SPECjbb2005

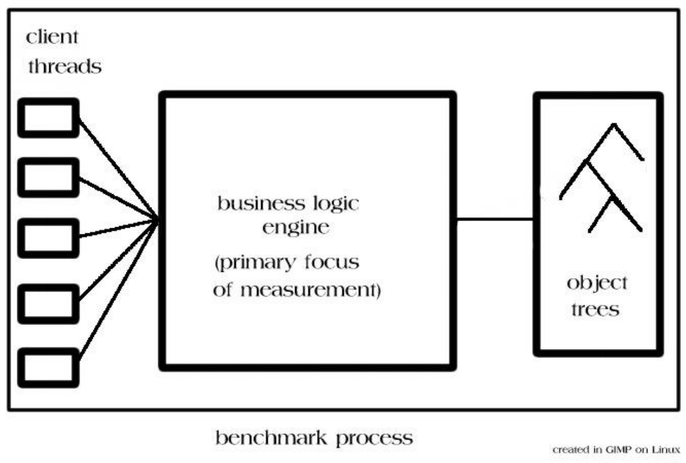
Java Server Benchmark

Developed by the Java Subcommittee of the Open Systems Group
Webpage: http://www.spec.org/jbb2005/

SPECjbb2005 Benchmark Highlights

- Emulates a 3-tier system, the most commor type of server-side Java application today.
- Business logic and object manipulation, the work of the middle tier, predominate.
- Clients are replaced by driver threads, database storage by as HashMaps, or TreeMaps.
- Increasing amounts of workload are applied providing a graphical view of scalability.

Architecture schematic



Software stack

SPECjbb2005 Benchmark
JVM (Java Virtual Machine)
OS
HW

High Level Characteristics

☺ Runs on stand alone system

☺ CPU, memory and compute intensive

☺ Easily utilizes CPU to 100%

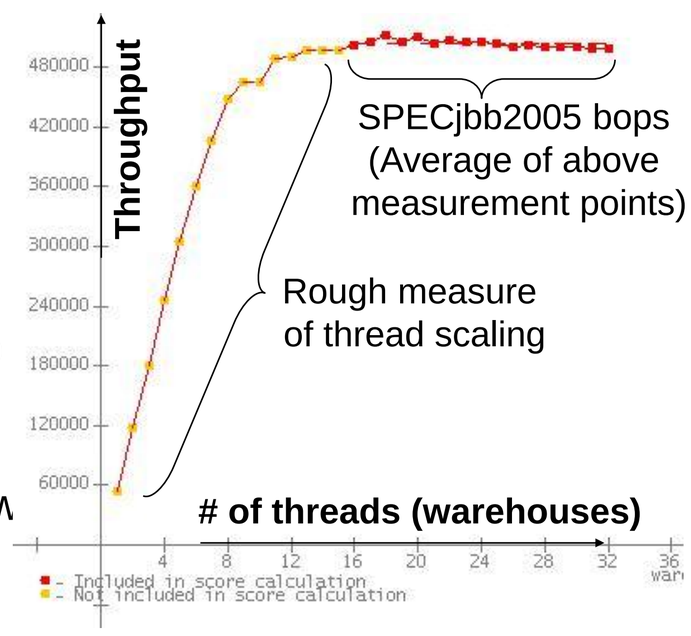
☺ Minimal tuning needed for optimal results

☺ Only need a JVM (Java Virtual Machine) to

☺ Simple setup: minimal disk and network I/O

☺ Final result in very reasonable time while show intermediate results immediately

Example throughput graph



SPECjbb2005 Metric

Two ways to run the benchmark:

- Single instance:

  ## SPECjbb2005 bops

- Multiple JVM instances:

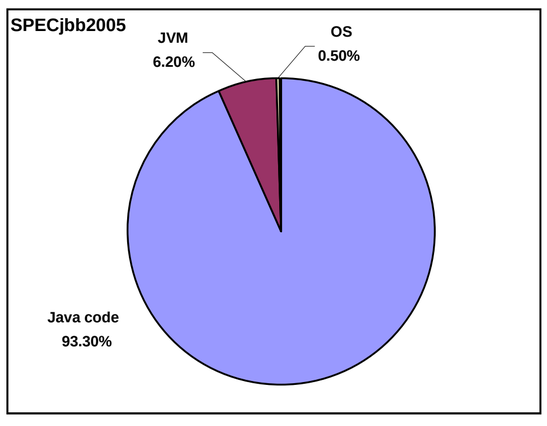
  ## SPECjbb2005 bops

  ## SPECjbb2005 bops/JVM

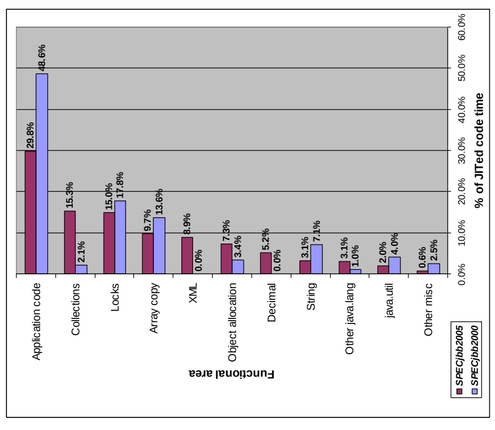
Performance characterization: SPECjbb2005 replaced SPECjbb2000

*A multi-level comparative performance characterization of SPECjbb2005 versus SPECjbb2000 http://ieeexplore.ieee.org/stamp/stamp.jsp?tp=&arnumber=1526002

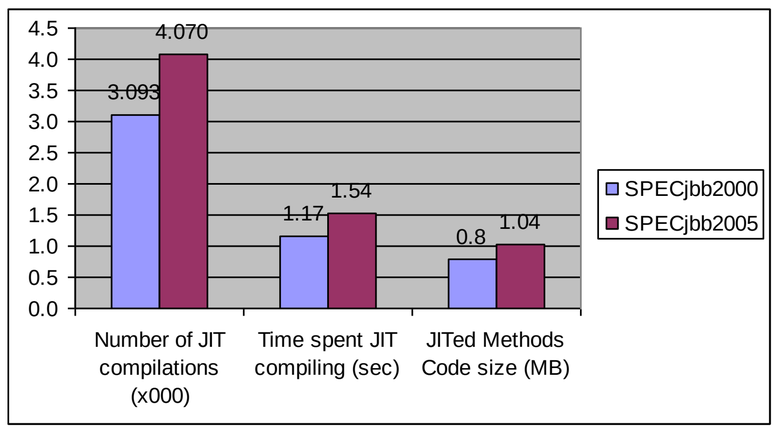
% of total CPU cycles spent



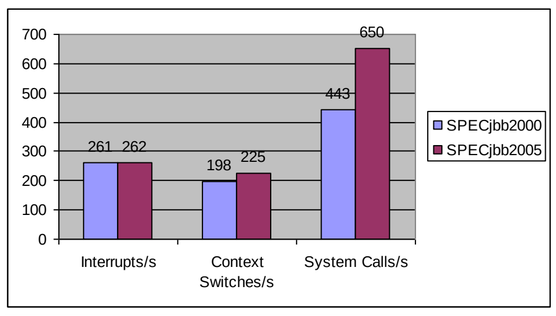
Time distribution of Java code



JITed code characteristics



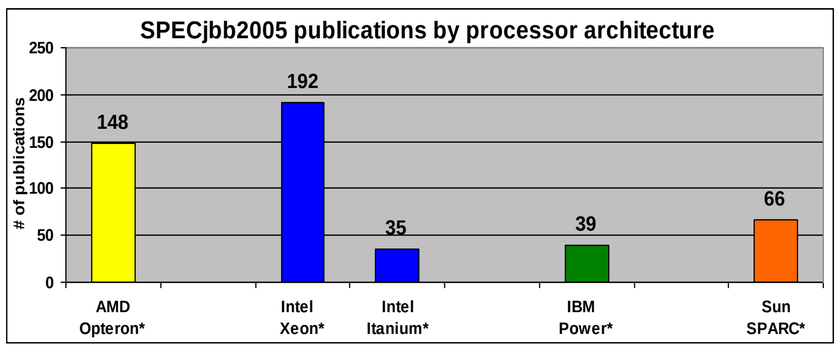
OS level basic events



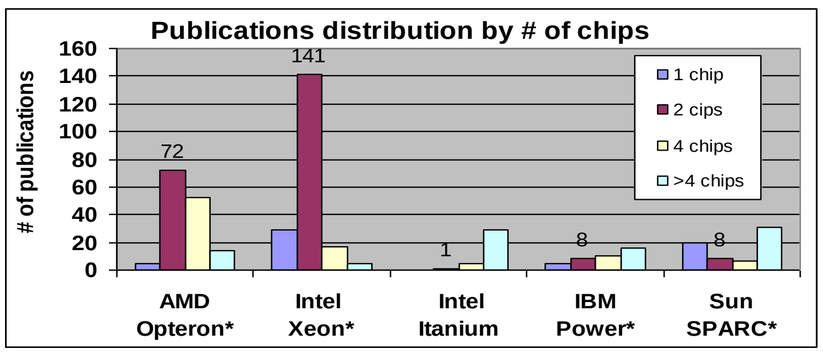
I/O and File at 4 warehouses	SPECjbb2000	SPECjbb2005
I/O Read Bytes/s	0	0
I/O Write Bytes/s	12	23
I/O Data Bytes/s	12	23
File Read Bytes/s	0	1
File Write Bytes/s	594	620

SPECjbb2005 publications: Based on published data as of 24th January 2010 at http://www.spec.org/jbb2005/results/jbb2005.html

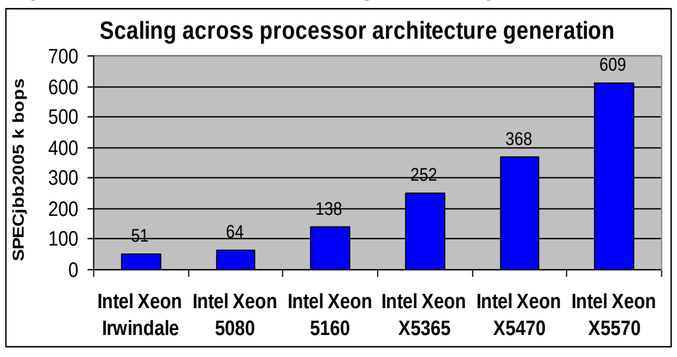
Many publications across processor architectures by all leading OEM(s). New publications are often submitted at product launches as well as following major changes.



Publications using 2 chips are dominated by AMD Opteron* and Intel Xeon* based processors. For >4 chips (up to 256 chips) are dominated by Intel Itanium*, IBM Power* and Sun SPARC*



Publications across same generation of a processor architecture (example Intel Xeon*) can be plotted to evaluate performance for design, compare etc.



References

SPECjbb2005 Benchmark from SPEC

http://www.spec.org/jbb2005/docs/WhitePaper.html
http://www.spec.org/jbb2005/docs/UserGuide.html
http://www.spec.org/jbb2005/docs/RunRules.html
http://www.spec.org/jbb2005/docs/FAQ.html

SPECjbb2005 Benchmarking and Performance related papers

http://www.spec.org/workshops/2007/austin/papers/SPECjbb2005_Life_of_benchmark.pdf
http://primeserver.fujitsu.com/primergy/performance/pdf/benchmark-overview-specjbb2005-en.pdf
A multi-level comparative performance characterization of SPECjbb2005 versus SPECjbb2000
http://ieeexplore.ieee.org/stamp/stamp.jsp?tp=&arnumber=1526002

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