SPEC® CINT2006 Result

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IBM Corporation

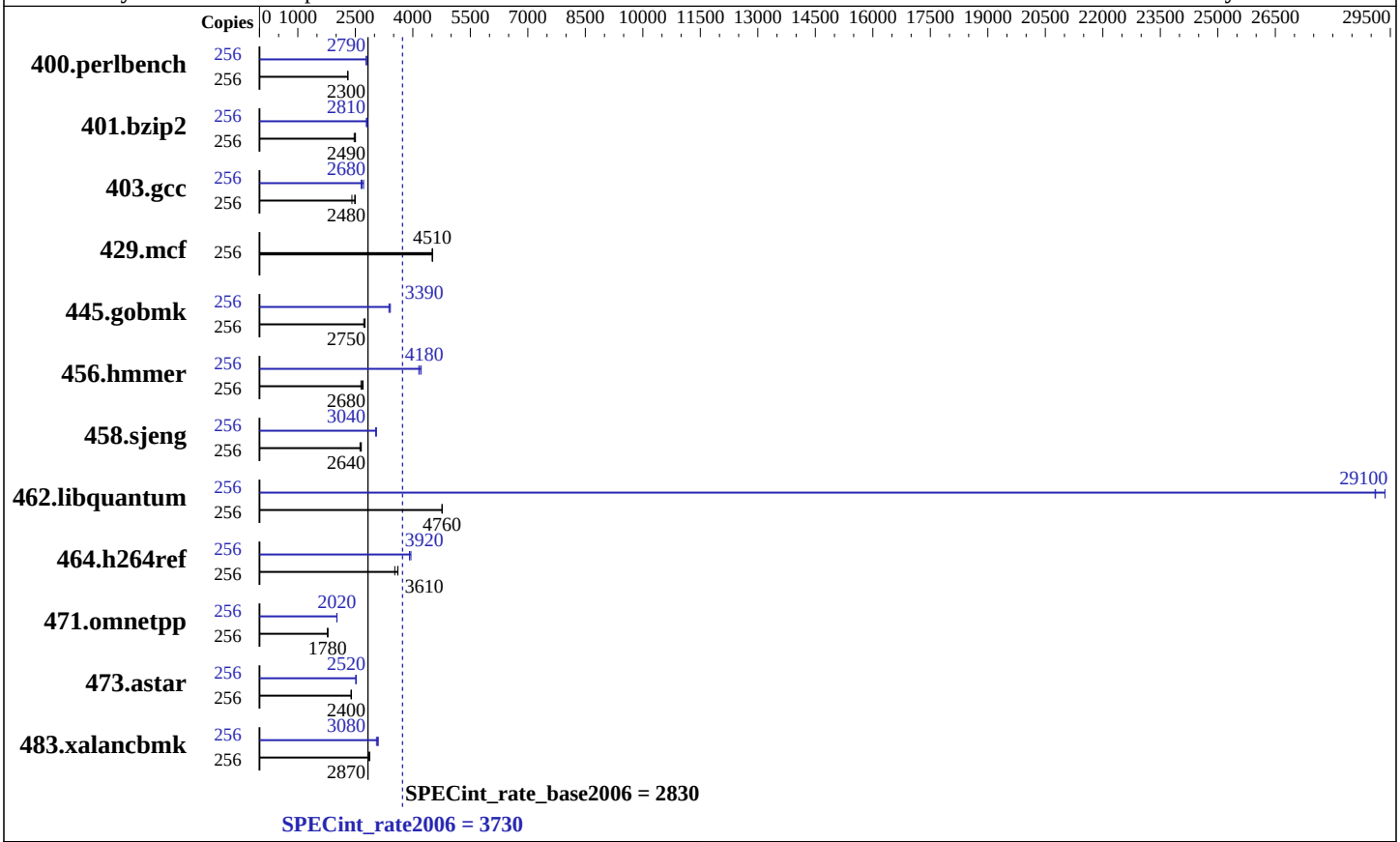
IBM Power 780 (4.4 GHz, 64 core)

SPECint®_rate2006 = 3730

SPECint_rate_base2006 = 2830

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

Test date: Sep-2012
Hardware Availability: Oct-2012
Software Availability: Nov-2012



Hardware

CPU Name:	POWER7+
CPU Characteristics:	Intelligent Energy Optimization enabled, up to 4.480 GHz
CPU MHz:	4424
FPU:	Integrated
CPU(s) enabled:	64 cores, 16 chips, 4 cores/chip, 4 threads/core
CPU(s) orderable:	16,32,48,64 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:	8 x 177 GB Raid0 SFF-1 SSD
Other Hardware:	None

Software

Operating System:	IBM AIX V7.1
Compiler:	C/C++: Version 12.1 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	256	1086	2300	1085	2310	**1086**	**2300**	256	900	2780	**897**	**2790**	896	2790
401.bzip2	256	1000	2470	986	2500	**990**	**2490**	256	879	2810	**879**	**2810**	887	2790
403.gcc	256	855	2410	825	2500	**830**	**2480**	256	777	2650	759	2720	**769**	**2680**
429.mcf	256	517	4520	**517**	**4510**	518	4510	256	517	4520	**517**	**4510**	518	4510
445.gobmk	256	975	2750	987	2720	**978**	**2750**	256	**792**	**3390**	795	3380	786	3420
456.hmmer	256	883	2700	**891**	**2680**	902	2650	256	566	4220	**572**	**4180**	574	4160
458.sjeng	256	1181	2620	1166	2660	**1172**	**2640**	256	1016	3050	1021	3030	**1020**	**3040**
462.libquantum	256	1114	4760	**1114**	**4760**	1113	4770	256	181	29400	**182**	**29100**	182	29100
464.h264ref	256	1605	3530	**1570**	**3610**	1569	3610	256	1448	3910	**1445**	**3920**	1434	3950
471.omnetpp	256	897	1780	901	1770	**899**	**1780**	256	791	2020	793	2020	**791**	**2020**
473.astar	256	752	2390	**750**	**2400**	749	2400	256	713	2520	714	2520	**713**	**2520**
483.xalancbmk	256	**615**	**2870**	620	2850	614	2880	256	**573**	**3080**	579	3050	570	3100

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 November 2012 PTF
      Version: 12.01.0000.0002
```

Peak Tuning Notes

```
400.perlbench fdpr options: -O4 -cbpth -1 -sdp -1
401.bzip2 fdpr options: -O4 -vrox -nobldcg -sdp -1
403.gcc fdpr options: -O4 -cbpth -1 -sdp -1
429.mcf fdpr options: -O2
445.gobmk fdpr options: -O3
456.hmmer fdpr options: -O3 -bldcg -ccc 10
458.sjeng fdpr options: -O3
464.h264ref fdpr options: -O4 -sdp -1 -vrox -lu -1
473.astar fdpr options: -O3 -vrox -bldcg
483.xalancbmk fdpr options: -O3 -bldcg -lu -1 -lux 1
```

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 TL 2

All ulimits set to unlimited.

25600 16M large pages defined with vmo command
```

Platform Notes

```
Service Processor Memory Mirroring Property Disabled
```

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:
```
/usr/vac/bin/xlc -qlanglvl=extc99
```

C++ benchmarks:
```
/usr/vacpp/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:
```
-qipa=threads -bmaxdata:0x50000000 -qlargepage -O5 -qsimd -qvecnvol
-D_ILS_MACROS -qalias=noansi -qalloca -blpdata
```

C++ benchmarks:
```
-qipa=threads -bmaxdata:0x20000000 -qlargepage -O4 -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:
```
/usr/vac/bin/xlc -qlanglvl=extc99
```

C++ benchmarks:
```
/usr/vacpp/bin/xlC
```

Peak Portability Flags

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

Peak Optimization Flags

C benchmarks:

400.perlbench: -bmaxdata:0x50000000 -qpdf1(pass 1) -qpdf2(pass 2) -O2 -qarch=auto -qtune=auto -D_ILS_MACROS -qalias=noansi -blpdata -btextpsize:64K

401.bzip2: -qipa=threads -bmaxdata:0x50000000 -qpdf1(pass 1) -qpdf2(pass 2) -O3 -qarch=auto -qtune=auto -qlargepage -D_ILS_MACROS -blpdata -btextpsize:64K

403.gcc: -qipa=threads -bmaxdata:0x50000000 -qpdf1(pass 1) -qpdf2(pass 2) -O5 -qlargepage -D_ILS_MACROS -qalloca -blpdata -btextpsize:64K

429.mcf: basepeak = yes

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

456.hmmer: -qipa=threads -O5 -qsimd -qvecnvol -qassert=refalign -D_ILS_MACROS -blpdata -btextpsize:64K

Continued on next page

Peak Optimization Flags (Continued)

458.sjeng: `-qipa=threads -qpdf1`(pass 1) `-qpdf2`(pass 2) `-O4 -D_ILS_MACROS -blpdata -btextpsize:64K`

462.libquantum: `-qipa=threads -qpdf1`(pass 1) `-qpdf2`(pass 2) `-O5 -q64 -qlargepage -D_ILS_MACROS -blpdata -btextpsize:64K`

464.h264ref: `-qipa=threads -qpdf1`(pass 1) `-qpdf2`(pass 2) `-O5 -qsimd -qvecnvol -D_ILS_MACROS -blpdata -btextpsize:64K`

C++ benchmarks:

471.omnetpp: `-qipa=threads -bmaxdata:0x20000000 -qpdf1`(pass 1) `-qpdf2`(pass 2) `-O4 -qsimd -qvecnvol -D_ILS_MACROS -qalign=natural -qrtti=all -qinlglue -D__IBM_FAST_SET_MAP_ITERATOR -blpdata -btextpsize:64K`

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

483.xalancbmk: `-qipa=threads -bmaxdata:0x20000000 -qpdf1`(pass 1) `-qpdf2`(pass 2) `-O3 -qarch=auto -qtune=auto -qlargepage -D_ILS_MACROS -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.20110613.html
http://www.spec.org/cpu2006/flags/IBM-AIX.20110613.html

You can also download the XML flags sources by saving the following links:
http://www.spec.org/cpu2006/flags/IBM-XL.20110613.xml
http://www.spec.org/cpu2006/flags/IBM-AIX.20110613.xml

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