SPEC® CFP2006 Result

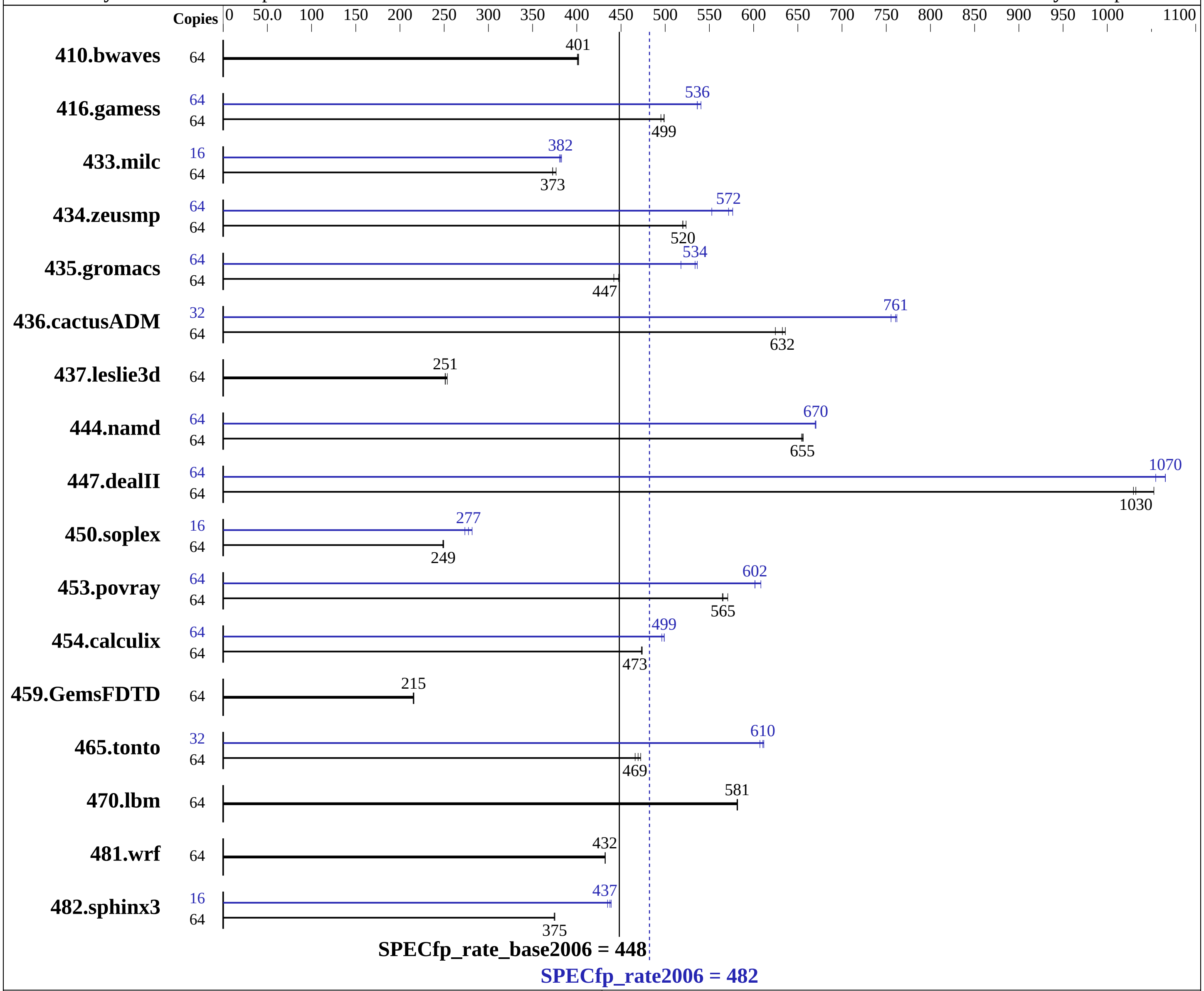
IBM Corporation

SPECfp®_rate2006 = 482

IBM Power 730 Express (3.55 GHz, 16 core)

SPECfp_rate_base2006 = 448

CPU2006 license:	11	**Test date:**	Aug-2010
Test sponsor:	IBM Corporation	**Hardware Availability:**	Sep-2010
Tested by:	IBM Corporation	**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:	16 cores, 2 chips, 8 cores/chip, 4 threads/core
CPU(s) orderable:	16 cores
Primary Cache:	32 KB I + 32 KB D on chip per core

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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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CPU2006 license: 11
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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:	128 GB (16x8 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	64	2171	401	**2167**	**401**	2163	402	64	2171	401	**2167**	**401**	2163	402
416.gamess	64	**2513**	**499**	2512	499	2531	495	64	2337	536	2319	540	**2336**	**536**
433.milc	64	1560	377	1577	373	**1576**	**373**	16	384	383	386	381	**385**	**382**
434.zeusmp	64	**1120**	**520**	1112	524	1120	520	64	1054	553	**1019**	**572**	1010	576
435.gromacs	64	1019	448	1034	442	**1021**	**447**	64	882	518	**856**	**534**	852	536
436.cactusADM	64	1224	625	**1209**	**632**	1203	636	32	502	762	**503**	**761**	506	755
437.leslie3d	64	2373	253	**2394**	**251**	2396	251	64	2373	253	**2394**	**251**	2396	251
444.namd	64	782	656	**783**	**655**	785	654	64	765	671	767	670	**766**	**670**
447.dealII	64	711	1030	**709**	**1030**	695	1050	64	694	1050	**687**	**1070**	687	1070
450.soplex	64	2139	250	2148	248	**2144**	**249**	16	**481**	**277**	488	273	474	282
453.povray	64	597	571	603	565	**602**	**565**	64	560	608	**566**	**602**	566	601
454.calculix	64	1116	473	1114	474	**1116**	**473**	64	1064	496	**1059**	**499**	1058	499
459.GemsFDTD	64	**3153**	**215**	3147	216	3160	215	64	**3153**	**215**	3147	216	3160	215
465.tonto	64	**1342**	**469**	1333	472	1352	466	32	**516**	**610**	519	607	515	612
470.lbm	64	1513	581	1511	582	**1512**	**581**	64	1513	581	1511	582	**1512**	**581**
481.wrf	64	**1654**	**432**	1655	432	1654	432	64	**1654**	**432**	1655	432	1654	432
482.sphinx3	64	**3326**	**375**	3332	374	3324	375	16	710	439	**713**	**437**	717	435

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:
   453.povray 454.calculix
 with options -O4 -sdp 9 -vrox -rtb -nodp -m power7
```

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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.
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`

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

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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: basepeak = yes

459.GemsFDTD: basepeak = yes

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):
`-qipa=noobject -qsuppress=1500-010 -qsuppress=cmpmsg -qsuppress=1500-036`

434.zeusmp: `-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

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

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