SPEC® CINT2006 Result
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IBM Corporation

IBM Power 780 (3.7 GHz, 128 core)

$SPECint^{®}\_rate2006 =$ 6100
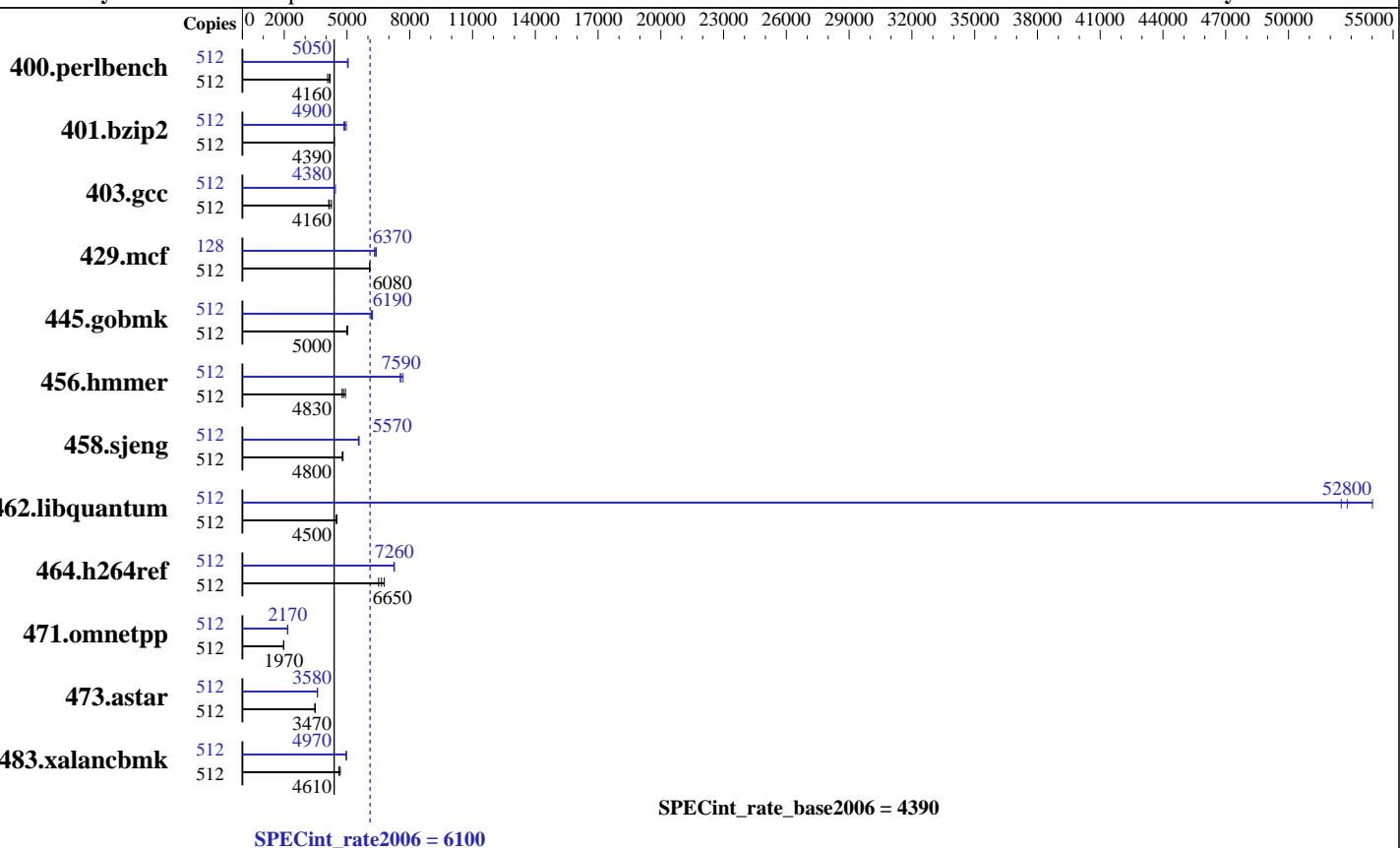
$SPECint\_rate\_base2006 =$ 4390

CPU2006 license: 11

Test sponsor: IBM Corporation

Tested by: IBM Corporation

Test date: Sep-2012

Hardware Availability: Oct-2012

Software Availability: Nov-2012

Benchmark	Copies	Value
400.perlbench	512	5050
	512	4160
401.bzip2	512	4900
	512	4390
403.gcc	512	4380
	512	4160
429.mcf	128	6370
	512	6080
445.gobmk	512	6190
	512	5000
456.hmmer	512	7590
	512	4830
458.sjeng	512	5570
	512	4800
462.libquantum	512	52800
	512	4500
464.h264ref	512	7260
	512	6650
471.omnetpp	512	2170
	512	1970
473.astar	512	3580
	512	3470
483.xalancbmk	512	4970
	512	4610

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Hardware

CPU Name:	POWER7+
CPU Characteristics:	Intelligent Energy Optimization enabled, up to 4.144 GHz
CPU MHz:	3724
FPU:	Integrated
CPU(s) enabled:	128 cores, 16 chips, 8 cores/chip, 4 threads/core
CPU(s) orderable:	32,64,96,128 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:	1 TB (64 x 16 GB) DDR3 1066 MHz
Disk Subsystem:	8 x 387 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	512	1228	4070	**1203**	**4160**	1194	4190	512	**991**	**5050**	996	5020	990	5050
401.bzip2	512	**1126**	**4390**	1126	4390	1128	4380	512	1018	4850	**1009**	**4900**	995	4970
403.gcc	512	**991**	**4160**	967	4260	999	4130	512	**941**	**4380**	943	4370	927	4450
429.mcf	512	768	6080	767	6090	**768**	**6080**	128	182	6400	185	6310	**183**	**6370**
445.gobmk	512	1076	4990	1067	5030	**1074**	**5000**	512	871	6160	**868**	**6190**	863	6220
456.hmmer	512	969	4930	1003	4760	**988**	**4830**	512	622	7680	633	7540	**630**	**7590**
458.sjeng	512	**1290**	**4800**	1298	4770	1288	4810	512	**1112**	**5570**	1117	5550	1111	5570
462.libquantum	512	**2360**	**4500**	2361	4490	2352	4510	512	202	52500	196	54000	**201**	**52800**
464.h264ref	512	**1704**	**6650**	1740	6510	1670	6780	512	1561	7260	**1561**	**7260**	1565	7240
471.omnetpp	512	1623	1970	1619	1980	**1621**	**1970**	512	1475	2170	1486	2150	**1475**	**2170**
473.astar	512	1034	3470	1035	3470	**1035**	**3470**	512	1003	3580	1002	3590	**1003**	**3580**
483.xalancbmk	512	766	4610	**766**	**4610**	755	4680	512	**711**	**4970**	712	4960	711	4970

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).
```

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Operating System Notes

```
AIX updated to V7.1 TL 2

All ulimits set to unlimited.

51200 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
```

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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: -qipa=threads -bmaxdata:0x50000000 -O5 -qsimd -qvecnvol
               -qlargepage -D_ILS_MACROS -blpdata -btextpsize:64K

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

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Peak Optimization Flags (Continued)

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

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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For questions about this result, please contact the tester.
For other inquiries, please contact webmaster@spec.org.

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