

SPC Benchmark-1™ Introduction

For Additional Information: www.StoragePerformance.org

Storage Performance Council (SPC) Mission

The Storage Performance Council's strategic objectives are: to empower storage vendors to build better products, and to stimulate the IT community to more rapidly trust and deploy multi-vendor storage networking technology. In support, the SPC is the only non-profit corporation that defines, standardizes and promotes storage subsystem benchmarks as well as disseminates objective, relevant and verifiable performance data and related test tools to the computer industry and its customers. The first benchmark of the SPC is SPC Benchmark-1.

SPC Benchmark-1 (SPC-1)

The first industry-standard storage benchmark and the first comprehensive performance analysis environment for Storage Area Networks (SANs). The I/O workload in SPC-1 is characterized by predominately random I/O operations as typified by multi-user OLTP, database and email server environments. SPC-1 uses a highly efficient multi-threaded workload generator to thoroughly analyze direct attach or network storage subsystems. The SPC-1 benchmark enables companies to rapidly produce valid performance and price/performance results using a variety of host platforms and storage network topologies. SPC-1 is designed to:

- Provide a level playing field for test sponsors.
- Produce results that are powerful and yet simple to use.
- Provide value for engineers as well as IT consumers and solution integrators.
- Report official results in an easy to run, easy to audit/verify, and easy to use manner.



Benchmark Configuration Requirements

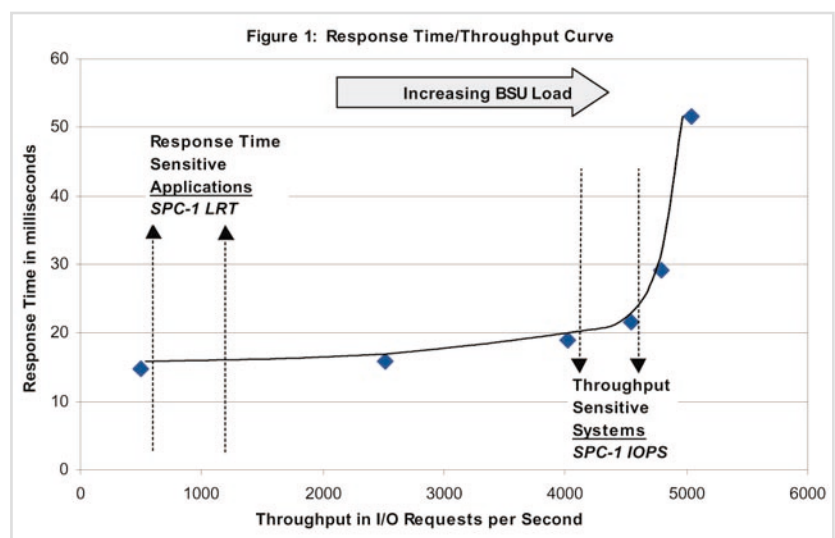
Virtually any block addressable storage subsystem can be used to produce SPC-1 results, but all storage configurations must be able to demonstrate data persistence, repeatability, sustainability, equal access to host systems and support for general-purpose applications. Specifically prohibited are subsystems whose primary purpose is the performance optimization of SPC benchmark results without corresponding improvements to real-world applications.

Benchmark Tests & Metrics

SPC-1 tests and resulting metrics are designed with an understanding that there are two classes of environments that are critically dependent on storage performance (see Figure 1).

The first environment is composed of *systems*, which have many users that can saturate the total I/O request processing potential of a storage subsystem. In this case, the success of the system rests on the ability of the subsystem to process large numbers of I/O requests while maintaining acceptable response times. SPC-1 documents this first environment with the maximum I/O Per Second (SPC-1 IOPS™) test and metric.

The second environment is composed of individual business critical *applications* that are dependent upon minimizing wall clock completion time. These applications are sensitive to wall clock completion time as they issue thousands of serial I/O requests (one after the completion of another) in order to complete. SPC-1 documents this second environment with the Least Response Time (SPC-1 LRT™) test and metric. The following diagram illustrates the series of tests required to complete an SPC-1 benchmark.



The reporting and promoting of SPC Benchmark-1 metrics are closely controlled. Each SPC-1 result is accompanied by a Full Disclosure Report (FDR). Published SPC-1 results must include the SPC-IOPS rate, SPC-1 LRT time capacity and an SPC audit certification identifier.

Scaling the Workload

Business Scaling Units (BSUs) allow test sponsors to scale I/O load imposed by a simulated user population against a storage capacity, known as Application Storage Units (ASUs). Test sponsors scale BSU load and ASU capacity independently and will benefit in the market by maximizing each factor.

Results Validation

To ensure authenticity, accuracy and compliance, SPC benchmark results must successfully complete the SPC Result Validation Process before they become official. The SPC's Result Validation Process is composed of two required stages: Audit Certification and Peer Review.

SPC Benchmark-1 Results

Official results are available at www.storageperformance.org.

Results Interpretation and Consulting

Preferred analysts of the SPC include: The Evaluator Group (www.evaluatorgroup.com) and Ideas International (www.ideasinternational.com). These firms are uniquely suited to provide a complete and timely analysis of SPC results as well as to ensure that IT consumers and integrators optimally configure storage subsystems.

SPC Benchmark-1 Test Kit

SPC-1 has been implemented in a robust and complete test kit that runs on a variety of host platforms and storage network topologies. See www.storageperformance.org for additional information.

General Purpose Testing/Analysis Tools

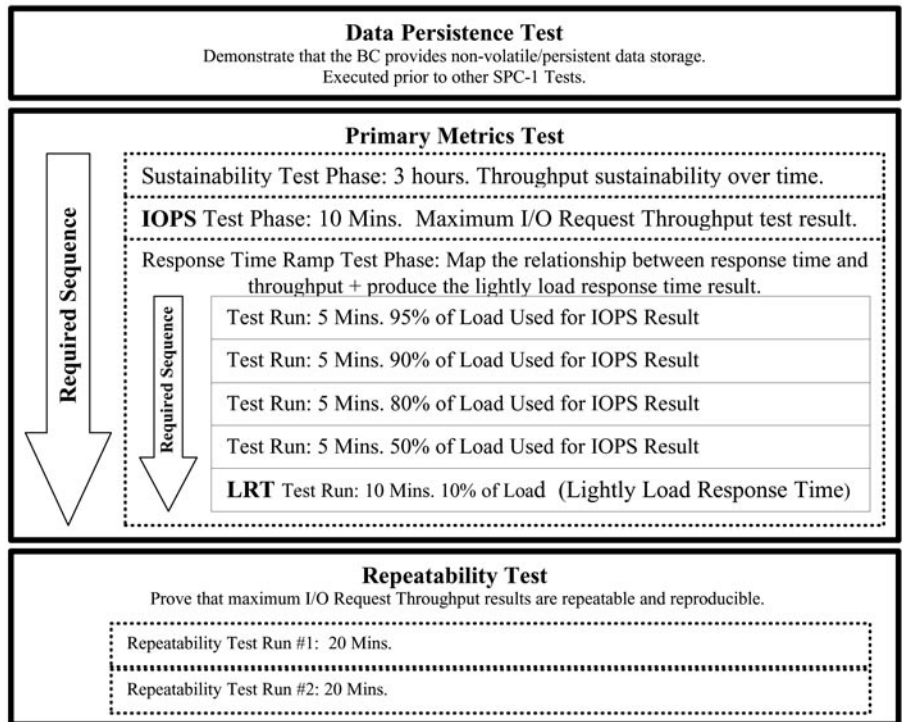
The SPC is constructing the most comprehensive and detailed set of stress-testing and performance-analysis tools on the market today. These tools are specifically designed to efficiently exercise and analyze large storage area networks and can also be used on smaller direct attach storage subsystems. See www.storageperformance.org to obtain a copy.

How to Produce and Publish Benchmark Results

To produce an SPC result, test sponsors should first contact the SPC (see below) to obtain the appropriate specifications, test kits, policies and procedures, and audit certification keys.

Service and Support

The SPC provides service and support to test sponsors who wish to produce results or use SPC test tools. Contact the SPC (see below).



SPC Contact Information

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