



SPEC® CINT2006 Result

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IBM Corporation

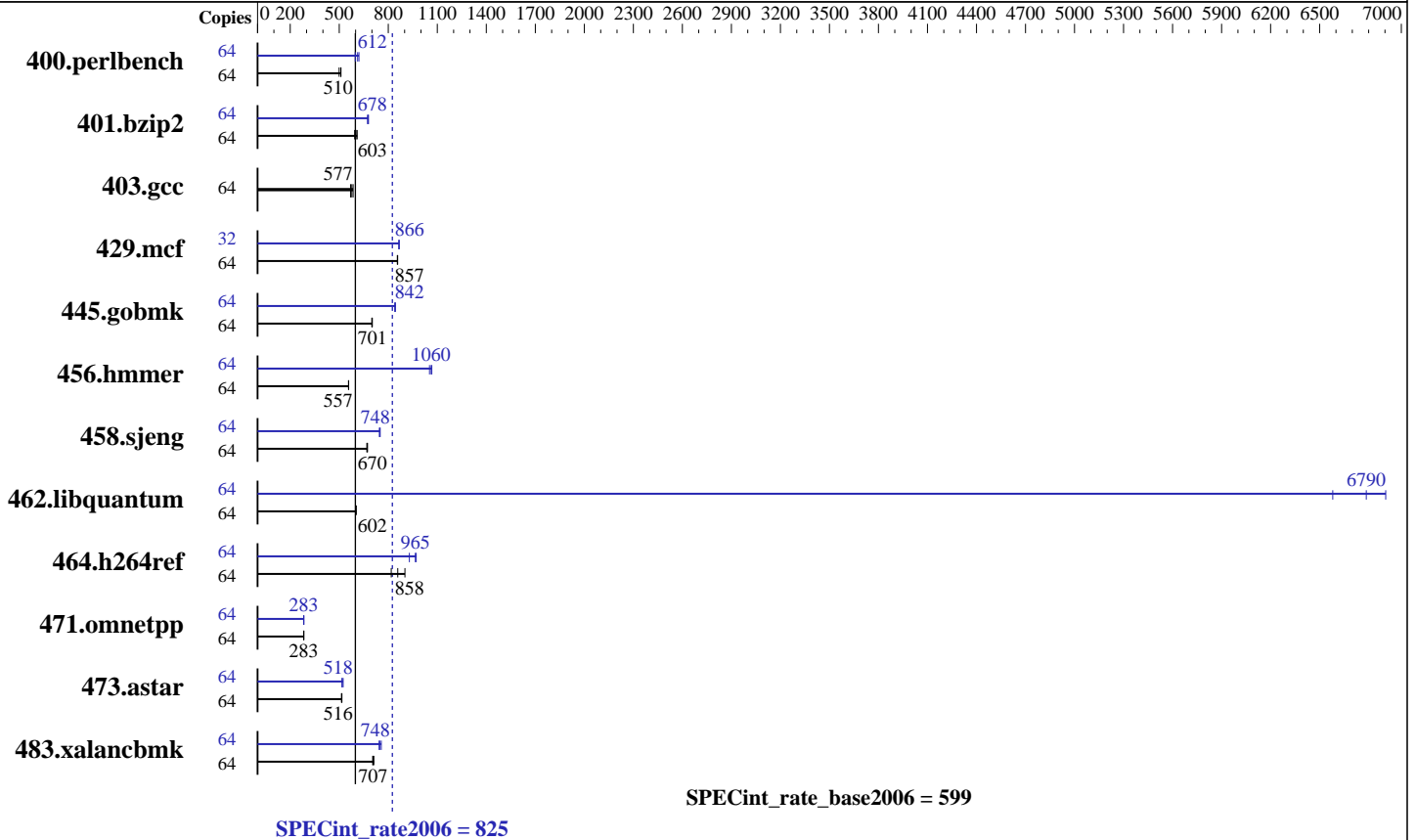
SPECint®_rate2006 = **825**

IBM Flex System p260 (4.1 GHz, 16 core, SLES)

SPECint_rate_base2006 = 599

CPU2006 license: 11
Test sponsor: IBM Corporation
Tested by: IBM Corporation

Test date: Oct-2012
Hardware Availability: Dec-2012
Software Availability: Dec-2012



Hardware

CPU Name: POWER7+
 CPU Characteristics: Intelligent Energy Optimization enabled, up to 4.340 GHz
 CPU MHz: 4116
 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: 10 MB I+D on chip per core
 Other Cache: None
 Memory: 128 GB (16 x 8 GB) DDR3 1066 MHz
 Disk Subsystem: 1 x 600 GB SAS SFF 10K RPM
 Other Hardware: None

Software

Operating System: SUSE Linux Enterprise Server 11 SP2 (ppc64) kernel 3.0.13-0.27-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	64	1253	499	1225	510	<u>1227</u>	<u>510</u>	64	1046	598	<u>1021</u>	<u>612</u>	1008	621
401.bzip2	64	1039	594	<u>1024</u>	<u>603</u>	1013	610	64	918	673	<u>911</u>	<u>678</u>	911	678
403.gcc	64	905	569	881	585	<u>893</u>	<u>577</u>	64	905	569	881	585	<u>893</u>	<u>577</u>
429.mcf	64	<u>681</u>	<u>857</u>	681	857	682	855	32	337	866	<u>337</u>	<u>866</u>	337	866
445.gobmk	64	956	702	<u>957</u>	<u>701</u>	960	699	64	<u>797</u>	<u>842</u>	796	843	799	840
456.hammer	64	<u>1072</u>	<u>557</u>	1071	558	1073	557	64	<u>562</u>	<u>1060</u>	560	1070	567	1050
458.sjeng	64	<u>1156</u>	<u>670</u>	1151	673	1157	670	64	1038	746	1032	750	<u>1036</u>	<u>748</u>
462.libquantum	64	<u>2201</u>	<u>602</u>	2202	602	2201	603	64	202	6580	192	6900	<u>195</u>	<u>6790</u>
464.h264ref	64	<u>1651</u>	<u>858</u>	1570	902	1731	818	64	1459	971	<u>1467</u>	<u>965</u>	1524	929
471.omnetpp	64	<u>1415</u>	<u>283</u>	1416	282	1414	283	64	1414	283	1415	283	<u>1414</u>	<u>283</u>
473.astar	64	871	516	875	514	<u>871</u>	<u>516</u>	64	858	524	869	517	<u>867</u>	<u>518</u>
483.xalancbmk	64	620	712	<u>625</u>	<u>707</u>	627	705	64	583	757	594	744	<u>590</u>	<u>748</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 -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 4224 > /proc/sys/vm/nr_hugepages

Additional filesystem options:
data=writeback,noatime

The following environment variables were set before the runspec command:
export HUGETLB_VERBOSE=0
export HUGETLB_MORECORE=yes
export XLFRTIOPTS=intrinths=1

Platform Notes

This Compute Node is housed in an "IBM Flex System Enterprise Chassis"

The Maximum Power Limit for this Compute Node was set according to recommendation on "IBM Chassis Management Module"

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



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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:

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: -W1,-q -qpdf1(pass 1) -qpdf2(pass 2) -O4 -qarch=pwr7
-qtune=pwr7 -qipa=threads -qalias=noansi -qipa=level=2
-lsmartheap

401.bzip2: -W1,-q -qpdf1(pass 1) -qpdf2(pass 2) -O3 -qarch=pwr7
-qtune=pwr7 -lhugetlbfs

403.gcc: basepeak = yes

Continued on next page



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Peak Optimization Flags (Continued)

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.hmmr: -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

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 -lsmartheap

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

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

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.20121205.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.20121205.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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