An overview of the SPECpower_ssj™2008 benchmark on HP ProLiant servers and server blades

Table of Contents

What SPECpower_ssj™2008 measures

SPECpower_ssj2008 is the first generation SPEC benchmark for evaluating the power and performance characteristics of server class computers. This measurement provides a way to compare the energy efficiency of servers and determine the amount of power servers require at different levels of utilization. Being a SPEC (Standard Performance Evaluation Corporation) benchmark, SPECpower_ssj™2008 is a consortium-policed benchmark that provides a way for server vendors to compare benchmark results in a fair manner.

Benchmark methodology

In SPECpower_ssj™2008, the amount of work done by a system is measured in "ssj_ops". The benchmark consists of measuring power consumption in 13 intervals at different levels of system utilization. First, the system runs three intervals (usually 240 seconds each) at maximum system capacity. These three intervals calibrating the benchmark for the 100% performance level of the system and are not counted in the final benchmark results. From there, the workload is throttled and runs intervals in 10% steps from 100% to active idle, measuring system performance and power consumption. Certain environmental factors must be adhered to during the benchmark; for instance, the ambient temperature cannot fall below 20°C.
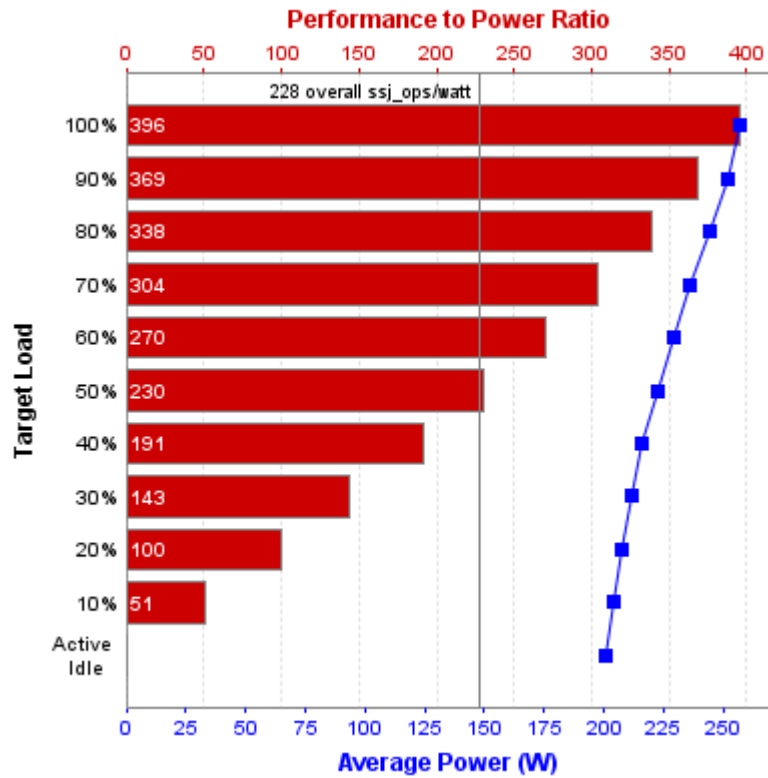
Figure 1. SPECpower_ssj2008 Workload Iteration
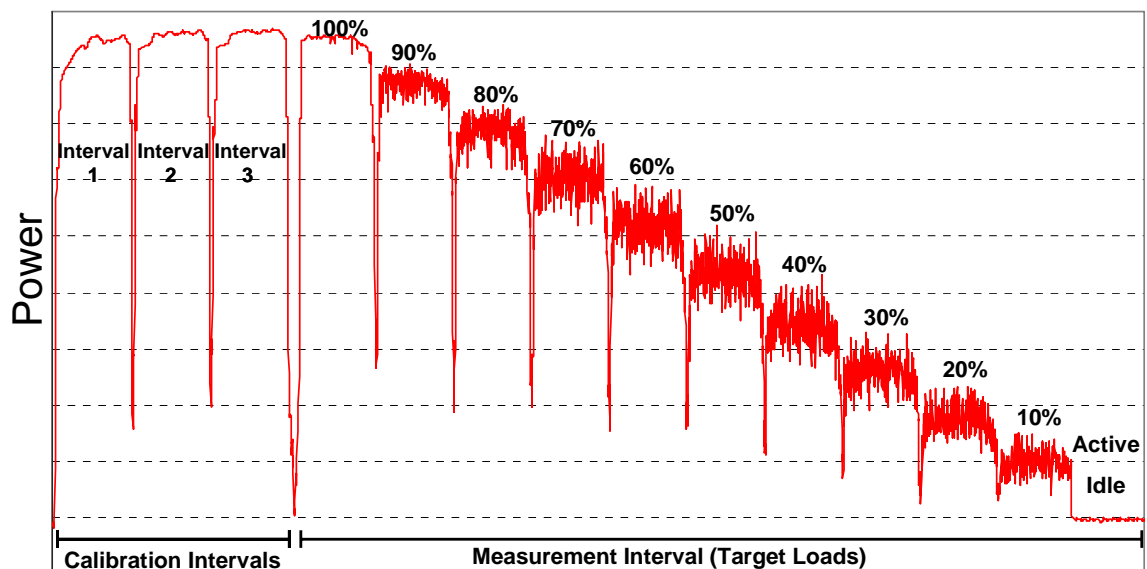
Benchmark metrics and comparing results

The SPECpower_ssj™2008 primary metric is the "overall ssj_ops/watt". This metric is computed by taking the sum of the ssj_ops scores for all target loads, and then dividing by the sum of the power consumption averages for all target loads – including the "active idle" (0% utilization) measurement interval. SPECpower_ssj™2008 benchmark results are available on the SPEC website at http://www.spec.org/power_ssj2008.

Figure 2. Sample SPECpower_ssj™2008 benchmark metrics

Benchmark workload

The SPECpower_ssj™2008 workload represents a three-tier system; however, all three tiers run on the same server.
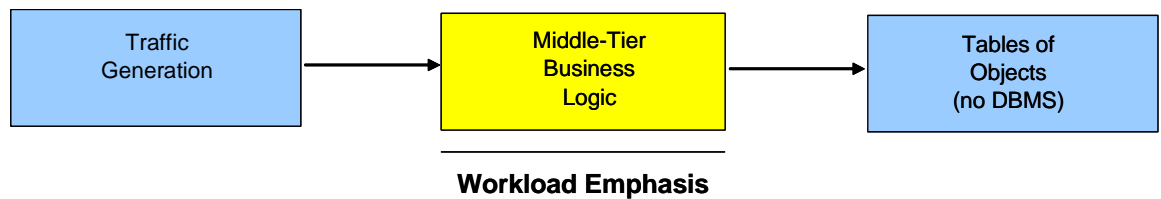

Figure 3. SPECpower_ssj™2008 3-tier workload

The 3-tier model simulates a wholesaling operation that processes orders, checks the status on the orders, manages stock levels and deliveries, and runs reports on customer data. The workload is reminiscent of a OLTP database workload; however, the emphasis is on the server-side Java-driven middle tier (hence, the "ssj") rather than on a back-end database system. In SPECpower_ssj™2008,

the back-end database is implemented without a commercial DBMS but is implemented as in-memory Java objects with transactions being logged in XML. With today's multi-core processors quickly becoming the standard, expect multiple concurrent Java Virtual Machines to be running in most SPECpower_ssj™2008 benchmarks.

HP ProLiant servers and server blades

HP has long been a leader in SPEC benchmarks, including SPEC CPU2006, SPECweb2005, and SPECjAppServer2004. Hundreds of SPEC benchmarks have been submitted on HP ProLiant servers and server blades. In the future, HP will continue using SPEC benchmarks to demonstrate the industry-leading capabilities of ProLiant servers and server blades.

For more information

www.hp.com/servers/benchmarks
www.spec.org