | 6.11 | 0:47:10 | 81.37 | 81.37 | 3.22 |
| 0:07:15 | 1,257.87 | 15.72 | 16.67 | 0:17:15 | 1,187.09 | 29.68 | 8.82 | 0:27:15 | 827.75 | 41.39 | 6.33 | 0:37:15 | 466.98 | 46.70 | 5.61 | 0:47:15 | 84.67 | 84.67 | 3.09 |
| 0:07:20 | 1,338.40 | 16.73 | 15.62 | 0:17:20 | 1,138.60 | 28.46 | 9.21 | 0:27:20 | 834.14 | 41.71 | 6.28 | 0:37:20 | 475.58 | 47.56 | 5.51 | 0:47:20 | 84.20 | 84.20 | 3.11 |
| 0:07:25 | 1,161.82 | 14.52 | 18.07 | 0:17:25 | 1,157.05 | 28.93 | 9.05 | 0:27:25 | 884.11 | 44.21 | 5.92 | 0:37:25 | 521.25 | 52.12 | 5.02 | 0:47:25 | 80.06 | 80.06 | 3.27 |
| 0:07:30 | 1,222.38 | 15.28 | 17.15 | 0:17:30 | 1,063.05 | 26.58 | 9.85 | 0:27:30 | 819.78 | 40.99 | 6.39 | 0:37:30 | 440.93 | 44.09 | 5.94 | 0:47:30 | 78.70 | 78.70 | 3.33 |
| 0:07:35 | 1,072.12 | 13.40 | 19.54 | 0:17:35 | 1,195.43 | 29.89 | 8.77 | 0:27:35 | 680.58 | 34.03 | 7.70 | 0:37:35 | 625.37 | 62.54 | 4.18 | 0:47:35 | 92.69 | 92.69 | 2.82 |
| 0:07:40 | 1,093.77 | 13.67 | 19.19 | 0:17:40 | 1,049.73 | 26.24 | 9.98 | 0:27:40 | 856.16 | 42.81 | 6.12 | 0:37:40 | 571.16 | 57.12 | 4.58 | 0:47:40 | 114.82 | 114.82 | 2.27 |
| 0:07:45 | 1,173.25 | 14.67 | 17.83 | 0:17:45 | 1,109.08 | 27.73 | 9.45 | 0:27:45 | 901.62 | 45.08 | 5.81 | 0:37:45 | 485.54 | 48.55 | 5.38 | 0:47:45 | 86.77 | 86.77 | 3.02 |
| 0:07:50 | 1,187.46 | 14.84 | 17.69 | 0:17:50 | 1,152.80 | 28.82 | 9.09 | 0:27:50 | 825.28 | 41.26 | 6.34 | 0:37:50 | 453.09 | 45.31 | 5.79 | 0:47:50 | 121.43 | 121.43 | 2.15 |
| 0:07:55 | 1,277.27 | 15.97 | 16.40 | 0:17:55 | 1,193.07 | 29.83 | 8.78 | 0:27:55 | 799.22 | 39.96 | 6.56 | 0:37:55 | 442.45 | 44.24 | 5.92 | 0:47:55 | 82.42 | 82.42 | 3.18 |
| 0:08:00 | 1,146.04 | 14.33 | 18.31 | 0:18:00 | 1,172.20 | 29.31 | 8.93 | 0:28:00 | 871.79 | 43.59 | 6.00 | 0:38:00 | 459.17 | 45.92 | 5.70 | 0:48:00 | 121.79 | 121.79 | 2.15 |
| 0:08:05 | 1,238.00 | 15.48 | 16.92 | 0:18:05 | 952.79 | 23.82 | 10.97 | 0:28:05 | 673.81 | 33.69 | 7.78 | 0:38:05 | 495.35 | 49.53 | 5.28 | 0:48:05 | 95.68 | 95.68 | 2.73 |
| 0:08:10 | 1,274.02 | 15.93 | 16.46 | 0:18:10 | 989.70 | 24.74 | 10.60 | 0:28:10 | 780.77 | 39.04 | 6.71 | 0:38:10 | 675.07 | 67.51 | 3.88 | 0:48:10 | 77.54 | 77.54 | 3.38 |
| 0:08:15 | 1,286.92 | 16.09 | 16.28 | 0:18:15 | 921.07 | 23.03 | 11.38 | 0:28:15 | 784.07 | 39.20 | 6.68 | 0:38:15 | 467.35 | 46.74 | 5.60 | 0:48:15 | 80.11 | 80.11 | 3.25 |
| 0:08:20 | 1,438.33 | 17.98 | 14.58 | 0:18:20 | 1,027.60 | 25.69 | 10.20 | 0:28:20 | 594.07 | 29.70 | 8.80 | 0:38:20 | 553.96 | 55.40 | 4.73 | 0:48:20 | 80.43 | 80.43 | 3.27 |
| 0:08:25 | 1,338.19 | 16.73 | 15.65 | 0:18:25 | 1,082.81 | 27.07 | 9.68 | 0:28:25 | 809.97 | 40.50 | 6.48 | 0:38:25 | 675.34 | 67.53 | 3.88 | 0:48:25 | 85.72 | 85.72 | 3.05 |
| 0:08:30 | 1,306.11 | 16.33 | 16.05 | 0:18:30 | 1,166.54 | 29.16 | 8.98 | 0:28:30 | 950.64 | 47.53 | 5.51 | 0:38:30 | 614.10 | 61.41 | 4.26 | 0:48:30 | 89.39 | 89.39 | 2.93 |
| 0:08:35 | 1,168.59 | 14.61 | 17.94 | 0:18:35 | 1,271.92 | 31.80 | 8.24 | 0:28:35 | 815.43 | 40.77 | 6.42 | 0:38:35 | 609.43 | 60.94 | 4.30 | 0:48:35 | 99.25 | 99.25 | 2.63 |
| 0:08:40 | 1,216.77 | 15.21 | 17.23 | 0:18:40 | 1,284.40 | 32.11 | 8.15 | 0:28:40 | 810.39 | 40.52 | 6.46 | 0:38:40 | 584.90 | 58.49 | 4.47 | 0:48:40 | 96.99 | 96.99 | 2.70 |
| 0:08:45 | 1,336.15 | 16.70 | 15.69 | 0:18:45 | 1,231.13 | 30.78 | 8.51 | 0:28:45 | 838.70 | 41.94 | 6.24 | 0:38:45 | 424.31 | 42.43 | 6.17 | 0:48:45 | 83.31 | 83.31 | 3.14 |
| 0:08:50 | 1,470.37 | 18.38 | 14.25 | 0:18:50 | 1,146.72 | 28.67 | 9.13 | 0:28:50 | 939.10 | 46.96 | 5.58 | 0:38:50 | 567.80 | 56.78 | 4.61 | 0:48:50 | 81.84 | 81.84 | 3.20 |
| 0:08:55 | 1,386.95 | 17.34 | 15.11 | 0:18:55 | 1,043.60 | 26.09 | 10.03 | 0:28:55 | 763.15 | 38.16 | 6.86 | 0:38:55 | 534.04 | 53.40 | 4.90 | 0:48:55 | 89.65 | 89.65 | 2.92 |
| 0:09:00 | 1,301.02 | 16.26 | 16.11 | 0:19:00 | 966.58 | 24.16 | 10.84 | 0:29:00 | 786.54 | 39.33 | 6.66 | 0:39:00 | 478.10 | 47.81 | 5.47 | 0:49:00 | 79.53 | 79.53 | 3.29 |
| 0:09:05 | 1,401.79 | 17.52 | 14.97 | 0:19:05 | 1,102.68 | 27.57 | 9.51 | 0:29:05 | 850.13 | 42.51 | 6.16 | 0:39:05 | 536.08 | 53.61 | 4.88 | 0:49:05 | 85.30 | 85.30 | 3.07 |
| 0:09:10 | 1,336.15 | 16.70 | 15.67 | 0:19:10 | 1,043.75 | 26.09 | 10.03 | 0:29:10 | 789.63 | 39.48 | 6.63 | 0:39:10 | 551.76 | 55.18 | 4.74 | 0:49:10 | 99.67 | 99.67 | 2.62 |
| 0:09:15 | 1,448.50 | 18.11 | 14.48 | 0:19:15 | 1,104.67 | 27.62 | 9.50 | 0:29:15 | 746.90 | 37.35 | 7.01 | 0:39:15 | 539.02 | 53.90 | 4.84 | 0:49:15 | 80.79 | 80.79 | 3.24 |
| 0:09:20 | 1,386.22 | 17.33 | 15.12 | 0:19:20 | 1,078.04 | 26.95 | 9.71 | 0:29:20 | 874.30 | 43.72 | 5.99 | 0:39:20 | 683.88 | 68.39 | 3.84 | 0:49:20 | 103.97 | 103.97 | 2.52 |
| 0:09:25 | 1,379.51 | 17.24 | 15.19 | 0:19:25 | 1,058.07 | 26.45 | 9.90 | 0:29:25 | 854.38 | 42.72 | 6.13 | 0:39:25 | 588.25 | 58.83 | 4.45 | 0:49:25 | 110.47 | 110.47 | 2.37 |
| 0:09:30 | 1,394.45 | 17.43 | 15.03 | 0:19:30 | 1,206.18 | 30.15 | 8.69 | 0:29:30 | 845.89 | 42.29 | 6.19 | 0:39:30 | 639.11 | 63.91 | 4.10 | 0:49:30 | 111.25 | 111.25 | 2.35 |
| 0:09:35 | 1,403.68 | 17.55 | 14.92 | 0:19:35 | 1,020.58 | 25.51 | 10.26 | 0:29:35 | 1,022.94 | 51.15 | 5.12 | 0:39:35 | 505.52 | 50.55 | 5.17 | 0:49:35 | 84.88 | 84.88 | 3.08 |
| 0:09:40 | 1,350.83 | 16.89 | 15.52 | 0:19:40 | 1,074.63 | 26.87 | 9.76 | 0:29:40 | 927.10 | 46.35 | 5.65 | 0:39:40 | 539.54 | 53.95 | 4.85 | 0:49:40 | 83.89 | 83.89 | 3.12 |
| 0:09:45 | 487.33 | 0.00 | 13.98 | 0:19:45 | 401.97 | 0.00 | 8.20 | 0:29:45 | 338.22 | 0.00 | 5.07 | 0:39:45 | 174.17 | 0.00 | 4.77 | 0:49:45 | 19.77 | 0.00 | 3.29 |
| 0:09:50 | 0.00 | 0.00 | 0.00 | 0:19:50 | 0.00 | 0.00 | 0.00 | 0:29:50 | 0.00 | 0.00 | 0.00 | 0:39:50 | 0.00 | 0.00 | 0.00 | 0:49:50 | 0.00 | 0.00 | 0.00 |
| 0:09:55 | 0.00 | 0.00 | 0.00 | 0:19:55 | 0.00 | 0.00 | 0.00 | 0:29:55 | 0.00 | 0.00 | 0.00 | 0:39:55 | 0.00 | 0.00 | 0.00 | 0:49:55 | 0.00 | 0.00 | 0.00 |

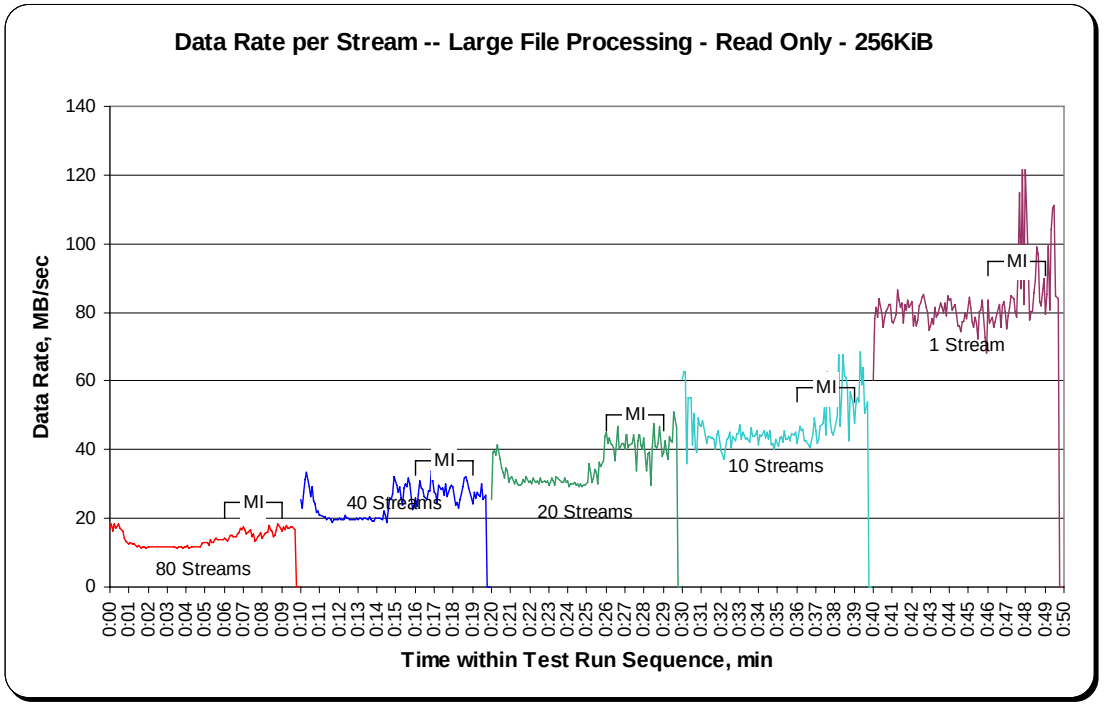
## SPC-2 "Large File Processing/READ ONLY/256 KiB Transfer Size" Average Data Rate Graph – Complete Test Run



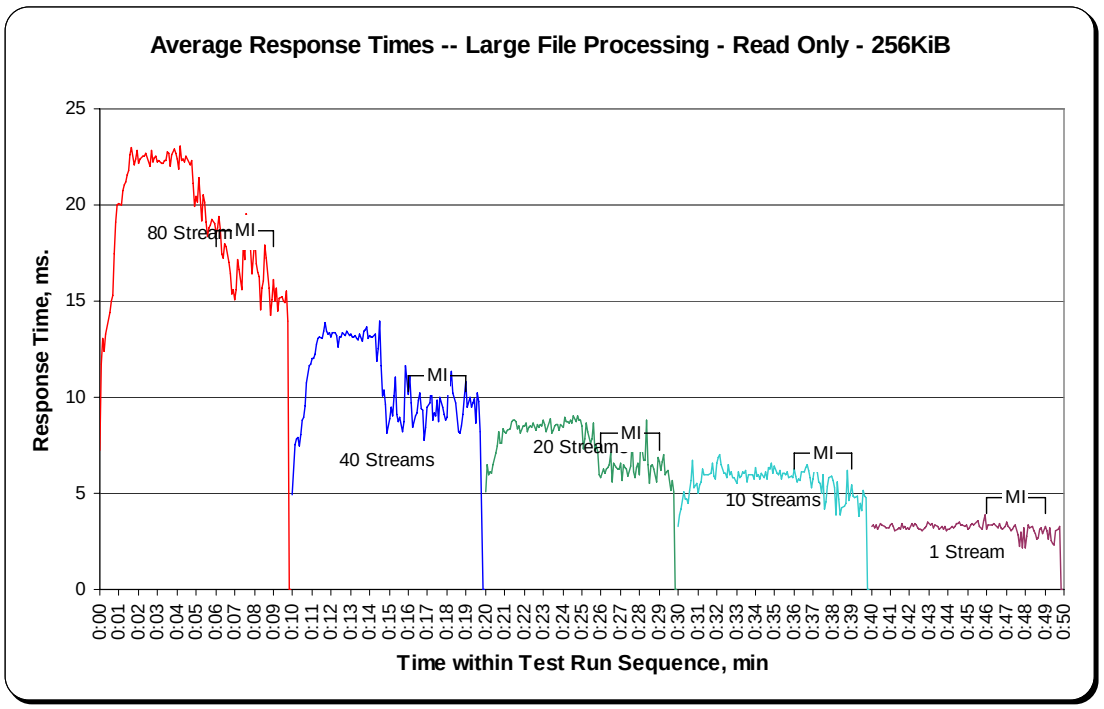

## SPC-2 "Large File Processing/READ ONLY/256 KiB Transfer Size" Average Data Rate Graph – Measurement Interval (MI) Only



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




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



## Large Database Query Test

*Clause 6.4.3.1*

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

*Clause 6.4.3.2*

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

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

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

*Clause 10.6.8.2*

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

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

### SPC-2 Workload Generator Commands and Parameters

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

### SPC-2 Test Results File

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

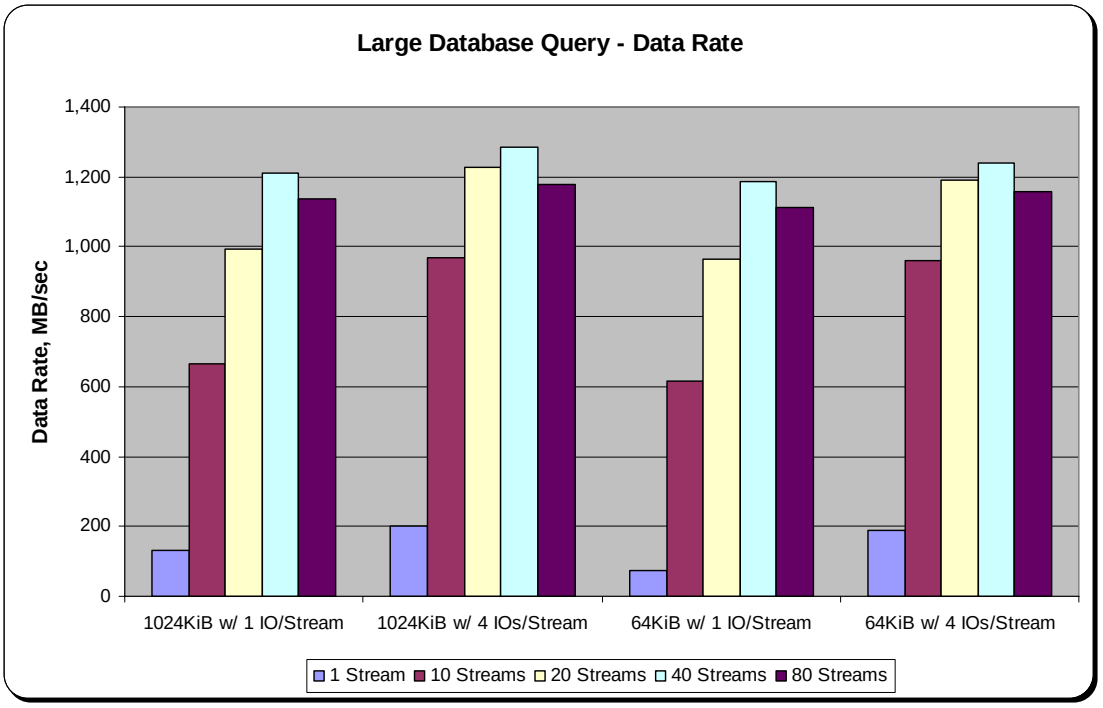
**SPC-2 Large Database Query Test Results File**

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

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

| Test Run Sequence | 1 Stream | 10 Streams | 20 Streams | 40 Streams | 80 Streams |
|---|---|---|---|---|---|
| 1024KiB w/ 1 IO/Stream | 130.65 | 663.57 | 991.73 | 1,209.70 | 1,137.54 |
| 1024KiB w/ 4 IOs/Stream | 199.29 | 967.64 | 1,226.13 | 1,284.97 | 1,178.12 |
| 64KiB w/ 1 IO/Stream | 73.19 | 614.66 | 966.54 | 1,187.37 | 1,112.39 |
| 64KiB w/ 4 IOs/Stream | 188.24 | 960.27 | 1,188.72 | 1,241.48 | 1,157.11 |

## SPC-2 Large Database Query Average Data Rates Graph

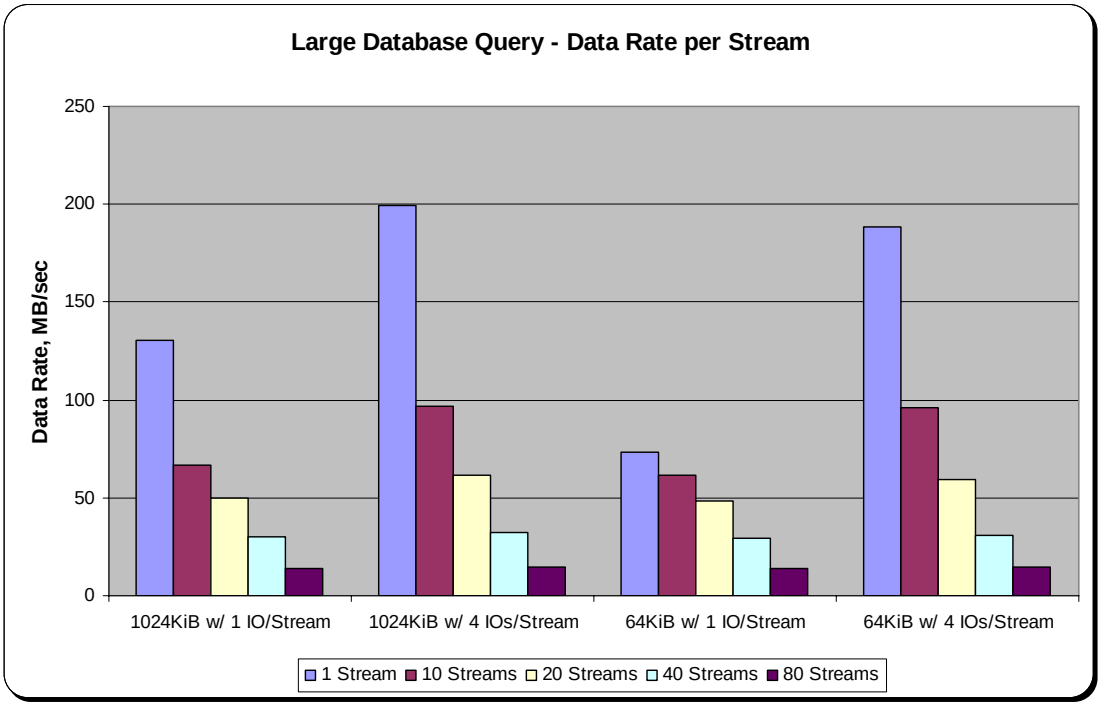


## SPC-2 Large Database Query Average Data Rate per Stream

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 | 10 Streams | 20 Streams | 40 Streams | 80 Streams |
|---|---|---|---|---|---|
| 1024KiB w/ 1 IO/Stream | 130.65 | 66.36 | 49.59 | 30.24 | 14.22 |
| 1024KiB w/ 4 IOs/Stream | 199.29 | 96.76 | 61.31 | 32.12 | 14.73 |
| 64KiB w/ 1 IO/Stream | 73.19 | 61.47 | 48.33 | 29.68 | 13.90 |
| 64KiB w/ 4 IOs/Stream | 188.24 | 96.03 | 59.44 | 31.04 | 14.46 |

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



## Large Database Query Test – 1024 KIB TRANSFER SIZE Test Phase

*Clause 10.6.8.2.1*

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

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

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

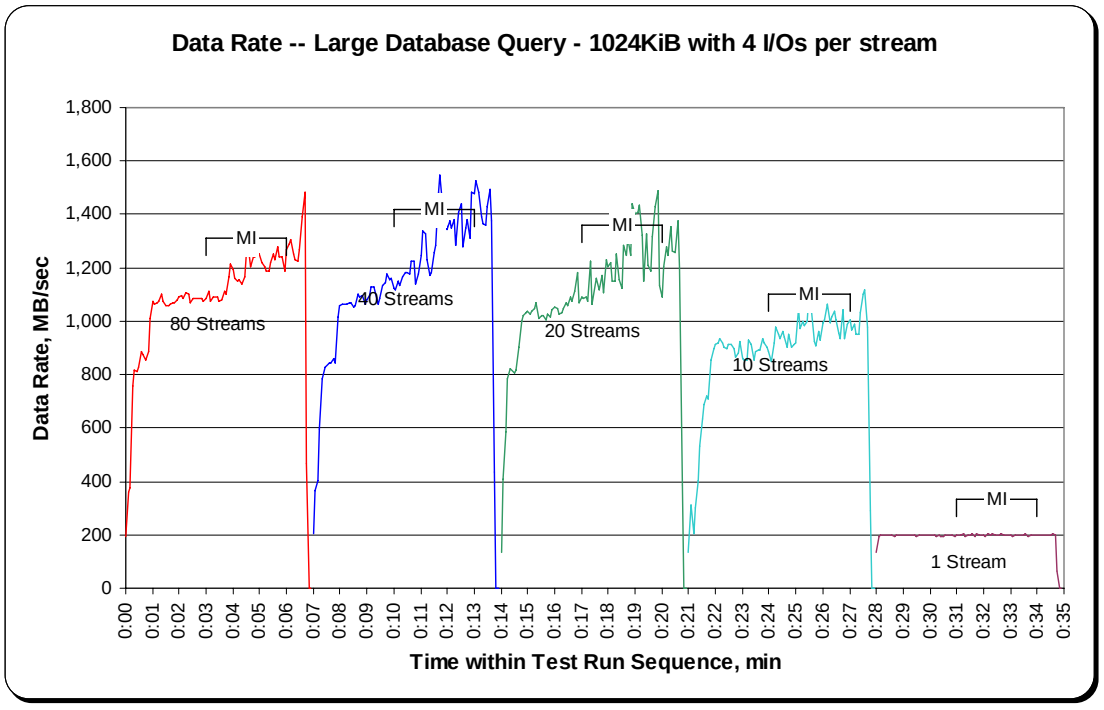
## SPC-2 "Large Database Query/1024 KiB Transfer Size/4 Outstanding I/Os" Test Run Data – Ramp-Up Period

| TR1 | 80 Streams | | | TR2 | 40 Streams | | | TR3 | 20 Streams | | | TR4 | 10 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 | 191.05 | 27.29 | 70.89 | 0:07:00 | 201.96 | 33.66 | 57.96 | 0:14:00 | 136.73 | 45.58 | 25.89 | 0:21:00 | 134.01 | 134.01 | 21.41 | 0:28:00 | 135.06 | 135.06 | 21.28 |
| 0:00:05 | 359.87 | 25.71 | 121.03 | 0:07:05 | 367.21 | 45.90 | 76.67 | 0:14:05 | 410.62 | 51.33 | 47.70 | 0:21:05 | 309.75 | 103.25 | 33.23 | 0:28:05 | 194.62 | 194.62 | 21.49 |
| 0:00:10 | 374.76 | 17.85 | 169.78 | 0:07:10 | 403.91 | 40.39 | 91.83 | 0:14:10 | 587.41 | 73.43 | 57.13 | 0:21:10 | 204.05 | 68.02 | 61.56 | 0:28:10 | 200.07 | 200.07 | 20.96 |
| 0:00:15 | 755.81 | 24.38 | 150.13 | 0:07:15 | 594.54 | 45.73 | 80.96 | 0:14:15 | 781.82 | 65.15 | 54.30 | 0:21:15 | 302.62 | 100.87 | 41.70 | 0:28:15 | 199.02 | 199.02 | 21.07 |
| 0:00:20 | 814.32 | 23.27 | 171.09 | 0:07:20 | 783.92 | 43.55 | 80.00 | 0:14:20 | 822.71 | 68.56 | 61.23 | 0:21:20 | 402.65 | 134.22 | 31.23 | 0:28:20 | 200.28 | 200.28 | 20.93 |
| 0:00:25 | 812.44 | 21.96 | 187.79 | 0:07:25 | 828.58 | 39.46 | 97.61 | 0:14:25 | 818.52 | 62.96 | 62.51 | 0:21:25 | 532.05 | 106.41 | 33.67 | 0:28:25 | 197.76 | 197.76 | 21.22 |
| 0:00:30 | 825.86 | 20.14 | 198.85 | 0:07:30 | 834.04 | 34.75 | 111.56 | 0:14:30 | 805.73 | 61.98 | 67.57 | 0:21:30 | 632.29 | 105.38 | 35.58 | 0:28:30 | 198.81 | 198.81 | 21.07 |
| 0:00:35 | 885.42 | 18.84 | 206.26 | 0:07:35 | 842.01 | 35.08 | 119.85 | 0:14:35 | 815.79 | 54.39 | 72.67 | 0:21:35 | 686.82 | 98.12 | 40.10 | 0:28:35 | 199.86 | 199.86 | 20.99 |
| 0:00:40 | 876.40 | 17.18 | 232.30 | 0:07:40 | 842.64 | 32.41 | 127.83 | 0:14:40 | 903.45 | 56.47 | 72.43 | 0:21:40 | 721.63 | 103.09 | 40.70 | 0:28:40 | 195.24 | 195.24 | 21.46 |
| 0:00:45 | 856.06 | 15.29 | 264.45 | 0:07:45 | 857.53 | 31.76 | 127.90 | 0:14:45 | 999.92 | 55.55 | 73.43 | 0:21:45 | 709.05 | 78.78 | 43.02 | 0:28:45 | 198.81 | 198.81 | 21.12 |
| 0:00:50 | 888.14 | 14.56 | 271.13 | 0:07:50 | 843.47 | 28.12 | 140.70 | 0:14:50 | 1,021.52 | 56.75 | 73.94 | 0:21:50 | 853.75 | 94.86 | 44.14 | 0:28:50 | 199.02 | 199.02 | 21.04 |
| 0:00:55 | 1,011.04 | 15.80 | 259.99 | 0:07:55 | 1,013.34 | 30.71 | 132.76 | 0:14:55 | 1,031.38 | 57.30 | 73.22 | 0:21:55 | 897.79 | 89.78 | 42.34 | 0:28:55 | 200.91 | 200.91 | 20.87 |
| 0:01:00 | 1,072.27 | 16.00 | 255.01 | 0:08:00 | 1,056.13 | 31.06 | 131.48 | 0:15:00 | 1,034.94 | 57.50 | 72.95 | 0:22:00 | 913.52 | 91.35 | 45.81 | 0:29:00 | 197.34 | 197.34 | 21.25 |
| 0:01:05 | 1,062.21 | 15.62 | 265.42 | 0:08:05 | 1,063.05 | 31.27 | 133.70 | 0:15:05 | 1,028.86 | 54.15 | 73.75 | 0:22:05 | 917.50 | 91.75 | 45.71 | 0:29:05 | 196.29 | 196.29 | 21.37 |
| 0:01:10 | 1,070.39 | 15.51 | 267.30 | 0:08:10 | 1,062.63 | 31.25 | 134.37 | 0:15:10 | 1,039.56 | 54.71 | 76.07 | 0:22:10 | 933.65 | 93.37 | 44.91 | 0:29:10 | 198.39 | 198.39 | 21.12 |
| 0:01:15 | 1,076.47 | 14.95 | 276.31 | 0:08:15 | 1,065.35 | 28.79 | 142.15 | 0:15:15 | 1,049.21 | 52.46 | 79.46 | 0:22:15 | 920.23 | 92.02 | 45.51 | 0:29:15 | 196.92 | 196.92 | 21.18 |
| 0:01:20 | 1,099.12 | 14.85 | 277.49 | 0:08:20 | 1,070.39 | 28.17 | 148.64 | 0:15:20 | 1,067.87 | 53.39 | 78.45 | 0:22:20 | 905.34 | 90.53 | 46.31 | 0:29:20 | 197.34 | 197.34 | 21.36 |
| 0:01:25 | 1,072.06 | 13.57 | 302.90 | 0:08:25 | 1,067.03 | 26.68 | 152.64 | 0:15:25 | 1,010.20 | 50.51 | 82.51 | 0:22:25 | 896.95 | 89.70 | 46.75 | 0:29:25 | 199.23 | 199.23 | 21.04 |
| 0:01:30 | 1,060.74 | 13.26 | 314.18 | 0:08:30 | 1,053.61 | 26.34 | 159.59 | 0:15:30 | 1,020.68 | 51.03 | 82.61 | 0:22:30 | 913.10 | 91.31 | 45.98 | 0:29:30 | 195.24 | 195.24 | 21.46 |
| 0:01:35 | 1,056.55 | 13.21 | 318.32 | 0:08:35 | 1,058.85 | 26.47 | 158.37 | 0:15:35 | 1,023.20 | 51.16 | 82.16 | 0:22:35 | 911.21 | 91.12 | 45.98 | 0:29:35 | 198.18 | 198.18 | 21.15 |
| 0:01:40 | 1,063.26 | 13.29 | 314.16 | 0:08:40 | 1,099.75 | 27.49 | 152.51 | 0:15:40 | 1,002.23 | 50.11 | 82.88 | 0:22:40 | 899.05 | 89.90 | 46.62 | 0:29:40 | 199.65 | 199.65 | 21.00 |
| 0:01:45 | 1,071.64 | 13.40 | 313.00 | 0:08:45 | 1,091.99 | 27.30 | 153.42 | 0:15:45 | 1,026.98 | 51.35 | 82.38 | 0:22:45 | 863.40 | 86.34 | 48.53 | 0:29:45 | 197.34 | 197.34 | 21.26 |
| 0:01:50 | 1,068.29 | 13.35 | 314.44 | 0:08:50 | 1,098.28 | 27.46 | 152.96 | 0:15:50 | 1,013.76 | 50.69 | 82.76 | 0:22:50 | 883.74 | 88.37 | 47.52 | 0:29:50 | 198.39 | 198.39 | 21.11 |
| 0:01:55 | 1,078.15 | 13.48 | 312.62 | 0:08:55 | 1,062.00 | 26.55 | 157.87 | 0:15:55 | 1,039.98 | 52.00 | 79.98 | 0:22:55 | 923.59 | 92.36 | 45.35 | 0:29:55 | 198.60 | 198.60 | 21.13 |
| 0:02:00 | 1,090.31 | 13.63 | 309.05 | 0:09:00 | 1,078.57 | 26.96 | 154.22 | 0:16:00 | 1,052.77 | 52.64 | 80.25 | 0:23:00 | 858.15 | 85.82 | 48.86 | 0:30:00 | 197.97 | 197.97 | 21.17 |
| 0:02:05 | 1,095.13 | 13.69 | 304.55 | 0:09:05 | 1,093.66 | 27.34 | 153.67 | 0:16:05 | 1,047.53 | 52.38 | 80.00 | 0:23:05 | 855.85 | 85.58 | 49.07 | 0:30:05 | 199.23 | 199.23 | 21.03 |
| 0:02:10 | 1,084.44 | 13.56 | 310.89 | 0:09:10 | 1,128.90 | 28.22 | 148.77 | 0:16:10 | 1,026.77 | 51.34 | 81.13 | 0:23:10 | 856.48 | 85.65 | 48.85 | 0:30:10 | 196.29 | 196.29 | 21.40 |
| 0:02:15 | 1,107.51 | 13.84 | 304.30 | 0:09:15 | 1,130.36 | 28.26 | 148.24 | 0:16:15 | 1,032.22 | 51.61 | 81.85 | 0:23:15 | 928.20 | 92.82 | 45.22 | 0:30:15 | 196.08 | 196.08 | 21.37 |
| 0:02:20 | 1,103.10 | 13.79 | 302.20 | 0:09:20 | 1,106.67 | 27.67 | 151.20 | 0:16:20 | 1,049.00 | 52.45 | 80.00 | 0:23:20 | 912.05 | 91.21 | 45.96 | 0:30:20 | 197.97 | 197.97 | 21.16 |
| 0:02:25 | 1,066.82 | 13.34 | 316.54 | 0:09:25 | 1,063.05 | 26.58 | 158.19 | 0:16:25 | 1,071.43 | 53.57 | 77.64 | 0:23:25 | 851.65 | 85.17 | 48.80 | 0:30:25 | 195.66 | 195.66 | 21.44 |
| 0:02:30 | 1,085.28 | 13.57 | 304.73 | 0:09:30 | 1,085.49 | 27.14 | 154.44 | 0:16:30 | 1,059.06 | 52.95 | 79.69 | 0:23:30 | 884.79 | 88.48 | 47.84 | 0:30:30 | 194.20 | 194.20 | 21.55 |
| 0:02:35 | 1,083.39 | 13.54 | 313.45 | 0:09:35 | 1,131.62 | 28.29 | 147.84 | 0:16:35 | 1,089.26 | 54.46 | 77.16 | 0:23:35 | 889.61 | 88.96 | 47.06 | 0:30:35 | 197.76 | 197.76 | 21.25 |
| 0:02:40 | 1,085.49 | 13.57 | 307.69 | 0:09:40 | 1,143.16 | 28.58 | 147.43 | 0:16:40 | 1,074.16 | 53.71 | 77.54 | 0:23:40 | 894.23 | 89.42 | 46.94 | 0:30:40 | 199.86 | 199.86 | 20.97 |
| 0:02:45 | 1,083.81 | 13.55 | 309.52 | 0:09:45 | 1,176.92 | 29.42 | 142.60 | 0:16:45 | 1,111.70 | 55.59 | 75.96 | 0:23:45 | 932.81 | 93.28 | 44.94 | 0:30:45 | 198.60 | 198.60 | 21.11 |
| 0:02:50 | 1,088.00 | 13.60 | 308.88 | 0:09:50 | 1,153.85 | 28.85 | 145.08 | 0:16:50 | 1,179.44 | 58.97 | 71.00 | 0:23:50 | 917.50 | 91.75 | 45.68 | 0:30:50 | 196.71 | 196.71 | 21.31 |
| 0:02:55 | 1,075.63 | 13.45 | 310.49 | 0:09:55 | 1,162.87 | 29.07 | 144.37 | 0:16:55 | 1,068.50 | 53.42 | 77.78 | 0:23:55 | 902.61 | 90.26 | 46.48 | 0:30:55 | 195.24 | 195.24 | 21.47 |

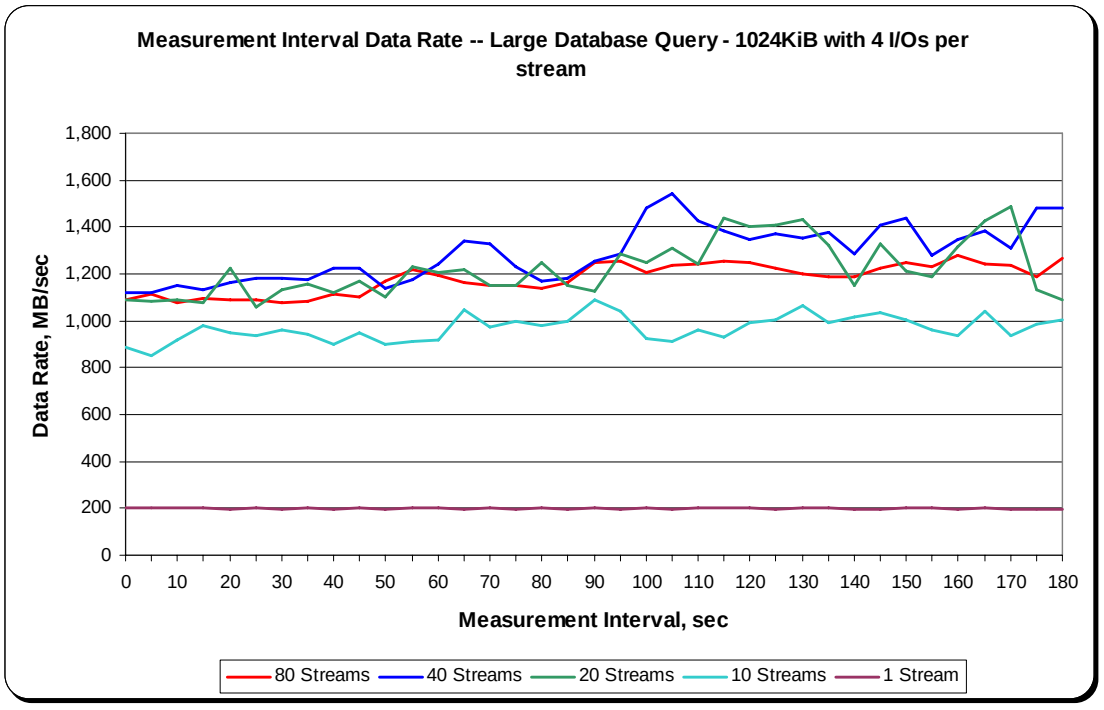
## SPC-2 "Large Database Query/1024 KiB Transfer Size/4 Outstanding I/Os" Test Run Data Measurement Interval, Run-Out, and Ramp-Down Periods

| TR1 | 80 Streams | | | TR2 | 40 Streams | | | TR3 | 20 Streams | | | TR4 | 10 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 | 1,087.58 | 13.59 | 309.38 | 0:10:00 | 1,123.02 | 28.08 | 148.91 | 0:17:00 | 1,089.05 | 54.45 | 77.18 | 0:24:00 | 886.68 | 88.67 | 47.29 | 0:31:00 | 200.49 | 200.49 | 20.91 |
| 0:03:05 | 1,113.38 | 13.92 | 302.00 | 0:10:05 | 1,118.83 | 27.97 | 150.54 | 0:17:05 | 1,084.02 | 54.20 | 77.96 | 0:24:05 | 849.35 | 84.93 | 49.37 | 0:31:05 | 201.12 | 201.12 | 20.85 |
| 0:03:10 | 1,075.42 | 13.44 | 311.45 | 0:10:10 | 1,150.29 | 28.76 | 145.60 | 0:17:10 | 1,092.41 | 54.62 | 75.95 | 0:24:10 | 916.67 | 91.67 | 45.79 | 0:31:10 | 201.12 | 201.12 | 20.84 |
| 0:03:15 | 1,093.25 | 13.67 | 304.38 | 0:10:15 | 1,133.93 | 28.35 | 148.14 | 0:17:15 | 1,076.47 | 53.82 | 78.77 | 0:24:15 | 980.00 | 98.00 | 42.72 | 0:31:15 | 203.63 | 203.63 | 20.59 |
| 0:03:20 | 1,091.15 | 13.64 | 309.47 | 0:10:20 | 1,163.50 | 29.09 | 144.07 | 0:17:20 | 1,225.79 | 61.29 | 68.48 | 0:24:20 | 950.64 | 95.06 | 44.12 | 0:31:20 | 194.41 | 194.41 | 21.54 |
| 0:03:25 | 1,091.36 | 13.64 | 306.40 | 0:10:25 | 1,180.28 | 29.51 | 142.13 | 0:17:25 | 1,061.37 | 53.07 | 78.27 | 0:24:25 | 936.59 | 93.66 | 44.79 | 0:31:25 | 200.91 | 200.91 | 20.89 |
| 0:03:30 | 1,075.84 | 13.45 | 314.30 | 0:10:30 | 1,184.26 | 29.61 | 141.79 | 0:17:30 | 1,130.36 | 56.52 | 74.88 | 0:24:30 | 961.75 | 96.18 | 43.57 | 0:31:30 | 197.55 | 197.55 | 21.22 |
| 0:03:35 | 1,082.55 | 13.53 | 309.45 | 0:10:35 | 1,176.29 | 29.41 | 142.51 | 0:17:35 | 1,158.89 | 57.94 | 72.34 | 0:24:35 | 942.25 | 94.23 | 44.55 | 0:31:35 | 201.54 | 201.54 | 20.75 |
| 0:03:40 | 1,112.54 | 13.91 | 303.07 | 0:10:40 | 1,227.25 | 30.68 | 136.68 | 0:17:40 | 1,118.83 | 55.94 | 74.25 | 0:24:40 | 900.31 | 90.03 | 46.52 | 0:31:40 | 196.08 | 196.08 | 21.43 |
| 0:03:45 | 1,101.42 | 13.77 | 303.83 | 0:10:45 | 1,223.48 | 30.59 | 137.22 | 0:17:45 | 1,168.95 | 58.45 | 72.43 | 0:24:45 | 951.90 | 95.19 | 44.07 | 0:31:45 | 201.54 | 201.54 | 20.81 |
| 0:03:50 | 1,167.69 | 14.60 | 287.57 | 0:10:50 | 1,141.48 | 28.54 | 146.88 | 0:17:50 | 1,104.57 | 55.23 | 75.93 | 0:24:50 | 900.31 | 90.03 | 46.60 | 0:31:50 | 197.55 | 197.55 | 21.22 |
| 0:03:55 | 1,215.51 | 15.19 | 275.08 | 0:10:55 | 1,175.03 | 29.38 | 142.93 | 0:17:55 | 1,232.92 | 61.65 | 67.58 | 0:24:55 | 914.15 | 91.41 | 45.85 | 0:31:55 | 199.65 | 199.65 | 20.99 |
| 0:04:00 | 1,193.07 | 14.91 | 282.35 | 0:11:00 | 1,245.29 | 31.13 | 134.95 | 0:18:00 | 1,203.97 | 60.20 | 70.09 | 0:25:00 | 918.55 | 91.86 | 45.61 | 0:32:00 | 200.28 | 200.28 | 20.95 |
| 0:04:05 | 1,160.56 | 14.51 | 288.67 | 0:11:05 | 1,339.66 | 33.49 | 124.83 | 0:18:05 | 1,218.24 | 60.91 | 68.83 | 0:25:05 | 1,046.27 | 104.63 | 40.16 | 0:32:05 | 193.78 | 193.78 | 21.65 |
| 0:04:10 | 1,151.55 | 14.39 | 291.73 | 0:11:10 | 1,325.82 | 33.15 | 126.81 | 0:18:10 | 1,150.71 | 57.54 | 72.30 | 0:25:10 | 973.92 | 97.39 | 43.01 | 0:32:10 | 204.05 | 204.05 | 20.52 |
| 0:04:15 | 1,152.80 | 14.41 | 291.49 | 0:11:15 | 1,231.03 | 30.78 | 136.13 | 0:18:15 | 1,152.18 | 57.61 | 73.35 | 0:25:15 | 998.87 | 99.89 | 42.02 | 0:32:15 | 196.71 | 196.71 | 21.29 |
| 0:04:20 | 1,140.64 | 14.26 | 293.89 | 0:11:20 | 1,168.95 | 29.22 | 143.44 | 0:18:20 | 1,251.16 | 62.56 | 67.07 | 0:25:20 | 981.68 | 98.17 | 42.72 | 0:32:20 | 203.00 | 203.00 | 20.67 |
| 0:04:25 | 1,164.55 | 14.56 | 288.54 | 0:11:25 | 1,184.47 | 29.61 | 141.61 | 0:18:25 | 1,153.64 | 57.68 | 72.12 | 0:25:25 | 998.45 | 99.85 | 41.98 | 0:32:25 | 198.60 | 198.60 | 21.13 |
| 0:04:30 | 1,247.81 | 15.60 | 270.59 | 0:11:30 | 1,257.87 | 31.45 | 133.70 | 0:18:30 | 1,124.07 | 56.20 | 75.06 | 0:25:30 | 1,087.16 | 108.72 | 38.57 | 0:32:30 | 199.86 | 199.86 | 20.97 |
| 0:04:35 | 1,252.63 | 15.66 | 265.93 | 0:11:35 | 1,286.81 | 32.17 | 130.40 | 0:18:35 | 1,285.97 | 64.30 | 65.39 | 0:25:35 | 1,038.93 | 103.89 | 40.25 | 0:32:35 | 197.97 | 197.97 | 21.18 |
| 0:04:40 | 1,204.81 | 15.06 | 278.27 | 0:11:40 | 1,482.27 | 37.06 | 113.59 | 0:18:40 | 1,248.43 | 62.42 | 66.68 | 0:25:40 | 923.17 | 92.32 | 45.48 | 0:32:40 | 202.17 | 202.17 | 20.72 |
| 0:04:45 | 1,238.79 | 15.48 | 271.65 | 0:11:45 | 1,545.18 | 38.63 | 108.39 | 0:18:45 | 1,310.72 | 65.54 | 64.46 | 0:25:45 | 910.37 | 91.04 | 46.07 | 0:32:45 | 198.60 | 198.60 | 21.12 |
| 0:04:50 | 1,241.51 | 15.52 | 271.17 | 0:11:50 | 1,427.11 | 35.68 | 117.54 | 0:18:50 | 1,245.08 | 62.25 | 67.33 | 0:25:50 | 963.64 | 96.36 | 43.51 | 0:32:50 | 200.91 | 200.91 | 20.90 |
| 0:04:55 | 1,254.31 | 15.68 | 267.79 | 0:11:55 | 1,383.28 | 34.58 | 121.24 | 0:18:55 | 1,439.28 | 71.96 | 57.86 | 0:25:55 | 928.83 | 92.88 | 45.14 | 0:32:55 | 200.07 | 200.07 | 20.94 |
| 0:05:00 | 1,251.58 | 15.64 | 267.06 | 0:12:00 | 1,344.48 | 33.61 | 124.67 | 0:19:00 | 1,404.04 | 70.20 | 60.07 | 0:26:00 | 993.21 | 99.32 | 42.23 | 0:33:00 | 200.70 | 200.70 | 20.88 |
| 0:05:05 | 1,222.22 | 15.28 | 274.12 | 0:12:05 | 1,373.84 | 34.35 | 122.07 | 0:19:05 | 1,408.03 | 70.40 | 59.70 | 0:26:05 | 1,005.79 | 100.58 | 41.69 | 0:33:05 | 195.45 | 195.45 | 21.44 |
| 0:05:10 | 1,201.67 | 15.02 | 279.72 | 0:12:10 | 1,350.15 | 33.75 | 123.65 | 0:19:10 | 1,435.50 | 71.78 | 57.93 | 0:26:10 | 1,066.40 | 106.64 | 39.31 | 0:33:10 | 200.07 | 200.07 | 21.00 |
| 0:05:15 | 1,186.36 | 14.83 | 282.57 | 0:12:15 | 1,379.72 | 34.49 | 121.80 | 0:19:15 | 1,319.53 | 65.98 | 63.89 | 0:26:16 | 992.16 | 99.22 | 44.25 | 0:33:15 | 200.70 | 200.70 | 20.87 |
| 0:05:20 | 1,188.04 | 14.85 | 282.54 | 0:12:20 | 1,285.55 | 32.14 | 130.70 | 0:19:20 | 1,151.55 | 57.58 | 72.85 | 0:26:20 | 1,015.02 | 101.50 | 39.33 | 0:33:20 | 197.13 | 197.13 | 21.26 |
| 0:05:25 | 1,221.59 | 15.27 | 274.35 | 0:12:25 | 1,409.08 | 35.23 | 119.19 | 0:19:25 | 1,326.66 | 66.33 | 62.67 | 0:26:25 | 1,035.15 | 103.52 | 40.56 | 0:33:25 | 196.50 | 196.50 | 21.32 |
| 0:05:30 | 1,251.58 | 15.64 | 269.03 | 0:12:30 | 1,439.49 | 35.99 | 116.78 | 0:19:30 | 1,209.64 | 60.48 | 69.92 | 0:26:30 | 1,007.05 | 100.71 | 41.63 | 0:33:30 | 200.91 | 200.91 | 20.87 |
| 0:05:35 | 1,231.24 | 15.39 | 270.47 | 0:12:35 | 1,278.42 | 31.96 | 131.12 | 0:19:35 | 1,186.36 | 59.32 | 70.82 | 0:26:35 | 959.03 | 95.90 | 43.71 | 0:33:35 | 202.38 | 202.38 | 20.70 |
| 0:05:40 | 1,279.68 | 16.00 | 263.81 | 0:12:40 | 1,348.47 | 33.71 | 124.36 | 0:19:40 | 1,317.85 | 65.89 | 63.10 | 0:26:40 | 935.12 | 93.51 | 44.79 | 0:33:40 | 194.83 | 194.83 | 21.54 |
| 0:05:45 | 1,241.93 | 15.52 | 269.42 | 0:12:45 | 1,380.76 | 34.52 | 121.38 | 0:19:45 | 1,428.16 | 71.41 | 59.22 | 0:26:45 | 1,041.45 | 104.14 | 40.23 | 0:33:45 | 199.23 | 199.23 | 21.04 |
| 0:05:50 | 1,238.58 | 15.48 | 269.83 | 0:12:50 | 1,312.82 | 32.82 | 127.58 | 0:19:50 | 1,490.66 | 74.53 | 56.16 | 0:26:50 | 937.22 | 93.72 | 44.83 | 0:33:50 | 196.50 | 196.50 | 21.33 |
| 0:05:55 | 1,186.99 | 14.84 | 284.60 | 0:12:55 | 1,480.80 | 37.02 | 113.69 | 0:19:55 | 1,135.61 | 56.78 | 73.32 | 0:26:55 | 987.13 | 98.71 | 42.45 | 0:33:55 | 198.60 | 198.60 | 21.12 |
| 0:06:00 | 1,267.94 | 15.85 | 264.01 | 0:13:00 | 1,479.33 | 36.98 | 113.46 | 0:20:00 | 1,090.94 | 54.55 | 77.41 | 0:27:00 | 1,004.96 | 100.50 | 41.70 | 0:34:00 | 198.39 | 198.39 | 21.15 |
| 0:06:05 | 1,289.75 | 16.12 | 259.69 | 0:13:05 | 1,524.21 | 38.11 | 110.20 | 0:20:05 | 1,204.60 | 60.23 | 69.76 | 0:27:05 | 966.16 | 96.62 | 43.41 | 0:34:05 | 198.81 | 198.81 | 21.08 |
| 0:06:10 | 1,307.15 | 16.34 | 256.98 | 0:13:10 | 1,485.62 | 37.14 | 112.72 | 0:20:10 | 1,278.63 | 63.93 | 65.01 | 0:27:10 | 988.60 | 98.86 | 42.42 | 0:34:10 | 199.44 | 199.44 | 21.02 |
| 0:06:15 | 1,252.42 | 15.66 | 268.21 | 0:13:15 | 1,392.09 | 34.80 | 120.27 | 0:20:15 | 1,244.87 | 62.24 | 67.88 | 0:27:15 | 951.48 | 95.15 | 44.05 | 0:34:15 | 200.70 | 200.70 | 20.90 |
| 0:06:20 | 1,232.08 | 15.40 | 272.81 | 0:13:20 | 1,362.10 | 34.05 | 123.09 | 0:20:20 | 1,356.02 | 67.80 | 61.78 | 0:27:20 | 949.17 | 94.92 | 44.13 | 0:34:20 | 196.92 | 196.92 | 21.27 |
| 0:06:25 | 1,225.37 | 15.32 | 273.04 | 0:13:25 | 1,359.16 | 33.98 | 123.40 | 0:20:25 | 1,263.53 | 63.18 | 65.92 | 0:27:25 | 1,031.17 | 103.12 | 40.72 | 0:34:25 | 197.34 | 197.34 | 21.25 |
| 0:06:30 | 1,267.73 | 15.85 | 264.06 | 0:13:30 | 1,430.89 | 35.77 | 117.40 | 0:20:30 | 1,259.97 | 63.00 | 67.17 | 0:27:30 | 1,101.42 | 110.14 | 38.09 | 0:34:30 | 197.76 | 197.76 | 21.17 |
| 0:06:35 | 1,394.19 | 17.43 | 243.24 | 0:13:35 | 1,491.49 | 37.29 | 112.32 | 0:20:35 | 1,378.04 | 68.90 | 60.73 | 0:27:35 | 1,119.04 | 111.90 | 37.43 | 0:34:35 | 201.75 | 201.75 | 20.80 |
| 0:06:40 | 1,481.64 | 18.52 | 225.71 | 0:13:40 | 1,376.99 | 34.42 | 121.99 | 0:20:40 | 1,196.01 | 59.80 | 69.63 | 0:27:40 | 976.01 | 97.60 | 42.96 | 0:34:40 | 197.97 | 197.97 | 21.17 |
| 0:06:45 | 467.25 | 0.00 | 238.06 | 0:13:45 | 437.26 | 0.00 | 114.31 | 0:20:45 | 387.13 | 0.00 | 65.21 | 0:27:45 | 290.25 | 0.00 | 40.16 | 0:34:45 | 62.50 | 0.00 | 21.15 |
| 0:06:50 | 0.00 | 0.00 | 0.00 | 0:13:50 | 0.00 | 0.00 | 0.00 | 0:20:50 | 0.00 | 0.00 | 0.00 | 0:27:50 | 0.00 | 0.00 | 0.00 | 0:34:50 | 0.00 | 0.00 | 0.00 |
| 0:06:55 | 0.00 | 0.00 | 0.00 | 0:13:55 | 0.00 | 0.00 | 0.00 | 0:20:55 | 0.00 | 0.00 | 0.00 | 0:27:55 | 0.00 | 0.00 | 0.00 | 0:34:55 | 0.00 | 0.00 | 0.00 |

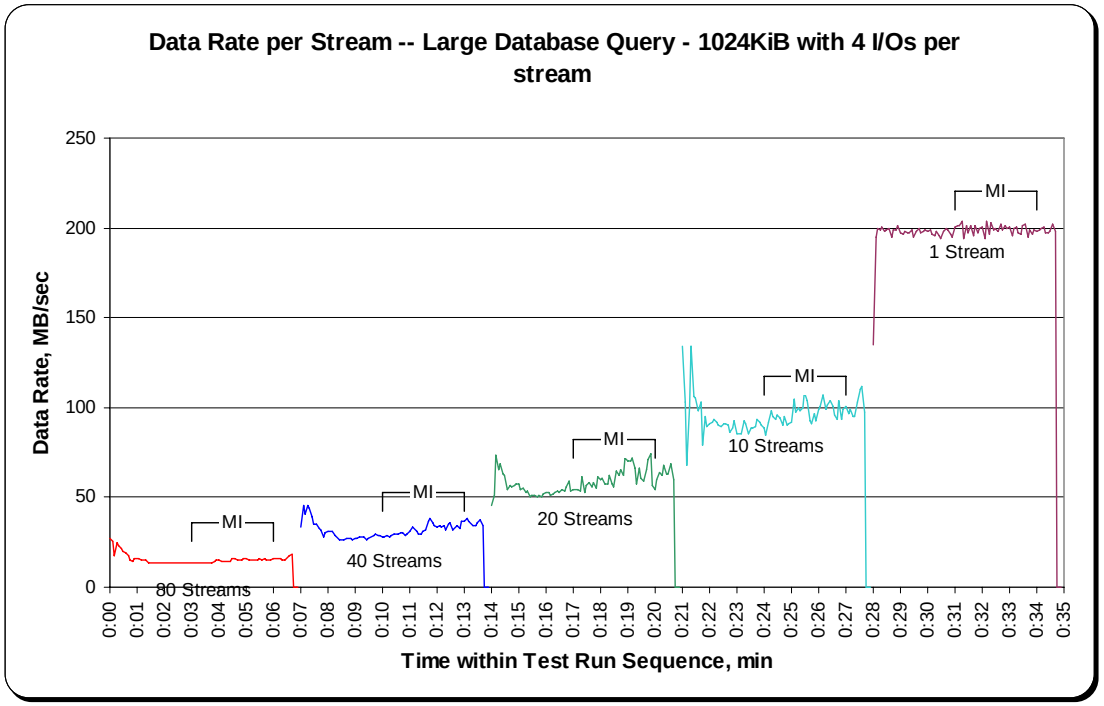
## SPC-2 "Large Database Query/1024 KiB Transfer Size/4 Outstanding I/Os" Average Data Rate Graph – Complete Test Run



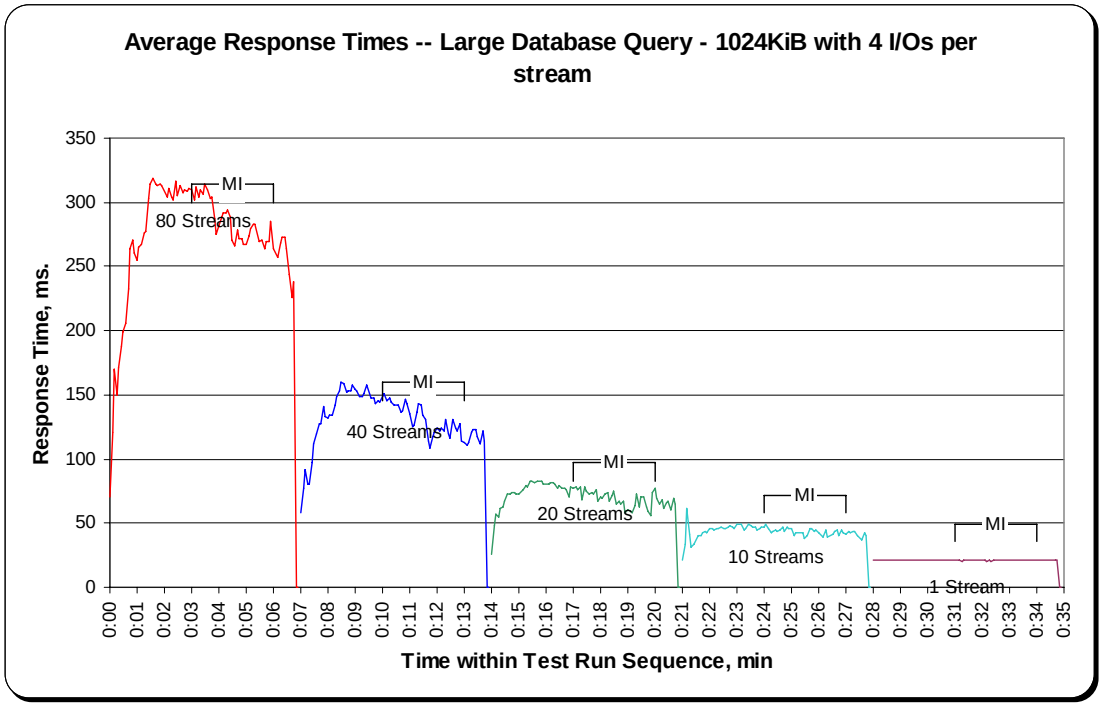

## SPC-2 "Large Database Query/1024 KiB Transfer Size/4 Outstanding I/Os" Average Data Rate Graph – Measurement Interval (MI) Only



## 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



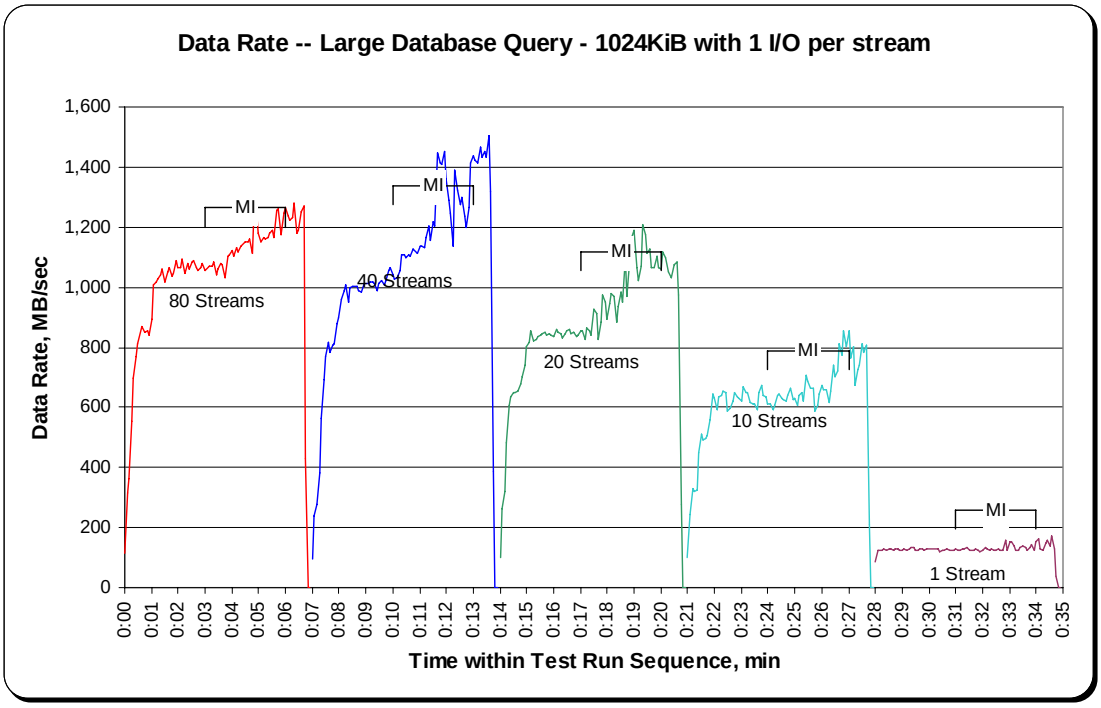
## SPC-2 "Large Database Query/1024 KiB Transfer Size/1 Outstanding I/O" Test Run Data – Ramp-Up Period

| TR6 | 80 Streams | | | TR7 | 40 Streams | | | TR8 | 20 Streams | | | TR9 | 10 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 | 115.97 | 23.19 | 14.24 | 0:07:00 | 97.31 | 48.65 | 9.51 | 0:14:00 | 98.36 | 32.79 | 10.89 | 0:21:00 | 102.55 | 51.28 | 9.44 | 0:28:00 | 87.45 | 87.45 | 8.23 |
| 0:00:05 | 315.62 | 26.30 | 28.47 | 0:07:05 | 236.56 | 39.43 | 20.91 | 0:14:05 | 261.10 | 52.22 | 18.28 | 0:21:05 | 244.53 | 61.13 | 11.67 | 0:28:05 | 125.83 | 125.83 | 8.33 |
| 0:00:10 | 361.55 | 22.60 | 41.36 | 0:07:10 | 278.29 | 34.79 | 23.93 | 0:14:10 | 319.82 | 53.30 | 17.05 | 0:21:10 | 329.25 | 82.31 | 12.69 | 0:28:10 | 125.20 | 125.20 | 8.37 |
| 0:00:15 | 553.65 | 23.07 | 40.85 | 0:07:15 | 381.68 | 38.17 | 25.70 | 0:14:15 | 483.39 | 53.71 | 17.00 | 0:21:15 | 321.91 | 80.48 | 13.03 | 0:28:15 | 126.46 | 126.46 | 8.28 |
| 0:00:20 | 698.35 | 22.53 | 41.45 | 0:07:20 | 565.18 | 37.68 | 23.61 | 0:14:20 | 607.54 | 55.23 | 17.34 | 0:21:20 | 327.16 | 65.43 | 13.31 | 0:28:20 | 129.60 | 129.60 | 8.09 |
| 0:00:25 | 768.19 | 20.76 | 45.50 | 0:07:25 | 694.79 | 34.74 | 25.94 | 0:14:25 | 634.81 | 57.71 | 18.13 | 0:21:25 | 449.84 | 64.26 | 14.82 | 0:28:25 | 123.31 | 123.31 | 8.49 |
| 0:00:30 | 813.49 | 20.86 | 49.60 | 0:07:30 | 769.45 | 32.06 | 29.53 | 0:14:30 | 649.49 | 59.04 | 17.76 | 0:21:30 | 513.38 | 73.34 | 14.31 | 0:28:30 | 126.88 | 126.88 | 8.26 |
| 0:00:35 | 849.35 | 18.87 | 51.65 | 0:07:35 | 815.79 | 33.99 | 31.14 | 0:14:35 | 648.02 | 54.00 | 19.41 | 0:21:35 | 493.67 | 61.71 | 15.31 | 0:28:35 | 128.56 | 128.56 | 8.14 |
| 0:00:40 | 867.17 | 17.00 | 58.11 | 0:07:40 | 783.71 | 30.14 | 33.04 | 0:14:40 | 655.36 | 50.41 | 20.45 | 0:21:40 | 497.86 | 62.23 | 16.83 | 0:28:40 | 122.05 | 122.05 | 8.59 |
| 0:00:45 | 849.77 | 15.17 | 66.23 | 0:07:45 | 805.52 | 27.78 | 35.28 | 0:14:45 | 677.80 | 48.41 | 20.97 | 0:21:45 | 503.95 | 62.99 | 16.65 | 0:28:45 | 127.30 | 127.30 | 8.22 |
| 0:00:50 | 855.64 | 14.75 | 68.57 | 0:07:50 | 810.34 | 26.14 | 37.86 | 0:14:50 | 700.45 | 46.70 | 22.40 | 0:21:50 | 560.36 | 62.26 | 15.05 | 0:28:50 | 127.30 | 127.30 | 8.24 |
| 0:00:55 | 838.44 | 14.21 | 73.43 | 0:07:55 | 880.59 | 28.41 | 36.93 | 0:14:55 | 741.97 | 46.37 | 21.98 | 0:21:55 | 644.04 | 71.56 | 14.64 | 0:28:55 | 125.83 | 125.83 | 8.32 |
| 0:01:00 | 894.65 | 13.56 | 72.01 | 0:08:00 | 897.16 | 26.39 | 37.99 | 0:15:00 | 801.11 | 47.12 | 22.20 | 0:22:00 | 629.77 | 69.97 | 14.99 | 0:29:00 | 125.41 | 125.41 | 8.36 |
| 0:01:05 | 1,007.47 | 14.60 | 69.79 | 0:08:05 | 958.82 | 27.39 | 37.52 | 0:15:05 | 816.42 | 42.97 | 22.34 | 0:22:05 | 589.93 | 65.55 | 15.99 | 0:29:05 | 126.67 | 126.67 | 8.27 |
| 0:01:10 | 1,016.49 | 14.73 | 71.30 | 0:08:10 | 989.44 | 26.74 | 38.40 | 0:15:10 | 854.80 | 44.99 | 23.29 | 0:22:10 | 637.11 | 70.79 | 14.79 | 0:29:10 | 126.04 | 126.04 | 8.31 |
| 0:01:15 | 1,026.98 | 14.26 | 72.75 | 0:08:15 | 1,006.63 | 26.49 | 39.42 | 0:15:15 | 819.78 | 43.15 | 24.32 | 0:22:15 | 640.26 | 71.14 | 14.75 | 0:29:15 | 127.51 | 127.51 | 8.21 |
| 0:01:20 | 1,041.87 | 13.71 | 73.68 | 0:08:20 | 949.80 | 24.99 | 41.91 | 0:15:20 | 826.07 | 43.48 | 24.11 | 0:22:20 | 652.84 | 65.28 | 14.90 | 0:29:20 | 131.49 | 131.49 | 7.97 |
| 0:01:25 | 1,060.74 | 13.26 | 77.38 | 0:08:25 | 998.24 | 24.96 | 40.48 | 0:15:25 | 836.76 | 41.84 | 24.77 | 0:22:25 | 651.59 | 65.16 | 16.09 | 0:29:25 | 134.01 | 134.01 | 7.81 |
| 0:01:30 | 1,015.23 | 12.69 | 82.42 | 0:08:30 | 1,001.18 | 25.03 | 41.96 | 0:15:30 | 839.28 | 41.96 | 24.93 | 0:22:30 | 587.20 | 58.72 | 17.84 | 0:29:30 | 125.83 | 125.83 | 8.33 |
| 0:01:35 | 1,051.93 | 13.15 | 79.63 | 0:08:35 | 1,004.75 | 25.12 | 41.76 | 0:15:35 | 843.06 | 42.15 | 24.86 | 0:22:35 | 598.53 | 59.85 | 17.53 | 0:29:35 | 125.83 | 125.83 | 8.33 |
| 0:01:40 | 1,064.93 | 13.31 | 78.82 | 0:08:40 | 1,004.54 | 25.11 | 41.78 | 0:15:40 | 847.88 | 42.39 | 24.75 | 0:22:40 | 619.50 | 61.95 | 16.92 | 0:29:40 | 130.65 | 130.65 | 8.01 |
| 0:01:45 | 1,035.36 | 12.94 | 80.98 | 0:08:45 | 987.97 | 24.70 | 42.44 | 0:15:45 | 839.49 | 41.97 | 24.98 | 0:22:45 | 648.86 | 64.89 | 16.13 | 0:29:45 | 128.97 | 128.97 | 8.11 |
| 0:01:50 | 1,043.96 | 13.05 | 80.34 | 0:08:50 | 983.35 | 24.58 | 42.64 | 0:15:50 | 845.78 | 42.29 | 24.76 | 0:22:50 | 632.92 | 63.29 | 16.58 | 0:29:50 | 125.62 | 125.62 | 8.36 |
| 0:01:55 | 1,088.63 | 13.61 | 77.18 | 0:08:55 | 1,012.30 | 25.31 | 41.40 | 0:15:55 | 840.12 | 42.01 | 24.96 | 0:22:55 | 631.45 | 63.15 | 16.60 | 0:29:55 | 127.93 | 127.93 | 8.17 |
| 0:02:00 | 1,065.35 | 13.32 | 78.67 | 0:09:00 | 1,013.34 | 25.33 | 41.40 | 0:16:00 | 834.04 | 41.70 | 25.16 | 0:23:00 | 623.27 | 62.33 | 16.80 | 0:30:00 | 129.18 | 129.18 | 8.12 |
| 0:02:05 | 1,066.40 | 13.33 | 78.63 | 0:09:05 | 1,013.97 | 25.35 | 41.30 | 0:16:05 | 859.62 | 42.98 | 24.40 | 0:23:05 | 666.47 | 66.65 | 15.73 | 0:30:05 | 130.23 | 130.23 | 8.04 |
| 0:02:10 | 1,093.66 | 13.67 | 76.77 | 0:09:10 | 1,015.02 | 25.38 | 41.35 | 0:16:10 | 852.49 | 42.62 | 24.56 | 0:23:10 | 651.38 | 65.14 | 16.08 | 0:30:10 | 130.86 | 130.86 | 8.01 |
| 0:02:15 | 1,046.27 | 13.08 | 80.07 | 0:09:15 | 1,015.23 | 25.38 | 41.31 | 0:16:15 | 844.10 | 42.21 | 24.85 | 0:23:15 | 650.96 | 65.10 | 16.11 | 0:30:15 | 127.93 | 127.93 | 8.20 |
| 0:02:20 | 1,080.24 | 13.50 | 77.57 | 0:09:20 | 1,011.46 | 25.29 | 41.47 | 0:16:20 | 829.21 | 41.46 | 25.27 | 0:23:20 | 615.93 | 61.59 | 16.87 | 0:30:20 | 127.93 | 127.93 | 8.18 |
| 0:02:25 | 1,060.32 | 13.25 | 79.18 | 0:09:25 | 988.60 | 24.71 | 42.40 | 0:16:25 | 847.04 | 42.35 | 24.76 | 0:23:25 | 612.37 | 61.24 | 17.25 | 0:30:25 | 120.59 | 120.59 | 8.70 |
| 0:02:30 | 1,084.23 | 13.55 | 77.36 | 0:09:30 | 1,013.13 | 25.33 | 41.42 | 0:16:30 | 853.75 | 42.69 | 24.55 | 0:23:30 | 610.27 | 61.03 | 17.17 | 0:30:30 | 126.46 | 126.46 | 8.28 |
| 0:02:35 | 1,089.26 | 13.62 | 76.94 | 0:09:35 | 1,021.52 | 25.54 | 41.07 | 0:16:35 | 861.30 | 43.07 | 24.35 | 0:23:35 | 592.86 | 59.29 | 17.64 | 0:30:35 | 124.57 | 124.57 | 8.40 |
| 0:02:40 | 1,065.77 | 13.32 | 78.71 | 0:09:40 | 1,007.26 | 25.18 | 41.57 | 0:16:40 | 847.04 | 42.35 | 24.75 | 0:23:40 | 651.59 | 65.16 | 16.12 | 0:30:40 | 129.39 | 129.39 | 8.10 |
| 0:02:45 | 1,053.82 | 13.17 | 79.72 | 0:09:45 | 1,022.36 | 25.56 | 41.05 | 0:16:45 | 849.56 | 42.48 | 24.68 | 0:23:45 | 672.56 | 67.26 | 15.59 | 0:30:45 | 125.41 | 125.41 | 8.36 |
| 0:02:50 | 1,065.77 | 13.32 | 78.65 | 0:09:50 | 1,055.50 | 26.39 | 39.76 | 0:16:50 | 836.13 | 41.81 | 25.05 | 0:23:50 | 641.73 | 64.17 | 16.33 | 0:30:50 | 126.46 | 126.46 | 8.29 |
| 0:02:55 | 1,077.94 | 13.47 | 77.95 | 0:09:55 | 1,063.05 | 26.58 | 39.39 | 0:16:55 | 840.12 | 42.01 | 24.98 | 0:23:55 | 635.44 | 63.54 | 16.49 | 0:30:55 | 122.68 | 122.68 | 8.53 |

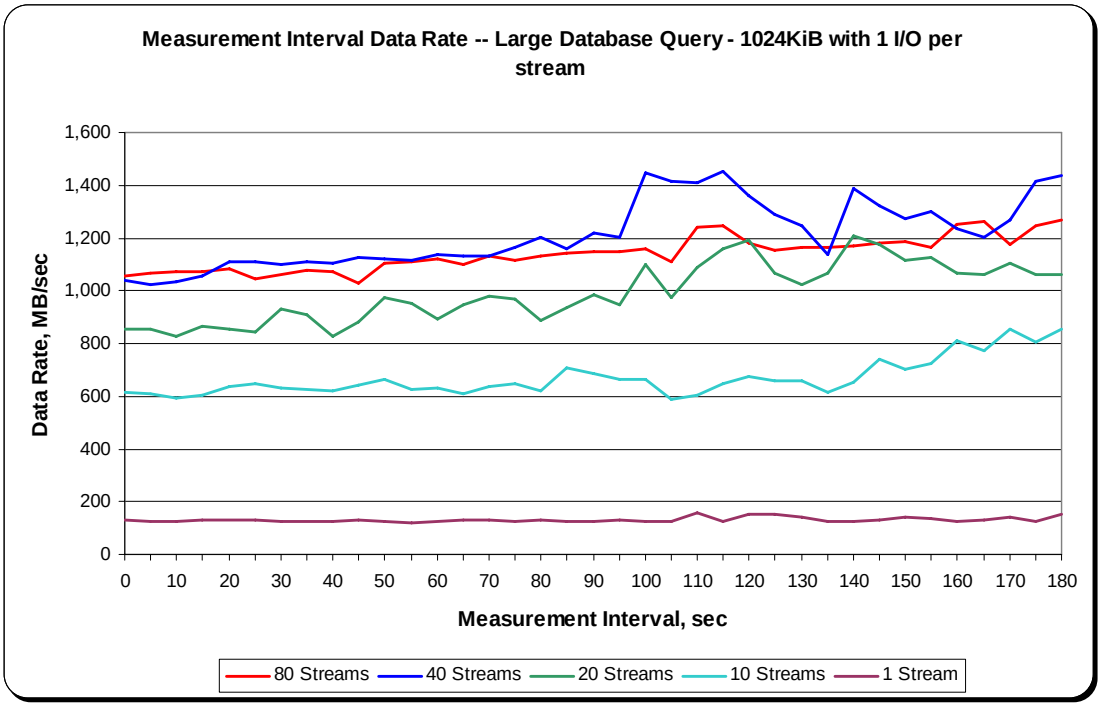
## SPC-2 "Large Database Query/1024 KiB Transfer Size/1 Outstanding I/O" Test Run Data Measurement Interval, Run-Out, and Ramp-Down Periods

| TR6 | 80 Streams | | | TR7 | 40 Streams | | | TR8 | 20 Streams | | | TR9 | 10 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 |
| 0:03:00 | 1,056.34 | 13.20 | 79.27 | 0:10:00 | 1,041.45 | 26.04 | 40.30 | 0:17:00 | 853.54 | 42.68 | 24.56 | 0:24:00 | 613.21 | 61.32 | 17.09 | 0:31:00 | 129.60 | 129.60 | 8.08 |
| 0:03:05 | 1,065.98 | 13.32 | 78.71 | 0:10:05 | 1,025.30 | 25.63 | 40.86 | 0:17:05 | 856.27 | 42.81 | 24.47 | 0:24:05 | 611.32 | 61.13 | 17.15 | 0:31:05 | 126.46 | 126.46 | 8.25 |
| 0:03:10 | 1,071.85 | 13.40 | 78.19 | 0:10:10 | 1,031.59 | 25.79 | 40.70 | 0:17:10 | 826.28 | 41.31 | 25.39 | 0:24:10 | 590.56 | 59.06 | 17.75 | 0:31:10 | 125.41 | 125.41 | 8.39 |
| 0:03:15 | 1,070.60 | 13.38 | 78.46 | 0:10:15 | 1,056.75 | 26.42 | 39.66 | 0:17:15 | 866.12 | 43.31 | 24.20 | 0:24:15 | 606.29 | 60.63 | 17.27 | 0:31:15 | 130.23 | 130.23 | 8.04 |
| 0:03:20 | 1,081.92 | 13.52 | 77.42 | 0:10:20 | 1,108.76 | 27.72 | 37.80 | 0:17:20 | 854.17 | 42.71 | 24.53 | 0:24:20 | 637.95 | 63.80 | 16.44 | 0:31:20 | 131.28 | 131.28 | 7.99 |
| 0:03:25 | 1,042.70 | 13.03 | 80.31 | 0:10:25 | 1,107.51 | 27.69 | 37.88 | 0:17:25 | 842.22 | 42.11 | 24.90 | 0:24:25 | 645.29 | 64.53 | 16.24 | 0:31:25 | 132.33 | 132.33 | 7.92 |
| 0:03:30 | 1,062.21 | 13.28 | 79.16 | 0:10:30 | 1,096.81 | 27.42 | 38.24 | 0:17:30 | 928.20 | 46.41 | 22.59 | 0:24:30 | 629.57 | 62.96 | 16.65 | 0:31:30 | 125.62 | 125.62 | 8.34 |
| 0:03:35 | 1,079.19 | 13.49 | 77.81 | 0:10:35 | 1,107.93 | 27.70 | 37.52 | 0:17:35 | 910.37 | 45.52 | 23.01 | 0:24:35 | 625.16 | 62.52 | 16.74 | 0:31:35 | 125.62 | 125.62 | 8.33 |
| 0:03:40 | 1,074.79 | 13.43 | 77.85 | 0:10:40 | 1,104.78 | 27.62 | 38.30 | 0:17:40 | 826.07 | 41.30 | 25.37 | 0:24:40 | 622.22 | 62.22 | 16.86 | 0:31:40 | 123.94 | 123.94 | 8.47 |
| 0:03:45 | 1,029.70 | 12.87 | 81.47 | 0:10:45 | 1,127.43 | 28.19 | 37.21 | 0:17:45 | 882.48 | 44.12 | 23.78 | 0:24:45 | 642.15 | 64.21 | 16.33 | 0:31:45 | 129.81 | 129.81 | 8.06 |
| 0:03:50 | 1,103.73 | 13.80 | 76.04 | 0:10:50 | 1,120.93 | 28.02 | 37.45 | 0:17:50 | 972.66 | 48.63 | 21.52 | 0:24:50 | 663.54 | 66.35 | 15.79 | 0:31:50 | 125.20 | 125.20 | 8.38 |
| 0:03:55 | 1,109.18 | 13.86 | 75.75 | 0:10:55 | 1,114.22 | 27.86 | 37.57 | 0:17:55 | 952.74 | 47.64 | 22.03 | 0:24:55 | 625.79 | 62.58 | 16.75 | 0:31:55 | 120.17 | 120.17 | 8.72 |
| 0:04:00 | 1,122.82 | 14.04 | 74.57 | 0:11:00 | 1,135.61 | 28.39 | 36.93 | 0:18:00 | 892.76 | 44.64 | 23.49 | 0:25:00 | 630.61 | 63.06 | 16.62 | 0:32:00 | 122.47 | 122.47 | 8.55 |
| 0:04:05 | 1,101.84 | 13.77 | 76.22 | 0:11:05 | 1,134.35 | 28.36 | 36.94 | 0:18:05 | 947.70 | 47.39 | 22.10 | 0:25:05 | 608.80 | 60.88 | 17.21 | 0:32:05 | 131.70 | 131.70 | 7.97 |
| 0:04:10 | 1,129.95 | 14.12 | 74.21 | 0:11:10 | 1,129.95 | 28.25 | 37.15 | 0:18:10 | 980.00 | 49.00 | 21.39 | 0:25:10 | 637.95 | 63.80 | 16.43 | 0:32:10 | 130.86 | 130.86 | 8.00 |
| 0:04:15 | 1,115.48 | 13.94 | 75.20 | 0:11:15 | 1,165.81 | 29.15 | 35.96 | 0:18:15 | 968.05 | 48.40 | 21.66 | 0:25:15 | 648.44 | 64.84 | 16.16 | 0:32:15 | 126.04 | 126.04 | 8.31 |
| 0:04:20 | 1,134.35 | 14.18 | 73.84 | 0:11:20 | 1,202.51 | 30.06 | 34.86 | 0:18:20 | 884.79 | 44.24 | 23.70 | 0:25:20 | 619.71 | 61.97 | 16.91 | 0:32:20 | 127.93 | 127.93 | 8.19 |
| 0:04:25 | 1,142.32 | 14.28 | 73.57 | 0:11:25 | 1,156.58 | 28.91 | 36.26 | 0:18:25 | 937.85 | 46.89 | 22.37 | 0:25:25 | 708.00 | 70.80 | 14.82 | 0:32:25 | 123.73 | 123.73 | 8.47 |
| 0:04:30 | 1,149.87 | 14.37 | 72.98 | 0:11:30 | 1,218.86 | 30.47 | 34.43 | 0:18:30 | 982.52 | 49.13 | 21.31 | 0:25:30 | 688.08 | 68.81 | 15.22 | 0:32:30 | 124.78 | 124.78 | 8.39 |
| 0:04:35 | 1,149.03 | 14.36 | 73.02 | 0:11:35 | 1,204.39 | 30.11 | 34.82 | 0:18:35 | 949.38 | 47.47 | 22.07 | 0:25:35 | 666.06 | 66.61 | 15.75 | 0:32:35 | 130.23 | 130.23 | 8.05 |
| 0:04:40 | 1,159.73 | 14.50 | 72.14 | 0:11:40 | 1,447.03 | 36.18 | 28.97 | 0:18:40 | 1,099.12 | 54.96 | 19.07 | 0:25:40 | 662.70 | 66.27 | 15.82 | 0:32:40 | 124.78 | 124.78 | 8.40 |
| 0:04:45 | 1,111.70 | 13.90 | 75.44 | 0:11:45 | 1,415.16 | 35.38 | 29.62 | 0:18:45 | 971.82 | 48.59 | 21.61 | 0:25:45 | 587.62 | 58.76 | 17.81 | 0:32:45 | 125.41 | 125.41 | 8.36 |
| 0:04:50 | 1,240.68 | 15.51 | 67.75 | 0:11:50 | 1,408.03 | 35.20 | 29.81 | 0:18:50 | 1,090.73 | 54.54 | 19.21 | 0:25:50 | 604.40 | 60.44 | 17.36 | 0:32:50 | 156.45 | 156.45 | 6.69 |
| 0:04:55 | 1,248.43 | 15.61 | 67.09 | 0:11:55 | 1,451.65 | 36.29 | 28.89 | 0:18:55 | 1,159.93 | 58.00 | 18.07 | 0:25:55 | 646.76 | 64.68 | 16.16 | 0:32:55 | 126.46 | 126.46 | 8.29 |
| 0:05:00 | 1,179.44 | 14.74 | 71.19 | 0:12:00 | 1,360.00 | 34.00 | 30.76 | 0:19:00 | 1,190.76 | 59.54 | 17.62 | 0:26:00 | 672.35 | 67.23 | 15.63 | 0:33:00 | 151.20 | 151.20 | 6.93 |
| 0:05:05 | 1,151.34 | 14.39 | 72.75 | 0:12:05 | 1,288.49 | 32.21 | 32.59 | 0:19:05 | 1,067.24 | 53.36 | 19.64 | 0:26:05 | 657.25 | 65.72 | 15.96 | 0:33:05 | 153.30 | 153.30 | 6.83 |
| 0:05:10 | 1,166.02 | 14.58 | 72.01 | 0:12:10 | 1,248.64 | 31.22 | 33.59 | 0:19:10 | 1,022.36 | 51.12 | 20.48 | 0:26:10 | 660.39 | 66.04 | 15.87 | 0:33:10 | 140.09 | 140.09 | 7.47 |
| 0:05:15 | 1,162.24 | 14.53 | 72.13 | 0:12:15 | 1,138.54 | 28.46 | 36.83 | 0:19:15 | 1,068.29 | 53.41 | 19.63 | 0:26:15 | 615.09 | 61.51 | 17.04 | 0:33:15 | 125.20 | 125.20 | 8.37 |
| 0:05:20 | 1,167.69 | 14.60 | 71.91 | 0:12:20 | 1,388.73 | 34.72 | 29.91 | 0:19:20 | 1,207.12 | 60.36 | 17.37 | 0:26:20 | 655.15 | 65.52 | 16.00 | 0:33:20 | 126.25 | 126.25 | 8.30 |
| 0:05:25 | 1,181.75 | 14.77 | 70.92 | 0:12:25 | 1,323.09 | 33.08 | 31.98 | 0:19:25 | 1,175.03 | 58.75 | 17.83 | 0:26:25 | 740.29 | 74.03 | 14.14 | 0:33:25 | 131.49 | 131.49 | 7.98 |
| 0:05:30 | 1,187.83 | 14.85 | 70.63 | 0:12:30 | 1,274.65 | 31.87 | 32.92 | 0:19:30 | 1,113.59 | 55.68 | 18.83 | 0:26:30 | 701.29 | 70.13 | 14.95 | 0:33:30 | 139.67 | 139.67 | 7.50 |
| 0:05:35 | 1,165.81 | 14.57 | 71.89 | 0:12:35 | 1,298.14 | 32.45 | 32.28 | 0:19:35 | 1,126.59 | 56.33 | 18.62 | 0:26:35 | 722.68 | 72.27 | 14.38 | 0:33:35 | 133.38 | 133.38 | 7.85 |
| 0:05:40 | 1,254.10 | 15.68 | 66.96 | 0:12:40 | 1,236.06 | 30.90 | 33.87 | 0:19:40 | 1,066.19 | 53.31 | 19.66 | 0:26:40 | 810.76 | 81.08 | 13.03 | 0:33:40 | 125.83 | 125.83 | 8.32 |
| 0:05:45 | 1,261.86 | 15.77 | 66.45 | 0:12:45 | 1,200.62 | 30.02 | 34.97 | 0:19:45 | 1,063.05 | 53.15 | 19.70 | 0:26:45 | 772.17 | 77.22 | 13.58 | 0:33:45 | 132.96 | 132.96 | 7.89 |
| 0:05:50 | 1,174.61 | 14.68 | 71.44 | 0:12:50 | 1,266.26 | 31.66 | 32.81 | 0:19:50 | 1,102.47 | 55.12 | 19.02 | 0:26:50 | 855.85 | 85.58 | 12.24 | 0:33:50 | 141.77 | 141.77 | 7.38 |
| 0:05:55 | 1,244.24 | 15.55 | 67.22 | 0:12:55 | 1,412.43 | 35.31 | 29.95 | 0:19:55 | 1,063.89 | 53.19 | 19.70 | 0:26:55 | 803.00 | 80.30 | 13.06 | 0:33:55 | 125.83 | 125.83 | 8.33 |
| 0:06:00 | 1,265.63 | 15.82 | 66.50 | 0:13:00 | 1,436.97 | 35.92 | 29.18 | 0:20:00 | 1,060.95 | 53.05 | 19.78 | 0:27:00 | 856.48 | 85.65 | 12.22 | 0:34:00 | 153.72 | 153.72 | 6.81 |
| 0:06:05 | 1,238.58 | 15.48 | 67.60 | 0:13:05 | 1,421.24 | 35.53 | 29.53 | 0:20:05 | 1,115.48 | 55.77 | 18.77 | 0:27:05 | 764.83 | 76.48 | 13.71 | 0:34:05 | 160.43 | 160.43 | 6.53 |
| 0:06:10 | 1,223.69 | 15.30 | 68.60 | 0:13:10 | 1,414.32 | 35.36 | 29.66 | 0:20:10 | 1,096.60 | 54.83 | 19.12 | 0:27:10 | 804.26 | 80.43 | 13.03 | 0:34:10 | 127.09 | 127.09 | 8.24 |
| 0:06:15 | 1,230.40 | 15.38 | 68.14 | 0:13:15 | 1,465.07 | 36.63 | 28.59 | 0:20:16 | 1,050.88 | 52.54 | 20.80 | 0:27:15 | 672.77 | 67.28 | 15.55 | 0:34:15 | 125.83 | 125.83 | 8.33 |
| 0:06:20 | 1,280.94 | 16.01 | 65.48 | 0:13:20 | 1,434.45 | 35.86 | 29.26 | 0:20:20 | 1,043.33 | 52.17 | 19.22 | 0:27:20 | 727.08 | 72.71 | 14.42 | 0:34:20 | 150.37 | 150.37 | 6.97 |
| 0:06:25 | 1,181.54 | 14.77 | 70.91 | 0:13:25 | 1,453.96 | 36.35 | 28.84 | 0:20:25 | 1,033.48 | 51.67 | 20.28 | 0:27:25 | 738.41 | 73.84 | 14.20 | 0:34:25 | 158.13 | 158.13 | 6.62 |
| 0:06:30 | 1,187.83 | 14.85 | 70.76 | 0:13:30 | 1,432.98 | 35.82 | 29.24 | 0:20:30 | 1,075.63 | 53.78 | 19.51 | 0:27:30 | 813.49 | 81.35 | 12.89 | 0:34:30 | 140.09 | 140.09 | 7.48 |
| 0:06:35 | 1,252.42 | 15.66 | 66.98 | 0:13:35 | 1,504.29 | 37.61 | 27.87 | 0:20:35 | 1,084.65 | 54.23 | 19.33 | 0:27:35 | 782.45 | 78.24 | 13.39 | 0:34:35 | 171.34 | 171.34 | 6.12 |
| 0:06:40 | 1,268.99 | 15.86 | 66.11 | 0:13:40 | 1,318.48 | 32.96 | 31.78 | 0:20:40 | 973.08 | 48.65 | 21.53 | 0:27:40 | 808.87 | 80.89 | 12.96 | 0:34:40 | 128.35 | 128.35 | 8.16 |
| 0:06:45 | 430.13 | 0.00 | 56.39 | 0:13:45 | 386.92 | 0.00 | 30.38 | 0:20:45 | 278.08 | 0.00 | 21.15 | 0:27:45 | 212.23 | 0.00 | 13.33 | 0:34:45 | 39.85 | 0.00 | 8.25 |
| 0:06:50 | 0.00 | 0.00 | 0.00 | 0:13:50 | 0.00 | 0.00 | 0.00 | 0:20:50 | 0.00 | 0.00 | 0.00 | 0:27:50 | 0.00 | 0.00 | 0.00 | 0:34:50 | 0.00 | 0.00 | 0.00 |
| 0:06:55 | 0.00 | 0.00 | 0.00 | 0:13:55 | 0.00 | 0.00 | 0.00 | 0:20:55 | 0.00 | 0.00 | 0.00 | 0:27:55 | 0.00 | 0.00 | 0.00 | 0:34:55 | 0.00 | 0.00 | 0.00 |

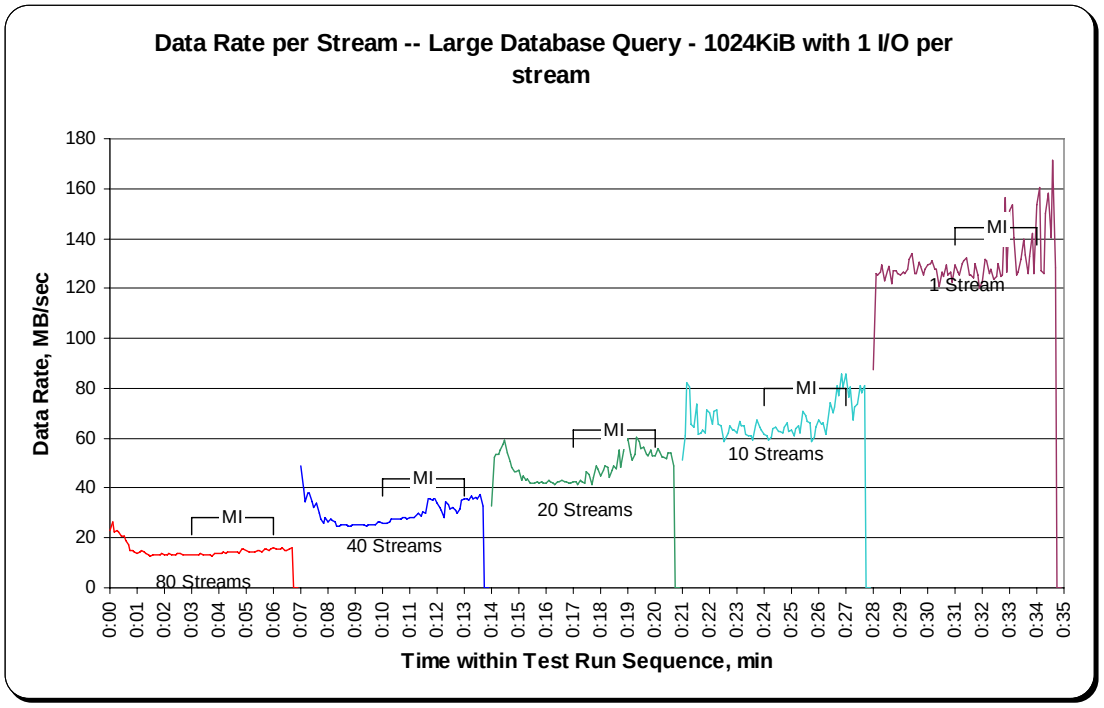
## SPC-2 "Large Database Query/1024 KiB Transfer Size/1 Outstanding I/O" Average Data Rate Graph – Complete Test Run



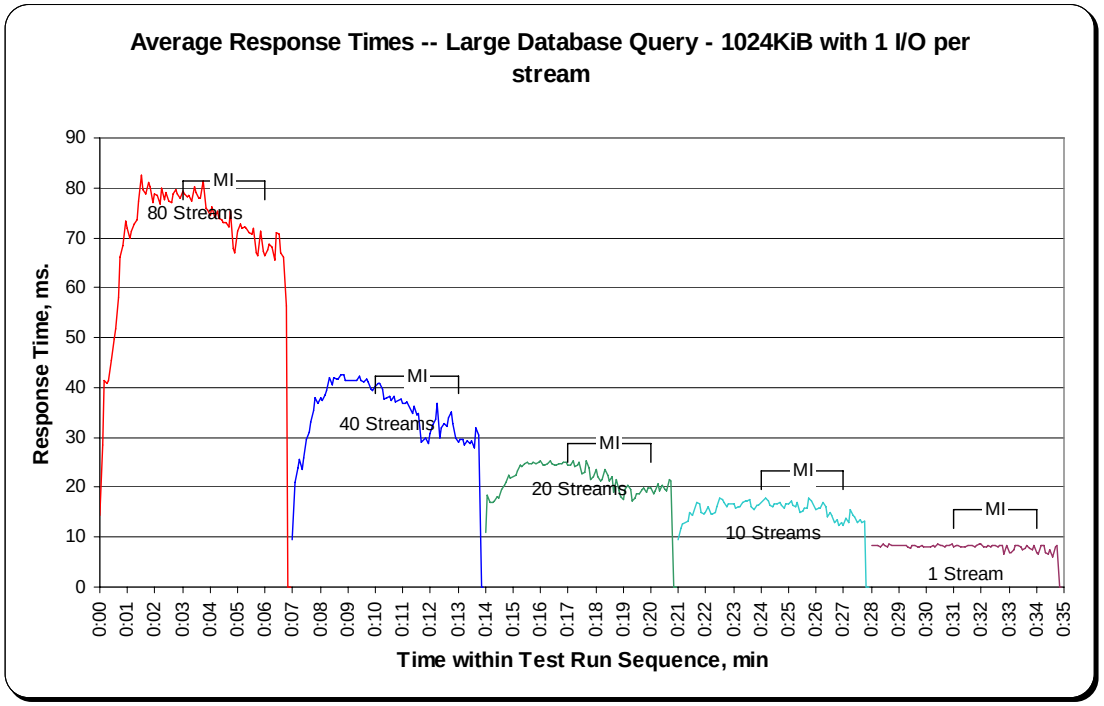

## SPC-2 "Large Database Query/1024 KiB Transfer Size/1 Outstanding I/O" Average Data Rate Graph – Measurement Interval (MI) Only



## 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, 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.*
8. *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.*

The SPC-2 "Large DatabaseQuery/64 KIB TRANSFER SIZE/4 Outstanding I/Os" Test Run data is contained in the table that appears on the next page. That table is followed by graphs illustrating the average Data Rate, average Data Rate per Stream, and average Response Time produced by the same Test Runs. The table and graphs present the data at five-second intervals.

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

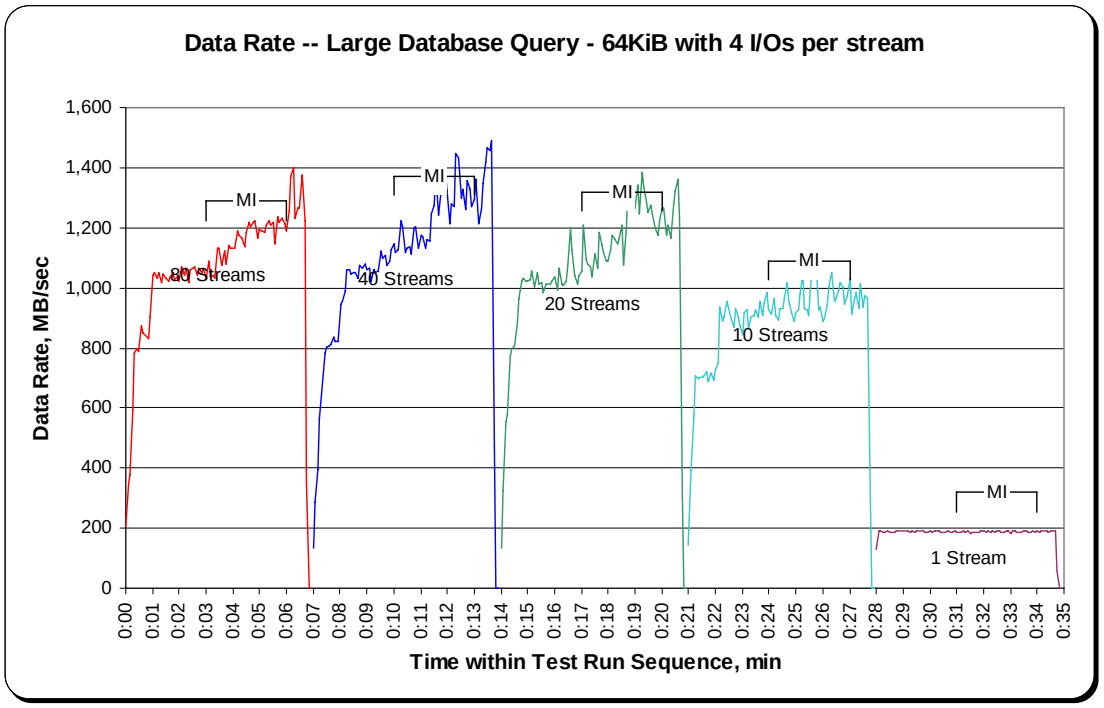
## SPC-2 "Large Database Query/64 KiB Transfer Size/4 Outstanding I/Os" Test Run Data – Ramp-Up Period

| TR11 | 80 Streams | | | TR12 | 40 Streams | | | TR13 | 20 Streams | | | TR14 | 10 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 | 204.16 | 29.17 | 4.14 | 0:07:00 | 135.07 | 45.02 | 2.78 | 0:14:00 | 135.14 | 45.05 | 2.98 | 0:21:00 | 143.21 | 47.74 | 2.10 | 0:28:00 | 128.74 | 128.74 | 1.39 |
| 0:00:05 | 349.40 | 23.29 | 8.40 | 0:07:05 | 285.37 | 31.71 | 5.24 | 0:14:05 | 326.20 | 65.24 | 3.60 | 0:21:05 | 392.46 | 98.12 | 2.39 | 0:28:05 | 191.06 | 191.06 | 1.36 |
| 0:00:10 | 376.86 | 19.83 | 11.83 | 0:07:10 | 396.88 | 39.69 | 6.54 | 0:14:10 | 553.14 | 79.02 | 2.85 | 0:21:10 | 574.73 | 95.79 | 2.35 | 0:28:10 | 188.69 | 188.69 | 1.38 |
| 0:00:15 | 592.29 | 21.94 | 10.03 | 0:07:15 | 563.70 | 46.98 | 5.10 | 0:14:15 | 577.75 | 72.22 | 3.57 | 0:21:15 | 708.58 | 118.10 | 2.20 | 0:28:15 | 187.53 | 187.53 | 1.38 |
| 0:00:20 | 785.64 | 22.45 | 11.02 | 0:07:20 | 675.61 | 42.23 | 5.03 | 0:14:20 | 770.40 | 64.20 | 3.63 | 0:21:20 | 699.27 | 116.55 | 2.23 | 0:28:20 | 186.98 | 186.98 | 1.39 |
| 0:00:25 | 796.34 | 20.96 | 12.30 | 0:07:25 | 785.65 | 43.65 | 5.78 | 0:14:25 | 799.94 | 61.53 | 4.13 | 0:21:25 | 700.12 | 116.69 | 2.23 | 0:28:25 | 189.65 | 189.65 | 1.37 |
| 0:00:30 | 787.32 | 19.68 | 12.73 | 0:07:30 | 800.67 | 40.03 | 6.02 | 0:14:30 | 805.18 | 53.68 | 4.32 | 0:21:30 | 704.07 | 117.34 | 2.22 | 0:28:30 | 188.20 | 188.20 | 1.38 |
| 0:00:35 | 874.50 | 19.01 | 13.23 | 0:07:35 | 805.51 | 36.61 | 6.67 | 0:14:35 | 883.27 | 55.20 | 4.62 | 0:21:35 | 705.69 | 117.62 | 2.21 | 0:28:35 | 188.54 | 188.54 | 1.38 |
| 0:00:40 | 848.28 | 16.63 | 14.76 | 0:07:40 | 812.45 | 32.50 | 7.56 | 0:14:40 | 965.83 | 53.66 | 4.54 | 0:21:40 | 718.91 | 119.82 | 2.17 | 0:28:40 | 184.25 | 184.25 | 1.41 |
| 0:00:45 | 841.78 | 15.59 | 16.15 | 0:07:45 | 833.89 | 30.88 | 8.28 | 0:14:45 | 1,021.71 | 56.76 | 4.60 | 0:21:45 | 688.12 | 114.69 | 2.27 | 0:28:45 | 190.27 | 190.27 | 1.37 |
| 0:00:50 | 828.84 | 14.29 | 17.52 | 0:07:50 | 822.41 | 29.37 | 8.74 | 0:14:50 | 1,029.49 | 57.19 | 4.55 | 0:21:50 | 714.28 | 102.04 | 2.45 | 0:28:50 | 189.00 | 189.00 | 1.37 |
| 0:00:55 | 903.10 | 14.33 | 17.33 | 0:07:55 | 823.07 | 28.38 | 9.16 | 0:14:55 | 1,019.78 | 53.67 | 4.70 | 0:21:55 | 690.93 | 98.70 | 2.63 | 0:28:55 | 189.69 | 189.69 | 1.37 |
| 0:01:00 | 1,039.44 | 15.99 | 16.21 | 0:08:00 | 947.20 | 30.55 | 8.47 | 0:15:00 | 1,022.93 | 53.84 | 4.86 | 0:22:00 | 726.47 | 90.81 | 2.70 | 0:29:00 | 190.59 | 190.59 | 1.36 |
| 0:01:05 | 1,048.89 | 14.77 | 17.01 | 0:08:05 | 953.89 | 29.81 | 8.68 | 0:15:05 | 1,025.55 | 53.98 | 4.80 | 0:22:05 | 751.50 | 83.50 | 2.75 | 0:29:05 | 192.36 | 192.36 | 1.35 |
| 0:01:10 | 1,032.02 | 13.95 | 18.18 | 0:08:10 | 987.56 | 29.93 | 8.40 | 0:15:10 | 1,056.08 | 52.80 | 4.86 | 0:22:10 | 937.21 | 104.13 | 2.52 | 0:29:10 | 189.38 | 189.38 | 1.37 |
| 0:01:15 | 1,052.69 | 14.04 | 18.60 | 0:08:15 | 1,057.99 | 29.39 | 8.54 | 0:15:15 | 1,002.90 | 50.15 | 5.19 | 0:22:15 | 888.63 | 98.74 | 2.61 | 0:29:15 | 185.66 | 185.66 | 1.40 |
| 0:01:20 | 1,018.88 | 13.23 | 19.35 | 0:08:20 | 1,061.48 | 27.93 | 9.20 | 0:15:20 | 1,052.81 | 52.64 | 4.96 | 0:22:20 | 900.71 | 100.08 | 2.62 | 0:29:20 | 189.05 | 189.05 | 1.37 |
| 0:01:25 | 1,044.43 | 13.06 | 19.71 | 0:08:25 | 1,043.84 | 26.10 | 9.72 | 0:15:25 | 1,014.85 | 50.74 | 5.17 | 0:22:25 | 956.57 | 95.66 | 2.66 | 0:29:25 | 187.79 | 187.79 | 1.38 |
| 0:01:30 | 1,030.37 | 12.88 | 20.26 | 0:08:30 | 1,048.83 | 26.22 | 10.00 | 0:15:30 | 1,016.92 | 50.85 | 5.14 | 0:22:30 | 935.20 | 93.52 | 2.78 | 0:29:30 | 189.75 | 189.75 | 1.37 |
| 0:01:35 | 1,023.45 | 12.79 | 20.47 | 0:08:35 | 1,052.03 | 26.30 | 9.93 | 0:15:35 | 982.05 | 49.10 | 5.31 | 0:22:35 | 895.67 | 89.57 | 2.91 | 0:29:35 | 189.22 | 189.22 | 1.37 |
| 0:01:40 | 1,035.67 | 12.95 | 20.27 | 0:08:40 | 1,032.73 | 25.82 | 10.07 | 0:15:40 | 1,010.42 | 50.52 | 5.18 | 0:22:40 | 867.37 | 86.74 | 3.01 | 0:29:40 | 191.48 | 191.48 | 1.36 |
| 0:01:45 | 1,048.97 | 13.11 | 20.06 | 0:08:45 | 1,074.81 | 26.87 | 9.79 | 0:15:45 | 1,011.60 | 50.58 | 5.17 | 0:22:45 | 929.47 | 92.95 | 2.80 | 0:29:45 | 190.17 | 190.17 | 1.37 |
| 0:01:50 | 1,024.89 | 12.81 | 20.65 | 0:08:50 | 1,065.21 | 26.63 | 9.87 | 0:15:50 | 1,010.58 | 50.53 | 5.17 | 0:22:50 | 903.70 | 90.37 | 2.86 | 0:29:50 | 188.52 | 188.52 | 1.38 |
| 0:01:55 | 1,037.20 | 12.96 | 20.05 | 0:08:55 | 1,077.03 | 26.93 | 9.72 | 0:15:55 | 1,023.29 | 51.16 | 5.11 | 0:22:55 | 874.91 | 87.49 | 3.00 | 0:29:55 | 188.58 | 188.58 | 1.38 |
| 0:02:00 | 1,024.46 | 12.81 | 20.53 | 0:09:00 | 1,062.32 | 26.56 | 9.83 | 0:16:00 | 1,034.64 | 51.73 | 5.04 | 0:23:00 | 844.51 | 84.45 | 3.06 | 0:30:00 | 190.33 | 190.33 | 1.36 |
| 0:02:05 | 1,068.14 | 13.35 | 19.61 | 0:09:05 | 1,064.87 | 26.62 | 9.73 | 0:16:05 | 994.58 | 49.73 | 5.25 | 0:23:05 | 915.08 | 91.51 | 2.84 | 0:30:05 | 186.64 | 186.64 | 1.39 |
| 0:02:10 | 1,039.24 | 12.99 | 19.99 | 0:09:10 | 1,022.07 | 25.55 | 10.23 | 0:16:10 | 1,065.68 | 53.28 | 4.92 | 0:23:10 | 927.04 | 92.70 | 2.84 | 0:30:10 | 189.08 | 189.08 | 1.37 |
| 0:02:15 | 1,065.09 | 13.31 | 19.77 | 0:09:15 | 1,062.11 | 26.55 | 9.94 | 0:16:15 | 1,012.36 | 50.62 | 5.15 | 0:23:15 | 866.03 | 86.60 | 3.01 | 0:30:15 | 189.14 | 189.14 | 1.37 |
| 0:02:20 | 1,017.87 | 12.72 | 20.30 | 0:09:20 | 1,051.39 | 26.28 | 10.00 | 0:16:20 | 1,006.65 | 50.33 | 5.19 | 0:23:20 | 904.92 | 90.49 | 2.88 | 0:30:20 | 189.41 | 189.41 | 1.37 |
| 0:02:25 | 1,060.47 | 13.26 | 19.89 | 0:09:25 | 1,053.50 | 26.34 | 9.94 | 0:16:25 | 1,021.01 | 51.05 | 5.14 | 0:23:25 | 909.26 | 90.93 | 2.87 | 0:30:25 | 187.07 | 187.07 | 1.39 |
| 0:02:30 | 1,064.73 | 13.31 | 19.92 | 0:09:30 | 1,122.70 | 28.07 | 9.31 | 0:16:30 | 1,070.24 | 53.51 | 4.87 | 0:23:30 | 927.27 | 92.73 | 2.81 | 0:30:30 | 187.70 | 187.70 | 1.38 |
| 0:02:35 | 1,068.38 | 13.35 | 19.36 | 0:09:35 | 1,100.65 | 27.52 | 9.43 | 0:16:35 | 1,200.10 | 60.00 | 4.36 | 0:23:35 | 902.17 | 90.22 | 2.87 | 0:30:35 | 187.34 | 187.34 | 1.39 |
| 0:02:40 | 1,043.45 | 13.04 | 20.34 | 0:09:40 | 1,107.93 | 27.70 | 9.53 | 0:16:40 | 1,125.42 | 56.27 | 4.64 | 0:23:40 | 956.25 | 95.62 | 2.75 | 0:30:40 | 188.69 | 188.69 | 1.38 |
| 0:02:45 | 1,065.89 | 13.32 | 19.85 | 0:09:45 | 1,075.61 | 26.89 | 9.74 | 0:16:45 | 1,041.92 | 52.10 | 5.01 | 0:23:45 | 905.84 | 90.58 | 2.88 | 0:30:45 | 184.99 | 184.99 | 1.41 |
| 0:02:50 | 1,049.65 | 13.12 | 19.71 | 0:09:50 | 1,090.11 | 27.25 | 9.63 | 0:16:50 | 1,011.60 | 50.58 | 5.16 | 0:23:50 | 952.27 | 95.23 | 2.74 | 0:30:50 | 185.47 | 185.47 | 1.40 |
| 0:02:55 | 1,066.21 | 13.33 | 19.48 | 0:09:55 | 1,126.09 | 28.15 | 9.20 | 0:16:55 | 1,042.98 | 52.15 | 5.02 | 0:23:55 | 985.93 | 98.59 | 2.64 | 0:30:55 | 190.37 | 190.37 | 1.36 |

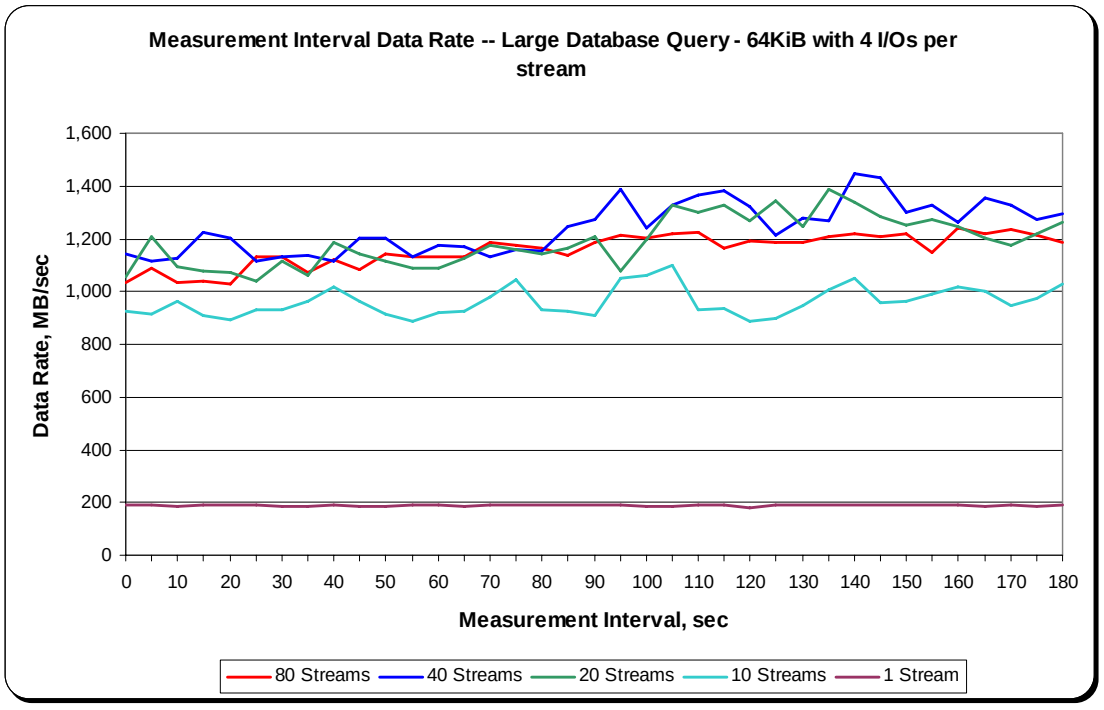
## SPC-2 "Large Database Query/64 KiB Transfer Size/4 Outstanding I/Os" Test Run Data Measurement Interval, Run-Out, and Ramp-Down Periods

| TR11 | 80 Streams | | | TR12 | 40 Streams | | | TR13 | 20 Streams | | | TR14 | 10 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 |
| 0:03:00 | 1,032.66 | 12.91 | 20.28 | 0:10:00 | 1,144.82 | 28.62 | 9.25 | 0:17:00 | 1,057.32 | 52.87 | 4.93 | 0:24:00 | 925.38 | 92.54 | 2.80 | 0:31:00 | 188.38 | 188.38 | 1.38 |
| 0:03:05 | 1,088.89 | 13.61 | 19.39 | 0:10:05 | 1,117.40 | 27.94 | 9.28 | 0:17:05 | 1,207.88 | 60.39 | 4.32 | 0:24:05 | 913.57 | 91.36 | 2.85 | 0:31:05 | 188.16 | 188.16 | 1.38 |
| 0:03:10 | 1,035.10 | 12.94 | 20.22 | 0:10:10 | 1,126.11 | 28.15 | 9.38 | 0:17:10 | 1,093.86 | 54.69 | 4.78 | 0:24:10 | 963.80 | 96.38 | 2.72 | 0:31:10 | 187.07 | 187.07 | 1.39 |
| 0:03:15 | 1,041.74 | 13.02 | 20.35 | 0:10:15 | 1,224.11 | 30.60 | 8.57 | 0:17:15 | 1,079.74 | 53.99 | 4.80 | 0:24:15 | 907.10 | 90.71 | 2.87 | 0:31:15 | 190.34 | 190.34 | 1.37 |
| 0:03:20 | 1,029.64 | 12.87 | 19.84 | 0:10:20 | 1,204.50 | 30.11 | 8.66 | 0:17:20 | 1,069.90 | 53.50 | 4.93 | 0:24:20 | 893.60 | 89.36 | 2.92 | 0:31:20 | 188.49 | 188.49 | 1.38 |
| 0:03:25 | 1,131.54 | 14.14 | 18.78 | 0:10:25 | 1,115.60 | 27.89 | 9.38 | 0:17:25 | 1,037.00 | 51.85 | 5.03 | 0:24:25 | 932.61 | 93.26 | 2.79 | 0:31:25 | 189.50 | 189.50 | 1.37 |
| 0:03:30 | 1,133.08 | 14.16 | 18.68 | 0:10:30 | 1,130.62 | 28.27 | 9.27 | 0:17:30 | 1,113.91 | 55.70 | 4.68 | 0:24:30 | 931.62 | 93.16 | 2.78 | 0:31:30 | 183.66 | 183.66 | 1.41 |
| 0:03:35 | 1,074.12 | 13.43 | 19.30 | 0:10:35 | 1,137.98 | 28.45 | 9.18 | 0:17:35 | 1,063.03 | 53.15 | 4.93 | 0:24:35 | 963.62 | 96.36 | 2.73 | 0:31:35 | 187.28 | 187.28 | 1.39 |
| 0:03:40 | 1,122.48 | 14.03 | 18.68 | 0:10:40 | 1,113.22 | 27.83 | 9.34 | 0:17:40 | 1,186.79 | 59.34 | 4.40 | 0:24:40 | 1,014.98 | 101.50 | 2.56 | 0:31:40 | 188.59 | 188.59 | 1.38 |
| 0:03:45 | 1,081.52 | 13.52 | 19.47 | 0:10:45 | 1,200.51 | 30.01 | 8.81 | 0:17:45 | 1,142.58 | 57.13 | 4.57 | 0:24:45 | 961.88 | 96.19 | 2.71 | 0:31:45 | 185.89 | 185.89 | 1.40 |
| 0:03:50 | 1,143.16 | 14.29 | 18.11 | 0:10:50 | 1,205.12 | 30.13 | 8.67 | 0:17:50 | 1,116.65 | 55.83 | 4.68 | 0:24:50 | 916.44 | 91.64 | 2.84 | 0:31:50 | 185.16 | 185.16 | 1.40 |
| 0:03:55 | 1,130.26 | 14.13 | 18.89 | 0:10:55 | 1,132.98 | 28.32 | 9.15 | 0:17:55 | 1,086.59 | 54.33 | 4.77 | 0:24:55 | 889.78 | 88.98 | 2.90 | 0:31:55 | 189.95 | 189.95 | 1.37 |
| 0:04:00 | 1,133.89 | 14.17 | 18.55 | 0:11:00 | 1,176.08 | 29.40 | 9.02 | 0:18:00 | 1,088.79 | 54.44 | 4.83 | 0:25:00 | 917.36 | 91.74 | 2.84 | 0:32:00 | 189.37 | 189.37 | 1.37 |
| 0:04:05 | 1,131.14 | 14.14 | 18.49 | 0:11:05 | 1,171.98 | 29.30 | 8.90 | 0:18:05 | 1,128.37 | 56.42 | 4.63 | 0:25:05 | 926.57 | 92.66 | 2.84 | 0:32:05 | 186.53 | 186.53 | 1.39 |
| 0:04:10 | 1,187.78 | 14.85 | 17.64 | 0:11:10 | 1,133.68 | 28.34 | 9.22 | 0:18:10 | 1,175.22 | 58.76 | 4.45 | 0:25:10 | 977.21 | 97.72 | 2.67 | 0:32:10 | 190.27 | 190.27 | 1.36 |
| 0:04:15 | 1,176.91 | 14.71 | 17.76 | 0:11:15 | 1,159.00 | 28.98 | 9.07 | 0:18:15 | 1,161.42 | 58.07 | 4.46 | 0:25:15 | 1,045.97 | 104.60 | 2.49 | 0:32:15 | 188.49 | 188.49 | 1.38 |
| 0:04:20 | 1,166.88 | 14.59 | 17.98 | 0:11:20 | 1,155.30 | 28.88 | 9.06 | 0:18:20 | 1,144.85 | 57.24 | 4.60 | 0:25:20 | 932.61 | 93.26 | 2.79 | 0:32:20 | 191.97 | 191.97 | 1.35 |
| 0:04:25 | 1,136.22 | 14.20 | 18.47 | 0:11:25 | 1,247.27 | 31.18 | 8.41 | 0:18:25 | 1,163.82 | 58.19 | 4.48 | 0:25:25 | 927.07 | 92.71 | 2.81 | 0:32:25 | 188.00 | 188.00 | 1.38 |
| 0:04:30 | 1,186.72 | 14.83 | 17.38 | 0:11:30 | 1,272.85 | 31.82 | 8.13 | 0:18:30 | 1,208.06 | 60.40 | 4.32 | 0:25:30 | 909.52 | 90.95 | 2.87 | 0:32:30 | 189.32 | 189.32 | 1.37 |
| 0:04:35 | 1,215.73 | 15.20 | 17.60 | 0:11:35 | 1,388.89 | 34.72 | 7.62 | 0:18:35 | 1,075.33 | 53.77 | 4.87 | 0:25:35 | 1,051.72 | 105.17 | 2.48 | 0:32:35 | 190.19 | 190.19 | 1.36 |
| 0:04:40 | 1,201.42 | 15.02 | 17.32 | 0:11:40 | 1,241.53 | 31.04 | 8.30 | 0:18:40 | 1,198.23 | 59.91 | 4.36 | 0:25:40 | 1,061.24 | 106.12 | 2.43 | 0:32:40 | 184.22 | 184.22 | 1.41 |
| 0:04:45 | 1,219.81 | 15.25 | 17.30 | 0:11:45 | 1,329.78 | 33.24 | 7.98 | 0:18:45 | 1,325.91 | 66.30 | 3.94 | 0:25:45 | 1,097.19 | 109.72 | 2.39 | 0:32:45 | 184.88 | 184.88 | 1.41 |
| 0:04:50 | 1,224.06 | 15.30 | 17.22 | 0:11:50 | 1,366.65 | 34.17 | 7.67 | 0:18:50 | 1,303.32 | 65.17 | 4.00 | 0:25:50 | 927.97 | 92.80 | 2.81 | 0:32:50 | 191.01 | 191.01 | 1.36 |
| 0:04:55 | 1,164.43 | 14.56 | 17.83 | 0:11:55 | 1,384.95 | 34.62 | 7.54 | 0:18:55 | 1,327.41 | 66.37 | 3.93 | 0:25:55 | 938.17 | 93.82 | 2.78 | 0:32:55 | 192.11 | 192.11 | 1.35 |
| 0:05:00 | 1,193.06 | 14.91 | 17.37 | 0:12:00 | 1,322.04 | 33.05 | 7.92 | 0:19:00 | 1,267.88 | 63.39 | 4.12 | 0:26:00 | 888.19 | 88.82 | 2.93 | 0:33:00 | 182.15 | 182.15 | 1.43 |
| 0:05:05 | 1,187.72 | 14.85 | 17.56 | 0:12:05 | 1,213.78 | 30.34 | 8.60 | 0:19:05 | 1,342.37 | 67.12 | 3.89 | 0:26:05 | 897.73 | 89.77 | 2.90 | 0:33:05 | 190.34 | 190.34 | 1.37 |
| 0:05:10 | 1,184.15 | 14.80 | 18.03 | 0:12:10 | 1,281.27 | 32.03 | 8.21 | 0:19:10 | 1,246.90 | 62.35 | 4.19 | 0:26:10 | 944.41 | 94.44 | 2.76 | 0:33:10 | 190.33 | 190.33 | 1.36 |
| 0:05:15 | 1,207.02 | 15.09 | 17.20 | 0:12:15 | 1,270.37 | 31.76 | 8.20 | 0:19:15 | 1,387.08 | 69.35 | 3.74 | 0:26:15 | 1,004.68 | 100.47 | 2.57 | 0:33:15 | 188.03 | 188.03 | 1.38 |
| 0:05:21 | 1,220.50 | 15.26 | 17.49 | 0:12:20 | 1,448.23 | 36.21 | 7.26 | 0:19:20 | 1,337.84 | 66.89 | 3.90 | 0:26:20 | 1,051.43 | 105.14 | 2.50 | 0:33:20 | 188.11 | 188.11 | 1.38 |
| 0:05:25 | 1,207.77 | 15.10 | 17.21 | 0:12:25 | 1,431.78 | 35.79 | 7.30 | 0:19:25 | 1,286.19 | 64.31 | 4.09 | 0:26:25 | 956.84 | 95.68 | 2.70 | 0:33:25 | 188.38 | 188.38 | 1.38 |
| 0:05:30 | 1,218.28 | 15.23 | 17.18 | 0:12:30 | 1,297.98 | 32.45 | 8.05 | 0:19:30 | 1,252.63 | 62.63 | 4.14 | 0:26:30 | 963.05 | 96.31 | 2.73 | 0:33:30 | 190.22 | 190.22 | 1.37 |
| 0:05:35 | 1,145.73 | 14.32 | 18.26 | 0:12:35 | 1,327.40 | 33.19 | 7.89 | 0:19:35 | 1,275.38 | 63.77 | 4.08 | 0:26:35 | 991.27 | 99.13 | 2.63 | 0:33:35 | 189.95 | 189.95 | 1.37 |
| 0:05:40 | 1,238.96 | 15.49 | 16.95 | 0:12:40 | 1,262.75 | 31.57 | 8.30 | 0:19:40 | 1,246.15 | 62.31 | 4.20 | 0:26:40 | 1,019.22 | 101.92 | 2.55 | 0:33:40 | 188.03 | 188.03 | 1.38 |
| 0:05:45 | 1,219.07 | 15.24 | 17.23 | 0:12:45 | 1,357.68 | 33.94 | 7.69 | 0:19:45 | 1,200.84 | 60.04 | 4.38 | 0:26:45 | 1,001.91 | 100.19 | 2.60 | 0:33:45 | 187.02 | 187.02 | 1.39 |
| 0:05:50 | 1,232.68 | 15.41 | 16.85 | 0:12:50 | 1,327.33 | 33.18 | 7.90 | 0:19:50 | 1,174.09 | 58.70 | 4.41 | 0:26:50 | 948.03 | 94.80 | 2.75 | 0:33:50 | 189.98 | 189.98 | 1.37 |
| 0:05:55 | 1,211.88 | 15.15 | 17.27 | 0:12:55 | 1,271.70 | 31.79 | 8.22 | 0:19:55 | 1,220.61 | 61.03 | 4.32 | 0:26:55 | 975.96 | 97.60 | 2.67 | 0:33:55 | 185.37 | 185.37 | 1.40 |
| 0:06:00 | 1,187.97 | 14.85 | 17.65 | 0:13:00 | 1,294.49 | 32.36 | 8.03 | 0:20:00 | 1,265.23 | 63.26 | 4.13 | 0:27:00 | 1,029.58 | 102.96 | 2.53 | 0:34:00 | 191.11 | 191.11 | 1.36 |
| 0:06:05 | 1,258.35 | 15.73 | 16.78 | 0:13:05 | 1,361.01 | 34.03 | 7.67 | 0:20:05 | 1,264.04 | 63.20 | 4.09 | 0:27:05 | 911.94 | 91.19 | 2.86 | 0:34:05 | 187.70 | 187.70 | 1.39 |
| 0:06:10 | 1,372.12 | 17.15 | 15.25 | 0:13:10 | 1,214.17 | 30.35 | 8.65 | 0:20:10 | 1,175.86 | 58.79 | 4.44 | 0:27:10 | 965.85 | 96.59 | 2.70 | 0:34:10 | 190.78 | 190.78 | 1.36 |
| 0:06:15 | 1,397.04 | 17.46 | 14.77 | 0:13:15 | 1,265.32 | 31.63 | 8.33 | 0:20:15 | 1,209.30 | 60.47 | 4.35 | 0:27:15 | 981.93 | 98.19 | 2.65 | 0:34:15 | 189.94 | 189.94 | 1.37 |
| 0:06:20 | 1,232.59 | 15.41 | 17.03 | 0:13:20 | 1,345.94 | 33.65 | 7.79 | 0:20:20 | 1,166.27 | 58.31 | 4.43 | 0:27:20 | 931.58 | 93.16 | 2.79 | 0:34:20 | 191.68 | 191.68 | 1.36 |
| 0:06:25 | 1,263.91 | 15.80 | 16.81 | 0:13:25 | 1,419.06 | 35.48 | 7.31 | 0:20:25 | 1,278.97 | 63.95 | 4.12 | 0:27:25 | 1,010.61 | 101.06 | 2.58 | 0:34:25 | 185.89 | 185.89 | 1.40 |
| 0:06:30 | 1,267.74 | 15.85 | 16.62 | 0:13:30 | 1,467.91 | 36.70 | 7.20 | 0:20:30 | 1,321.77 | 66.09 | 3.96 | 0:27:30 | 937.36 | 93.74 | 2.78 | 0:34:30 | 189.23 | 189.23 | 1.37 |
| 0:06:35 | 1,375.26 | 17.19 | 15.18 | 0:13:35 | 1,455.65 | 36.39 | 7.12 | 0:20:35 | 1,362.78 | 68.14 | 3.83 | 0:27:35 | 973.56 | 97.36 | 2.68 | 0:34:35 | 190.47 | 190.47 | 1.36 |
| 0:06:40 | 1,220.80 | 15.26 | 17.20 | 0:13:40 | 1,492.17 | 37.30 | 7.01 | 0:20:40 | 1,231.66 | 61.58 | 4.23 | 0:27:40 | 967.02 | 96.70 | 2.69 | 0:34:40 | 189.11 | 189.11 | 1.37 |
| 0:06:45 | 358.19 | 0.00 | 16.86 | 0:13:45 | 467.15 | 0.00 | 6.36 | 0:20:45 | 303.04 | 0.00 | 4.78 | 0:27:45 | 290.81 | 0.00 | 2.42 | 0:34:45 | 59.46 | 0.00 | 1.36 |
| 0:06:50 | 0.00 | 0.00 | 0.00 | 0:13:50 | 0.00 | 0.00 | 0.00 | 0:20:50 | 0.00 | 0.00 | 0.00 | 0:27:50 | 0.00 | 0.00 | 0.00 | 0:34:50 | 0.00 | 0.00 | 0.00 |
| 0:06:55 | 0.00 | 0.00 | 0.00 | 0:13:55 | 0.00 | 0.00 | 0.00 | 0:20:55 | 0.00 | 0.00 | 0.00 | 0:27:55 | 0.00 | 0.00 | 0.00 | 0:34:55 | 0.00 | 0.00 | 0.00 |

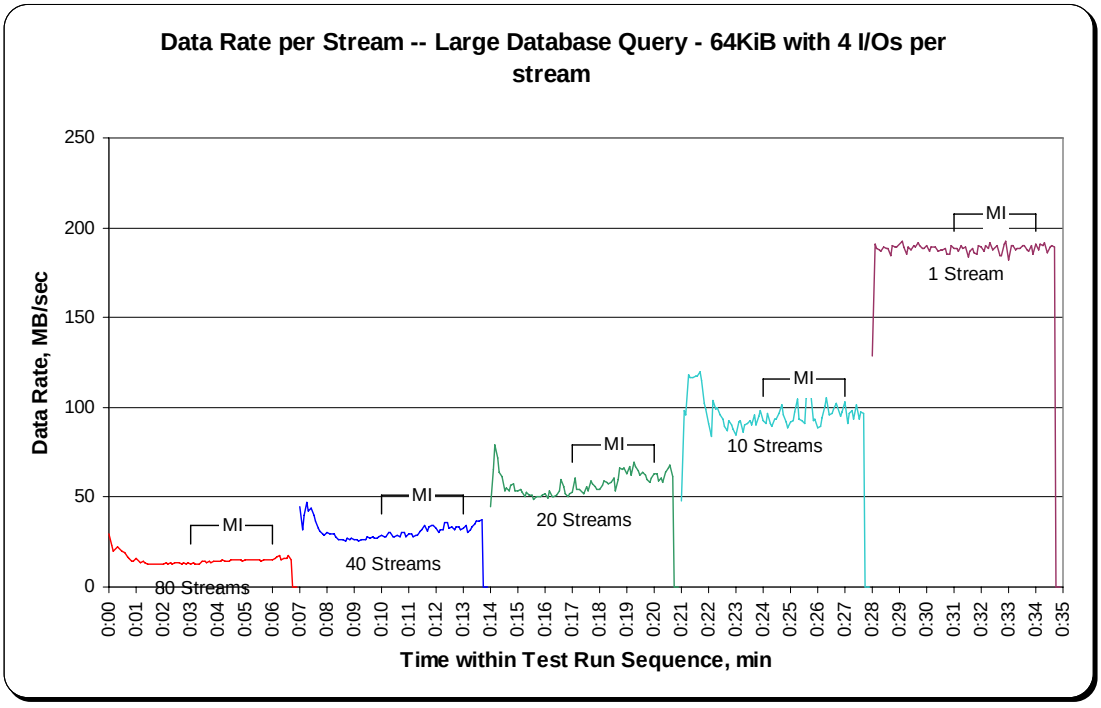
## SPC-2 "Large Database Query/64 KiB Transfer Size/4 Outstanding I/Os" Average Data Rate Graph – Complete Test Run



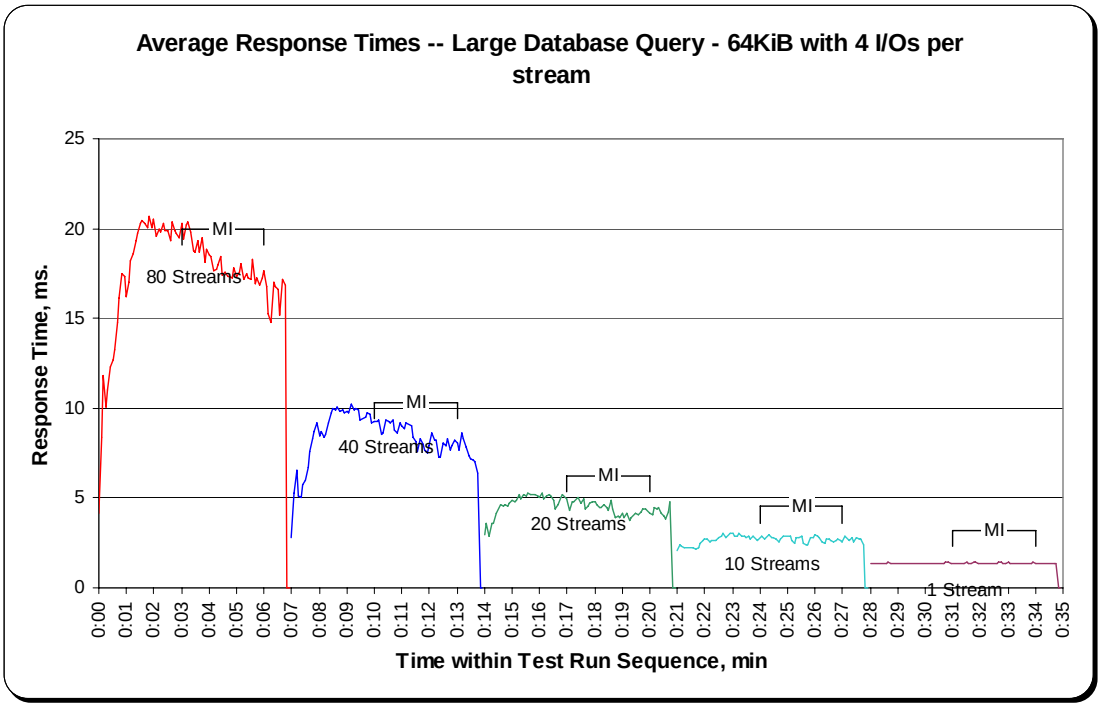

## SPC-2 "Large Database Query/64 KiB Transfer Size/4 Outstanding I/Os" Average Data Rate Graph – Measurement Interval (MI) Only



## 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



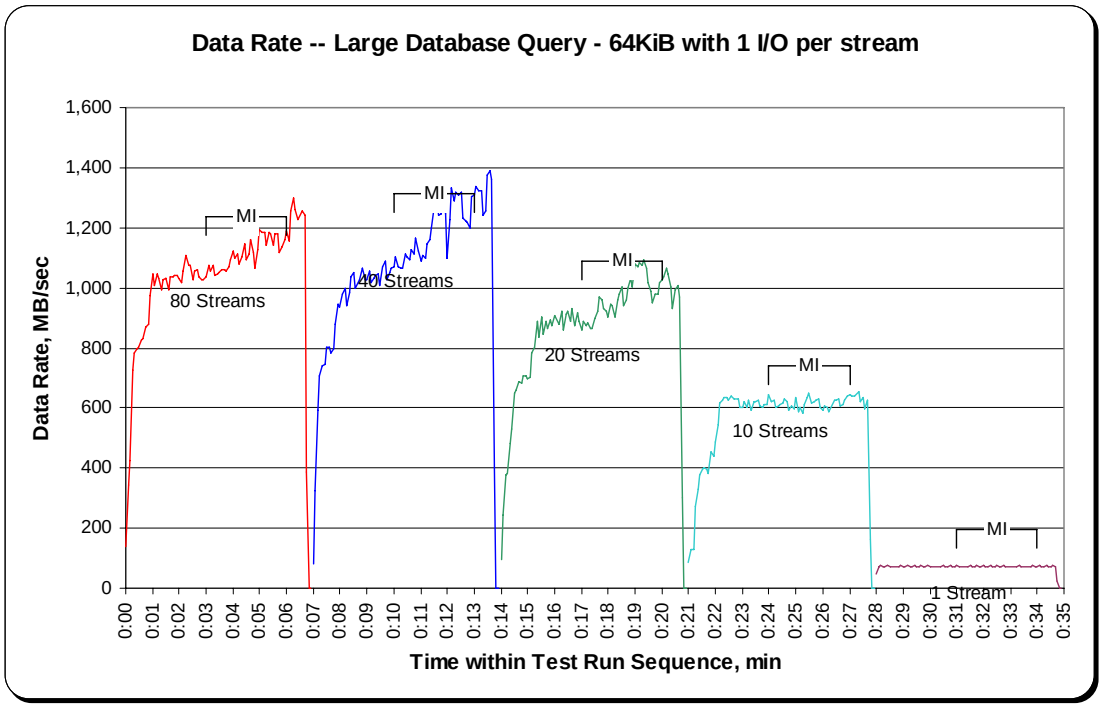
## SPC-2 "Large Database Query/64 KiB Transfer Size/1 Outstanding I/O" Test Run Data – Ramp-Up Period

| TR16 | 80 Streams | | | TR17 | 40 Streams | | | TR18 | 20 Streams | | | TR19 | 10 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 | 137.48 | 13.75 | 1.96 | 0:07:00 | 80.89 | 40.44 | 1.03 | 0:14:00 | 97.18 | 24.30 | 1.28 | 0:21:00 | 86.81 | 43.41 | 1.03 | 0:28:00 | 49.48 | 49.48 | 0.91 |
| 0:00:05 | 345.95 | 21.62 | 2.75 | 0:07:05 | 326.64 | 27.22 | 1.66 | 0:14:05 | 244.69 | 40.78 | 1.31 | 0:21:05 | 129.76 | 64.88 | 1.00 | 0:28:05 | 73.19 | 73.19 | 0.89 |
| 0:00:10 | 425.85 | 17.74 | 2.98 | 0:07:10 | 592.15 | 39.48 | 1.50 | 0:14:10 | 376.29 | 53.76 | 1.19 | 0:21:10 | 128.88 | 42.96 | 1.04 | 0:28:10 | 74.26 | 74.26 | 0.88 |
| 0:00:15 | 723.77 | 22.62 | 2.59 | 0:07:15 | 707.15 | 39.29 | 1.59 | 0:14:15 | 383.82 | 47.98 | 1.21 | 0:21:15 | 273.21 | 54.64 | 1.03 | 0:28:15 | 73.30 | 73.30 | 0.89 |
| 0:00:20 | 784.27 | 20.11 | 3.01 | 0:07:20 | 742.50 | 35.36 | 1.73 | 0:14:20 | 482.37 | 53.60 | 1.20 | 0:21:20 | 328.48 | 65.70 | 0.99 | 0:28:20 | 71.03 | 71.03 | 0.92 |
| 0:00:25 | 797.63 | 18.99 | 3.37 | 0:07:25 | 743.44 | 30.98 | 1.94 | 0:14:25 | 531.51 | 48.32 | 1.21 | 0:21:25 | 375.94 | 62.66 | 1.01 | 0:28:25 | 74.39 | 74.39 | 0.88 |
| 0:00:30 | 801.68 | 17.43 | 3.58 | 0:07:30 | 803.36 | 29.75 | 2.02 | 0:14:30 | 650.34 | 50.03 | 1.27 | 0:21:30 | 394.94 | 65.82 | 1.00 | 0:28:30 | 72.50 | 72.50 | 0.90 |
| 0:00:35 | 825.40 | 16.51 | 3.79 | 0:07:35 | 801.11 | 28.61 | 2.21 | 0:14:35 | 661.01 | 47.22 | 1.32 | 0:21:35 | 400.13 | 66.69 | 0.97 | 0:28:35 | 72.82 | 72.82 | 0.89 |
| 0:00:40 | 832.56 | 15.42 | 3.99 | 0:07:40 | 784.71 | 26.16 | 2.41 | 0:14:40 | 686.39 | 49.03 | 1.34 | 0:21:40 | 395.16 | 65.86 | 0.99 | 0:28:40 | 73.55 | 73.55 | 0.89 |
| 0:00:45 | 868.70 | 15.51 | 4.18 | 0:07:45 | 798.34 | 26.61 | 2.45 | 0:14:45 | 682.90 | 48.78 | 1.32 | 0:21:45 | 383.78 | 63.96 | 1.01 | 0:28:45 | 73.24 | 73.24 | 0.89 |
| 0:00:50 | 879.50 | 13.96 | 4.40 | 0:07:50 | 880.07 | 25.88 | 2.42 | 0:14:50 | 709.11 | 47.27 | 1.35 | 0:21:50 | 455.25 | 65.04 | 1.01 | 0:28:50 | 72.86 | 72.86 | 0.89 |
| 0:00:55 | 976.00 | 14.79 | 4.23 | 0:07:55 | 946.09 | 27.83 | 2.32 | 0:14:55 | 708.27 | 47.22 | 1.36 | 0:21:55 | 441.46 | 55.18 | 1.03 | 0:28:55 | 74.30 | 74.30 | 0.88 |
| 0:01:00 | 1,047.06 | 15.63 | 4.15 | 0:08:00 | 934.41 | 27.48 | 2.40 | 0:15:00 | 697.72 | 46.51 | 1.41 | 0:22:00 | 486.43 | 60.80 | 1.08 | 0:29:00 | 72.92 | 72.92 | 0.89 |
| 0:01:05 | 1,009.84 | 14.03 | 4.49 | 0:08:05 | 978.58 | 27.96 | 2.31 | 0:15:05 | 703.47 | 46.90 | 1.37 | 0:22:05 | 544.19 | 60.47 | 1.04 | 0:29:05 | 72.52 | 72.52 | 0.90 |
| 0:01:10 | 1,045.56 | 14.13 | 4.58 | 0:08:10 | 1,000.17 | 28.58 | 2.30 | 0:15:10 | 784.02 | 46.12 | 1.37 | 0:22:10 | 613.93 | 61.39 | 1.01 | 0:29:10 | 74.16 | 74.16 | 0.88 |
| 0:01:15 | 1,031.91 | 13.76 | 4.72 | 0:08:15 | 938.75 | 25.37 | 2.49 | 0:15:15 | 801.54 | 44.53 | 1.38 | 0:22:15 | 624.54 | 62.45 | 1.03 | 0:29:15 | 72.51 | 72.51 | 0.90 |
| 0:01:20 | 995.35 | 13.10 | 4.94 | 0:08:20 | 983.87 | 25.89 | 2.52 | 0:15:20 | 889.26 | 46.80 | 1.35 | 0:22:20 | 637.18 | 63.72 | 1.03 | 0:29:20 | 72.55 | 72.55 | 0.90 |
| 0:01:25 | 1,026.71 | 12.83 | 5.05 | 0:08:25 | 1,035.74 | 26.56 | 2.38 | 0:15:25 | 837.33 | 41.87 | 1.48 | 0:22:25 | 637.27 | 63.73 | 1.01 | 0:29:25 | 74.40 | 74.40 | 0.88 |
| 0:01:30 | 1,032.43 | 12.91 | 5.07 | 0:08:30 | 1,048.95 | 26.22 | 2.51 | 0:15:30 | 901.13 | 45.06 | 1.45 | 0:22:30 | 626.90 | 62.69 | 1.05 | 0:29:30 | 72.86 | 72.86 | 0.89 |
| 0:01:35 | 993.37 | 12.42 | 5.19 | 0:08:35 | 998.77 | 24.97 | 2.61 | 0:15:35 | 847.27 | 42.36 | 1.53 | 0:22:35 | 640.62 | 64.06 | 1.01 | 0:29:35 | 72.73 | 72.73 | 0.90 |
| 0:01:40 | 1,037.24 | 12.97 | 5.09 | 0:08:40 | 1,019.44 | 25.49 | 2.57 | 0:15:40 | 889.05 | 44.45 | 1.48 | 0:22:40 | 629.10 | 62.91 | 1.04 | 0:29:40 | 74.32 | 74.32 | 0.88 |
| 0:01:45 | 1,035.28 | 12.94 | 4.99 | 0:08:45 | 1,025.13 | 25.63 | 2.55 | 0:15:45 | 864.28 | 43.21 | 1.50 | 0:22:45 | 631.28 | 63.13 | 1.02 | 0:29:45 | 72.99 | 72.99 | 0.89 |
| 0:01:50 | 1,040.67 | 13.01 | 5.03 | 0:08:50 | 1,066.50 | 26.66 | 2.45 | 0:15:50 | 892.07 | 44.60 | 1.47 | 0:22:50 | 629.66 | 62.97 | 1.04 | 0:29:50 | 73.32 | 73.32 | 0.89 |
| 0:01:55 | 1,043.27 | 13.04 | 5.07 | 0:08:55 | 1,025.32 | 25.63 | 2.53 | 0:15:55 | 872.32 | 43.62 | 1.48 | 0:22:55 | 600.29 | 60.03 | 1.08 | 0:29:55 | 74.37 | 74.37 | 0.88 |
| 0:02:00 | 1,033.36 | 12.92 | 5.09 | 0:09:00 | 1,029.16 | 25.73 | 2.56 | 0:16:00 | 908.29 | 45.41 | 1.45 | 0:23:00 | 601.61 | 60.16 | 1.09 | 0:30:00 | 73.38 | 73.38 | 0.89 |
| 0:02:05 | 1,017.91 | 12.72 | 5.08 | 0:09:05 | 1,056.45 | 26.41 | 2.47 | 0:16:05 | 886.76 | 44.34 | 1.47 | 0:23:05 | 620.67 | 62.07 | 1.04 | 0:30:05 | 72.81 | 72.81 | 0.89 |
| 0:02:10 | 1,057.05 | 13.21 | 5.00 | 0:09:10 | 1,019.52 | 25.49 | 2.53 | 0:16:10 | 878.83 | 43.94 | 1.48 | 0:23:10 | 601.52 | 60.15 | 1.09 | 0:30:10 | 73.63 | 73.63 | 0.88 |
| 0:02:15 | 1,106.58 | 13.83 | 4.73 | 0:09:15 | 1,030.11 | 25.75 | 2.56 | 0:16:15 | 921.97 | 46.10 | 1.40 | 0:23:15 | 627.00 | 62.70 | 1.03 | 0:30:15 | 73.53 | 73.53 | 0.89 |
| 0:02:20 | 1,073.34 | 13.42 | 4.83 | 0:09:20 | 1,039.99 | 26.00 | 2.51 | 0:16:20 | 858.84 | 42.94 | 1.52 | 0:23:20 | 591.40 | 59.14 | 1.11 | 0:30:20 | 73.08 | 73.08 | 0.89 |
| 0:02:25 | 1,074.73 | 13.43 | 4.93 | 0:09:25 | 1,043.85 | 26.10 | 2.51 | 0:16:25 | 911.82 | 45.59 | 1.43 | 0:23:25 | 622.39 | 62.24 | 1.04 | 0:30:25 | 73.27 | 73.27 | 0.89 |
| 0:02:30 | 1,027.96 | 12.85 | 5.06 | 0:09:30 | 1,008.18 | 25.20 | 2.56 | 0:16:30 | 922.80 | 46.14 | 1.41 | 0:23:30 | 620.36 | 62.04 | 1.06 | 0:30:30 | 74.09 | 74.09 | 0.88 |
| 0:02:35 | 1,054.95 | 13.19 | 4.91 | 0:09:35 | 1,068.33 | 26.71 | 2.47 | 0:16:35 | 887.82 | 44.39 | 1.47 | 0:23:35 | 623.49 | 62.35 | 1.04 | 0:30:35 | 73.11 | 73.11 | 0.89 |
| 0:02:40 | 1,060.96 | 13.26 | 4.99 | 0:09:40 | 1,088.72 | 27.22 | 2.40 | 0:16:40 | 930.31 | 46.52 | 1.41 | 0:23:40 | 607.40 | 60.74 | 1.08 | 0:30:40 | 73.27 | 73.27 | 0.89 |
| 0:02:45 | 1,036.16 | 12.95 | 5.04 | 0:09:45 | 1,028.72 | 25.72 | 2.51 | 0:16:45 | 875.02 | 43.75 | 1.48 | 0:23:45 | 602.60 | 60.26 | 1.07 | 0:30:45 | 74.14 | 74.14 | 0.88 |
| 0:02:50 | 1,025.26 | 12.82 | 5.07 | 0:09:50 | 1,049.33 | 26.23 | 2.52 | 0:16:50 | 915.78 | 45.79 | 1.43 | 0:23:50 | 610.25 | 61.03 | 1.08 | 0:30:50 | 73.23 | 73.23 | 0.89 |
| 0:02:55 | 1,025.52 | 12.82 | 5.14 | 0:09:55 | 1,063.32 | 26.58 | 2.46 | 0:16:55 | 889.92 | 44.50 | 1.45 | 0:23:55 | 613.21 | 61.32 | 1.05 | 0:30:55 | 73.21 | 73.21 | 0.89 |

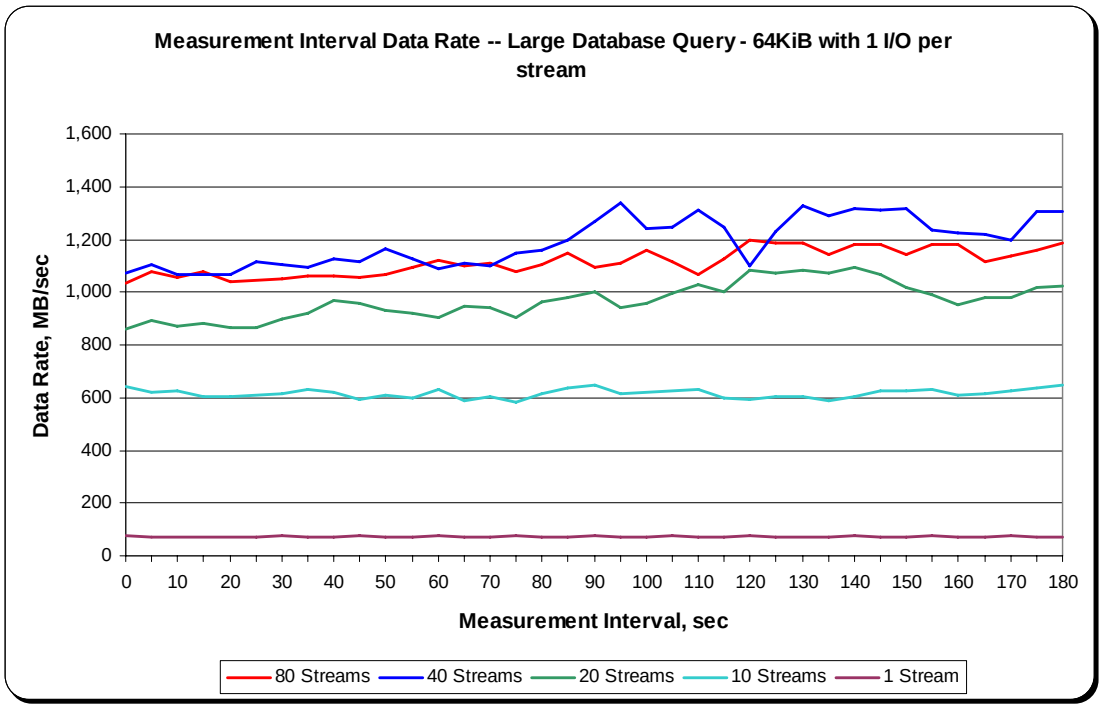
## SPC-2 "Large Database Query/64 KiB Transfer Size/1 Outstanding I/O" Test Run Data Measurement Interval, Run-Out, and Ramp-Down Period

| TR16 | 80 Streams | | | TR17 | 40 Streams | | | TR18 | 20 Streams | | | TR19 | 10 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 |
| 0:03:00 | 1,035.99 | 12.95 | 5.03 | 0:10:00 | 1,069.64 | 26.74 | 2.42 | 0:17:00 | 858.70 | 42.93 | 1.53 | 0:24:00 | 642.86 | 64.29 | 1.02 | 0:31:00 | 74.33 | 74.33 | 0.88 |
| 0:03:05 | 1,075.71 | 13.45 | 4.84 | 0:10:05 | 1,102.54 | 27.56 | 2.39 | 0:17:05 | 890.18 | 44.51 | 1.45 | 0:24:05 | 620.91 | 62.09 | 1.04 | 0:31:05 | 73.19 | 73.19 | 0.89 |
| 0:03:10 | 1,057.87 | 13.22 | 4.98 | 0:10:10 | 1,068.45 | 26.71 | 2.42 | 0:17:10 | 872.57 | 43.63 | 1.51 | 0:24:10 | 625.32 | 62.53 | 1.05 | 0:31:10 | 72.61 | 72.61 | 0.90 |
| 0:03:15 | 1,075.31 | 13.44 | 4.91 | 0:10:15 | 1,067.13 | 26.68 | 2.47 | 0:17:15 | 884.12 | 44.21 | 1.46 | 0:24:15 | 601.63 | 60.16 | 1.07 | 0:31:15 | 73.21 | 73.21 | 0.89 |
| 0:03:20 | 1,040.63 | 13.01 | 4.97 | 0:10:20 | 1,066.28 | 26.66 | 2.45 | 0:17:20 | 866.56 | 43.33 | 1.52 | 0:24:20 | 605.64 | 60.56 | 1.08 | 0:31:20 | 72.66 | 72.66 | 0.90 |
| 0:03:25 | 1,044.30 | 13.05 | 5.06 | 0:10:25 | 1,114.21 | 27.86 | 2.35 | 0:17:25 | 863.72 | 43.19 | 1.50 | 0:24:25 | 611.84 | 61.18 | 1.06 | 0:31:25 | 72.67 | 72.67 | 0.90 |
| 0:03:30 | 1,051.84 | 13.15 | 4.98 | 0:10:30 | 1,104.00 | 27.60 | 2.37 | 0:17:30 | 899.24 | 44.96 | 1.46 | 0:24:30 | 616.21 | 61.62 | 1.06 | 0:31:30 | 74.41 | 74.41 | 0.88 |
| 0:03:35 | 1,059.90 | 13.25 | 4.84 | 0:10:35 | 1,093.05 | 27.33 | 2.38 | 0:17:35 | 919.76 | 45.99 | 1.41 | 0:24:35 | 629.33 | 62.93 | 1.03 | 0:31:35 | 72.73 | 72.73 | 0.90 |
| 0:03:40 | 1,060.07 | 13.25 | 5.01 | 0:10:40 | 1,127.75 | 28.19 | 2.32 | 0:17:40 | 968.70 | 48.43 | 1.35 | 0:24:40 | 619.19 | 61.92 | 1.06 | 0:31:40 | 72.27 | 72.27 | 0.90 |
| 0:03:45 | 1,055.22 | 13.19 | 4.97 | 0:10:45 | 1,113.38 | 27.83 | 2.34 | 0:17:45 | 957.86 | 47.89 | 1.35 | 0:24:45 | 592.39 | 59.24 | 1.09 | 0:31:45 | 74.33 | 74.33 | 0.88 |
| 0:03:50 | 1,068.17 | 13.35 | 4.82 | 0:10:50 | 1,164.49 | 29.11 | 2.24 | 0:17:50 | 932.65 | 46.63 | 1.41 | 0:24:50 | 607.40 | 60.74 | 1.08 | 0:31:50 | 73.23 | 73.23 | 0.89 |
| 0:03:55 | 1,095.07 | 13.69 | 4.80 | 0:10:55 | 1,124.39 | 28.11 | 2.31 | 0:17:55 | 922.43 | 46.12 | 1.40 | 0:24:55 | 597.44 | 59.74 | 1.08 | 0:31:55 | 72.37 | 72.37 | 0.90 |
| 0:04:00 | 1,122.41 | 14.03 | 4.73 | 0:11:00 | 1,087.75 | 27.19 | 2.41 | 0:18:00 | 903.10 | 45.15 | 1.46 | 0:25:00 | 633.63 | 63.36 | 1.03 | 0:32:00 | 74.22 | 74.22 | 0.88 |
| 0:04:05 | 1,097.39 | 13.72 | 4.71 | 0:11:05 | 1,109.62 | 27.74 | 2.32 | 0:18:05 | 945.87 | 47.29 | 1.37 | 0:25:05 | 588.13 | 58.81 | 1.10 | 0:32:05 | 72.92 | 72.92 | 0.89 |
| 0:04:10 | 1,110.65 | 13.88 | 4.75 | 0:11:10 | 1,099.80 | 27.49 | 2.38 | 0:18:10 | 939.48 | 46.97 | 1.40 | 0:25:10 | 602.47 | 60.25 | 1.09 | 0:32:10 | 73.21 | 73.21 | 0.89 |
| 0:04:15 | 1,078.96 | 13.49 | 4.89 | 0:11:15 | 1,148.18 | 28.70 | 2.30 | 0:18:15 | 900.92 | 45.05 | 1.44 | 0:25:15 | 583.66 | 58.37 | 1.11 | 0:32:15 | 74.28 | 74.28 | 0.88 |
| 0:04:20 | 1,104.98 | 13.81 | 4.67 | 0:11:20 | 1,160.69 | 29.02 | 2.25 | 0:18:20 | 962.15 | 48.11 | 1.36 | 0:25:20 | 612.89 | 61.29 | 1.06 | 0:32:20 | 73.18 | 73.18 | 0.89 |
| 0:04:25 | 1,147.82 | 14.35 | 4.58 | 0:11:25 | 1,198.29 | 29.96 | 2.17 | 0:18:25 | 979.06 | 48.95 | 1.32 | 0:25:25 | 636.53 | 63.65 | 1.02 | 0:32:25 | 72.75 | 72.75 | 0.90 |
| 0:04:30 | 1,092.21 | 13.65 | 4.82 | 0:11:30 | 1,269.72 | 31.74 | 2.06 | 0:18:30 | 1,003.07 | 50.15 | 1.30 | 0:25:30 | 648.28 | 64.83 | 1.01 | 0:32:30 | 74.45 | 74.45 | 0.87 |
| 0:04:35 | 1,112.03 | 13.90 | 4.64 | 0:11:35 | 1,340.46 | 33.51 | 1.95 | 0:18:35 | 940.70 | 47.03 | 1.39 | 0:25:35 | 616.44 | 61.64 | 1.05 | 0:32:35 | 72.99 | 72.99 | 0.89 |
| 0:04:40 | 1,159.87 | 14.50 | 4.55 | 0:11:40 | 1,243.00 | 31.08 | 2.09 | 0:18:40 | 958.10 | 47.91 | 1.36 | 0:25:40 | 622.46 | 62.25 | 1.05 | 0:32:40 | 72.57 | 72.57 | 0.90 |
| 0:04:45 | 1,117.31 | 13.97 | 4.71 | 0:11:45 | 1,245.71 | 31.14 | 2.10 | 0:18:45 | 997.99 | 49.90 | 1.29 | 0:25:45 | 624.34 | 62.43 | 1.03 | 0:32:45 | 74.26 | 74.26 | 0.88 |
| 0:04:50 | 1,066.94 | 13.34 | 4.85 | 0:11:50 | 1,312.28 | 32.81 | 1.99 | 0:18:50 | 1,029.51 | 51.48 | 1.27 | 0:25:50 | 630.62 | 63.06 | 1.04 | 0:32:50 | 71.26 | 71.26 | 0.91 |
| 0:04:55 | 1,126.85 | 14.09 | 4.68 | 0:11:55 | 1,246.27 | 31.16 | 2.09 | 0:18:55 | 1,001.61 | 50.08 | 1.29 | 0:25:55 | 599.73 | 59.97 | 1.08 | 0:32:55 | 72.86 | 72.86 | 0.89 |
| 0:05:00 | 1,195.25 | 14.94 | 4.38 | 0:12:00 | 1,096.94 | 27.42 | 2.38 | 0:19:00 | 1,080.81 | 54.04 | 1.21 | 0:26:00 | 590.89 | 59.09 | 1.11 | 0:33:00 | 73.87 | 73.87 | 0.88 |
| 0:05:05 | 1,184.67 | 14.81 | 4.37 | 0:12:05 | 1,228.49 | 30.71 | 2.13 | 0:19:05 | 1,070.44 | 53.52 | 1.22 | 0:26:05 | 604.55 | 60.45 | 1.07 | 0:33:05 | 73.34 | 73.34 | 0.89 |
| 0:05:10 | 1,185.43 | 14.82 | 4.42 | 0:12:10 | 1,330.58 | 33.26 | 1.96 | 0:19:10 | 1,081.83 | 54.09 | 1.20 | 0:26:10 | 602.09 | 60.21 | 1.09 | 0:33:10 | 73.23 | 73.23 | 0.89 |
| 0:05:15 | 1,142.13 | 14.28 | 4.54 | 0:12:15 | 1,288.07 | 32.20 | 2.01 | 0:19:15 | 1,074.71 | 53.74 | 1.20 | 0:26:15 | 586.37 | 58.64 | 1.10 | 0:33:15 | 73.23 | 73.23 | 0.89 |
| 0:05:20 | 1,182.60 | 14.78 | 4.47 | 0:12:20 | 1,318.52 | 32.96 | 2.00 | 0:19:20 | 1,092.67 | 54.63 | 1.20 | 0:26:20 | 604.59 | 60.46 | 1.08 | 0:33:20 | 74.11 | 74.11 | 0.88 |
| 0:05:25 | 1,180.84 | 14.76 | 4.46 | 0:12:25 | 1,310.66 | 32.77 | 1.97 | 0:19:25 | 1,064.11 | 53.21 | 1.21 | 0:26:25 | 626.04 | 62.60 | 1.03 | 0:33:25 | 72.34 | 72.34 | 0.90 |
| 0:05:30 | 1,141.06 | 14.26 | 4.58 | 0:12:30 | 1,317.06 | 32.93 | 1.97 | 0:19:30 | 1,017.59 | 50.88 | 1.29 | 0:26:30 | 624.99 | 62.50 | 1.05 | 0:33:30 | 72.14 | 72.14 | 0.90 |
| 0:05:35 | 1,178.98 | 14.74 | 4.41 | 0:12:35 | 1,232.87 | 30.82 | 2.14 | 0:19:35 | 990.68 | 49.53 | 1.30 | 0:26:35 | 631.13 | 63.11 | 1.02 | 0:33:35 | 73.76 | 73.76 | 0.88 |
| 0:05:40 | 1,181.97 | 14.77 | 4.46 | 0:12:40 | 1,222.03 | 30.55 | 2.13 | 0:19:40 | 949.74 | 47.49 | 1.38 | 0:26:40 | 607.19 | 60.72 | 1.08 | 0:33:40 | 72.23 | 72.23 | 0.90 |
| 0:05:45 | 1,115.78 | 13.95 | 4.68 | 0:12:45 | 1,218.64 | 30.47 | 2.14 | 0:19:45 | 976.97 | 48.85 | 1.32 | 0:26:45 | 613.62 | 61.36 | 1.05 | 0:33:45 | 72.96 | 72.96 | 0.89 |
| 0:05:50 | 1,138.54 | 14.23 | 4.55 | 0:12:50 | 1,199.68 | 29.99 | 2.18 | 0:19:50 | 981.17 | 49.06 | 1.34 | 0:26:50 | 627.63 | 62.76 | 1.05 | 0:33:50 | 74.24 | 74.24 | 0.88 |
| 0:05:55 | 1,161.39 | 14.52 | 4.55 | 0:12:55 | 1,304.85 | 32.62 | 2.00 | 0:19:55 | 1,016.59 | 50.83 | 1.27 | 0:26:55 | 639.16 | 63.92 | 1.01 | 0:33:55 | 72.50 | 72.50 | 0.90 |
| 0:06:00 | 1,188.55 | 14.86 | 4.39 | 0:13:00 | 1,306.59 | 32.66 | 2.00 | 0:20:00 | 1,025.77 | 51.29 | 1.28 | 0:27:00 | 645.15 | 64.51 | 1.02 | 0:34:00 | 73.11 | 73.11 | 0.89 |
| 0:06:05 | 1,153.65 | 14.42 | 4.49 | 0:13:05 | 1,338.86 | 33.47 | 1.95 | 0:20:05 | 1,036.57 | 51.83 | 1.25 | 0:27:05 | 638.71 | 63.87 | 1.01 | 0:34:05 | 74.25 | 74.25 | 0.88 |
| 0:06:10 | 1,258.02 | 15.73 | 4.19 | 0:13:10 | 1,322.41 | 33.06 | 1.97 | 0:20:10 | 1,065.44 | 53.27 | 1.23 | 0:27:10 | 637.97 | 63.80 | 1.03 | 0:34:10 | 72.12 | 72.12 | 0.90 |
| 0:06:15 | 1,300.46 | 16.26 | 4.00 | 0:13:15 | 1,322.13 | 33.05 | 1.97 | 0:20:15 | 1,044.74 | 52.24 | 1.24 | 0:27:15 | 643.03 | 64.30 | 1.00 | 0:34:15 | 72.82 | 72.82 | 0.89 |
| 0:06:20 | 1,260.30 | 15.75 | 4.14 | 0:13:20 | 1,242.31 | 31.06 | 2.10 | 0:20:20 | 1,003.15 | 50.16 | 1.31 | 0:27:20 | 654.84 | 65.48 | 1.00 | 0:34:20 | 74.35 | 74.35 | 0.88 |
| 0:06:25 | 1,227.00 | 15.34 | 4.32 | 0:13:25 | 1,257.54 | 31.44 | 2.08 | 0:20:25 | 930.45 | 46.52 | 1.39 | 0:27:25 | 619.31 | 61.93 | 1.04 | 0:34:25 | 72.60 | 72.60 | 0.90 |
| 0:06:30 | 1,236.77 | 15.46 | 4.24 | 0:13:30 | 1,373.57 | 34.34 | 1.90 | 0:20:30 | 993.71 | 49.69 | 1.32 | 0:27:30 | 635.48 | 63.55 | 1.03 | 0:34:30 | 72.51 | 72.51 | 0.90 |
| 0:06:35 | 1,256.92 | 15.71 | 4.11 | 0:13:35 | 1,390.68 | 34.77 | 1.87 | 0:20:35 | 1,009.35 | 50.47 | 1.28 | 0:27:35 | 594.73 | 59.47 | 1.09 | 0:34:35 | 74.29 | 74.29 | 0.88 |
| 0:06:40 | 1,239.82 | 15.50 | 4.28 | 0:13:40 | 1,361.03 | 34.03 | 1.92 | 0:20:40 | 969.70 | 48.49 | 1.34 | 0:27:40 | 627.28 | 62.73 | 1.05 | 0:34:40 | 72.89 | 72.89 | 0.89 |
| 0:06:45 | 385.02 | 0.00 | 3.76 | 0:13:45 | 400.35 | 0.00 | 1.77 | 0:20:45 | 299.46 | 0.00 | 1.23 | 0:27:45 | 162.15 | 0.00 | 1.07 | 0:34:45 | 23.08 | 0.00 | 0.88 |
| 0:06:50 | 0.00 | 0.00 | 0.00 | 0:13:50 | 0.00 | 0.00 | 0.00 | 0:20:50 | 0.00 | 0.00 | 0.00 | 0:27:50 | 0.00 | 0.00 | 0.00 | 0:34:50 | 0.00 | 0.00 | 0.00 |
| 0:06:55 | 0.00 | 0.00 | 0.00 | 0:13:55 | 0.00 | 0.00 | 0.00 | 0:20:55 | 0.00 | 0.00 | 0.00 | 0:27:55 | 0.00 | 0.00 | 0.00 | 0:34:55 | 0.00 | 0.00 | 0.00 |

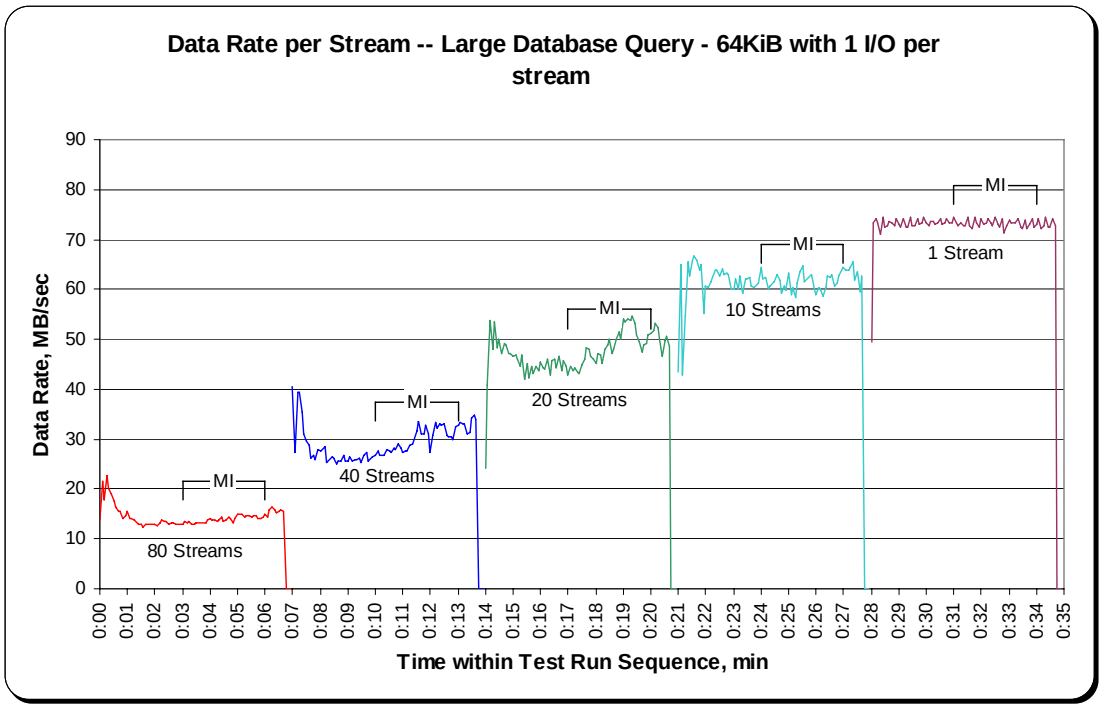
## SPC-2 "Large Database Query/64 KiB Transfer Size/1 Outstanding I/O" Average Data Rate Graph – Complete Test Run



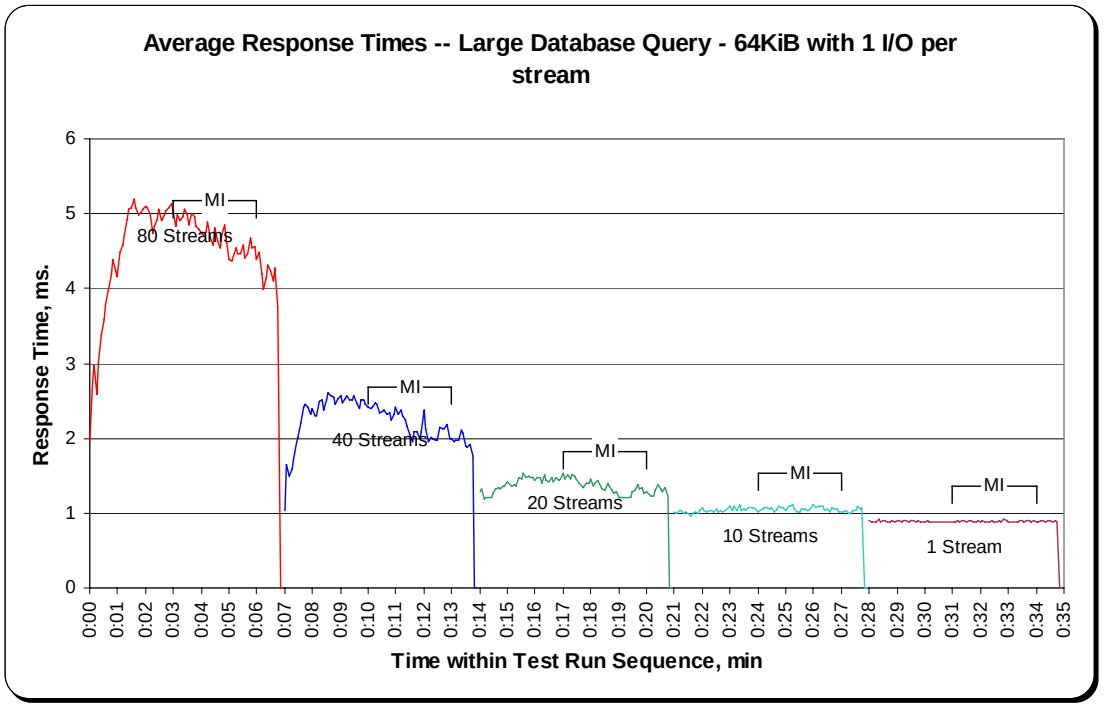

## SPC-2 "Large Database Query/64 KiB Transfer Size/1 Outstanding I/O" Average Data Rate Graph – Measurement Interval (MI) Only



## 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 100.

### SPC-2 Test Results File

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

SPC-2 Video on Demand Delivery Test Results File

### SPC-2 Video on Demand Delivery Test Run Data

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

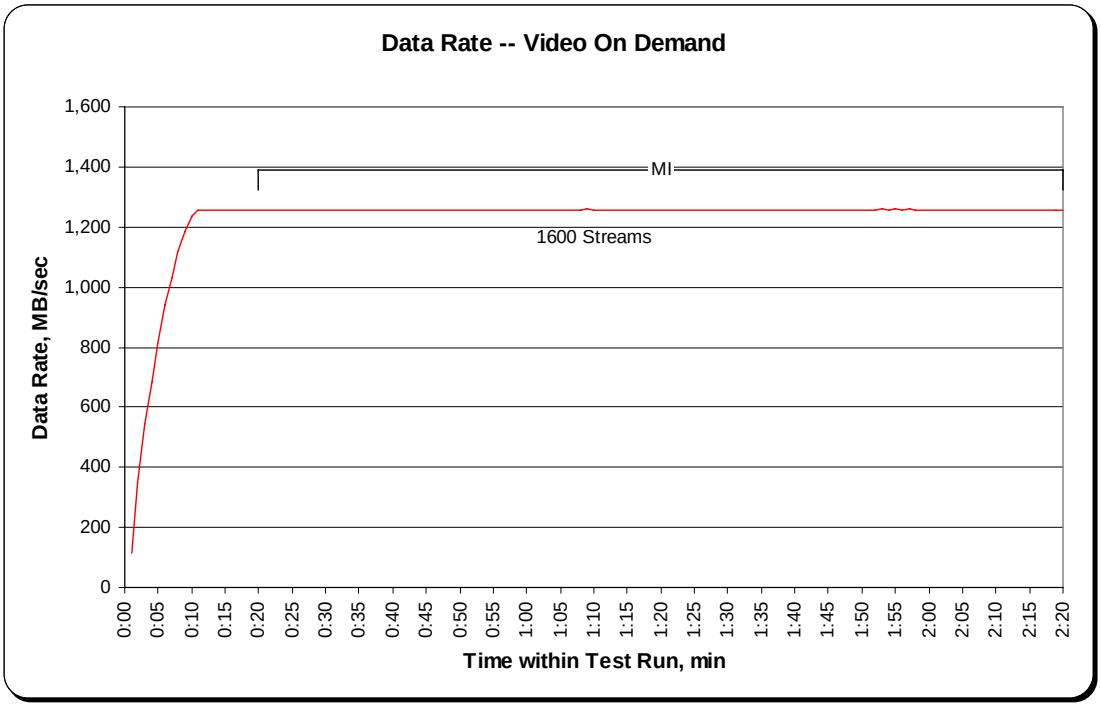
| Markers for Measurement Interval | | | | |
|---|---|---|---|---|
| Time | DR | DR/S | RT | MRT |
| 0:20:00 | 1,324.26 | 0.83 | 25.38 | 212.17 |
| 0:20:00 | 1,390.23 | 0.87 | 26.59 | 222.27 |
| 1:20:00 | 1,390.23 | 0.87 | 26.59 | 222.27 |
| 2:20:00 | 1,390.23 | 0.87 | 26.59 | 222.27 |
| 2:20:00 | 1,324.26 | 0.83 | 25.38 | 212.17 |
| **RU length:** | 0:20:00 | | 156 | |
| **MI length:** | 2:00:00 | 36 | 156 | |
| **Average:** | 1,258.29 | 0.79 | 24.17 | 202.07 |

## Video on Demand Delivery Test – TEST RUN DATA BY INTERVAL

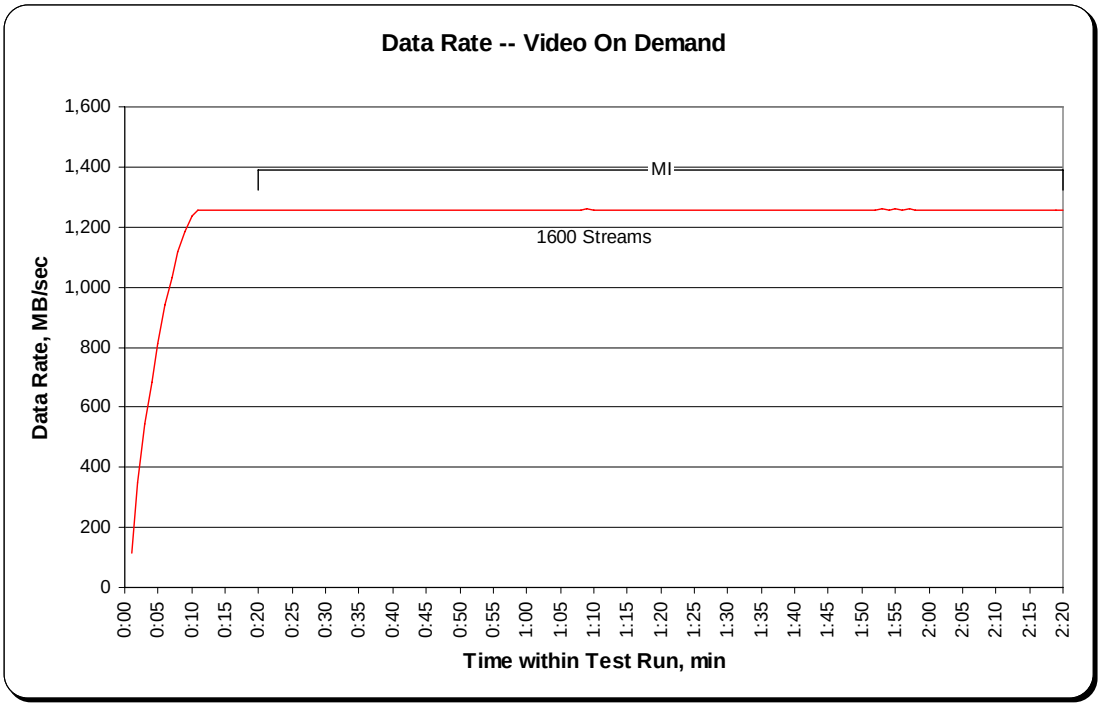
The SPC-2 Video on Demand Delivery Test Run data is contained in the table that appears on the next page. That table is followed by graphs illustrating the average Data Rate and average Data Rate per Stream produced by the same Test Runs. The table and graphs present the data at sixty second intervals.

| Test Run Sequence Time | Data Rate, MB/sec | Data Rate / Stream, MB/sec | Response Time, ms | Maximum Response Time, ms |
|---|---|---|---|---|
| 0:01:00 | 115.10 | 0.65 | 5.22 | 80.58 |
| 0:02:00 | 347.11 | 0.76 | 6.71 | 87.57 |
| 0:03:00 | 543.75 | 0.78 | 10.09 | 87.17 |
| 0:04:00 | 682.27 | 0.78 | 11.60 | 108.15 |
| 0:05:00 | 811.66 | 0.78 | 12.92 | 103.36 |
| 0:06:00 | 939.06 | 0.78 | 14.52 | 119.46 |
| 0:07:00 | 1,033.74 | 0.78 | 16.00 | 136.09 |
| 0:08:00 | 1,119.54 | 0.78 | 18.35 | 162.02 |
| 0:09:00 | 1,184.12 | 0.78 | 20.53 | 200.85 |
| 0:10:00 | 1,237.15 | 0.78 | 21.21 | 170.22 |
| 0:11:00 | 1,258.19 | 0.79 | 22.65 | 190.42 |
| 0:12:00 | 1,258.34 | 0.79 | 22.45 | 192.98 |
| 0:13:00 | 1,258.29 | 0.79 | 21.95 | 169.88 |
| 0:14:00 | 1,258.38 | 0.79 | 22.42 | 183.53 |
| 0:15:00 | 1,258.32 | 0.79 | 26.77 | 274.35 |
| 0:16:00 | 1,258.32 | 0.79 | 22.31 | 180.93 |
| 0:17:00 | 1,258.29 | 0.79 | 22.54 | 180.53 |
| 0:18:00 | 1,258.42 | 0.79 | 22.11 | 182.43 |
| 0:19:00 | 1,258.29 | 0.79 | 22.61 | 191.58 |
| 0:20:00 | 1,258.34 | 0.79 | 21.92 | 173.93 |
| 0:21:00 | 1,258.06 | 0.79 | 23.47 | 182.05 |
| 0:22:00 | 1,258.17 | 0.79 | 23.77 | 197.53 |
| 0:23:00 | 1,258.34 | 0.79 | 25.02 | 195.79 |
| 0:24:00 | 1,258.34 | 0.79 | 24.40 | 186.34 |
| 0:25:00 | 1,258.22 | 0.79 | 26.75 | 229.69 |
| 0:26:00 | 1,258.41 | 0.79 | 25.66 | 197.28 |
| 0:27:00 | 1,258.21 | 0.79 | 24.56 | 187.78 |
| 0:28:00 | 1,258.31 | 0.79 | 24.71 | 193.36 |
| 0:29:00 | 1,258.34 | 0.79 | 24.12 | 247.71 |
| 0:30:00 | 1,258.42 | 0.79 | 28.26 | 308.55 |
| 0:31:00 | 1,258.30 | 0.79 | 23.58 | 189.76 |
| 0:32:00 | 1,258.20 | 0.79 | 23.44 | 195.08 |
| 0:33:00 | 1,258.31 | 0.79 | 24.19 | 200.83 |
| 0:34:00 | 1,258.33 | 0.79 | 23.73 | 182.10 |
| 0:35:00 | 1,258.32 | 0.79 | 24.24 | 189.62 |
| 0:36:00 | 1,258.28 | 0.79 | 23.75 | 185.59 |
| 0:37:00 | 1,258.18 | 0.79 | 23.93 | 177.73 |
| 0:38:00 | 1,258.34 | 0.79 | 24.38 | 193.51 |
| 0:39:00 | 1,258.24 | 0.79 | 24.66 | 192.05 |
| 0:40:00 | 1,258.26 | 0.79 | 25.24 | 178.50 |
| 0:41:00 | 1,258.40 | 0.79 | 24.63 | 203.60 |
| 0:42:00 | 1,258.32 | 0.79 | 25.66 | 196.52 |
| 0:43:00 | 1,258.29 | 0.79 | 25.02 | 198.91 |
| 0:44:00 | 1,258.26 | 0.79 | 25.46 | 204.23 |
| 0:45:00 | 1,258.33 | 0.79 | 25.55 | 206.48 |
| 0:46:00 | 1,258.35 | 0.79 | 24.99 | 186.12 |
| 0:47:00 | 1,258.17 | 0.79 | 25.73 | 194.19 |
| 0:48:00 | 1,258.26 | 0.79 | 24.35 | 182.88 |
| 0:49:00 | 1,258.28 | 0.79 | 24.05 | 180.01 |
| 0:50:00 | 1,258.35 | 0.79 | 23.27 | 179.90 |
| 0:51:00 | 1,258.32 | 0.79 | 22.34 | 183.40 |
| 0:52:00 | 1,258.18 | 0.79 | 23.37 | 190.29 |
| 0:53:00 | 1,258.31 | 0.79 | 23.41 | 200.83 |
| 0:54:00 | 1,258.37 | 0.79 | 23.50 | 169.96 |
| 0:55:00 | 1,258.28 | 0.79 | 23.32 | 170.11 |
| 0:56:00 | 1,258.32 | 0.79 | 23.85 | 181.08 |
| 0:57:00 | 1,258.21 | 0.79 | 23.91 | 194.67 |
| 0:58:00 | 1,258.31 | 0.79 | 24.13 | 192.04 |
| 0:59:00 | 1,258.42 | 0.79 | 23.30 | 201.94 |
| 1:00:00 | 1,258.39 | 0.79 | 23.01 | 167.93 |
| 1:01:00 | 1,258.32 | 0.79 | 22.61 | 181.41 |
| 1:02:00 | 1,258.18 | 0.79 | 22.28 | 212.41 |
| 1:03:00 | 1,258.31 | 0.79 | 22.62 | 176.19 |
| 1:04:00 | 1,258.22 | 0.79 | 21.95 | 181.89 |
| 1:05:00 | 1,258.18 | 0.79 | 22.57 | 197.14 |
| 1:06:00 | 1,258.31 | 0.79 | 22.72 | 182.92 |
| 1:07:00 | 1,258.16 | 0.79 | 22.23 | 180.98 |
| 1:08:00 | 1,258.29 | 0.79 | 22.35 | 186.89 |
| 1:09:00 | 1,258.96 | 0.79 | 22.75 | 210.04 |
| 1:10:00 | 1,258.37 | 0.79 | 22.91 | 170.87 |
| 1:11:00 | 1,258.35 | 0.79 | 22.33 | 182.55 |
| 1:12:00 | 1,258.29 | 0.79 | 22.45 | 212.54 |
| 1:13:00 | 1,258.34 | 0.79 | 22.26 | 174.72 |
| 1:14:00 | 1,258.34 | 0.79 | 22.07 | 179.48 |
| 1:15:00 | 1,258.28 | 0.79 | 22.24 | 186.59 |
| 1:16:00 | 1,258.28 | 0.79 | 22.57 | 169.16 |
| 1:17:00 | 1,258.36 | 0.79 | 22.66 | 193.53 |
| 1:18:00 | 1,258.35 | 0.79 | 22.29 | 168.98 |
| 1:19:00 | 1,258.24 | 0.79 | 22.44 | 191.93 |
| 1:20:00 | 1,258.37 | 0.79 | 22.82 | 196.05 |
| 1:21:00 | 1,258.19 | 0.79 | 22.87 | 195.77 |
| 1:22:00 | 1,258.27 | 0.79 | 24.36 | 202.07 |
| 1:23:00 | 1,258.34 | 0.79 | 24.68 | 200.11 |
| 1:24:00 | 1,258.39 | 0.79 | 25.52 | 231.08 |
| 1:25:00 | 1,258.23 | 0.79 | 25.56 | 241.60 |
| 1:26:00 | 1,258.17 | 0.79 | 24.21 | 194.21 |
| 1:27:00 | 1,258.36 | 0.79 | 25.40 | 239.22 |
| 1:28:00 | 1,258.31 | 0.79 | 23.82 | 192.28 |
| 1:29:00 | 1,258.35 | 0.79 | 23.87 | 194.43 |
| 1:30:00 | 1,258.29 | 0.79 | 24.34 | 201.73 |
| 1:31:00 | 1,258.31 | 0.79 | 24.23 | 197.09 |
| 1:32:00 | 1,258.25 | 0.79 | 24.26 | 250.93 |
| 1:33:00 | 1,258.13 | 0.79 | 23.60 | 200.28 |
| 1:34:00 | 1,258.42 | 0.79 | 24.00 | 203.80 |
| 1:35:00 | 1,258.20 | 0.79 | 24.21 | 203.06 |
| 1:36:00 | 1,258.31 | 0.79 | 24.12 | 200.75 |
| 1:37:00 | 1,258.28 | 0.79 | 25.08 | 273.46 |
| 1:38:00 | 1,258.35 | 0.79 | 24.73 | 240.52 |
| 1:39:00 | 1,258.35 | 0.79 | 24.59 | 202.25 |
| 1:40:00 | 1,258.26 | 0.79 | 24.20 | 217.31 |
| 1:41:00 | 1,258.34 | 0.79 | 24.35 | 245.25 |
| 1:42:00 | 1,258.32 | 0.79 | 24.98 | 217.16 |
| 1:43:00 | 1,258.36 | 0.79 | 24.86 | 208.11 |
| 1:44:00 | 1,258.26 | 0.79 | 25.25 | 265.22 |
| 1:45:00 | 1,258.26 | 0.79 | 23.90 | 208.24 |
| 1:46:00 | 1,258.33 | 0.79 | 23.02 | 192.71 |
| 1:47:00 | 1,258.28 | 0.79 | 23.37 | 202.99 |
| 1:48:00 | 1,258.30 | 0.79 | 24.22 | 193.15 |
| 1:49:00 | 1,258.29 | 0.79 | 24.13 | 223.14 |
| 1:50:00 | 1,258.17 | 0.79 | 24.45 | 220.36 |
| 1:51:00 | 1,258.21 | 0.79 | 24.51 | 205.14 |
| 1:52:00 | 1,257.90 | 0.79 | 24.81 | 234.74 |
| 1:53:00 | 1,259.05 | 0.79 | 25.70 | 271.72 |
| 1:54:00 | 1,258.33 | 0.79 | 23.87 | 173.65 |
| 1:55:00 | 1,258.58 | 0.79 | 23.88 | 178.32 |
| 1:56:00 | 1,258.41 | 0.79 | 24.33 | 190.24 |
| 1:57:00 | 1,258.54 | 0.79 | 24.36 | 188.94 |
| 1:58:00 | 1,258.37 | 0.79 | 23.51 | 174.53 |
| 1:59:00 | 1,258.30 | 0.79 | 23.62 | 179.39 |
| 2:00:00 | 1,258.27 | 0.79 | 24.15 | 212.18 |
| 2:01:00 | 1,258.39 | 0.79 | 24.51 | 196.54 |
| 2:02:00 | 1,258.17 | 0.79 | 24.74 | 293.25 |
| 2:03:00 | 1,258.37 | 0.79 | 22.97 | 179.01 |
| 2:04:00 | 1,258.24 | 0.79 | 23.41 | 174.32 |
| 2:05:00 | 1,258.41 | 0.79 | 23.06 | 193.72 |
| 2:06:00 | 1,258.32 | 0.79 | 23.25 | 195.18 |
| 2:07:00 | 1,258.13 | 0.79 | 24.78 | 202.89 |
| 2:08:00 | 1,258.29 | 0.79 | 25.47 | 208.95 |
| 2:09:00 | 1,258.28 | 0.79 | 25.48 | 194.30 |
| 2:10:00 | 1,258.35 | 0.79 | 25.57 | 196.09 |
| 2:11:00 | 1,258.22 | 0.79 | 25.52 | 222.13 |
| 2:12:00 | 1,258.22 | 0.79 | 25.95 | 228.01 |
| 2:13:00 | 1,258.11 | 0.79 | 26.51 | 229.76 |
| 2:14:00 | 1,258.47 | 0.79 | 27.11 | 249.32 |
| 2:15:00 | 1,258.26 | 0.79 | 25.83 | 190.19 |
| 2:16:00 | 1,258.31 | 0.79 | 26.33 | 229.95 |
| 2:17:00 | 1,258.24 | 0.79 | 26.12 | 227.39 |
| 2:18:00 | 1,258.32 | 0.79 | 25.59 | 208.76 |
| 2:19:00 | 1,258.30 | 0.79 | 25.68 | 210.80 |
| 2:20:00 | 1,258.30 | 0.79 | 25.70 | 205.16 |

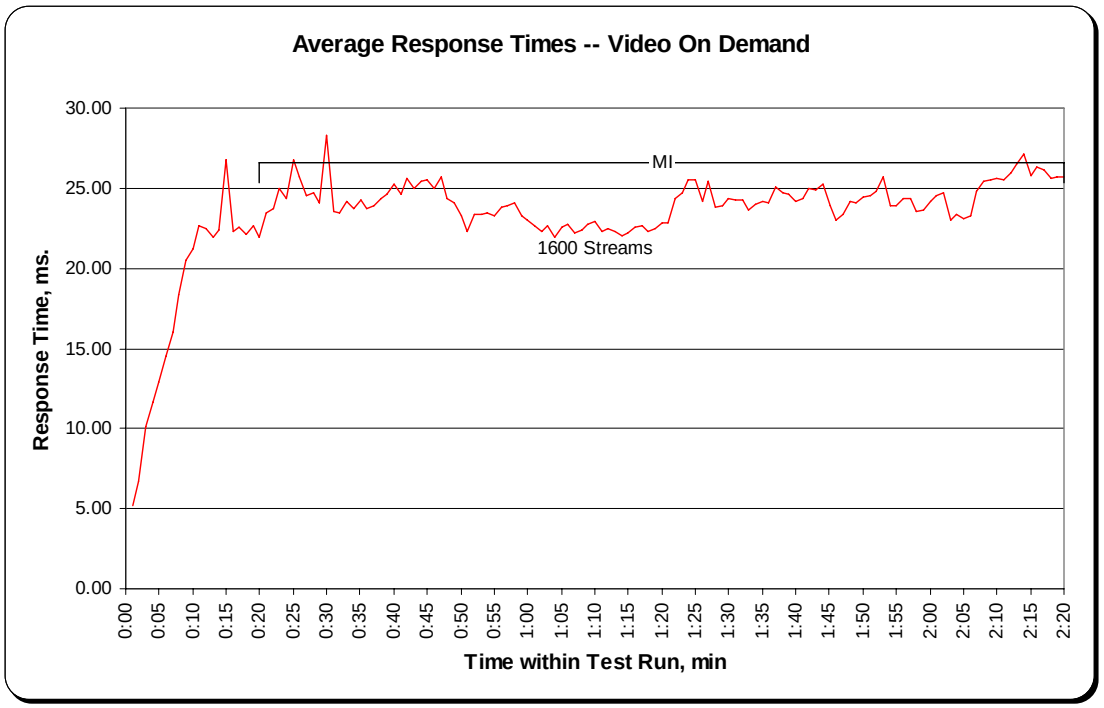
## SPC-2 Video on Demand Delivery Average Data Rate per Stream Graph



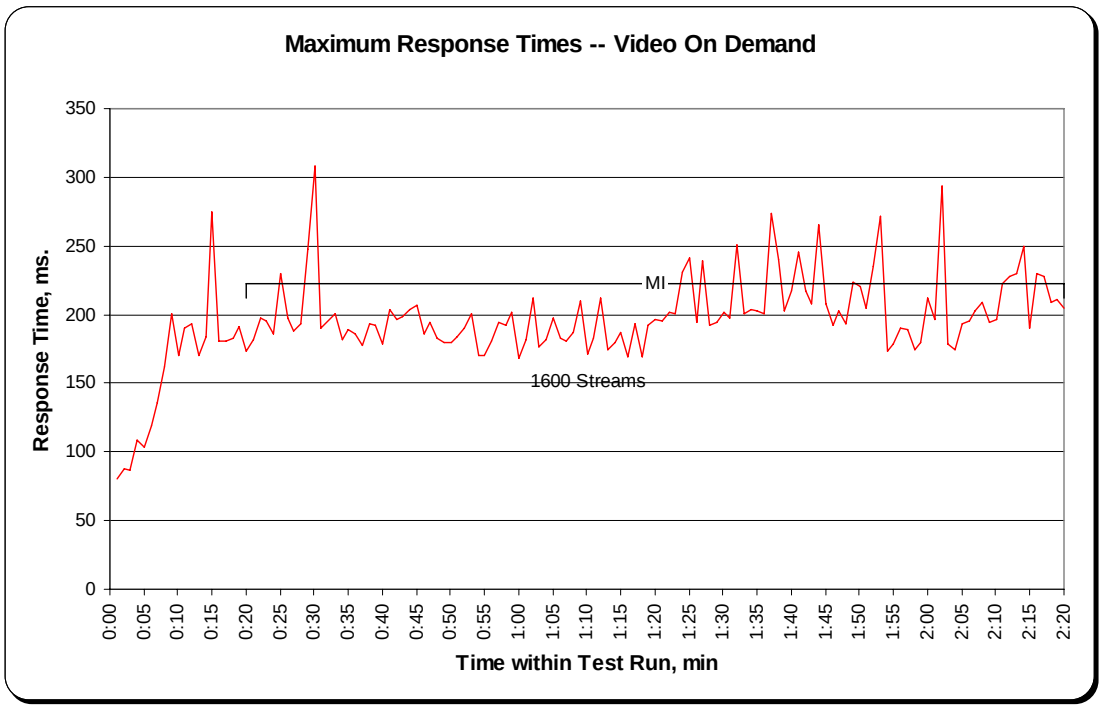

## SPC-2 Video on Demand Delivery Average Data Rate per Stream Graph



## 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 100.

### Data Persistence Test Results File

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

**Persistence 1 Test Results File**

**Persistence 2 Test Results File**

## Data Persistence Test Results

| Data Persistence Test Results | |
|---|---|
| Data Persistence Test Number: N | |
| Total Number of Logical Blocks Written | 90,612 |
| Total Number of Logical Blocks Re-referenced | 683 |
| Total Number of Logical Blocks Verified | 90,612 |
| 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 HP StorageWorks 8000 Enterprise Virtual Array, as documented in this SPC-2 Full Disclosure Report became available for customer purchase and shipment on March 14, 2005.

## ANOMALIES OR IRREGULARITIES

*Clause 10.6.11*

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

There were no anomalies or irregularities encountered during the SPC-2 Onsite Audit of the HP StorageWorks 8000 Enterprise Virtual Array.

# 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:

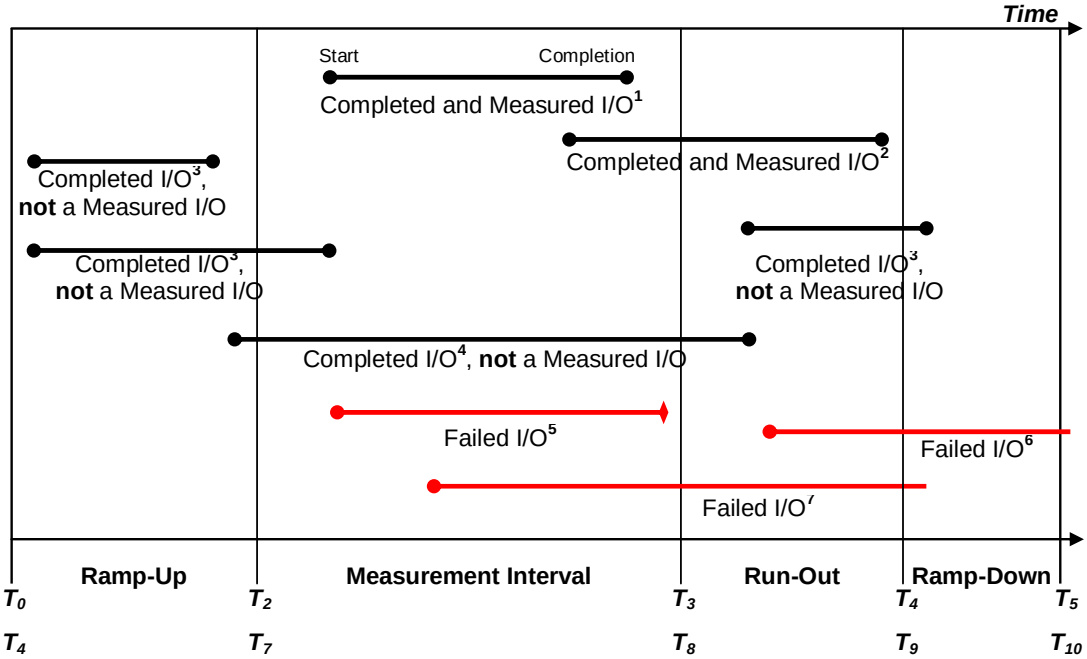
- Test Run 1: Maximum number of Streams, which is selected by the Test Sponsor
- Test Run 2: 50% of the maximum number of Streams used in Test Run 1.
- Test Run 3: 25% of the maximum number of Streams used in Test Run 1.
- Test Run 4: 12.5% of the maximum number of Streams used in Test Run 1.
- Test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

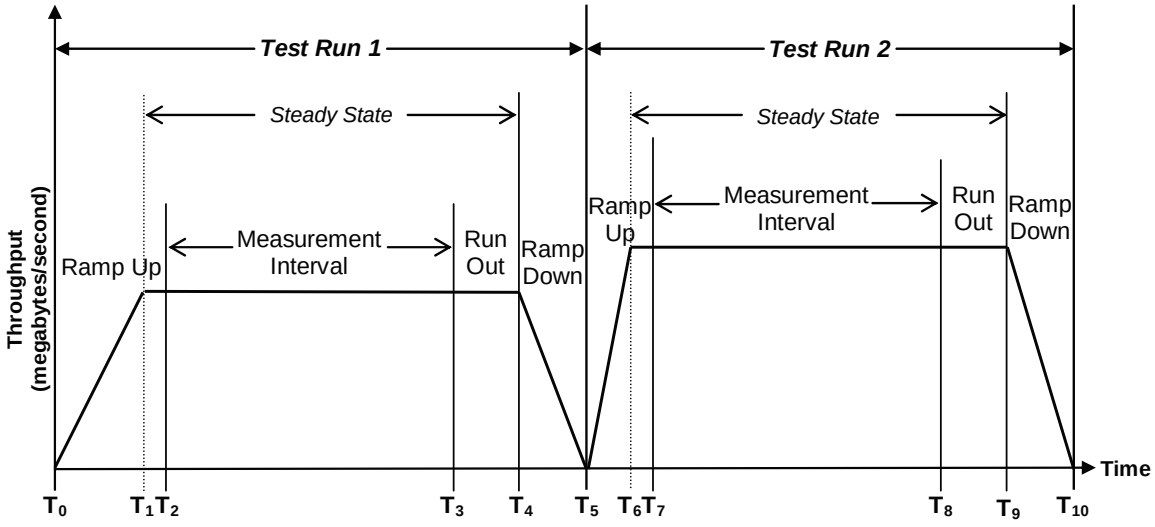
**Transfer Size:** The Transfer Size parameter specifies the number of bytes in KiB to transfer. *(Clause 3.4.7 of the SPC-2 Benchmark Specification)*

## 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 or options were changed from their default values.

# APPENDIX C: TESTED STORAGE CONFIGURATION (TSC) CREATION

## Initialize Array and Create Disk Groups

The following script initializes the array, and creates 4 disk groups, each containing 28 disks and 12 logical volumes.

```
### This script will create the TSC used.  112 Disks configured into 4 disk groups,
12 Vdisk's, configured in Raid5. ###

### Connect to SAN Manager ###
SET OPTION COMMAND_DELAY=10
SET OPTION NOSAFE_DELETE
SELECT MANAGER ***** USER=***** PASSWORD=*****
SELECT SYSTEM "Uninitialized Storage System [5000-1FE1-5000-EAB0]"

### Initialize System ###
ADD SYSTEM evaspc2 DEVICE_COUNT=28 SPARE_POLICY=none
SELECT SYSTEM evaspc2

### Create 4 Disk Groups each containing 28 Disk's ###
SET DISK_GROUP "\Disk Groups\Default Disk Group" NAME="Group 1"
SET DISK_GROUP "\Disk Groups\Group 1" OCCUPANCY_ALARM=100
ADD DISK_GROUP "\Disk Groups\Group 2" DEVICE_COUNT=28 OCCUPANCY_ALARM=100
SPARE_POLICY=none
ADD DISK_GROUP "\Disk Groups\Group 3" DEVICE_COUNT=28 OCCUPANCY_ALARM=100
SPARE_POLICY=none
ADD DISK_GROUP "\Disk Groups\Group 4" DEVICE_COUNT=28 OCCUPANCY_ALARM=100
SPARE_POLICY=none

### Add the 8 HBA's as hosts to present to the LUN's ###
ADD HOST "\Hosts\fsc10w-A2" OPERATING_SYSTEM=WINDOWS WORLD_WIDE_NAME=1000-0000-c94a-
9e3a
ADD HOST "\Hosts\fsc10w-A4" OPERATING_SYSTEM=WINDOWS WORLD_WIDE_NAME=1000-0000-c94a-
9c56
ADD HOST "\Hosts\fsc10w-B2" OPERATING_SYSTEM=WINDOWS WORLD_WIDE_NAME=1000-0000-c94a-
9bd1
ADD HOST "\Hosts\fsc10w-B4" OPERATING_SYSTEM=WINDOWS WORLD_WIDE_NAME=1000-0000-c94a-
9bdb
ADD HOST "\Hosts\fsc11w-A1" OPERATING_SYSTEM=WINDOWS WORLD_WIDE_NAME=1000-0000-c94a-
9d73
ADD HOST "\Hosts\fsc11w-A3" OPERATING_SYSTEM=WINDOWS WORLD_WIDE_NAME=1000-0000-c94a-
9d8b
ADD HOST "\Hosts\fsc11w-B1" OPERATING_SYSTEM=WINDOWS WORLD_WIDE_NAME=1000-0000-c94a-
9d86
ADD HOST "\Hosts\fsc11w-B3" OPERATING_SYSTEM=WINDOWS WORLD_WIDE_NAME=1000-0000-c94a-
9da6

### Create 12 Vdisk's (logical volumes) using Raid5       ###
### Each of these Vdisks are of 510 GB capacity           ###
### The first 6 Vdisks are on Controller A, the next on B ###
ADD VDISK "\Virtual Disks\Vdisk001" SIZE=510 REDUNDANCY=VRaid5 GROUP="\Disk
Groups\Group 1" PREFERRED_PATH=PATH_A_FAIL
ADD VDISK "\Virtual Disks\Vdisk002" SIZE=510 REDUNDANCY=VRaid5 GROUP="\Disk
Groups\Group 1" PREFERRED_PATH=PATH_A_FAIL
ADD VDISK "\Virtual Disks\Vdisk003" SIZE=508 REDUNDANCY=VRaid5 GROUP="\Disk
Groups\Group 1" PREFERRED_PATH=PATH_A_FAIL
ADD VDISK "\Virtual Disks\Vdisk004" SIZE=510 REDUNDANCY=VRaid5 GROUP="\Disk
Groups\Group 2" PREFERRED_PATH=PATH_A_FAIL
```

```
ADD VDISK "\Virtual Disks\Vdisk005" SIZE=510 REDUNDANCY=VRaid5 GROUP="\Disk
Groups\Group 2" PREFERRED_PATH=PATH_A_FAIL
ADD VDISK "\Virtual Disks\Vdisk006" SIZE=508 REDUNDANCY=VRaid5 GROUP="\Disk
Groups\Group 2" PREFERRED_PATH=PATH_A_FAIL
ADD VDISK "\Virtual Disks\Vdisk007" SIZE=510 REDUNDANCY=VRaid5 GROUP="\Disk
Groups\Group 3" PREFERRED_PATH=PATH_B_FAIL
ADD VDISK "\Virtual Disks\Vdisk008" SIZE=510 REDUNDANCY=VRaid5 GROUP="\Disk
Groups\Group 3" PREFERRED_PATH=PATH_B_FAIL
ADD VDISK "\Virtual Disks\Vdisk009" SIZE=508 REDUNDANCY=VRaid5 GROUP="\Disk
Groups\Group 3" PREFERRED_PATH=PATH_B_FAIL
ADD VDISK "\Virtual Disks\Vdisk010" SIZE=510 REDUNDANCY=VRaid5 GROUP="\Disk
Groups\Group 4" PREFERRED_PATH=PATH_B_FAIL
ADD VDISK "\Virtual Disks\Vdisk011" SIZE=510 REDUNDANCY=VRaid5 GROUP="\Disk
Groups\Group 4" PREFERRED_PATH=PATH_B_FAIL
ADD VDISK "\Virtual Disks\Vdisk012" SIZE=508 REDUNDANCY=VRaid5 GROUP="\Disk
Groups\Group 4" PREFERRED_PATH=PATH_B_FAIL

### Present Vdisk's to the HBA's.  Each HBA has a unique ###
### identifier following the HOST= assignment            ###
### Each HBA see's 3 unique LUN's.                       ###
ADD LUN 1 VDISK="\Virtual Disks\Vdisk001" HOST=fsc10w-A2
ADD LUN 1 VDISK="\Virtual Disks\Vdisk001" HOST=fsc11w-A1
ADD LUN 2 VDISK="\Virtual Disks\Vdisk002" HOST=fsc10w-A2
ADD LUN 2 VDISK="\Virtual Disks\Vdisk002" HOST=fsc11w-A1
ADD LUN 3 VDISK="\Virtual Disks\Vdisk003" HOST=fsc10w-A2
ADD LUN 3 VDISK="\Virtual Disks\Vdisk003" HOST=fsc11w-A1
ADD LUN 4 VDISK="\Virtual Disks\Vdisk004" HOST=fsc10w-A4
ADD LUN 4 VDISK="\Virtual Disks\Vdisk004" HOST=fsc11w-A3
ADD LUN 5 VDISK="\Virtual Disks\Vdisk005" HOST=fsc10w-A4
ADD LUN 5 VDISK="\Virtual Disks\Vdisk005" HOST=fsc11w-A3
ADD LUN 6 VDISK="\Virtual Disks\Vdisk006" HOST=fsc10w-A4
ADD LUN 6 VDISK="\Virtual Disks\Vdisk006" HOST=fsc11w-A3
ADD LUN 7 VDISK="\Virtual Disks\Vdisk007" HOST=fsc10w-B2
ADD LUN 7 VDISK="\Virtual Disks\Vdisk007" HOST=fsc11w-B1
ADD LUN 8 VDISK="\Virtual Disks\Vdisk008" HOST=fsc10w-B2
ADD LUN 8 VDISK="\Virtual Disks\Vdisk008" HOST=fsc11w-B1
ADD LUN 9 VDISK="\Virtual Disks\Vdisk009" HOST=fsc10w-B2
ADD LUN 9 VDISK="\Virtual Disks\Vdisk009" HOST=fsc11w-B1
ADD LUN 10 VDISK="\Virtual Disks\Vdisk010" HOST=fsc10w-B4
ADD LUN 10 VDISK="\Virtual Disks\Vdisk010" HOST=fsc11w-B3
ADD LUN 11 VDISK="\Virtual Disks\Vdisk011" HOST=fsc10w-B4
ADD LUN 11 VDISK="\Virtual Disks\Vdisk011" HOST=fsc11w-B3
ADD LUN 12 VDISK="\Virtual Disks\Vdisk012" HOST=fsc10w-B4
ADD LUN 12 VDISK="\Virtual Disks\Vdisk012" HOST=fsc11w-B3
```

### Prefill the array with data

After the TSC has been successfully created, the storage was prefilled with data, prior to the SPC-2 Test Runs, using the HP internal performance measurement tool "dp" using the script listed below. This step is necessary to ensure realistic response times for read I/O Requests. If a read I/O Request were to access a location that does not contain actual data, the resulting response time will be unrealistically small. This prefill step ensures all locations contain actual data so that all read I/O Requests result in a realistic response time.

```
## Prefill ##
!phase access = sequential reads = 0 prefill=true qdepth = 1 check = 1 cachehits = 0

## Declaration of Physical Devices ##
\\.\PhysicalDrive2
\\.\PhysicalDrive3
\\.\PhysicalDrive4
\\.\PhysicalDrive5
\\.\PhysicalDrive6
\\.\PhysicalDrive7
\\.\PhysicalDrive8
\\.\PhysicalDrive9
\\.\PhysicalDrive10
\\.\PhysicalDrive11
\\.\PhysicalDrive12
\\.\PhysicalDrive13
## END ##
```

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

## Large File Processing Test *("lfp_audit_run.txt")*

```
* Large File Processing Test (LFP)

host=localhost,jvms=4,maxstreams=1000

* Remote Host Definition Parameter
host=(15.3.105.23,fsc10w),java=("java","-Xmx3000m -Xms512m -
Xss128k"),spc2="C:\spc2\",shell=spc2,jvms=4,maxstreams=1000

* Storage Definition Parameters - Master Host
sd=default,host=localhost,size=500g
sd=sd1,lun=\\.\e:
sd=sd2,lun=\\.\f:
sd=sd3,lun=\\.\g:
sd=sd4,lun=\\.\h:
sd=sd5,lun=\\.\i:
sd=sd6,lun=\\.\j:
sd=sd7,lun=\\.\k:
sd=sd8,lun=\\.\l:
sd=sd9,lun=\\.\m:
sd=sd10,lun=\\.\n:
sd=sd11,lun=\\.\o:
sd=sd12,lun=\\.\p:

sd=default,host=fsc10w
sd=sd10,lun=\\.\e:
sd=sd11,lun=\\.\f:
sd=sd12,lun=\\.\g:
sd=sd1,lun=\\.\h:
sd=sd2,lun=\\.\i:
sd=sd3,lun=\\.\j:
sd=sd4,lun=\\.\k:
sd=sd5,lun=\\.\l:
sd=sd6,lun=\\.\m:
sd=sd7,lun=\\.\n:
sd=sd8,lun=\\.\o:
sd=sd9,lun=\\.\p:

maxlatestart=1
reportinginterval=5

segmentlength=512m

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

* LFP, "write" Test Phase

* Test Run Sequence 1
rd=default,rdpct=0,xfersize=1024k
rd=TR1-s80_SPC-2-FP,streams=80
rd=TR2-s40_SPC-2-FP,streams=40
rd=TR3-s20_SPC-2-FP,streams=20
rd=TR4-s10_SPC-2-FP,streams=10
rd=TR5-s1_SPC-2-FP,streams=1

* Test Run Sequence 2
```

```
rd=default,xfersize=256k
rd=TR6-s80_SPC-2-FP,streams=80
rd=TR7-s40_SPC-2-FP,streams=40
rd=TR8-s20_SPC-2-FP,streams=20
rd=TR9-s10_SPC-2-FP,streams=10
rd=TR10-s1_SPC-2-FP,streams=1


* LFP, "read-write" Test Phase

* Test Run Sequence 3
rd=default,rdpct=50,xfersize=1024k
rd=TR11-s80_SPC-2-FP,streams=80
rd=TR12-s40_SPC-2-FP,streams=40
rd=TR13-s20_SPC-2-FP,streams=20
rd=TR14-s10_SPC-2-FP,streams=10
rd=TR15-s1_SPC-2-FP,streams=1


* Test Run Sequence 4
rd=default,xfersize=256k
rd=TR16-s80_SPC-2-FP,streams=80
rd=TR17-s40_SPC-2-FP,streams=40
rd=TR18-s20_SPC-2-FP,streams=20
rd=TR19-s10_SPC-2-FP,streams=10
rd=TR20-s1_SPC-2-FP,streams=1

* LFP, "read" Test Phase

* Test Run Sequence 5
rd=default,rampup=360,rdpct=100,xfersize=1024k
rd=TR21-s80_SPC-2-FP,streams=80
rd=TR22-s40_SPC-2-FP,streams=40
rd=TR23-s20_SPC-2-FP,streams=20
rd=TR24-s10_SPC-2-FP,streams=10
rd=TR25-s1_SPC-2-FP,streams=1

* Test Run Sequence 6
rd=default,rampup=360,xfersize=256k
rd=TR26-s80_SPC-2-FP,streams=80
rd=TR27-s40_SPC-2-FP,streams=40
rd=TR28-s20_SPC-2-FP,streams=20
rd=TR29-s10_SPC-2-FP,streams=10
rd=TR30-s1_SPC-2-FP,streams=1
```

## Large Database Query Test *("ldq_audit_run.txt")*

```
host=localhost,jvms=4,maxstreams=500

* Remote Host Definition Parameter
host=(15.3.105.23,fsc10w),java=("java","-Xmx3000m -Xms512m -
Xss128k"),spc2="C:\spc2\",shell=spc2,jvms=4,maxstreams=500

* Storage Definition Parameters - Master Host
sd=default,host=localhost,size=500g
sd=sd1,lun=\\.\e:
sd=sd2,lun=\\.\f:
sd=sd3,lun=\\.\g:
sd=sd4,lun=\\.\h:
sd=sd5,lun=\\.\i:
sd=sd6,lun=\\.\j:
sd=sd7,lun=\\.\k:
```

```
sd=sd8,lun=\\.\l:
sd=sd9,lun=\\.\m:
sd=sd10,lun=\\.\n:
sd=sd11,lun=\\.\o:
sd=sd12,lun=\\.\p:

sd=default,host=fsc10w
sd=sd7,lun=\\.\e:
sd=sd8,lun=\\.\f:
sd=sd12,lun=\\.\g:
sd=sd1,lun=\\.\h:
sd=sd2,lun=\\.\i:
sd=sd3,lun=\\.\j:
sd=sd4,lun=\\.\k:
sd=sd5,lun=\\.\l:
sd=sd6,lun=\\.\m:
sd=sd9,lun=\\.\n:
sd=sd10,lun=\\.\o:
sd=sd11,lun=\\.\p:


maxlatestart=1
reportinginterval=5

segmentlength=512m

rd=default,rdpct=99,rampup=180,measurement=180,runout=45,rampdown=15,buffers=1,perio
ds=90


* Test Run Sequence 1
rd=default,xfersize=1024k,buffers=4
rd=TR1-s40_SPC-2-DQ,streams=40
rd=TR2-s20_SPC-2-DQ,streams=20
rd=TR3-s10_SPC-2-DQ,streams=10
rd=TR4-s5_SPC-2-DQ,streams=5
rd=TR5-s1_SPC-2-DQ,streams=1

* Test Run Sequence 2
rd=default,xfersize=1024k,buffers=1
rd=TR6-s40_SPC-2-DQ,streams=40
rd=TR7-s20_SPC-2-DQ,streams=20
rd=TR8-s10_SPC-2-DQ,streams=10
rd=TR9-s5_SPC-2-DQ,streams=5
rd=TR10-s1_SPC-2-DQ,streams=1


rd=default,xfersize=64k,buffers=4
rd=TR11-s40_SPC-2-DQ,streams=40
rd=TR12-s20_SPC-2-DQ,streams=20
rd=TR13-s10_SPC-2-DQ,streams=10
rd=TR14-s5_SPC-2-DQ,streams=5
rd=TR15-s1_SPC-2-DQ,streams=1


rd=default,xfersize=64k,buffers=1
rd=TR16-s40_SPC-2-DQ,streams=40
rd=TR17-s20_SPC-2-DQ,streams=20
rd=TR18-s10_SPC-2-DQ,streams=10
rd=TR19-s5_SPC-2-DQ,streams=5
rd=TR20-s1_SPC-2-DQ,streams=1
```

## Video on Demand Delivery Test *("vod_audit_run.txt")*

```
* Video on Demand Test (VOD)

* Large File Processing Test (LFP)

* Master Host Definition Parameter
host=localhost,jvms=8,maxstreams=5000

* Remote Host Definition Parameter
host=(15.3.105.23,fsc10w),java=("java","-Xms384m -Xmx768m -
Xss128k"),spc2="C:\spc2\",shell=spc2,jvms=8,maxstreams=5000

* Storage Definition Parameters
sd=default,host=localhost,size=500g
sd=sd1,lun=\\.\e:
sd=sd2,lun=\\.\f:
sd=sd3,lun=\\.\g:
sd=sd4,lun=\\.\h:
sd=sd5,lun=\\.\i:
sd=sd6,lun=\\.\j:
sd=sd7,lun=\\.\k:
sd=sd8,lun=\\.\l:
sd=sd9,lun=\\.\m:
sd=sd10,lun=\\.\n:
sd=sd11,lun=\\.\o:
sd=sd12,lun=\\.\p:

sd=default,host=fsc10w
sd=sd7,lun=\\.\e:
sd=sd8,lun=\\.\f:
sd=sd12,lun=\\.\g:
sd=sd1,lun=\\.\h:
sd=sd2,lun=\\.\i:
sd=sd3,lun=\\.\j:
sd=sd4,lun=\\.\k:
sd=sd5,lun=\\.\l:
sd=sd6,lun=\\.\m:
sd=sd9,lun=\\.\n:
sd=sd10,lun=\\.\o:
sd=sd11,lun=\\.\p:


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

* Fixed parameters

rd=default,measurement=7200,rampup=1200,runout=45,rampdown=15,periods=600
rd=TR11_SPC-2-VOD11.0,streams=1600,buffers=8
```

## Persistence Test Run 1 *("spc2-persist1.txt")*

```
* Persistence Test Run 1

host=localhost,jvms=4,maxstreams=1000

* Remote Host Definition Parameter
host=(15.3.105.23,fsc10w),java=("java","-Xmx3000m -Xms512m -
Xss128k"),spc2="C:\spc2\",shell=spc2,jvms=4,maxstreams=100
```

```
* Storage Definition Parameters - Master Host
sd=default,host=localhost,size=500g
sd=sd1,lun=\\.\e:
sd=sd2,lun=\\.\f:
sd=sd3,lun=\\.\g:
sd=sd4,lun=\\.\h:
sd=sd5,lun=\\.\i:
sd=sd6,lun=\\.\j:
sd=sd7,lun=\\.\k:
sd=sd8,lun=\\.\l:
sd=sd9,lun=\\.\m:
sd=sd10,lun=\\.\n:
sd=sd11,lun=\\.\o:
sd=sd12,lun=\\.\p:

sd=default,host=fsc10w
sd=sd7,lun=\\.\e:
sd=sd8,lun=\\.\f:
sd=sd12,lun=\\.\g:
sd=sd1,lun=\\.\h:
sd=sd2,lun=\\.\i:
sd=sd3,lun=\\.\j:
sd=sd4,lun=\\.\k:
sd=sd5,lun=\\.\l:
sd=sd6,lun=\\.\m:
sd=sd9,lun=\\.\n:
sd=sd10,lun=\\.\o:
sd=sd11,lun=\\.\p:


maxlatestart=1
reportinginterval=5
segmentlength=512m

rd=default,rampup=180,periods=90,measurement=300,runout=0,rampdown=0,buffers=1

rd=default,rdpct=0,xfersize=1024k
rd=TR1-80s_SPC-2-persist-w,streams=80
```

## Persistence Test Run 2 *("spc2-persist2.txt")*

```
* Persistence Test Run 2

host=localhost,jvms=4,maxstreams=1000

* Remote Host Definition Parameter
host=(15.3.105.23,fsc10w),java=("java","-Xms512m -Xmx4000m -
Xss96k"),spc2="C:\spc2\",shell=spc2,jvms=4,maxstreams=1000

* Storage Definition Parameters - Master Host
sd=default,host=localhost,size=500g
sd=sd1,lun=\\.\e:
sd=sd2,lun=\\.\f:
sd=sd3,lun=\\.\g:
sd=sd4,lun=\\.\h:
sd=sd5,lun=\\.\i:
sd=sd6,lun=\\.\j:
sd=sd7,lun=\\.\k:
sd=sd8,lun=\\.\l:
sd=sd9,lun=\\.\m:
sd=sd10,lun=\\.\n:
```

```
  sd=sd11,lun=\\.\o:
  sd=sd12,lun=\\.\p:

  sd=default,host=fsc10w
  sd=sd7,lun=\\.\e:
  sd=sd8,lun=\\.\f:
  sd=sd12,lun=\\.\g:
  sd=sd1,lun=\\.\h:
  sd=sd2,lun=\\.\i:
  sd=sd3,lun=\\.\j:
  sd=sd4,lun=\\.\k:
  sd=sd5,lun=\\.\l:
  sd=sd6,lun=\\.\m:
  sd=sd9,lun=\\.\n:
  sd=sd10,lun=\\.\o:
  sd=sd11,lun=\\.\p:

  maxlatestart=1
  reportinginterval=5
  segmentlength=512m

  maxpersistenceerrors=10
  *corruptstreams=3

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

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

## "run_spc.bat"

```
start /wait spc2 -f lfp_audit_run.txt -o lfp_audit
start /wait spc2 -f ldq_audit_run.txt -o ldq_audit
start /wait spc2 -f vod_audit_run.txt -o vod_audit
start /wait spc2 -f spc2-persist1.txt -o persist1
```