SPEC® CINT2006 Result

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IBM Corporation

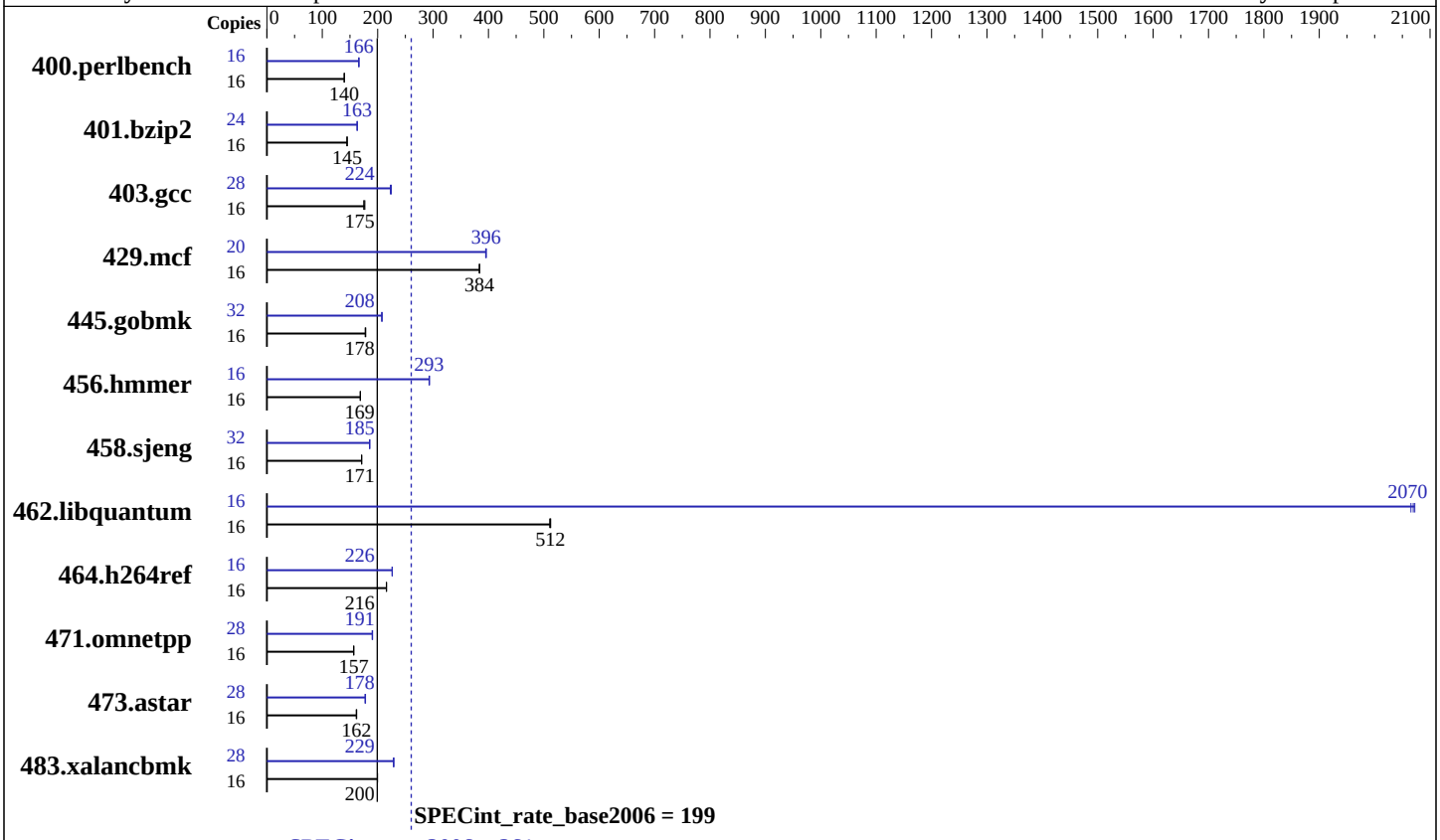
IBM Power S814 (3.026 GHz, 4 core)

SPECint®_rate2006 = 261

SPECint_rate_base2006 = 199

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

Test date: May-2015
Hardware Availability: Jun-2014
Software Availability: Sep-2014



Hardware

CPU Name:	POWER8
CPU Characteristics:	Intelligent Energy Optimization enabled, up to 3.36 GHz
CPU MHz:	3026
FPU:	Integrated
CPU(s) enabled:	4 cores, 2 chips, 2 cores/chip, 8 threads/core
CPU(s) orderable:	1 Modules
Primary Cache:	32 KB I + 64 KB D on chip per core
Secondary Cache:	512 KB I+D on chip per core
L3 Cache:	8 MB I+D on chip per core
Other Cache:	16 MB I+D off chip per CDIMM
Memory:	64 GB (4 x 16 GB CDIMMs) DDR3 1600 MHz
Disk Subsystem:	5 x 300 GB 15K RPM SAS SFF-2 Raid0
Other Hardware:	None

Software

Operating System:	IBM AIX V7.1
Compiler:	C/C++: Version 13.1 of IBM XL C/C++ for AIX
Auto Parallel:	No
File System:	AIX/JFS2
System State:	Multi-user
Base Pointers:	32-bit
Peak Pointers:	32/64-bit
Other Software:	None

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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	16	1118	140	1119	140	**1119**	**140**	16	940	166	942	166	**942**	**166**
401.bzip2	16	1068	145	1066	145	**1066**	**145**	24	1422	163	**1421**	**163**	1419	163
403.gcc	16	728	177	**735**	**175**	736	175	28	1011	223	1004	225	**1007**	**224**
429.mcf	16	380	384	380	384	**380**	**384**	20	461	396	**461**	**396**	462	395
445.gobmk	16	**942**	**178**	946	177	941	178	32	1618	207	1614	208	**1617**	**208**
456.hmmer	16	885	169	885	169	**885**	**169**	16	**509**	**293**	508	294	510	293
458.sjeng	16	1133	171	1131	171	**1132**	**171**	32	**2089**	**185**	2083	186	2089	185
462.libquantum	16	**647**	**512**	647	512	649	511	16	161	2070	**160**	**2070**	160	2070
464.h264ref	16	1641	216	1640	216	**1640**	**216**	16	1565	226	**1565**	**226**	1565	226
471.omnetpp	16	638	157	**638**	**157**	638	157	28	921	190	917	191	**918**	**191**
473.astar	16	693	162	696	161	**694**	**162**	28	1104	178	1110	177	**1106**	**178**
483.xalancbmk	16	553	200	**553**	**200**	553	200	28	**845**	**229**	845	229	843	229

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 September 2014 PTF
      Version 13.01.0000.0001
```

Peak Tuning Notes

```
400.perlbench fdpr options: -O4 -m power8 -A 2 -rcl 2 -sls -dir -vrox
401.bzip2 fdpr options: -O4 -m power8 -A 2 -rcl 2 -sls -dir -vrox
403.gcc fdpr options: -O4 -m power8 -A 2 -rcl 2 -sls -dir -vrox
429.mcf fdpr options: -O4 -m power8 -A 2 -rcl 2 -sls -dir -vrox
456.hmmer fdpr options: -O4 -m power8 -A 2 -rcl 2 -sls -dir -vrox
458.sjeng fdpr options: -O4 -m power8 -A 2 -rcl 2 -sls -dir -vrox
462.libquantum fdpr options: -O4 -m power8 -A 2 -rcl 2 -sls -dir -vrox
464.h264ref fdpr options: -O4 -m power8 -A 2 -rcl 2 -sls -dir -vrox
471.omnetpp fdpr options: -O4 -m power8 -A 2 -rcl 2 -sls -dir -vrox
473.astar fdpr options: -O4 -m power8 -A 2 -rcl 2 -sls -dir -vrox
483.xalancbmk fdpr options: -O4 -m power8 -A 2 -rcl 2 -sls -dir -vrox
```

Submit Notes

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

Operating System Notes

```
AIX updated to V7.1 TL3 SP4

All ulimits set to unlimited.
Set 8 threads per core via "smtctl -t 8 -w boot"

3200 16M large pages defined with vmo command
```

General Notes

```
Environment variables set by runspec before the start of the run:
MALLOCOPTIONS = "pool"
MEMORY_AFFINITY = "MCM"
XLFRTEOPTS = "intrinthds=1"
```

Base Compiler Invocation

C benchmarks:
```
/opt/IBM/xlc/13.1.0/bin/xlc -qlanglvl=extc99
```

C++ benchmarks:
```
/opt/IBM/xlC/13.1.0/bin/xlC
```

Base Portability Flags

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

Base Optimization Flags

C benchmarks:
```
-qinline=40 -qipa=threads -bmaxdata:0x50000000 -qlargepage -O5
-qvecnvol -D_ILS_MACROS -qalias=noansi -qalloca -blpdata
```

C++ benchmarks:
```
-qinline=40 -qipa=threads -bmaxdata:0x20000000 -qlargepage -O5
-qvecnvol -D_ILS_MACROS -qrtti=all -D__IBM_FAST_SET_MAP_ITERATOR
-blpdata
```

Base Other Flags

C benchmarks:
```
-qipa=noobject -qsuppress=1500-036
```

C++ benchmarks:
```
-qipa=noobject -qsuppress=1500-036
```

Peak Compiler Invocation

C benchmarks:
```
/opt/IBM/xlc/13.1.0/bin/xlc -qlanglvl=extc99
```

C++ benchmarks:
```
/opt/IBM/xlC/13.1.0/bin/xlC
```

Peak Portability Flags

400.perlbench: -DSPEC_CPU_AIX
403.gcc: -DSPEC_CPU_LP64
462.libquantum: -DSPEC_CPU_AIX
464.h264ref: -DSPEC_CPU_AIX -qchars=signed
483.xalancbmk: -DSPEC_CPU_AIX

Peak Optimization Flags

C benchmarks:

400.perlbench: -qinline=40 -bmaxdata:0x50000000 -qpdf1(pass 1)
-qpdf2(pass 2) -O3 -qarch=auto -qtune=auto -D_ILS_MACROS
-qalias=noansi -qfdpr -blpdata -btextpsize:64K

401.bzip2: -qinline=40 -qipa=threads -bmaxdata:0x50000000
-qpdf1(pass 1) -qpdf2(pass 2) -O4 -qsimd=noauto
-qlargepage -D_ILS_MACROS -qfdpr -blpdata -btextpsize:64K

403.gcc: -qinline=40 -qipa=threads -qpdf1(pass 1) -qpdf2(pass 2)
-O4 -qvecnvol -q64 -qlargepage -D_ILS_MACROS -qalloca
-qfdpr -blpdata -btextpsize:64K

429.mcf: -qinline=40 -qipa=threads -bmaxdata:0x50000000
-qpdf1(pass 1) -qpdf2(pass 2) -O5 -qvecnvol -qlargepage
-D_ILS_MACROS -qfdpr -blpdata -btextpsize:64K

445.gobmk: -qinline=40 -qipa=threads -qpdf1(pass 1) -qpdf2(pass 2)
-O5 -qvecnvol -qlargepage -D_ILS_MACROS -blpdata
-btextpsize:64K

Continued on next page

Peak Optimization Flags (Continued)

456.hmmer: -qinline=40 -qipa=threads -O5 -qvecnvol -qlargepage -qassert=refalign -D_ILS_MACROS -qfdpr -blpdata -btextpsize:64K

458.sjeng: -qinline=40 -qipa=threads -qpdf1(pass 1) -qpdf2(pass 2) -O3 -qarch=auto -qtune=auto -D_ILS_MACROS -qfdpr -blpdata -btextpsize:64K

462.libquantum: -qinline=40 -qipa=threads -qpdf1(pass 1) -qpdf2(pass 2) -O5 -qsimd=noauto -qinline=400 -q64 -qlargepage -D_ILS_MACROS -qfdpr -blpdata -btextpsize:64K

464.h264ref: -qinline=40 -qipa=threads -qpdf1(pass 1) -qpdf2(pass 2) -O5 -qvecnvol -qprefetch=dscr=84 -D_ILS_MACROS -qfdpr -blpdata -btextpsize:64K

C++ benchmarks:

471.omnetpp: -qinline=40 -qipa=threads -bmaxdata:0x20000000 -qpdf1(pass 1) -qpdf2(pass 2) -O5 -qsimd=noauto -qarch=pwr7 -qtune=pwr7 -D_ILS_MACROS -qfdpr -qalign=natural -qrtti=all -qinlglue -D__IBM_FAST_SET_MAP_ITERATOR -blpdata -btextpsize:64K

473.astar: -qinline=40 -qipa=threads -bmaxdata:0x20000000 -qpdf1(pass 1) -qpdf2(pass 2) -O5 -qvecnvol -qlargepage -D_ILS_MACROS -qfdpr -qinlglue -qalign=natural -blpdata -btextpsize:64K

483.xalancbmk: -qinline=40 -qipa=threads -bmaxdata:0x20000000 -qpdf1(pass 1) -qpdf2(pass 2) -O3 -qarch=auto -qtune=auto -qsimd -qvecnvol -qlargepage -qprefetch=dscr=84 -D_ILS_MACROS -qfdpr -qinlglue -D__IBM_FAST_VECTOR -blpdata -btextpsize:64K

Peak Other Flags

C benchmarks (except as noted below):
-qipa=noobject -qsuppress=1500-036

400.perlbench: -qsuppress=1500-036

C++ benchmarks:
-qipa=noobject -qsuppress=1500-036

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

http://www.spec.org/cpu2006/flags/IBM-XL.V13.html
http://www.spec.org/cpu2006/flags/IBM-AIX.V7.html

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

http://www.spec.org/cpu2006/flags/IBM-XL.V13.xml
http://www.spec.org/cpu2006/flags/IBM-AIX.V7.xml

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