



SPEC® CFP2006 Result

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IBM Corporation

SPECfp®_rate2006 = 10500

IBM Power 795 (4.0 GHz, 256 core)

SPECfp_rate_base2006 = 9730

CPU2006 license: 11

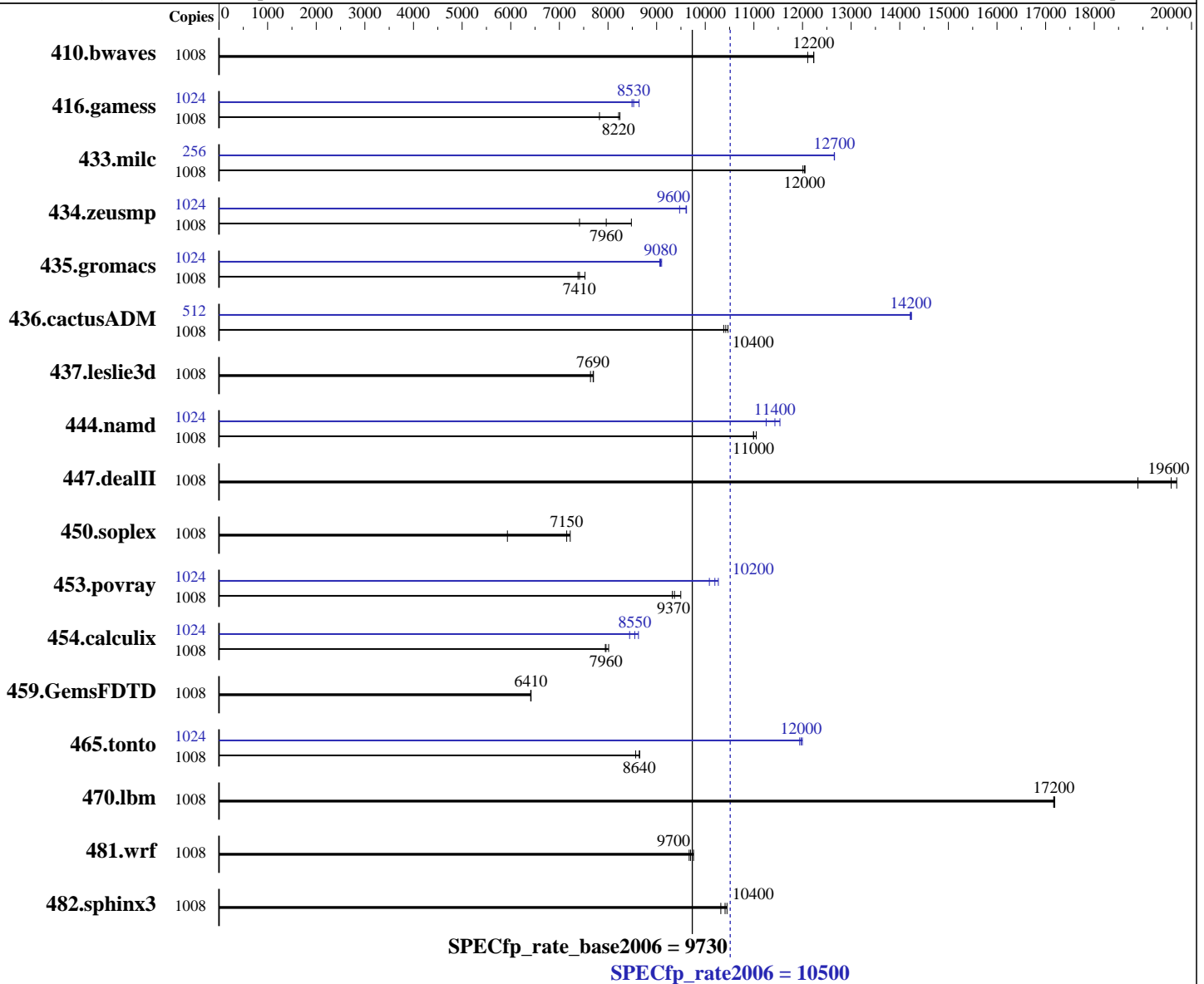
Test sponsor: IBM Corporation

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: 256 cores, 32 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

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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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Secondary Cache: 256 KB I+D on chip per core
 L3 Cache: 4 MB I+D on chip per core
 Other Cache: None
 Memory: 2 TB (256x8 GB) DDR3 1066 MHz
 Disk Subsystem: 42x146.8 GB Raid0 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	1008	1131	12100	<u>1120</u>	<u>12200</u>	1120	12200	1008	1131	12100	<u>1120</u>	<u>12200</u>	1120	12200
416.gamess	1008	2522	7820	<u>2401</u>	<u>8220</u>	2394	8250	1024	2361	8490	2321	8640	<u>2351</u>	<u>8530</u>
433.milc	1008	771	12000	768	12100	<u>769</u>	<u>12000</u>	256	186	12700	<u>186</u>	<u>12700</u>	186	12700
434.zeusmp	1008	1237	7410	<u>1152</u>	<u>7960</u>	1082	8480	1024	984	9470	969	9620	<u>970</u>	<u>9600</u>
435.gromacs	1008	975	7380	956	7530	<u>971</u>	<u>7410</u>	1024	<u>805</u>	<u>9080</u>	803	9100	807	9060
436.cactusADM	1008	<u>1156</u>	<u>10400</u>	1161	10400	1151	10500	512	430	14200	<u>430</u>	<u>14200</u>	430	14200
437.leslie3d	1008	1240	7640	1230	7700	<u>1232</u>	<u>7690</u>	1008	1240	7640	1230	7700	<u>1232</u>	<u>7690</u>
444.namd	1008	<u>735</u>	<u>11000</u>	735	11000	732	11000	1024	730	11300	712	11500	<u>718</u>	<u>11400</u>
447.dealII	1008	585	19700	<u>589</u>	<u>19600</u>	610	18900	1008	585	19700	<u>589</u>	<u>19600</u>	610	18900
450.soplex	1008	1417	5930	1164	7220	<u>1176</u>	<u>7150</u>	1008	1417	5930	1164	7220	<u>1176</u>	<u>7150</u>
453.povray	1008	565	9500	<u>573</u>	<u>9370</u>	575	9320	1024	531	10300	<u>534</u>	<u>10200</u>	540	10100
454.calculix	1008	1038	8010	<u>1045</u>	<u>7960</u>	1047	7950	1024	979	8630	1000	8440	<u>988</u>	<u>8550</u>
459.GemsFDTD	1008	1668	6410	<u>1668</u>	<u>6410</u>	1666	6420	1008	1668	6410	<u>1668</u>	<u>6410</u>	1666	6420
465.tonto	1008	1157	8570	1146	8650	<u>1148</u>	<u>8640</u>	1024	844	11900	840	12000	<u>842</u>	<u>12000</u>
470.lbm	1008	806	17200	807	17200	<u>807</u>	<u>17200</u>	1008	806	17200	807	17200	<u>807</u>	<u>17200</u>
481.wrf	1008	1164	9670	<u>1161</u>	<u>9700</u>	1154	9760	1008	1164	9670	<u>1161</u>	<u>9700</u>	1154	9760
482.sphinx3	1008	1904	10300	<u>1888</u>	<u>10400</u>	1881	10400	1008	1904	10300	<u>1888</u>	<u>10400</u>	1881	10400

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:
 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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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.
84600 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
454.calculix: -qfixed -qextname
481.wrf: -DSPEC_CPU_AIX -DNOUNDERSCORE
482.sphinx3: -qchars=signed
```



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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

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



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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 -qvecnvoll
-qlargepage -D_ILS_MACROS -qrestrict -qprefetch=aggressive
-qalign=natural -blpdata -btextpsize:64K

```

470.lbm: basepeak = yes

482.sphinx3: basepeak = yes

C++ benchmarks:

```

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

```

447.dealIII: basepeak = yes

450.soplex: basepeak = yes

```

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

```

Fortran benchmarks:

410.bwaves: basepeak = yes

```

416.gamess: -qipa=threads -bmaxdata:0x40000000 -qpdf1(pass 1)
-qpdf2(pass 2) -O5 -qsimd -qvecnvoll -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

```

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Peak Optimization Flags (Continued)

437.leslie3d: basepeak = yes

459.GemsFDTD: basepeak = yes

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

Benchmarks using both Fortran and C:

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

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

454.calculix: -qipa=threads -O5 -qsimd -qvecnvол -qlargepage
-D_ILS_MACROС -blpdata -btextpsize:64K

481.wrf: basepeak = yes

Peak Other Flags

C benchmarks:

-qipa=noobject -qsuppress=1500-036

C++ benchmarks:

-qipa=noobject -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>



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For other inquiries, please contact webmaster@spec.org.

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