



SPEC® CINT2006 Result

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IBM Corporation

SPECint®_rate2006 = 2130

IBM Power 760 (3.4 GHz, 48 core, SLES)

SPECint_rate_base2006 = 1480

CPU2006 license: 11

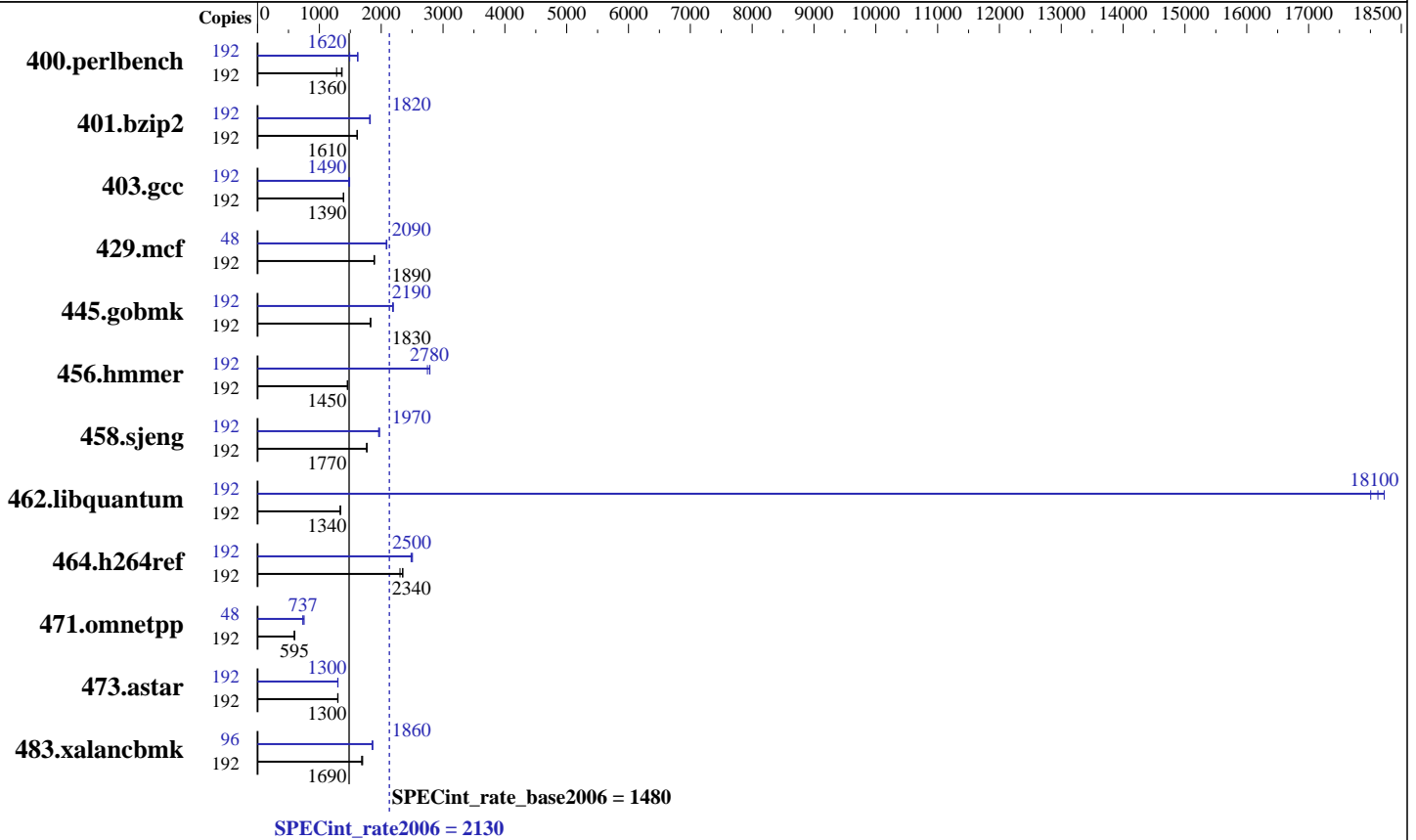
Test sponsor: IBM Corporation

Tested by: IBM Corporation

Test date: Jan-2013

Hardware Availability: Mar-2013

Software Availability: Dec-2012



Hardware

CPU Name: POWER7+
 CPU Characteristics: Intelligent Energy Optimization enabled, up to 3.787 GHz
 CPU MHz: 3416
 FPU: Integrated
 CPU(s) enabled: 48 cores, 8 chips, 6 cores/chip, 4 threads/core
 CPU(s) orderable: 12, 24, 36, 48 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: 10 MB I+D on chip per core
 Other Cache: None
 Memory: 512 GB (64 x 8 GB) DDR3 1066 MHz
 Disk Subsystem: 3 x 146.8 GB Raid0 SAS SFF 15K RPM
 Other Hardware: None

Software

Operating System: SUSE Linux Enterprise Server 11 SP2 (ppc64) kernel 3.0.42-0.7-ppc64
 Compiler: C/C++: Version 12.1 of IBM XL C/C++ for Linux
 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 5.6.1-7
 -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	192	1467	1280	<u>1381</u>	<u>1360</u>	1372	1370	192	1258	1490	1155	1620	<u>1160</u>	<u>1620</u>
401.bzip2	192	1152	1610	1148	1610	<u>1148</u>	<u>1610</u>	192	<u>1019</u>	<u>1820</u>	1016	1820	1022	1810
403.gcc	192	1109	1390	<u>1109</u>	<u>1390</u>	1115	1390	192	1038	1490	<u>1039</u>	<u>1490</u>	1047	1480
429.mcf	192	<u>929</u>	<u>1890</u>	925	1890	929	1890	48	<u>210</u>	<u>2090</u>	210	2080	209	2090
445.gobmk	192	1101	1830	<u>1102</u>	<u>1830</u>	1102	1830	192	917	2200	<u>920</u>	<u>2190</u>	921	2190
456.hammer	192	1231	1460	<u>1232</u>	<u>1450</u>	1232	1450	192	643	2790	<u>644</u>	<u>2780</u>	652	2750
458.sjeng	192	1311	1770	1317	1760	<u>1315</u>	<u>1770</u>	192	1177	1970	1186	1960	<u>1181</u>	<u>1970</u>
462.libquantum	192	<u>2969</u>	<u>1340</u>	2975	1340	2969	1340	192	218	18200	221	18000	<u>220</u>	<u>18100</u>
464.h264ref	192	<u>1812</u>	<u>2340</u>	1844	2300	1807	2350	192	<u>1703</u>	<u>2500</u>	1696	2510	1711	2480
471.omnetpp	192	1996	601	2018	595	<u>2017</u>	<u>595</u>	48	<u>407</u>	<u>737</u>	410	732	398	753
473.astar	192	1040	1300	<u>1037</u>	<u>1300</u>	1036	1300	192	1040	1300	1036	1300	<u>1037</u>	<u>1300</u>
483.xalancbmk	192	786	1690	<u>784</u>	<u>1690</u>	779	1700	96	<u>356</u>	<u>1860</u>	356	1860	357	1850

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

Compiler Invocation Notes

C/C++ compiler updated to December 2012 PTF
Version: 12.01.0000.0002

Peak Tuning Notes

Post-Link optimization tool used for:

400.perlbench
with options -O4 -omullX for optimization phase,
and -imullX for instrumentation phase

401.bzip2
with options -O4 -vrox

403.gcc
with options -O4 -nodp -rtb

429.mcf 445.gobmk 458.sjeng 473.astar
with options -O3

462.libquantum
with options -O4 -vrox -nodp

464.h264ref
with options -O4 -vrox -nodp -rtb

471.omnetpp
with options -O3 -lu -l -nodp -sdp 9

483.xalancbmk
with options -O3 -m power7



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Submit Notes

The config file option 'submit' was used to assign benchmark copy to specific kernel thread using the "numactl" command (see flags file for details).

Operating System Notes

ulimit -s (stack) set to 1048576.

Large pages reserved as follows by root user:
echo 12672 > /proc/sys/vm/nr_hugepages

The following environment variables were set before the runspec command:
export HUGETLB_VERBOSE=0
export HUGETLB_MORECORE=yes

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 -q32 -qipa=threads -qalias=noansi
-qalloca -lhugetlbfs

C++ benchmarks:

-O5 -qarch=pwr7 -qtune=pwr7 -q32 -qipa=threads -qrtti -lsmartheap

Base Other Flags

C benchmarks:

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Base Other Flags (Continued)

C++ benchmarks:

Peak Compiler Invocation

C benchmarks:

xlc -qlanglvl=extc99

C++ benchmarks:

x1C

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 -qipa=threads -qalias=noansi -qipa=level=2
-lsmartheap

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

403.gcc: -Wl,-q -qpdf1(pass 1) -qpdf2(pass 2) -O4 -qarch=pwr7
-qtune=pwr7 -qipa=threads -qalloca -lhugetlbfs

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

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

456.hmmmer: -Wl,-q -O5 -qarch=pwr7 -qtune=pwr7 -qipa=threads -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 -qipa=threads -lhugetlbfs

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Peak Optimization Flags (Continued)

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

464.h264ref: Same as 458.sjeng

C++ benchmarks:

471.omnetpp: -Wl,-q -qpdf1(pass 1) -qpdf2(pass 2) -O5 -qarch=pwr7
-qtune=pwr7 -qipa=threads -qrtti -lsmarheap

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

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

Peak Other Flags

C benchmarks:

C++ benchmarks:

The flags files that were used to format this result can be browsed at

<http://www.spec.org/cpu2006/flags/IBM-Power.html>

<http://www.spec.org/cpu2006/flags/IBM-Linux-XL.20121024.html>

You can also download the XML flags sources by saving the following links:

<http://www.spec.org/cpu2006/flags/IBM-Power.xml>

<http://www.spec.org/cpu2006/flags/IBM-Linux-XL.20121024.xml>

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For other inquiries, please contact webmaster@spec.org.

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