



SPEC[®] CFP2006 Result

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SGI

SPECfp[®]_rate2006 = **880**

SGI UV 20 (Intel Xeon E5-4650, 2.70 GHz)

SPECfp_rate_base2006 = **859**

CPU2006 license: 4

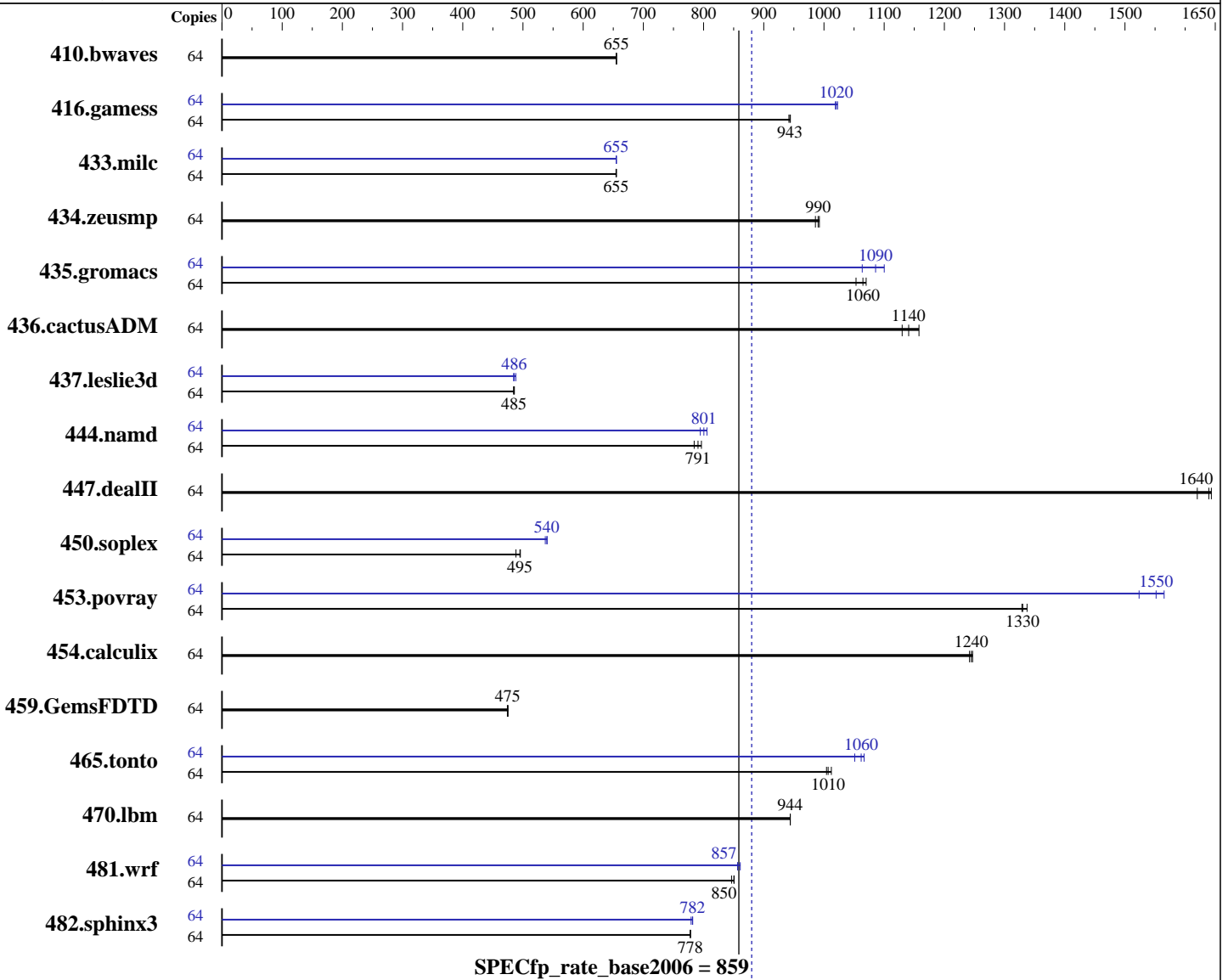
Test sponsor: SGI

Tested by: SGI

Test date: Mar-2013

Hardware Availability: Nov-2012

Software Availability: Feb-2013



Hardware

CPU Name: Intel Xeon E5-4650
 CPU Characteristics: Intel Turbo Boost Technology up to 3.30 GHz
 CPU MHz: 2700
 FPU: Integrated
 CPU(s) enabled: 32 cores, 4 chips, 8 cores/chip, 2 threads/core
 CPU(s) orderable: 2,4 chip
 Primary Cache: 32 KB I + 32 KB D on chip per core
 Secondary Cache: 256 KB I+D on chip per core

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Software

Operating System: SUSE Linux Enterprise Server 11 (x86_64)
 kernel 3.0.42-0.7-default
 Compiler: C/C++: Version 13.0.0.133 of Intel C++ Studio XE for Linux;
 Fortran: Version 13.0.0.133 of Intel Fortran Studio XE for Linux
 Auto Parallel: No
 File System: xfs
 System State: Run level 3 (multi-user)

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L3 Cache: 20 MB I+D on chip per chip
 Other Cache: None
 Memory: 512 GB (32 x 16 GB 2Rx4 PC3-12800R-11, ECC)
 Disk Subsystem: 3.3 TB RAID 0
 6 x 600 GB, SSD
 Other Hardware: None

Base Pointers: 32/64-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	1327	655	1328	655	<u>1327</u>	<u>655</u>	64	1327	655	1328	655	<u>1327</u>	<u>655</u>		
416.gamess	64	1331	942	1327	944	<u>1328</u>	<u>943</u>	64	<u>1228</u>	<u>1020</u>	1225	1020	1230	1020		
433.milc	64	896	655	<u>897</u>	<u>655</u>	898	655	64	<u>897</u>	<u>655</u>	896	655	897	655		
434.zeusmp	64	<u>588</u>	<u>990</u>	587	992	591	986	64	<u>588</u>	<u>990</u>	587	992	591	986		
435.gromacs	64	<u>429</u>	<u>1060</u>	434	1050	427	1070	64	<u>421</u>	<u>1090</u>	430	1060	415	1100		
436.cactusADM	64	<u>670</u>	<u>1140</u>	661	1160	677	1130	64	<u>670</u>	<u>1140</u>	661	1160	677	1130		
437.leslie3d	64	1242	484	<u>1240</u>	<u>485</u>	1238	486	64	1232	488	1242	484	<u>1239</u>	<u>486</u>		
444.namd	64	644	796	<u>649</u>	<u>791</u>	654	784	64	646	795	<u>641</u>	<u>801</u>	637	806		
447.dealII	64	452	1620	445	1640	<u>447</u>	<u>1640</u>	64	452	1620	445	1640	<u>447</u>	<u>1640</u>		
450.soplex	64	1077	496	<u>1078</u>	<u>495</u>	1093	488	64	994	537	988	540	<u>989</u>	<u>540</u>		
453.povray	64	256	1330	255	1340	<u>256</u>	<u>1330</u>	64	<u>219</u>	<u>1550</u>	218	1570	223	1520		
454.calculix	64	425	1240	423	1250	<u>424</u>	<u>1240</u>	64	425	1240	423	1250	<u>424</u>	<u>1240</u>		
459.GemsFDTD	64	1432	474	<u>1431</u>	<u>475</u>	1429	475	64	1432	474	<u>1431</u>	<u>475</u>	1429	475		
465.tonto	64	627	1000	622	1010	<u>625</u>	<u>1010</u>	64	590	1070	599	1050	<u>593</u>	<u>1060</u>		
470.lbm	64	932	944	931	944	<u>932</u>	<u>944</u>	64	932	944	931	944	<u>932</u>	<u>944</u>		
481.wrf	64	845	846	840	851	<u>841</u>	<u>850</u>	64	830	861	835	856	<u>834</u>	<u>857</u>		
482.sphinx3	64	<u>1603</u>	<u>778</u>	1603	778	1603	778	64	1595	782	1601	779	<u>1596</u>	<u>782</u>		

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

Submit Notes

The numactl mechanism was used to bind copies to processors. The config file option 'submit' was used to generate numactl commands to bind each copy to a specific processor. For details, please see the config file.

Operating System Notes

Stack size set to unlimited using "ulimit -s unlimited"



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CPU2006 license: 4

Test sponsor: SGI

Tested by: SGI

Test date: Mar-2013

Hardware Availability: Nov-2012

Software Availability: Feb-2013

Platform Notes

Sysinfo program /store/cma/cpu2006-v1.2/config/sysinfo.rev6818
\$Rev: 6818 \$ \$Date:: 2012-07-17 #\$ e86d102572650a6e4d596a3cee98f191
running on cy020 Mon Mar 11 05:19:27 2013

This section contains SUT (System Under Test) info as seen by some common utilities. To remove or add to this section, see:
<http://www.spec.org/cpu2006/Docs/config.html#sysinfo>

From /proc/cpuinfo

```
model name      : Intel(R) Xeon(R) CPU E5-4650 0 @ 2.70GHz
 4 "physical id"s (chips)
 64 "processors"
```

cores, siblings (Caution: counting these is hw and system dependent. The following excerpts from /proc/cpuinfo might not be reliable. Use with caution.)

```
cpu cores      : 8
siblings       : 16
physical 0:    : cores 0 1 2 3 4 5 6 7
physical 1:    : cores 0 1 2 3 4 5 6 7
physical 2:    : cores 0 1 2 3 4 5 6 7
physical 3:    : cores 0 1 2 3 4 5 6 7
```

cache size : 20480 KB

From /proc/meminfo

```
MemTotal:      529360176 kB
HugePages_Total: 0
Hugepagesize:  2048 kB
```

/usr/bin/lsb_release -d

```
SUSE Linux Enterprise Server 11 (x86_64)
```

From /etc/*release* /etc/*version*

```
SuSE-release:
  SUSE Linux Enterprise Server 11 (x86_64)
  VERSION = 11
  PATCHLEVEL = 2
```

```
sgi-accelerate-release: SGI Accelerate 1.5, Build 707r85.sles11sp2-1302142007
sgi-foundation-release: SGI Foundation Software 2.7, Build
707r85.sles11sp2-1302142007
sgi-mpi-release: SGI MPI 1.5, Build 707r85.sles11sp2-1302142007
sgi-propack-release: SGI ProPack 706 for Linux, Build
706rp51.sles11sp2-1210312107
sgi-release: SGI Performance Suite 1.5, Build 707r85.sles11sp2-1302142007
sgi-upc-release: SGI UPC 1.5, Build 707r85.sles11sp2-1302142007
```

uname -a:

```
Linux cy020 3.0.42-0.7-default #1 SMP Tue Oct 9 11:58:45 UTC 2012 (a8dc443)
x86_64 x86_64 x86_64 GNU/Linux
```

run-level 3 Mar 4 10:31 last=S

SPEC is set to: /store/cma/cpu2006-v1.2

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Platform Notes (Continued)

Filesystem	Type	Size	Used	Avail	Use%	Mounted on
/dev/sdcl	xfs	3.3T	867G	2.5T	26%	/scratch

Cannot run dmidecode; consider saying 'chmod +s /usr/sbin/dmidecode'

(End of data from sysinfo program)

General Notes

Environment variables set by runspec before the start of the run:

LD_LIBRARY_PATH = "/store/cma/cpu2006-v1.2/libs/32:/store/cma/cpu2006-v1.2/libs/64:/store/cma/cpu2006-v1.2/sh"

Binaries compiled on a system with 1x Core i7-860 CPU + 8GB memory using RHEL5.5

Transparent Huge Pages enabled with:

echo always > /sys/kernel/mm/transparent_hugepage/enabled

Filesystem page cache cleared with:

echo 1> /proc/sys/vm/drop_caches

runspec command invoked through numactl i.e.:

numactl --interleave=all runspec <etc>

Base Compiler Invocation

C benchmarks:

icc -m64

C++ benchmarks:

icpc -m64

Fortran benchmarks:

ifort -m64

Benchmarks using both Fortran and C:

icc -m64 ifort -m64

Base Portability Flags

410.bwaves: -DSPEC_CPU_LP64

416.gamess: -DSPEC_CPU_LP64

433.milc: -DSPEC_CPU_LP64

434.zeusmp: -DSPEC_CPU_LP64

435.gromacs: -DSPEC_CPU_LP64 -nofor_main

436.cactusADM: -DSPEC_CPU_LP64 -nofor_main

437.leslie3d: -DSPEC_CPU_LP64

444.namd: -DSPEC_CPU_LP64

447.dealII: -DSPEC_CPU_LP64

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Base Portability Flags (Continued)

```
450.soplex: -DSPEC_CPU_LP64
453.povray: -DSPEC_CPU_LP64
454.calculix: -DSPEC_CPU_LP64 -nofor_main
459.GemsFDTD: -DSPEC_CPU_LP64
465.tonto: -DSPEC_CPU_LP64
470.lbm: -DSPEC_CPU_LP64
481.wrf: -DSPEC_CPU_LP64 -DSPEC_CPU_CASE_FLAG -DSPEC_CPU_LINUX
482.sphinx3: -DSPEC_CPU_LP64
```

Base Optimization Flags

C benchmarks:

```
-xAVX -ipo -O3 -no-prec-div -static -opt-prefetch -auto-p32
-ansi-alias -opt-mem-layout-trans=3
```

C++ benchmarks:

```
-xAVX -ipo -O3 -no-prec-div -static -opt-prefetch -auto-p32
-ansi-alias -opt-mem-layout-trans=3
```

Fortran benchmarks:

```
-xAVX -ipo -O3 -no-prec-div -static -opt-prefetch
```

Benchmarks using both Fortran and C:

```
-xAVX -ipo -O3 -no-prec-div -static -opt-prefetch -auto-p32
-ansi-alias -opt-mem-layout-trans=3
```

Peak Compiler Invocation

C benchmarks (except as noted below):

```
icc -m64
```

```
482.sphinx3: icc -m32
```

C++ benchmarks (except as noted below):

```
icpc -m64
```

```
450.soplex: icpc -m32
```

Fortran benchmarks:

```
ifort -m64
```

Benchmarks using both Fortran and C:

```
icc -m64 ifort -m64
```



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Tested by: SGI

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Peak Portability Flags

```

410.bwaves: -DSPEC_CPU_LP64
416.gamess: -DSPEC_CPU_LP64
433.milc: -DSPEC_CPU_LP64
434.zeusmp: -DSPEC_CPU_LP64
435.gromacs: -DSPEC_CPU_LP64 -nofor_main
436.cactusADM: -DSPEC_CPU_LP64 -nofor_main
437.leslie3d: -DSPEC_CPU_LP64
444.namd: -DSPEC_CPU_LP64
447.dealII: -DSPEC_CPU_LP64
453.povray: -DSPEC_CPU_LP64
454.calculix: -DSPEC_CPU_LP64 -nofor_main
459.GemsFDTD: -DSPEC_CPU_LP64
465.tonto: -DSPEC_CPU_LP64
470.lbm: -DSPEC_CPU_LP64
481.wrf: -DSPEC_CPU_LP64 -DSPEC_CPU_CASE_FLAG -DSPEC_CPU_LINUX

```

Peak Optimization Flags

C benchmarks:

```

433.milc: -xAVX(pass 2) -prof-gen(pass 1) -ipo(pass 2) -O3(pass 2)
         -no-prec-div(pass 2) -opt-mem-layout-trans=3(pass 2)
         -prof-use(pass 2) -static -auto-ilp32

```

```

470.lbm: basepeak = yes

```

```

482.sphinx3: -xAVX -ipo -O3 -no-prec-div -opt-mem-layout-trans=3
            -unroll2

```

C++ benchmarks:

```

444.namd: -xAVX(pass 2) -prof-gen(pass 1) -ipo(pass 2) -O3(pass 2)
         -no-prec-div(pass 2) -opt-mem-layout-trans=3(pass 2)
         -prof-use(pass 2) -fno-alias -auto-ilp32

```

```

447.dealII: basepeak = yes

```

```

450.soplex: -xAVX(pass 2) -prof-gen(pass 1) -ipo(pass 2) -O3(pass 2)
         -no-prec-div(pass 2) -opt-mem-layout-trans=3(pass 2)
         -prof-use(pass 2) -opt-malloc-options=3

```

```

453.povray: -xAVX(pass 2) -prof-gen(pass 1) -ipo(pass 2) -O3(pass 2)
         -no-prec-div(pass 2) -opt-mem-layout-trans=3(pass 2)
         -prof-use(pass 2) -unroll4 -ansi-alias

```

Fortran benchmarks:

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Peak Optimization Flags (Continued)

410.bwaves: basepeak = yes

416.gamess: -xAVX(pass 2) -prof-gen(pass 1) -ipo(pass 2) -O3(pass 2)
-no-prec-div(pass 2) -prof-use(pass 2) -unroll2
-inline-level=0 -scalar-rep- -static

434.zeusmp: basepeak = yes

437.leslie3d: -xAVX -ipo -O3 -no-prec-div -static -opt-prefetch

459.GemsFDTD: basepeak = yes

465.tonto: -xAVX(pass 2) -prof-gen(pass 1) -ipo(pass 2) -O3(pass 2)
-no-prec-div(pass 2) -prof-use(pass 2) -unroll4 -auto
-inline-calloc -opt-malloc-options=3

Benchmarks using both Fortran and C:

435.gromacs: -xAVX(pass 2) -prof-gen(pass 1) -ipo(pass 2) -O3(pass 2)
-no-prec-div(pass 2) -opt-mem-layout-trans=3(pass 2)
-prof-use(pass 2) -opt-prefetch -static -auto-ilp32

436.cactusADM: basepeak = yes

454.calculix: basepeak = yes

481.wrf: -xAVX -ipo -O3 -no-prec-div -static -auto-ilp32

The flags files that were used to format this result can be browsed at

<http://www.spec.org/cpu2006/flags/Intel-ic13-official-linux64.html>

<http://www.spec.org/cpu2006/flags/SGI-platform.20120912.html>

You can also download the XML flags sources by saving the following links:

<http://www.spec.org/cpu2006/flags/Intel-ic13-official-linux64.xml>

<http://www.spec.org/cpu2006/flags/SGI-platform.20120912.xml>

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

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