SPEC® CFP2006 Result

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Supermicro

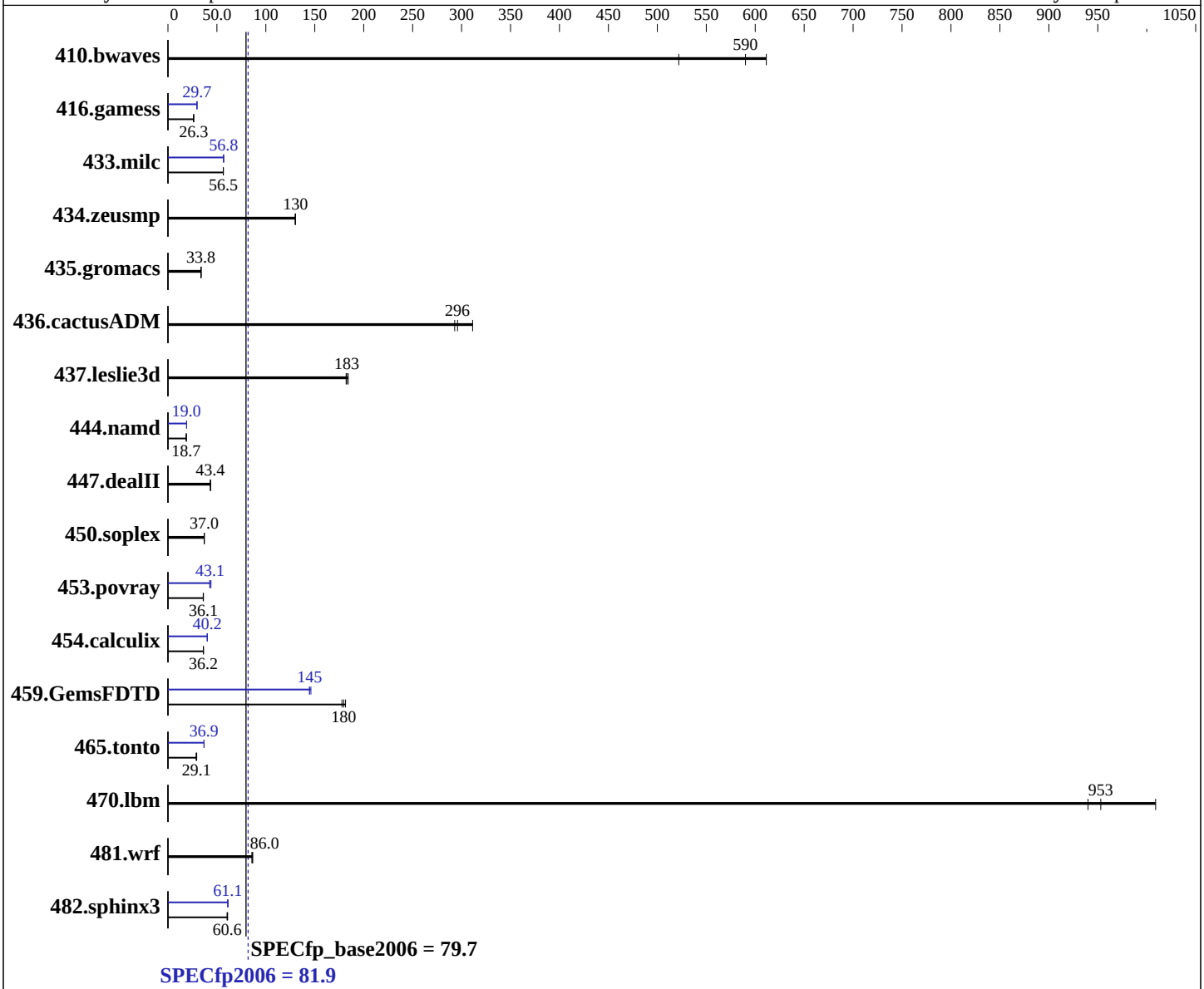
SuperServer 8027R-7RFT+
(X9QR7-TF+ , Intel E5-4640 v2)

SPECfp®2006 = 81.9

SPECfp_base2006 = 79.7

CPU2006 license: 001176
Test sponsor: Supermicro
Tested by: Supermicro

Test date: Jul-2014
Hardware Availability: Aug-2013
Software Availability: Sep-2013



Hardware

CPU Name:	Intel Xeon E5-4640 v2
CPU Characteristics:	Intel Turbo Boost Technology up to 2.70 GHz
CPU MHz:	2200
FPU:	Integrated
CPU(s) enabled:	40 cores, 4 chips, 10 cores/chip
CPU(s) orderable:	1,2,4 chips
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:	Red Hat Enterprise Linux Server release 6.5, Kernel 2.6.32-431.el6.x86_64
Compiler:	C/C++: Version 14.0.0.080 of Intel C++ Studio XE for Linux; Fortran: Version 14.0.0.080 of Intel Fortran Studio XE for Linux
Auto Parallel:	Yes
File System:	ext4
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: 256 GB (32 x 8 GB 2Rx8 PC3-14900R-13, ECC)
Disk Subsystem: 1 x 512 GB SATA III SSD
Other Hardware: None

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

Results Table

Benchmark	Base						Peak					
	Seconds	Ratio	Seconds	Ratio	Seconds	Ratio	Seconds	Ratio	Seconds	Ratio	Seconds	Ratio
410.bwaves	26.0	522	**23.0**	**590**	22.2	611	26.0	522	**23.0**	**590**	22.2	611
416.gamess	745	26.3	747	26.2	**746**	**26.3**	660	29.7	**660**	**29.7**	661	29.6
433.milc	**162**	**56.5**	162	56.6	162	56.5	161	56.9	162	56.8	**162**	**56.8**
434.zeusmp	69.8	130	**69.9**	**130**	70.0	130	69.8	130	**69.9**	**130**	70.0	130
435.gromacs	**211**	**33.8**	211	33.8	211	33.8	**211**	**33.8**	211	33.8	211	33.8
436.cactusADM	38.4	311	40.8	293	**40.4**	**296**	38.4	311	40.8	293	**40.4**	**296**
437.leslie3d	51.6	182	**51.4**	**183**	51.0	184	51.6	182	**51.4**	**183**	51.0	184
444.namd	429	18.7	428	18.7	**429**	**18.7**	422	19.0	**421**	**19.0**	420	19.1
447.dealII	264	43.4	263	43.4	**263**	**43.4**	264	43.4	263	43.4	**263**	**43.4**
450.soplex	225	37.0	224	37.2	**225**	**37.0**	225	37.0	224	37.2	**225**	**37.0**
453.povray	147	36.3	148	36.0	**147**	**36.1**	**124**	**43.1**	121	44.0	125	42.7
454.calculix	228	36.3	228	36.2	**228**	**36.2**	**205**	**40.2**	206	40.1	205	40.2
459.GemsFDTD	59.7	178	58.5	181	**59.1**	**180**	73.4	144	72.6	146	**73.2**	**145**
465.tonto	335	29.4	**338**	**29.1**	342	28.8	266	37.0	**267**	**36.9**	268	36.7
470.lbm	14.6	940	13.6	1010	**14.4**	**953**	14.6	940	13.6	1010	**14.4**	**953**
481.wrf	130	85.9	129	86.7	**130**	**86.0**	130	85.9	129	86.7	**130**	**86.0**
482.sphinx3	**322**	**60.6**	320	61.0	323	60.4	**319**	**61.1**	318	61.4	319	61.0

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

Operating System Notes

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

General Notes

```
Environment variables set by runspec before the start of the run:
KMP_AFFINITY = "granularity=fine,compact,0,1"
LD_LIBRARY_PATH = "/home/SPEC-CPU/SPEC2006_v11/libs/32:/home/SPEC-CPU/SPEC2006_v11/libs/64:/home/SPEC-CPU/SPEC2006_v11/sh"
OMP_NUM_THREADS = "40"

 Binaries compiled on a system with 1x Core i7-860 CPU + 8GB
 memory using RedHat EL 6.4
 Transparent Huge Pages enabled with:
 echo always > /sys/kernel/mm/redhat_transparent_hugepage/enabled
 runspec command invoked through numactl i.e.:
```

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General Notes (Continued)

```
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
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 -parallel -opt-prefetch -ansi-alias
```

C++ benchmarks:
```
-xAVX -ipo -O3 -no-prec-div -opt-prefetch -ansi-alias
```

Fortran benchmarks:
```
-xAVX -ipo -O3 -no-prec-div -parallel -opt-prefetch
```

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Base Optimization Flags (Continued)

Benchmarks using both Fortran and C:
`-xAVX -ipo -O3 -no-prec-div -parallel -opt-prefetch -ansi-alias`

Peak Compiler Invocation

C benchmarks:
`icc -m64`

C++ benchmarks:
`icpc -m64`

Fortran benchmarks:
`ifort -m64`

Benchmarks using both Fortran and C:
`icc -m64 ifort -m64`

Peak Portability Flags

`Same as Base Portability Flags`

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) `-prof-use`(pass 2) `-auto-ilp32` `-ansi-alias`

470.lbm: `basepeak = yes`

482.sphinx3: `-xAVX -ipo -O3 -no-prec-div -unroll2 -ansi-alias -parallel`

C++ benchmarks:

444.namd: `-xAVX`(pass 2) `-prof-gen`(pass 1) `-ipo`(pass 2) `-O3`(pass 2) `-no-prec-div`(pass 2) `-prof-use`(pass 2) `-fno-alias` `-auto-ilp32`

447.dealII: `basepeak = yes`

450.soplex: `basepeak = yes`

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Peak Optimization Flags (Continued)

453.povray: -xAVX(pass 2) -prof-gen(pass 1) -ipo(pass 2) -O3(pass 2) -no-prec-div(pass 2) -prof-use(pass 2) -unroll4 -ansi-alias

Fortran benchmarks:

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-

434.zeusmp: basepeak = yes

437.leslie3d: basepeak = yes

459.GemsFDTD: -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 -opt-prefetch -parallel

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

Benchmarks using both Fortran and C:

435.gromacs: basepeak = yes

436.cactusADM: basepeak = yes

454.calculix: -xAVX -ipo -O3 -no-prec-div -auto-ilp32 -ansi-alias

481.wrf: basepeak = yes

The flags files that were used to format this result can be browsed at
http://www.spec.org/cpu2006/flags/Intel-ic14.0-official-linux64.20140128.html
http://www.spec.org/cpu2006/flags/Supermicro-Platform-Settings-V1.2-revD.html

You can also download the XML flags sources by saving the following links:
http://www.spec.org/cpu2006/flags/Intel-ic14.0-official-linux64.20140128.xml
http://www.spec.org/cpu2006/flags/Supermicro-Platform-Settings-V1.2-revD.xml

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

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