SPEC® CINT2006 Result

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IBM Corporation

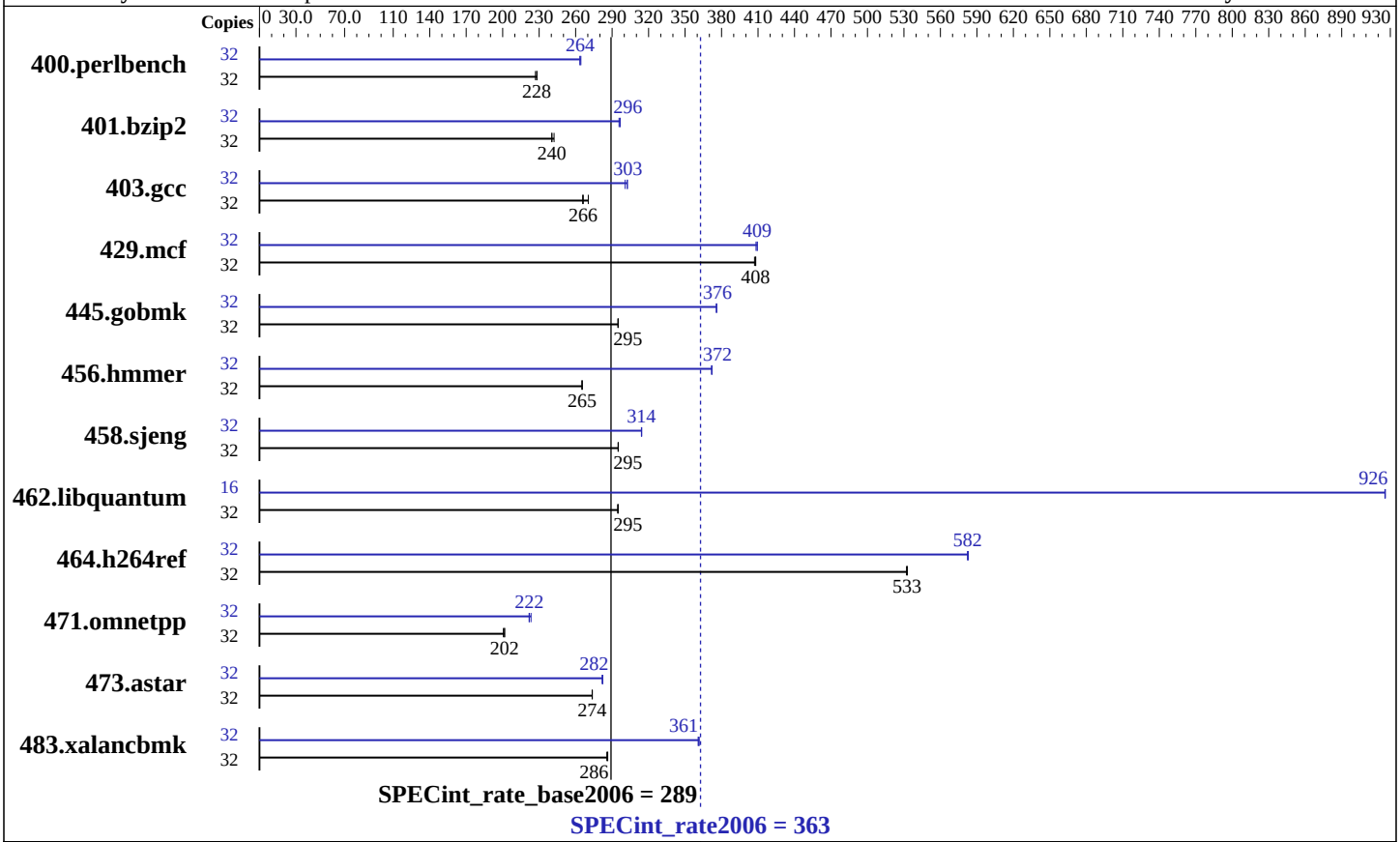
IBM Power 560 Express (3.6 GHz, 16 core)

SPECint®_rate2006 = 363

SPECint_rate_base2006 = 289

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

Test date: Sep-2008
Hardware Availability: Nov-2008
Software Availability: Nov-2008



Hardware

CPU Name:	POWER6+
CPU Characteristics:	
CPU MHz:	3600
FPU:	Integrated
CPU(s) enabled:	16 cores, 8 chips, 2 cores/chip, 2 threads/core
CPU(s) orderable:	4,8,16 cores
Primary Cache:	64 KB I + 64 KB D on chip per core
Secondary Cache:	4 MB I+D on chip per core
L3 Cache:	32 MB I+D off chip per chip
Other Cache:	None
Memory:	64 GB (32x2 GB) DDR2 667 MHz
Disk Subsystem:	4x146 GB SAS 15K RPM
Other Hardware:	None

Software

Operating System:	IBM AIX V6.1 with the 6100-02 Technology Level
Compiler:	IBM XL C/C++ V10.1 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	32	1370	228	1378	227	**1371**	**228**	32	1183	264	**1185**	**264**	1187	263
401.bzip2	32	1275	242	1284	240	**1284**	**240**	32	1041	297	1044	296	**1042**	**296**
403.gcc	32	**967**	**266**	969	266	953	270	32	857	301	852	303	**852**	**303**
429.mcf	32	715	408	**715**	**408**	717	407	32	**713**	**409**	715	408	713	409
445.gobmk	32	1138	295	**1138**	**295**	1138	295	32	893	376	**893**	**376**	893	376
456.hmmer	32	1125	265	**1125**	**265**	1125	265	32	802	372	803	372	**802**	**372**
458.sjeng	32	**1312**	**295**	1313	295	1312	295	32	1233	314	**1232**	**314**	1232	314
462.libquantum	32	2251	295	**2249**	**295**	2247	295	16	**358**	**926**	358	926	358	926
464.h264ref	32	1331	532	1329	533	**1330**	**533**	32	**1216**	**582**	1216	582	1215	583
471.omnetpp	32	997	201	**992**	**202**	992	202	32	**901**	**222**	896	223	902	222
473.astar	32	821	274	**821**	**274**	821	274	32	**796**	**282**	797	282	796	282
483.xalancbmk	32	773	286	771	286	**771**	**286**	32	612	361	610	362	**612**	**361**

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 400.perlbench 401.bzip2 403.gcc 456.hmmer 458.sjeng
                                       464.h264ref 471.omnetpp 473.astar 483.xalancbmk
  with options -O4 -vrox -pbsi
fdpr binary optimization tool used for 445.gobmk
  with options -O3 -vrox -sdp 9
fdpr binary optimization tool used for 429.mcf
  with options -kr -lap -lro -nop -nopr -RC -tb -tlo -vro -lu 9 -rt 0.95 -sdpla 8
               -sdpms 512 -shci 15 -si -sidf 45 -siht 10 -lun 13 -m ppc405 -vrox -gcpyp
fdpr binary optimization tool used for 462.libquantum
  with options -bf -bp -dp -hr -kr -las -lro -nop -RC -RD -tlo -vro -A 32 -isf 12
               -lu 9 -rt 0.00 -ihf 20 -sdp 9 -shci 90 -si -sidf 50 -vrox -dce
```

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

```
all ulimits set to unlimited.
3200 16M large pages defined with vmo command
```

Platform Notes

```
System set to "Enhanced" mode when defining partition on HMC.
```

General Notes

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

 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:
```
-bmaxdata:0x50000000 -O5 -qlargepage -D_ILS_MACROS -qalias=noansi
-qalloca -blpdata
```

C++ benchmarks:
```
-bmaxdata:0x20000000 -O5 -qlargepage -D_ILS_MACROS -qrtti=all
-D__IBM_FAST_SET_MAP_ITERATOR -blpdata
```

Base Other Flags

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

C++ benchmarks:
```
-qipa=threads -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) -O5
-qlargepage -D_ILS_MACROS -qalias=noansi -qfdpr -blpdata

401.bzip2: -bmaxdata:0x4fffffc -qpdf1(pass 1) -qpdf2(pass 2) -O4
-qlargepage -D_ILS_MACROS -qfdpr -blpdata

403.gcc: -bmaxdata:0x50000000 -qpdf1(pass 1) -qpdf2(pass 2) -O4
-qlargepage -D_ILS_MACROS -qalloca -qfdpr -blpdata

429.mcf: -bmaxdata:0x50000000 -O5 -qlargepage -D_ILS_MACROS -qfdpr
-blpdata

445.gobmk: -qpdf1(pass 1) -qpdf2(pass 2) -O3 -qarch=auto -qtune=auto
-qlargepage -D_ILS_MACROS -qfdpr -blpdata

456.hmmer: -qpdf1(pass 1) -qpdf2(pass 2) -O5 -qenablevmx -qvecnvol
-D_ILS_MACROS -qfdpr -bdatapsize:64K -bstackpsize:64K
-btextpsize:64K

458.sjeng: -O5 -qlargepage -qenablevmx -qvecnvol -D_ILS_MACROS
-qfdpr -blpdata

462.libquantum: -qpdf1(pass 1) -qpdf2(pass 2) -O5 -qlargepage -q64
-D_ILS_MACROS -qfdpr -blpdata

464.h264ref: -qpdf1(pass 1) -qpdf2(pass 2) -O5 -D_ILS_MACROS -qfdpr
-bdatapsize:64K -bstackpsize:64K -btextpsize:64K

Continued on next page

Peak Optimization Flags (Continued)

C++ benchmarks:

471.omnetpp: -bmaxdata:0x20000000 -qpdf1(pass 1) -qpdf2(pass 2) -O5 -qlargepage -D_ILS_MACROS -qfdpr -qalign=natural -qrtti=all -qinlglue -D__IBM_FAST_SET_MAP_ITERATOR -blpdata

473.astar: -bmaxdata:0x20000000 -O5 -qlargepage -D_ILS_MACROS -qfdpr -qenablevmx -qvecnvol -qinlglue -qalign=natural -blpdata

483.xalancbmk: -bmaxdata:0x20000000 -qpdf1(pass 1) -qpdf2(pass 2) -O5 -qlargepage -D_ILS_MACROS -qfdpr -qinlglue -D__IBM_FAST_VECTOR -blpdata

Peak Other Flags

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

C++ benchmarks:
-qipa=threads -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-AIX.html
http://www.spec.org/cpu2006/flags/IBM-XL.20090713.html

You can also download the XML flags sources by saving the following links:
http://www.spec.org/cpu2006/flags/IBM-AIX.xml
http://www.spec.org/cpu2006/flags/IBM-XL.20090713.xml

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