SPEC® CINT2006 Result

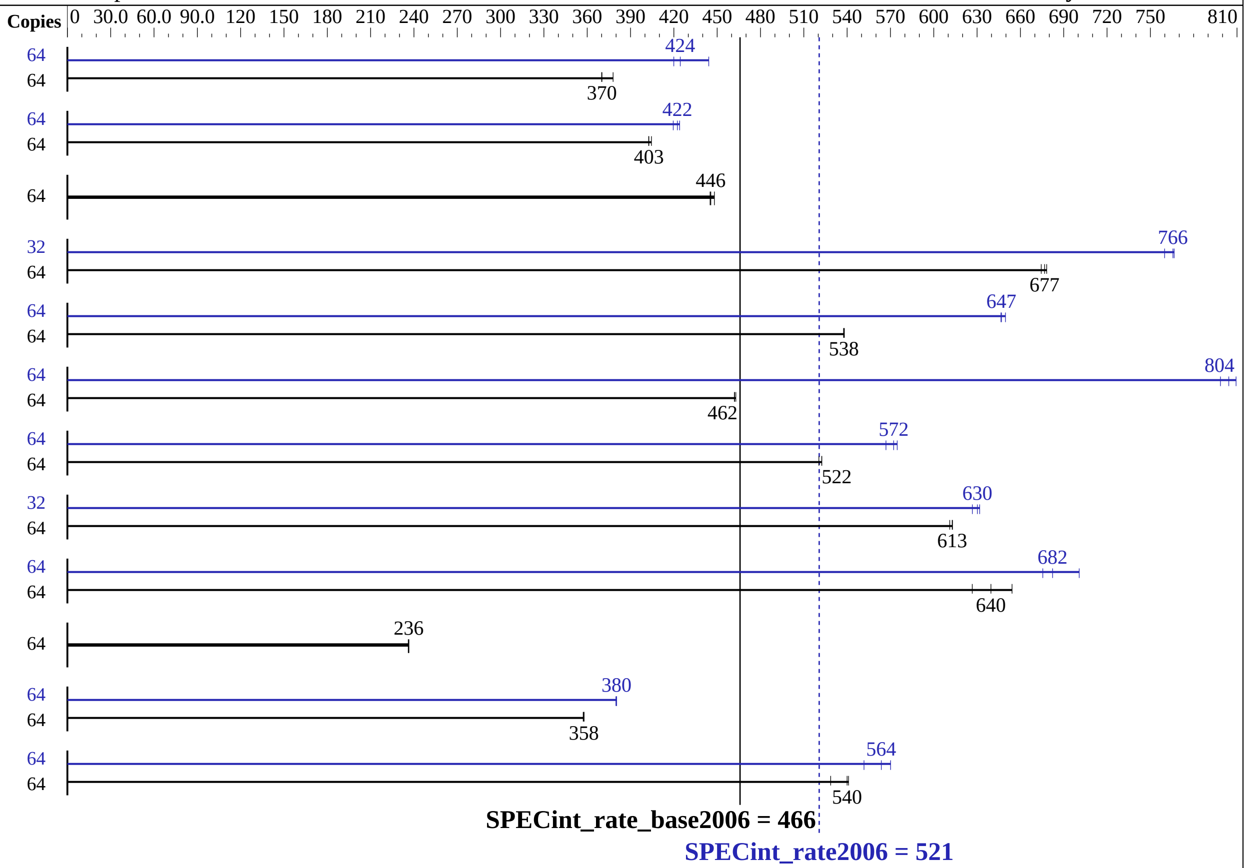
IBM Corporation

IBM BladeCenter PS702 Express (3.0 GHz, 16 core, RedHat)

SPECint®_rate2006 = 521

SPECint_rate_base2006 = 466

CPU2006 license:	11	**Test date:**	Oct-2010
Test sponsor:	IBM Corporation	**Hardware Availability:**	Jun-2010
Tested by:	IBM Corporation	**Software Availability:**	Nov-2010



Hardware

CPU Name:	POWER7
CPU Characteristics:	Intelligent Energy Optimization enabled, up to 3.30 GHz
CPU MHz:	3000
FPU:	Integrated
CPU(s) enabled:	16 cores, 2 chips, 8 cores/chip, 4 threads/core
CPU(s) orderable:	16 cores
Primary Cache:	32 KB I + 32 KB D on chip per core
Secondary Cache:	256 KB I+D on chip per core
L3 Cache:	4 MB I+D on chip per core
Other Cache:	None
Memory:	128 GB (32x4 GB) DDR3 1066 MHz
Disk Subsystem:	1x300 GB SAS SFF 10K RPM
Other Hardware:	None

Software

Operating System:	Red Hat Enterprise Linux Server release 6.0 (ppc64), Kernel 2.6.32-71.el6.ppc64
Compiler:	IBM XL C/C++ for Linux, V11.1 Updated with the Nov2010 PTF
Auto Parallel:	No
File System:	ext3
System State:	Run Level 3 (multi-user)
Base Pointers:	32-bit
Peak Pointers:	32/64-bit
Other Software:	-Post-Link Optimization for Linux on POWER, Version 5.5.0-3 -MicroQuill SmartHeap 9

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Results Table

Benchmark	Base							Peak						
	Copies	Seconds	Ratio	Seconds	Ratio	Seconds	Ratio	Copies	Seconds	Ratio	Seconds	Ratio	Seconds	Ratio
400.perlbench	64	1654	378	1690	370	**1689**	**370**	64	1489	420	**1473**	**424**	1408	444
401.bzip2	64	1527	404	1534	403	**1534**	**403**	64	1472	420	**1462**	**422**	1457	424
403.gcc	64	1150	448	1157	445	**1156**	**446**	64	1150	448	1157	445	**1156**	**446**
429.mcf	64	861	678	865	674	**862**	**677**	32	384	760	**381**	**766**	381	766
445.gobmk	64	**1248**	**538**	1248	538	1249	538	64	1033	650	1038	647	**1038**	**647**
456.hmmer	64	1293	462	1290	463	**1292**	**462**	64	738	809	**742**	**804**	748	799
458.sjeng	64	**1482**	**522**	1488	520	1482	522	64	1366	567	**1353**	**572**	1348	575
462.libquantum	64	**2164**	**613**	2170	611	2163	613	32	1049	632	**1052**	**630**	1058	627
464.h264ref	64	2260	627	2165	654	**2214**	**640**	64	2021	701	2097	676	**2076**	**682**
471.omnetpp	64	1691	237	**1692**	**236**	1694	236	64	1691	237	**1692**	**236**	1694	236
473.astar	64	1256	358	1258	357	**1256**	**358**	64	**1181**	**380**	1183	380	1181	380
483.xalancbmk	64	816	541	835	529	**818**	**540**	64	800	552	775	570	**783**	**564**

Results appear in the order in which they were run. Bold underlined text indicates a median measurement.

Peak Tuning Notes

```
IBM Post-Link Optimization tool with
options "-O4 -omullX" used for
  400.perlbench
options "-O4 -vrox" used for
  401.bzip2
options "-O4 -nodp -rtb"
  403.gcc
options "-O3" used for
  429.mcf 445.gobmk 458.sjeng 473.astar
options "-O4 -nodp -m power7" used for
  456.hmmer
options "-O4 -vrox -nodp" used for
  462.libquantum
options "-O4 -vrox -nodp -rtb" used for
  464.h264ref
options "-O3 -lu -1 -nodp -sdp 9" used for
  471.omnetpp
options "-O3 -m power7" used for
  483.xalancbmk
Whenever option "-omullX" was used during the optimization phase,
option "-imullX" was also used during the instrumentation phase.
```

Submit Notes

```
The config file option 'submit' was used.
 Benchmarks bound to a processor using numactl on the submit command.
```

Operating System Notes

```
ulimit -s (stack) set to 1048576.
Large pages reserved as follows by root user:
  echo 4224 > /proc/sys/vm/nr_hugepages
The following environment varibles were set before the runspec command:
  XLFRTEOPTS=intrinthds=1
  HUGETLB_VERBOSE=0
  HUGETLB_MORECORE=yes
  HUGETLB_ELFMAP=RW
```

Base Compiler Invocation

C benchmarks:
`xlc -qlanglvl=extc99`

C++ benchmarks:
`xlC`

Base Portability Flags

400.perlbench: `-DSPEC_CPU_LINUX_PPC`
462.libquantum: `-DSPEC_CPU_LINUX`
464.h264ref: `-qchars=signed`
483.xalancbmk: `-DSPEC_CPU_LINUX`

Base Optimization Flags

C benchmarks:
`-O5 -qarch=pwr7 -qtune=pwr7 -qalias=noansi -qalloca -lhugetlbfs`

C++ benchmarks:
`-O5 -qarch=pwr7 -qtune=pwr7 -qrtti -lsmartheap`

Base Other Flags

C benchmarks:
`-qipa=threads`

C++ benchmarks:
`-qipa=threads`

Peak Compiler Invocation

C benchmarks:
`xlc -qlanglvl=extc99`

C++ benchmarks:
`xlC`

Peak Portability Flags

400.perlbench: `-DSPEC_CPU_LINUX_PPC`
462.libquantum: `-DSPEC_CPU_LINUX`
464.h264ref: `-qchars=signed`
483.xalancbmk: `-DSPEC_CPU_LINUX`

Peak Optimization Flags

C benchmarks:

400.perlbench: `-Wl,-q -qpdf1`(pass 1) `-qpdf2`(pass 2) `-O4 -qarch=pwr7 -qtune=pwr7 -qalias=noansi -qipa=level=2 -lsmartheap`

401.bzip2: `-Wl,-q -qpdf1`(pass 1) `-qpdf2`(pass 2) `-O3 -qarch=pwr7 -qtune=pwr7 -lhugetlbfs`

403.gcc: `basepeak = yes`

429.mcf: `-Wl,-q -O5 -qarch=pwr7 -qtune=pwr7 -lhugetlbfs`

445.gobmk: `-Wl,-q -qpdf1`(pass 1) `-qpdf2`(pass 2) `-O4 -qarch=pwr7 -qtune=pwr7 -lhugetlbfs`

456.hmmer: `-Wl,-q -O5 -qarch=pwr7 -qtune=pwr7 -qsimd -qassert=refalign -qipa=inline=threshold=2888 -qipa=inline=limit=11880 -lhugetlbfs`

458.sjeng: `-Wl,-q -qpdf1`(pass 1) `-qpdf2`(pass 2) `-O5 -qarch=pwr7 -qtune=pwr7 -lhugetlbfs`

462.libquantum: `-Wl,-q -qpdf1`(pass 1) `-qpdf2`(pass 2) `-O5 -qarch=pwr7 -qtune=pwr7 -q64 -lhugetlbfs`

464.h264ref: `Same as 458.sjeng`

C++ benchmarks:

471.omnetpp: `basepeak = yes`

Continued on next page

Peak Optimization Flags (Continued)

473.astar: -Wl,-q -qpdf1(pass 1) -qpdf2(pass 2) -O4 -qarch=pwr7 -qtune=pwr7 -lhugetlbfs -lsmartheap

483.xalancbmk: -Wl,-q -O4 -qarch=pwr7 -qtune=pwr7 -qipa=partition=large -lsmartheap

Peak Other Flags

C benchmarks (except as noted below):
-qipa=threads

C++ benchmarks:
-qipa=threads

The flags file that was used to format this result can be browsed at
http://www.spec.org/cpu2006/flags/IBM-Linux-XL.20101123.01.html

You can also download the XML flags source by saving the following link:
http://www.spec.org/cpu2006/flags/IBM-Linux-XL.20101123.01.xml

For questions about this result, please contact the tester.
For other inquiries, please contact webmaster@spec.org.

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