SPEC® CINT2006 Result

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IBM Corporation

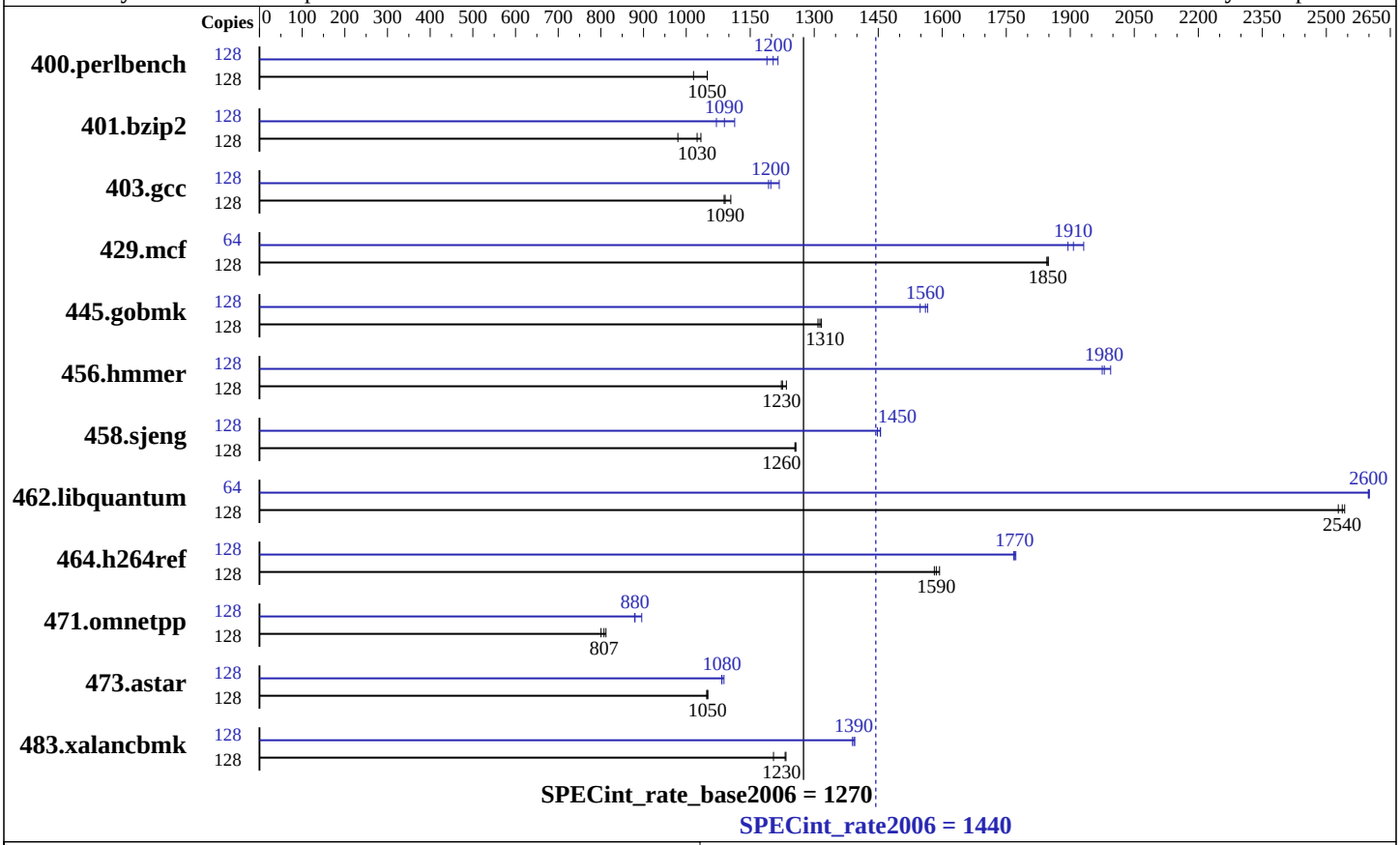
IBM Power 795 (4.0 GHz, 32 core)

SPECint®_rate2006 = 1440

SPECint_rate_base2006 = 1270

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

Test date: Aug-2010
Hardware Availability: Sep-2010
Software Availability: Sep-2010



Hardware

CPU Name:	POWER7
CPU Characteristics:	Intelligent Energy Optimization enabled, up to 4.14 GHz
CPU MHz:	4004
FPU:	Integrated
CPU(s) enabled:	32 cores, 4 chips, 8 cores/chip, 4 threads/core
CPU(s) orderable:	32,64,96,128,160,192,224,256 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:	4 MB I+D on chip per core
Other Cache:	None
Memory:	256 GB (32x8 GB) DDR3 1066 MHz
Disk Subsystem:	5x146.8 GB Raid0 SAS SFF 15K RPM
Other Hardware:	None

Software

Operating System:	IBM AIX V7.1
Compiler:	IBM XL C/C++ for AIX, V11.1 Version: 11.01.0000.0002
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	128	1230	1020	1192	1050	**1192**	**1050**	128	1052	1190	**1039**	**1200**	1029	1220
401.bzip2	128	1260	981	**1204**	**1030**	1194	1030	128	**1134**	**1090**	1109	1110	1154	1070
403.gcc	128	**944**	**1090**	946	1090	933	1100	128	846	1220	**860**	**1200**	864	1190
429.mcf	128	632	1850	**632**	**1850**	633	1850	64	**306**	**1910**	302	1930	308	1890
445.gobmk	128	1020	1320	**1022**	**1310**	1026	1310	128	867	1550	**860**	**1560**	858	1570
456.hmmer	128	967	1230	**974**	**1230**	976	1220	128	**603**	**1980**	605	1970	599	1990
458.sjeng	128	1232	1260	**1233**	**1260**	1234	1250	128	**1065**	**1450**	1064	1460	1070	1450
462.libquantum	128	**1045**	**2540**	1043	2540	1049	2530	64	**510**	**2600**	510	2600	510	2600
464.h264ref	128	1791	1580	**1786**	**1590**	1777	1590	128	1603	1770	**1601**	**1770**	1598	1770
471.omnetpp	128	1000	800	**991**	**807**	985	812	128	910	879	893	896	**909**	**880**
473.astar	128	**856**	**1050**	857	1050	855	1050	128	829	1080	825	1090	**829**	**1080**
483.xalancbmk	128	716	1230	**717**	**1230**	733	1200	128	**634**	**1390**	633	1400	636	1390

Results appear in the order in which they were run. Bold underlined text indicates a median measurement.

Peak Tuning Notes

```
fdpr binary optimization tool used for 401.bzip2
 with options -O4 -sdp 9 -rtb -vrox -nodp -m power7
fdpr binary optimization tool used for 403.gcc 429.mcf 445.gobmk 458.sjeng
 with options -O3 -m power7
fdpr binary optimization tool used for 456.hmmer
 with options -O3 -lu -1 -nodp -sdp 9 -m power7
fdpr binary optimization tool used for 462.libquantum
 with options -O4 -nodp -m power7
fdpr binary optimization tool used for 471.omnetpp
 with options -O4 -nodp -m power7 -vrox
fdpr binary optimization tool used for 473.astar
 with options -O4 -sdp 9 -vrox -dp -m power7
```

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

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

All ulimits set to unlimited.
```

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Operating System Notes (Continued)

```
12800 16M large pages defined with vmo command

See the flags file for details on settings.
```

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 -O5 -qlargepage -qsimd -qvecnvol
-D_ILS_MACROS -qalias=noansi -qalloca -blpdata
```

C++ benchmarks:
```
-qipa=threads -bmaxdata:0x20000000 -O5 -qlargepage -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
```

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Peak Compiler Invocation (Continued)

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: -qipa=threads -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) -O5 -qsimd -qvecnvol -qlargepage
-D_ILS_MACROS -blpdata -btextpsize:64K

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

429.mcf: Same as 401.bzip2

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

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) -O5
-D_ILS_MACROS -blpdata -btextpsize:64K

462.libquantum: -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:

Continued on next page

Peak Optimization Flags (Continued)

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

483.xalancbmk: `-qipa=threads -bmaxdata:0x20000000 -qpdf1`(pass 1)
`-qpdf2`(pass 2) `-O4 -qsimd -qvecnvol -qarch=pwr5`
`-qtune=pwr5 -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`

403.gcc: `-qsuppress=1500-036`

462.libquantum: `-qsuppress=1500-036`

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

471.omnetpp: `-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.20100901.html
http://www.spec.org/cpu2006/flags/IBM-AIX.20100303.html

You can also download the XML flags sources by saving the following links:
http://www.spec.org/cpu2006/flags/IBM-XL.20100901.xml
http://www.spec.org/cpu2006/flags/IBM-AIX.20100303.xml

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