SPEC® CFP2006 Result
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IBM Corporation

IBM Power 755 (3.3 GHz, 32 core, SLES)

$SPECfp®\_rate2006 =$ 839
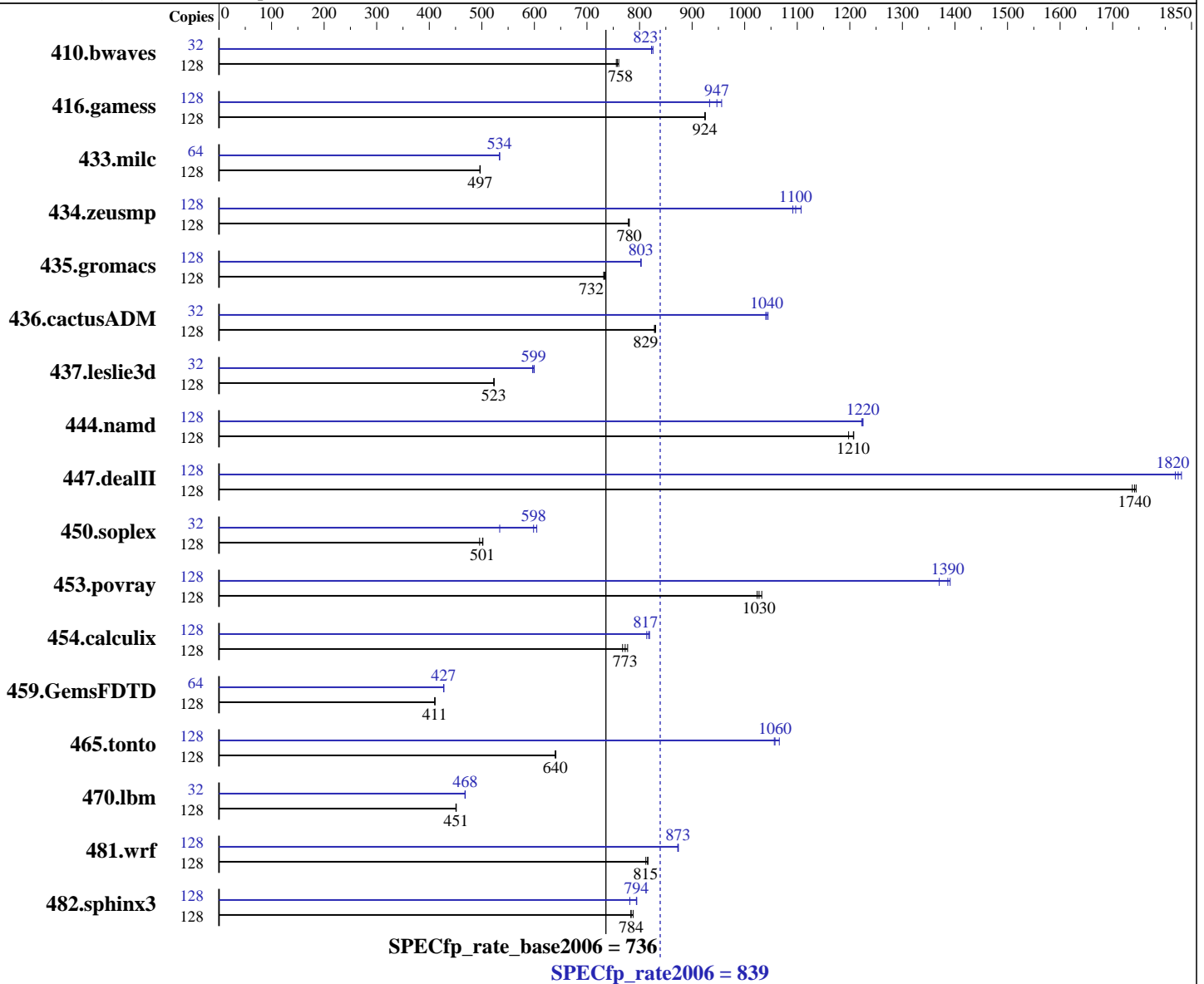
$SPECfp\_rate\_base2006 =$ 736

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

Test date: Jan-2010
Hardware Availability: Feb-2010
Software Availability: Dec-2009

	Copies		
410.bwaves	32	823	
	128	758	
416.gamess	128	947	
	128	924	
433.milc	64	534	
	128	497	
434.zeusmp	128	1100	
	128	780	
435.gromacs	128	803	
	128	732	
436.cactusADM	32	1040	
	128	829	
437.leslie3d	32	599	
	128	523	
444.namd	128	1220	
	128	1210	
447.dealII	128	1820	
	128	1740	
450.soplex	32	598	
	128	501	
453.povray	128	1390	
	128	1030	
454.calculix	128	817	
	128	773	
459.GemsFDTD	64	427	
	128	411	
465.tonto	128	1060	
	128	640	
470.lbm	32	468	
	128	451	
481.wrf	128	873	
	128	815	
482.sphinx3	128	794	
	128	784	

SPECfp_rate_base2006 = 736

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Hardware

CPU Name: POWER7
CPU Characteristics: Intelligent Energy Optimization enabled, up to 3.64 GHz
CPU MHz: 3300
FPU: Integrated
CPU(s) enabled: 32 cores, 4 chips, 8 cores/chip, 4 threads/core
CPU(s) orderable: 32 cores
Primary Cache: 32 KB I + 32 KB D on chip per core

Continued on next page

Software

Operating System: SUSE Linux Enterprise Server 11 (ppc64), Kernel 2.6.27.19-5-ppc64
Compiler: IBM XL C/C++ for Linux, V10.1 Updated with the Oct2009 PTF IBM XL Fortran for Linux, V12.1 Updated with the Oct2009 PTF
Auto Parallel: No
File System: ext3

Continued on next page

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Secondary Cache:	256 KB I+D on chip per core	System State:	Run level 3 (multi-user)
L3 Cache:	4 MB I+D on chip per core	Base Pointers:	32-bit
Other Cache:	None	Peak Pointers:	32/64-bit
Memory:	256 GB (32x8 GB) DDR3 1066 MHz	Other Software:	-Post-Link Optimization for Linux on
Disk Subsystem:	8x146.8 GB SAS SFF 15K RPM		POWER, Version 5.5.0-1
Other Hardware:	None		-MicroQuill SmartHeap 9

Results Table

Benchmark	Base Copies	Seconds	Ratio	Seconds	Ratio	Seconds	Ratio	Peak Copies	Seconds	Ratio	Seconds	Ratio	Seconds	Ratio
410.bwaves	128	**2296**	**758**	2302	756	2288	760	32	**528**	**823**	527	826	529	823
416.gamess	128	2709	925	**2711**	**924**	2712	924	128	2621	956	2686	933	**2646**	**947**
433.milc	128	2364	497	**2366**	**497**	2367	496	64	1101	534	1101	534	**1101**	**534**
434.zeusmp	128	1496	779	**1493**	**780**	1493	780	128	1052	1110	1067	1090	**1062**	**1100**
435.gromacs	128	**1248**	**732**	1249	732	1245	734	128	1139	802	**1138**	**803**	1138	803
436.cactusADM	128	1842	831	**1844**	**829**	1847	828	32	368	1040	**367**	**1040**	366	1040
437.leslie3d	128	2301	523	**2301**	**523**	2298	524	32	504	597	**502**	**599**	502	600
444.namd	128	857	1200	**851**	**1210**	850	1210	128	838	1220	840	1220	**838**	**1220**
447.dealII	128	843	1740	**841**	**1740**	839	1740	128	800	1830	805	1820	**803**	**1820**
450.soplex	128	2153	496	**2129**	**501**	2126	502	32	500	534	**446**	**598**	441	604
453.povray	128	665	1020	**663**	**1030**	660	1030	128	497	1370	490	1390	**491**	**1390**
454.calculix	128	1375	768	**1367**	**773**	1358	777	128	1298	814	1289	819	**1292**	**817**
459.GemsFDTD	128	3309	410	3305	411	**3308**	**411**	64	1588	428	1589	427	**1589**	**427**
465.tonto	128	**1968**	**640**	1969	640	1965	641	128	**1191**	**1060**	1192	1060	1182	1070
470.lbm	128	3896	451	**3900**	**451**	3902	451	32	940	468	**939**	**468**	938	469
481.wrf	128	1761	812	1752	816	**1754**	**815**	128	**1637**	**873**	1636	874	1638	873
482.sphinx3	128	3184	784	3167	788	**3182**	**784**	128	3192	782	**3142**	**794**	3139	795

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

Submit Notes

    The config file option 'submit' was used.

Operating System Notes

```
ulimit -s (stack) set to 1048576.
Large pages reserved as follows by root user:
    echo 8448 > /proc/sys/vm/nr_hugepages
System configured with libhugetlbfs library for application access to large pages
Environment variables set before executing benchmarks.
    export HUGETLB_VERBOSE=0
    export HUGETLB_MORECORE=yes
    export XLFRTEOPTS=intrinthds=1
```

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General Notes

```
The "IBM Power 750 Express (3.3 GHz)" and "IBM Power 755 (3.3 GHz)"
are electronically equivalent. The results have been measured on the
"IBM Power 755 (3.3 GHz)"

IBM Post-Link optimization tool with
    options "-O4 -omullX -see 0 -m power6" used for
       433.milc 435.gromacs 436.cactusADM 482.sphinx3
    options "-O4 -omullX -see 1" used for
       436.cactusADM
    options "-O4 -omullX -see 1 -ihf -1" used for
       453.povray
    options "-O4" used for
       465.tonto
     Whenever option "-omullX" was used during the optimization phase,
       option "-imullX" was also used during the instrumentation phase.

Benchmarks bound to a processor using numactl on the submit command.
See flags file for details on settings.
```

Base Compiler Invocation

C benchmarks:
```
xlc -qlanglvl=extc99
```

C++ benchmarks:
```
xlC
```

Fortran benchmarks:
```
xlf95
```

Benchmarks using both Fortran and C:
```
xlc -qlanglvl=extc99 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: -DNOUNDERSCORE
   482.sphinx3: -qchars=signed
```

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Base Optimization Flags

C benchmarks:
```
-O5 -qnoenablevmx -lhugetlbfs
```

C++ benchmarks:
```
-O5 -qrtti -qnoenablevmx -qstaticlink
-Wl,--whole-archive /usr/lib/libhugetlbfs.a -Wl,--no-whole-archive
```

Fortran benchmarks:
```
-O5 -qsmallstack=dynlenonheap -qalias=nostd -qnoenablevmx
-B/usr/share/libhugetlbfs/ -tl -Wl,--hugetlbfs-link=BDT
```

Benchmarks using both Fortran and C:
```
-O5 -qnoenablevmx -qsmallstack=dynlenonheap -qalias=nostd
-B/usr/share/libhugetlbfs/ -tl -Wl,--hugetlbfs-link=BDT
```

Base Other Flags

C benchmarks:
```
-qipa=noobject -qipa=threads
```

C++ benchmarks:
```
-qipa=noobject -qipa=threads
```

Fortran benchmarks:
```
-qipa=noobject -qipa=threads
```

Benchmarks using both Fortran and C:
```
-qipa=noobject -qipa=threads
```

Peak Compiler Invocation

C benchmarks:
```
xlc -qlanglvl=extc99
```

C++ benchmarks:
```
xlC
```

Fortran benchmarks:
```
xlf95
```

Benchmarks using both Fortran and C:
```
xlc -qlanglvl=extc99 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
     437.leslie3d: -qfixed
     454.calculix: -qfixed -qextname
         481.wrf: -DNOUNDERSCORE
     482.sphinx3: -qchars=signed
```

Peak Optimization Flags

C benchmarks:

```
     433.milc: -Wl,-q -O5 -qnoenablevmx -lhugetlbfs

     470.lbm: -qpdf1(pass 1) -qpdf2(pass 2) -O3 -qarch=auto -qtune=auto
             -B/usr/share/libhugetlbfs/ -tl -Wl,--hugetlbfs-link=BDT
             -q64

     482.sphinx3: -Wl,-q -qpdf1(pass 1) -qpdf2(pass 2) -O4 -lhugetlbfs
```

C++ benchmarks:

```
     444.namd: -qpdf1(pass 1) -qpdf2(pass 2) -O5

     447.dealII: -O5 -qrtti -qnoenablevmx -qstaticlink -Wl,-z,muldefs
             -Wl,--whole-archive /usr/lib/libsmartheap.a
             -Wl,--no-whole-archive

     450.soplex: -qpdf1(pass 1) -qpdf2(pass 2) -O4 -qstrict -lhugetlbfs

     453.povray: -Wl,-q -qpdf1(pass 1) -qpdf2(pass 2) -O5 -lsmartheap
```

Fortran benchmarks:

```
     410.bwaves: -O5 -qsmallstack=dynlenonheap -lhugetlbfs

     416.gamess: -qpdf1(pass 1) -qpdf2(pass 2) -O5 -qalias=nostd
             -qnoenablevmx

     434.zeusmp: -qpdf1(pass 1) -qpdf2(pass 2) -O3 -qarch=auto -qtune=auto
             -qxlf90=nosignedzero -B/usr/share/libhugetlbfs/ -tl
             -Wl,--hugetlbfs-link=BDT

     437.leslie3d: -O5 -qsmallstack=dynlenonheap -qnoenablevmx
             -B/usr/share/libhugetlbfs/ -tl -Wl,--hugetlbfs-link=BDT
```

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Peak Optimization Flags (Continued)

459.GemsFDTD: `-O5 -B/usr/share/libhugetlbfs/ -tl -Wl,--hugetlbfs-link=BDT -q64`

465.tonto: `-Wl,-q -qpdf1(pass 1) -qpdf2(pass 2) -O5 -q64 -lsmartheap64`

Benchmarks using both Fortran and C:

435.gromacs: `-Wl,-q -qpdf1(pass 1) -qpdf2(pass 2) -O5 -lhugetlbfs`

436.cactusADM: `-Wl,-q -qpdf1(pass 1) -qpdf2(pass 2) -O2 -qarch=auto -qtune=auto -qnostrict -lhugetlbfs`

454.calculix: `-O4 -B/usr/share/libhugetlbfs/ -tl -Wl,--hugetlbfs-link=BDT`

481.wrf: `-O5 -qnoenablevmx -q64 -lhugetlbfs`

Peak Other Flags

C benchmarks:
`-qipa=noobject -qipa=threads`

C++ benchmarks:
`-qipa=noobject -qipa=threads`

Fortran benchmarks:
`-qipa=noobject -qipa=threads`

Benchmarks using both Fortran and C:
`-qipa=noobject -qipa=threads`

The flags file that was used to format this result can be browsed at
http://www.spec.org/cpu2006/flags/IBM-Linux-XL.20100302.html

You can also download the XML flags source by saving the following link:
http://www.spec.org/cpu2006/flags/IBM-Linux-XL.20100302.xml

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

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