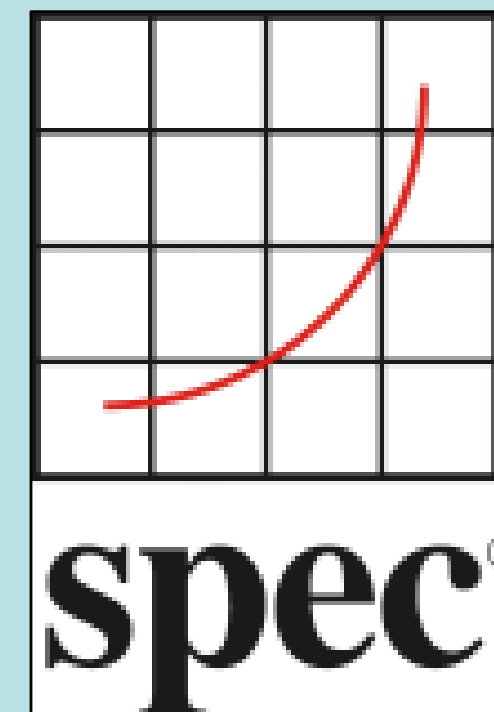


SPECjvm2008

Java Server Benchmark

Developed by the Java Subcommittee of the Open Systems Group

Webpage: <http://www.spec.org/jvm2008/>



SPECjvm2008 Benchmark Highlights

☺ **First SPEC benchmark which is FREE to download** ☺

- Multi-threaded benchmark replaced single threaded SPECjvm98
- Broad collection of JSE real-world applications for both clients and servers
- Stresses specific aspects of JVM performance from codegen, GC, threading, locks, and h/w features including integer and floating-point, CPU, cache, and memory bus.
- Includes set of evaluation tools to be able to profile heap, power usage etc. during testing, and a reporter that displays a summary graph of all test runs.
- Easy to run, quick feedback, configurable
- Min. memory for system under test: 512MB per hardware thread

Software stack

SPECjvm2008 Benchmark
JVM (Java Virtual Machine)
OS
HW

SPECjvm2008 vs. SPECjvm98

Features	SPECjvm98	SPECjvm2008
Target	client	client and server
Multi-threading	No	Yes
All code is available	No	Yes
Number of sub-groups	7	11
Free downloadable	No	Yes
Include Base and Peak scores	No	Yes
Fixed run duration	Yes	No
Measurements unit	time	Ops/min
Benchmark output verification	Yes	Yes
Single tier	Yes	Yes
JDK	JDK 1.1 or later	JDK 5.0 or later
Only 1 JVM instance is allowed	Yes	Yes

SPECjvm2008 run categories

- **Base run:** Simulates out-of-box. No configuration or hand tuning
Fixed run durations: 120 seconds warm-up, 1 iteration of 240 seconds measurement interval
- **Peak run:** Allows tuning, feedback optimizations, and code caching
A base submission is required for a peak submission

SPECjvm2008 Metric

- Overall score is computed by nested geo-mean, and reported as **operations per minute**
- Each of 11 sub-group of workloads gives equal 1/11 weight of impact to final composite throughput score
- Allowable fluctuation on composite score is expected to be less than 5%

SPECjvm2008 sub-categories

- 11 groups of Benchmarks
 1. Startup (17 sub-tests)
 2. Compiler (compiler.compiler, compiler.sunflow)
 3. Compress
 4. Crypto (crypto.aes, crypto.rsa, crypto.signverify)
 5. Derby
 6. Mpegaudio
 7. Scimark.X.large (5 sub-tests)
 8. Scimark.X.small (5 sub-tests)
 9. Serial
 10. Sunflow
 11. Xml (xml.transform and xml.validation)
- Runs in order: startup.helloworld → xml.validation
- The environment left from previous workloads impact rest of workloads' performance

SPECjvm2008 Metric

Example score

Benchmark	ops/m
compiler	821.32
compress	436.95
crypto	666.3
derby	644.82
mpegaudio	258.73
scimark.large	73.57
scimark.small	422.71
serial	377.27
startup	45.24
sunflow	165.06
xml	933.48

Composite result: **317.13** SPECjvm2008 Base ops/m

Characterization

Example:
Memory bandwidth requirement

Workload	MB/op	MB/sec
compiler.compiler:	155	2426
compiler.sunflow:	139	2586
compress:	12	127
crypto.aes:	240	859
crypto.rsa:	9	293
crypto.signverify:	44	859
derby:	1047	3035
mpegaudio:	53	307
scimark.fft.large:	36	9
scimark.lu.large:	0	0
scimark.sor.large:	0	0
scimark.sparse.large:	53	17
scimark.fft.small:	8	572
scimark.lu.small:	15	1263
scimark.sor.small:	0	0
scimark.sparse.small:	17	148
scimark.monte carlo:	0	10
serial:	763	3534
sunflow:	1037	3384
xml.transform:	110	2821
xml.validation:	125	2337
SPECjbb2005	0.02	5,946
SPECjAppServer2004	2	4,091

Detailed characterization at: <http://www.springerlink.com/content/3607u0t28281t088/fulltext.pdf>

SPECjvm2008 publications

Publications as of 24th January 2010

<http://www.spec.org/jvm2008/results/jvm2008.html>

Total Publications	6
Intel Xeon based	3
Intel Core 2 Duo based	3

SPECjvm2008 research

Each sub-category is very unique and helps in stressing specific components of hardware and software of a given platform.

References

SPECjvm2008 Benchmark from SPEC

<http://www.spec.org/jvm2008/docs/FAQ.html>

<http://www.spec.org/jvm2008/docs/UserGuide.html>

<http://www.spec.org/jvm2008/docs/RunRules.html>

SPECjvm2008 Benchmarking and Performance related papers

SPECjvm2008 Performance Characterization

Kumar Shiv, Kingsum Chow, Yanping Wang, and Dmitry Petrochenko (Intel Corporation)

<http://www.springerlink.com/content/3607u0t28281t088/fulltext.pdf>

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*Other names and brands may be claimed as the property of others.