SPEC® CFP2006 Result

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IBM Corporation

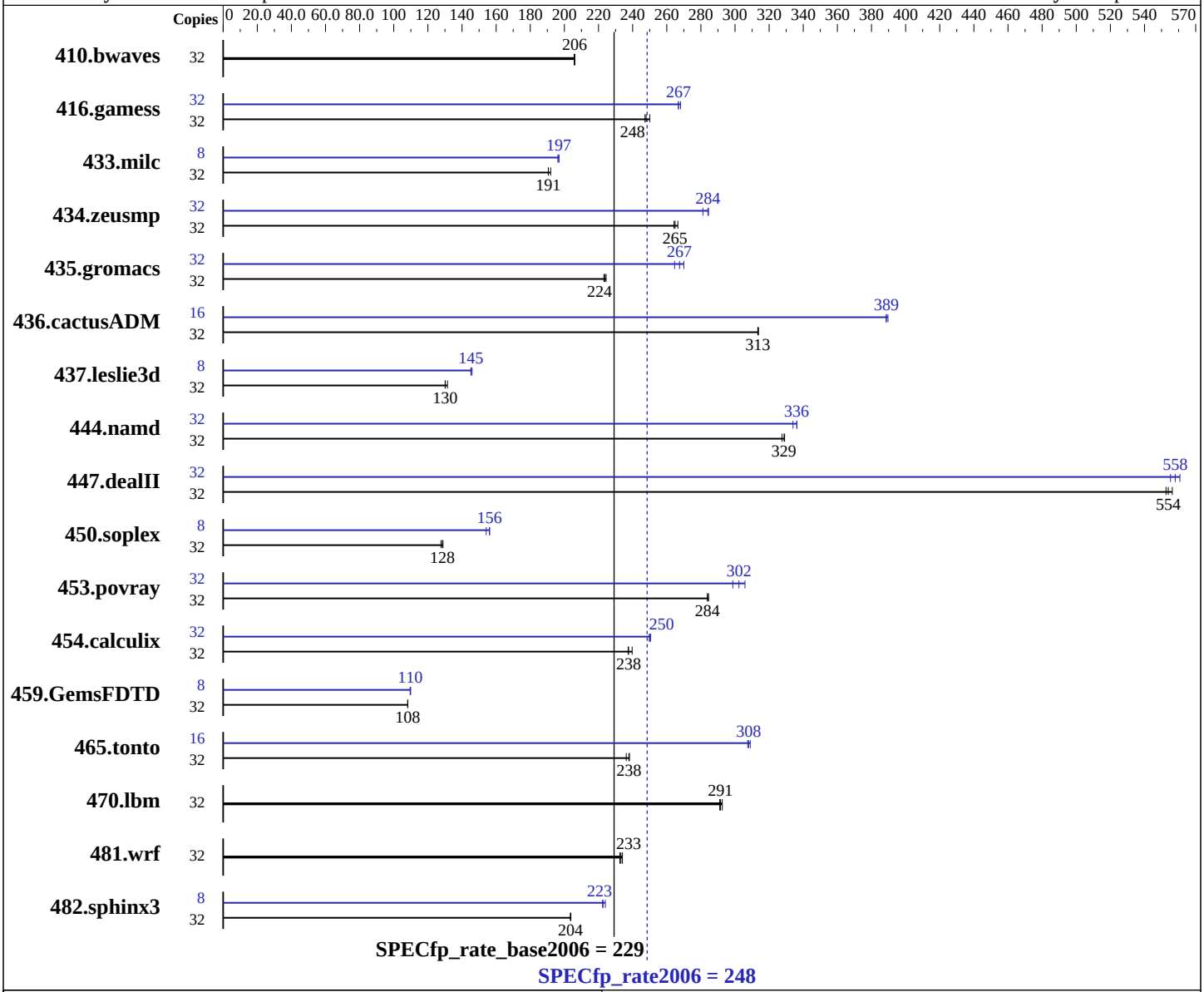
IBM Power 710 Express (3.55 GHz, 8 core)

SPECfp®_rate2006 = 248

SPECfp_rate_base2006 = 229

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 3.86 GHz
CPU MHz:	3556
FPU:	Integrated
CPU(s) enabled:	8 cores, 1 chip, 8 cores/chip, 4 threads/core
CPU(s) orderable:	8 cores
Primary Cache:	32 KB I + 32 KB D on chip per core

Continued on next page

Software

Operating System:	IBM AIX V7.1
Compiler:	IBM XL C/C++ for AIX, V11.1 Version: 11.01.0000.0002 IBM XL Fortran for AIX, V13.1 Version: 13.01.0000.0002
Auto Parallel:	No
File System:	AIX/JFS2
System State:	Multi-user

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Secondary Cache:	256 KB I+D on chip per core
L3 Cache:	4 MB I+D on chip per core
Other Cache:	None
Memory:	64 GB (8x8 GB) DDR3 1066 MHz
Disk Subsystem:	2x146.8 GB SAS SFF 15K RPM
Other Hardware:	None

Base Pointers:	32-bit
Peak Pointers:	32/64-bit
Other Software:	None

Results Table

Benchmark	Base							Peak						
	Copies	Seconds	Ratio	Seconds	Ratio	Seconds	Ratio	Copies	Seconds	Ratio	Seconds	Ratio	Seconds	Ratio
410.bwaves	32	2110	206	2114	206	**2111**	**206**	32	2110	206	2114	206	**2111**	**206**
416.gamess	32	**2527**	**248**	2534	247	2506	250	32	**2348**	**267**	2348	267	2337	268
433.milc	32	1530	192	1541	191	**1541**	**191**	8	374	196	373	197	**373**	**197**
434.zeusmp	32	**1099**	**265**	1093	267	1102	264	32	1024	284	**1025**	**284**	1036	281
435.gromacs	32	1018	224	**1021**	**224**	1024	223	32	**854**	**267**	864	265	846	270
436.cactusADM	32	**1220**	**313**	1220	313	1219	314	16	492	389	491	390	**492**	**389**
437.leslie3d	32	2288	131	**2311**	**130**	2312	130	8	518	145	**518**	**145**	515	146
444.namd	32	**781**	**329**	784	328	780	329	32	**763**	**336**	768	334	763	336
447.dealII	32	**661**	**554**	658	556	662	553	32	**656**	**558**	659	555	653	561
450.soplex	32	2071	129	**2077**	**128**	2091	128	8	433	154	**427**	**156**	427	156
453.povray	32	598	285	**600**	**284**	600	284	32	557	306	570	299	**563**	**302**
454.calculix	32	1112	237	1101	240	**1111**	**238**	32	1057	250	1054	251	**1056**	**250**
459.GemsFDTD	32	3139	108	**3138**	**108**	3137	108	8	775	110	772	110	**774**	**110**
465.tonto	32	1322	238	**1324**	**238**	1333	236	16	512	307	**511**	**308**	510	309
470.lbm	32	**1509**	**291**	1511	291	1503	293	32	**1509**	**291**	1511	291	1503	293
481.wrf	32	**1533**	**233**	1537	232	1527	234	32	**1533**	**233**	1537	232	1527	234
482.sphinx3	32	**3063**	**204**	3064	204	3060	204	8	**700**	**223**	696	224	701	222

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:
   450.soplex
 with options -O4 -sdp 9 -vrox -kr -m power7
fdpr binary optimization tool used for:
   433.milc 435.gromacs 444.namd
 with options -O3 -lu -1 -nodp -sdp 9 -m power7
fdpr binary optimization tool used for 434.zeusmp
 with options -RD -O4 -sdp 9 -vrox -nodp -m power7
fdpr binary optimization tool used for 436.cactusADM
 with options -O3 -m power7
fdpr binary optimization tool used for:
   437.leslie3d 453.povray 454.calculix
 with options -O4 -sdp 9 -vrox -rtb -nodp -m power7
```

Continued on next page

Peak Tuning Notes (Continued)

```
fdpr binary optimization tool used for 447.dealII
 with options -O4 -sdp 9 -vrox -m power7 -RD -dp
fdpr binary optimization tool used for 482.sphinx3
 with options -O4 -nodp -m power7 -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

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

All ulimits set to unlimited.
6400 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`

Fortran benchmarks:
`/usr/bin/xlf95`

Benchmarks using both Fortran and C:
`/usr/vac/bin/xlc -qlanglvl=extc99 /usr/bin/xlf95`

Base Portability Flags

410.bwaves: `-qfixed`
416.gamess: `-qfixed`
434.zeusmp: `-qfixed`
435.gromacs: `-qfixed -qextname`
436.cactusADM: `-qfixed -qextname`
437.leslie3d: `-qfixed`

Continued on next page

Base Portability Flags (Continued)

454.calculix: -qfixed -qextname
481.wrf: -DSPEC_CPU_AIX -DNOUNDERSCORE
482.sphinx3: -qchars=signed

Base Optimization Flags

C benchmarks:
-qipa=threads -bmaxdata:0x40000000 -O5 -qlargepage -O4 -D_ILS_MACROS
-blpdata

C++ benchmarks:
-qipa=threads -bmaxdata:0x50000000 -O5 -qlargepage -O4 -D_ILS_MACROS
-qrtti=all -D__IBM_FAST_VECTOR -D__IBM_FAST_SET_MAP_ITERATOR -blpdata

Fortran benchmarks:
-qipa=threads -bmaxdata:0x60000000 -O5 -qlargepage -O4
-qsmallstack=dynlenonheap -qalias=nostd -blpdata

Benchmarks using both Fortran and C:
-qipa=threads -bmaxdata:0x60000000 -O5 -qlargepage -O4 -D_ILS_MACROS
-qsmallstack=dynlenonheap -qalias=nostd -blpdata

Base Other Flags

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

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

Fortran benchmarks:
-qipa=noobject -qsuppress=1500-010 -qsuppress=cmpmsg
-qsuppress=1500-036

Benchmarks using both Fortran and C:
-qipa=noobject -qsuppress=1500-010 -qsuppress=cmpmsg
-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

Fortran benchmarks:
/usr/bin/xlf95

Benchmarks using both Fortran and C:
/usr/vac/bin/xlc -qlanglvl=extc99 /usr/bin/xlf95

Peak Portability Flags

410.bwaves: -qfixed
416.gamess: -qfixed
434.zeusmp: -qfixed
435.gromacs: -qfixed -qextname
436.cactusADM: -qfixed -qextname -DSPEC_CPU_LP64
437.leslie3d: -qfixed
454.calculix: -qfixed -qextname
481.wrf: -DSPEC_CPU_AIX -DNOUNDERSCORE
482.sphinx3: -qchars=signed

Peak Optimization Flags

C benchmarks:

433.milc: -qipa=threads -bmaxdata:0x40000000 -O5 -qsimd -qvecnvol
-qlargepage -D_ILS_MACROS -qrestrict -qprefetch=aggressive
-qalign=natural -blpdata -btextpsize:64K

470.lbm: basepeak = yes

482.sphinx3: -qipa=threads -qpdf1(pass 1) -qpdf2(pass 2) -O4
-qlargepage -D_ILS_MACROS -blpdata -btextpsize:64K

C++ benchmarks:

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

447.dealII: -qipa=threads -bmaxdata:0x50000000 -O4 -D_ILS_MACROS
-qrtti=all -D__IBM_FAST_VECTOR -D__IBM_FAST_SET_MAP_ITERATOR
-blpdata -btextpsize:64K

450.soplex: -bmaxdata:0x40000000 -qpdf1(pass 1) -qpdf2(pass 2) -O3
-qarch=auto -qtune=auto -q64 -qlargepage -D_ILS_MACROS
-blpdata -btextpsize:64K

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Peak Optimization Flags (Continued)

453.povray: -qipa=threads -qpdf1(pass 1) -qpdf2(pass 2) -O5 -q64 -qsimd -qvecnvol -qlargepage -D_ILS_MACROS -qalign=natural -bdatapsize:64K -bstackpsize:64K -btextpsize:64K

Fortran benchmarks:

410.bwaves: basepeak = yes

416.gamess: -qipa=threads -bmaxdata:0x40000000 -qpdf1(pass 1) -qpdf2(pass 2) -O5 -qsimd -qvecnvol -qarch=pwr5 -qlargepage -qalias=nostd -blpdata -btextpsize:64K

434.zeusmp: -bmaxdata:0x40000000 -qpdf1(pass 1) -qpdf2(pass 2) -O3 -qarch=auto -qtune=auto -qlargepage -qxlf90=nosignedzero -blpdata -btextpsize:64K

437.leslie3d: -qpdf1(pass 1) -qpdf2(pass 2) -O3 -qarch=auto -qtune=auto -q64 -blpdata -btextpsize:64K

459.GemsFDTD: -bmaxdata:0x50000000 -O3 -qarch=auto -qtune=auto -qlargepage -blpdata -btextpsize:64K

465.tonto: -qipa=threads -bmaxdata:0x50000000 -qpdf1(pass 1) -qpdf2(pass 2) -O5 -qsimd -qvecnvol -blpdata -btextpsize:64K

Benchmarks using both Fortran and C:

435.gromacs: -qipa=threads -qpdf1(pass 1) -qpdf2(pass 2) -O4 -qsimd -qvecnvol -D_ILS_MACROS -blpdata -btextpsize:64K

436.cactusADM: -qipa=threads -O4 -q64 -qsimd -qvecnvol -D_ILS_MACROS -qnostrict -blpdata -btextpsize:64K

454.calculix: -qipa=threads -O5 -qsimd -qvecnvol -qlargepage -D_ILS_MACROS -blpdata -btextpsize:64K

481.wrf: basepeak = yes

Peak Other Flags

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

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

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Peak Other Flags (Continued)

450.soplex: `-qsuppress=1500-036`

Fortran benchmarks (except as noted below):
`-qsuppress=1500-010 -qsuppress=cmpmsg -qsuppress=1500-036`

410.bwaves: `-qipa=noobject -qsuppress=1500-010 -qsuppress=cmpmsg -qsuppress=1500-036`

416.gamess: `-qipa=noobject -qsuppress=1500-010 -qsuppress=cmpmsg -qsuppress=1500-036`

465.tonto: `-qipa=noobject -qsuppress=1500-010 -qsuppress=cmpmsg -qsuppress=1500-036`

Benchmarks using both Fortran and C:
`-qipa=noobject -qsuppress=1500-010 -qsuppress=cmpmsg -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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