



SPEC® CINT2006 Result

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IBM Corporation

SPECint®_rate2006 = 1710

IBM Power 750 Express (4.0 GHz, 32 core, SLES)

SPECint_rate_base2006 = 1230

CPU2006 license: 11

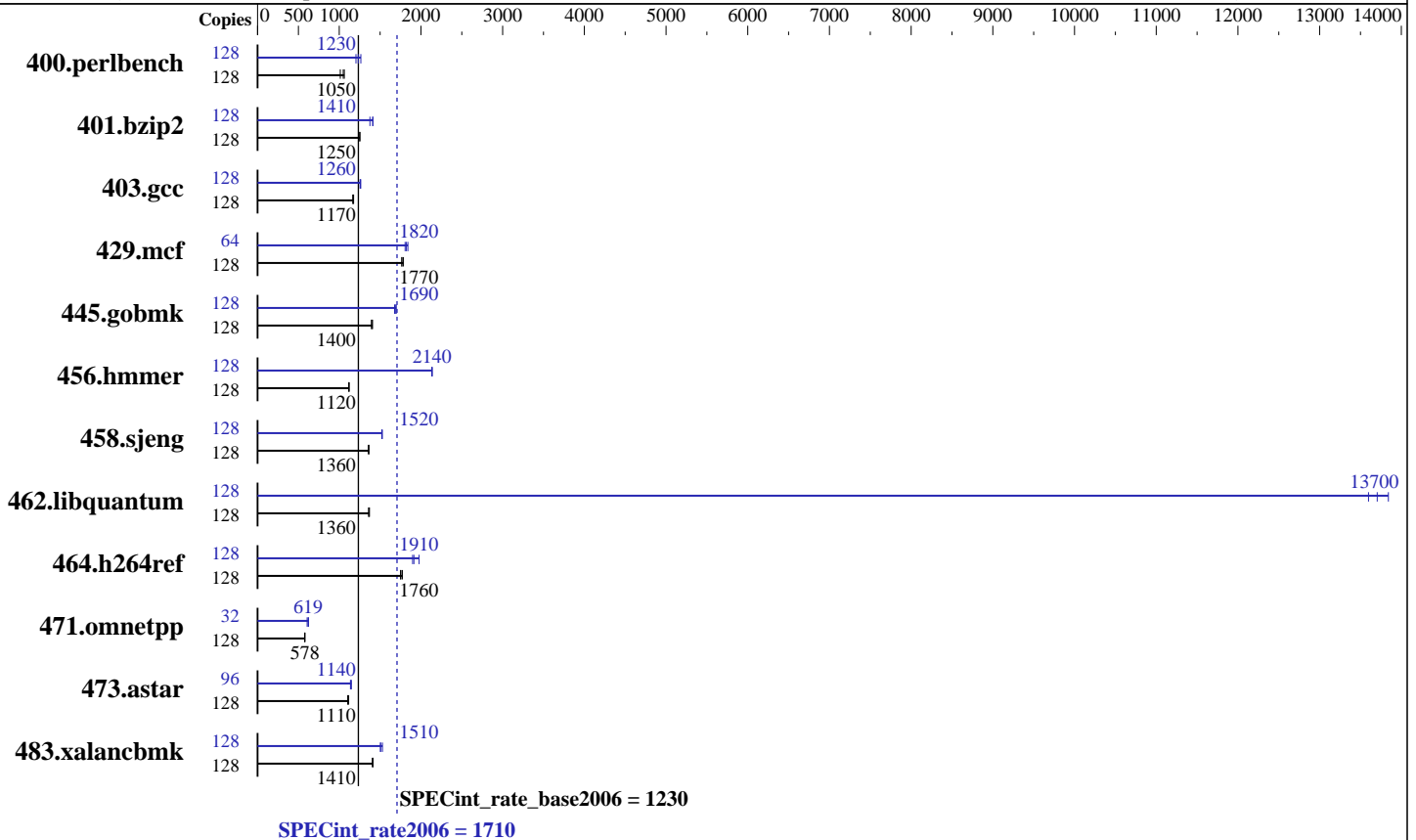
Test date: Jan-2013

Test sponsor: IBM Corporation

Hardware Availability: Mar-2013

Tested by: IBM Corporation

Software Availability: Dec-2012



Hardware

CPU Name: POWER7+
 CPU Characteristics: Intelligent Energy Optimization enabled, up to 4.431 GHz
 CPU MHz: 4060
 FPU: Integrated
 CPU(s) enabled: 32 cores, 8 chips, 4 cores/chip, 4 threads/core
 CPU(s) orderable: 8, 16, 24, 32 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: 256 GB (64 x 4 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	128	1235	1010	<u>1192</u>	<u>1050</u>	1178	1060	128	1038	1200	<u>1015</u>	<u>1230</u>	989	1260
401.bzip2	128	996	1240	986	1250	<u>987</u>	<u>1250</u>	128	<u>877</u>	<u>1410</u>	898	1380	875	1410
403.gcc	128	884	1170	876	1180	<u>881</u>	<u>1170</u>	128	816	1260	<u>819</u>	<u>1260</u>	821	1250
429.mcf	128	654	1790	<u>661</u>	<u>1770</u>	661	1770	64	317	1840	<u>320</u>	<u>1820</u>	323	1810
445.gobmk	128	954	1410	<u>960</u>	<u>1400</u>	963	1390	128	<u>794</u>	<u>1690</u>	791	1700	801	1680
456.hammer	128	1067	1120	<u>1067</u>	<u>1120</u>	1069	1120	128	560	2130	<u>559</u>	<u>2140</u>	559	2140
458.sjeng	128	1137	1360	<u>1139</u>	<u>1360</u>	1140	1360	128	<u>1018</u>	<u>1520</u>	1014	1530	1019	1520
462.libquantum	128	<u>1948</u>	<u>1360</u>	1936	1370	1950	1360	128	192	13800	<u>194</u>	<u>13700</u>	195	13600
464.h264ref	128	1619	1750	<u>1614</u>	<u>1760</u>	1598	1770	128	1433	1980	<u>1480</u>	<u>1910</u>	1493	1900
471.omnetpp	128	1386	577	<u>1383</u>	<u>578</u>	1382	579	32	<u>323</u>	<u>619</u>	330	607	320	624
473.astar	128	806	1120	<u>812</u>	<u>1110</u>	813	1110	96	593	1140	587	1150	<u>589</u>	<u>1140</u>
483.xalancbmk	128	625	1410	628	1410	<u>627</u>	<u>1410</u>	128	587	1500	578	1530	<u>586</u>	<u>1510</u>

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 -1 -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 8448 > /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.hmmer: -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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