



# SPEC® CFP2006 Result

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## Sugon

SPECfp®2006 = **99.0**

Sugon I620-G20 (Intel Xeon E5-2650 v3)

SPECfp\_base2006 = **96.1**

CPU2006 license: 9046

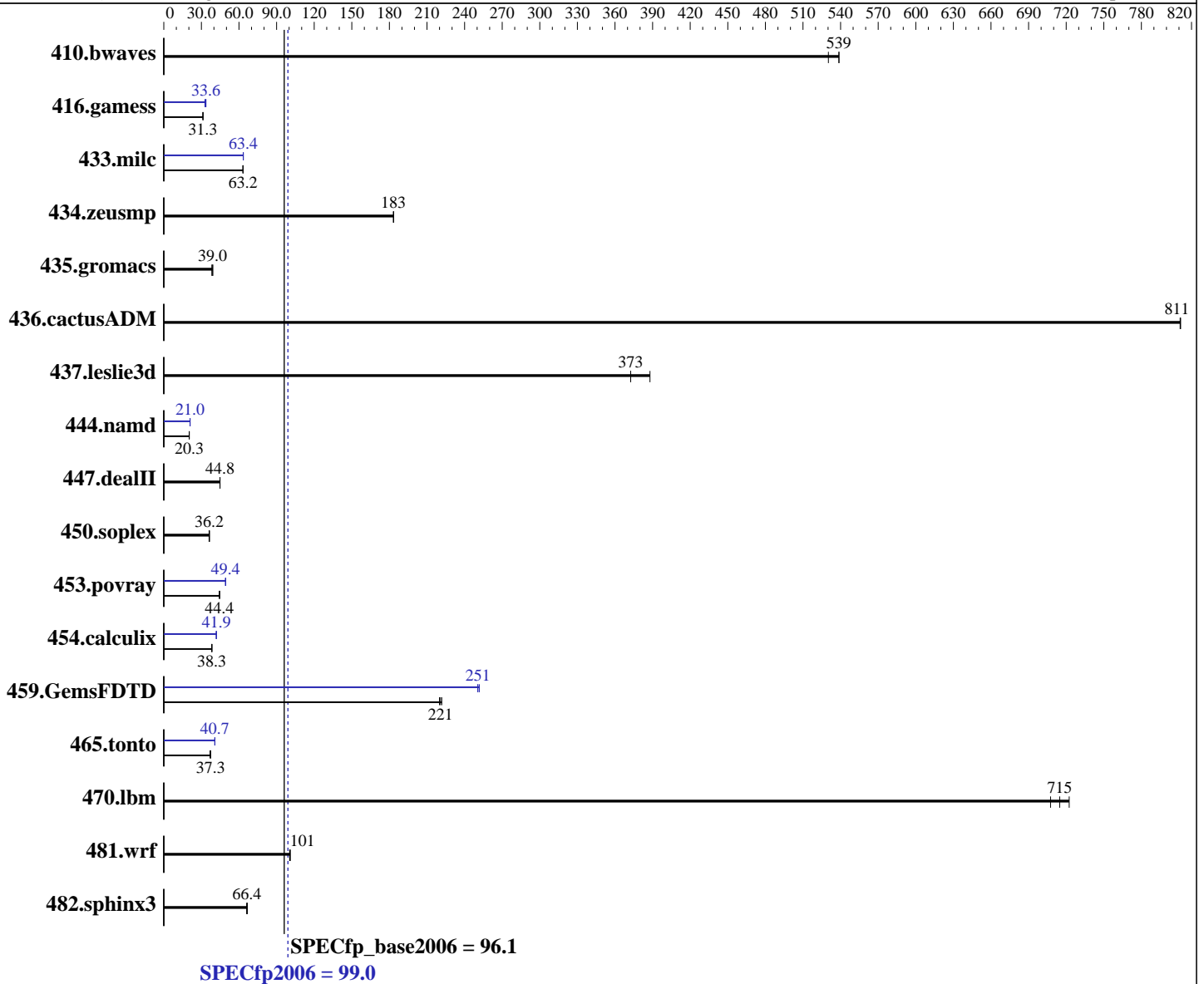
Test date: Oct-2014

Test sponsor: Sugon

Hardware Availability: Sep-2014

Tested by: Sugon

Software Availability: Sep-2013



### Hardware

CPU Name: Intel Xeon E5-2650 v3  
 CPU Characteristics: Intel Turbo Boost Technology up to 3.00 GHz  
 CPU MHz: 2300  
 FPU: Integrated  
 CPU(s) enabled: 20 cores, 2 chips, 10 cores/chip, 2 threads/core  
 CPU(s) orderable: 1,2 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: Red Hat Enterprise Linux Server release 6.4 (Santiago)  
 2.6.32-358.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

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L3 Cache: 25 MB I+D on chip per chip  
 Other Cache: None  
 Memory: 256 GB (16 x 16 GB 2Rx4 PC4-2133P-R)  
 Disk Subsystem: 1 x 2.0 TB SATA 7200 RPM  
 Other Hardware: None

System State: Run level 3 (multi-user)  
 Base Pointers: 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	25.2	539	25.6	530	<u>25.2</u>	<u>539</u>	25.2	539	25.6	530	<u>25.2</u>	<u>539</u>
416.gamess	628	31.2	626	31.3	<u>626</u>	<u>31.3</u>	<u>583</u>	<u>33.6</u>	596	32.8	583	33.6
433.milc	<u>145</u>	<u>63.2</u>	145	63.1	145	63.2	145	63.5	<u>145</u>	<u>63.4</u>	145	63.4
434.zeusmp	49.6	183	<u>49.6</u>	<u>183</u>	49.6	183	49.6	183	<u>49.6</u>	<u>183</u>	49.6	183
435.gromacs	<u>183</u>	<u>39.0</u>	186	38.3	183	39.1	<u>183</u>	<u>39.0</u>	186	38.3	183	39.1
436.cactusADM	14.7	811	14.7	811	<u>14.7</u>	<u>811</u>	14.7	811	14.7	811	<u>14.7</u>	<u>811</u>
437.leslie3d	25.2	373	24.2	388	<u>25.2</u>	<u>373</u>	25.2	373	24.2	388	<u>25.2</u>	<u>373</u>
444.namd	395	20.3	<u>395</u>	<u>20.3</u>	396	20.3	383	20.9	383	21.0	<u>383</u>	<u>21.0</u>
447.dealII	<u>255</u>	<u>44.8</u>	255	44.8	255	44.8	<u>255</u>	<u>44.8</u>	255	44.8	255	44.8
450.soplex	231	36.1	228	36.5	<u>231</u>	<u>36.2</u>	231	36.1	228	36.5	<u>231</u>	<u>36.2</u>
453.povray	119	44.6	120	44.4	<u>120</u>	<u>44.4</u>	108	49.1	<u>108</u>	<u>49.4</u>	108	49.4
454.calculix	215	38.3	215	38.3	<u>215</u>	<u>38.3</u>	<u>197</u>	<u>41.9</u>	197	41.9	197	41.9
459.GemsFDTD	<u>48.0</u>	<u>221</u>	48.2	220	47.8	222	<u>42.3</u>	<u>251</u>	42.3	251	42.1	252
465.tonto	<u>264</u>	<u>37.3</u>	267	36.9	263	37.4	242	40.7	<u>242</u>	<u>40.7</u>	241	40.8
470.lbm	<u>19.2</u>	<u>715</u>	19.4	708	19.0	722	<u>19.2</u>	<u>715</u>	19.4	708	19.0	722
481.wrf	111	100	<u>111</u>	<u>101</u>	111	101	111	100	<u>111</u>	<u>101</u>	111	101
482.sphinx3	<u>294</u>	<u>66.4</u>	292	66.7	295	66.1	<u>294</u>	<u>66.4</u>	292	66.7	295	66.1

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"

## Platform Notes

BIOS Configuration:  
 Enforce POR set to disabled  
 DDR Speed set to 2133  
 Early Snoop set to disabled  
 COD set to disable  
 Power Technology set to performance  
 Sysinfo program /home/cpu2006/config/sysinfo.rev6818  
 \$Rev: 6818 \$ \$Date:: 2012-07-17 #\$ e86d102572650a6e4d596a3cee98f191  
 running on localhost Fri Oct 17 00:26:39 2014

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## Platform Notes (Continued)

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 E5-2650 v3 @ 2.30GHz
 2 "physical id"s (chips)
 40 "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 : 10
  siblings  : 20
  physical 0: cores 0 1 2 3 4 8 9 10 11 12
  physical 1: cores 0 1 2 3 4 8 9 10 11 12
cache size : 25600 KB

```

```

From /proc/meminfo
MemTotal:      264478484 kB
HugePages_Total:    0
Hugepagesize:   2048 kB

```

```

/usr/bin/lsb_release -d
Red Hat Enterprise Linux Server release 6.4 (Santiago)

```

```

From /etc/*release* /etc/*version*
redhat-release: Red Hat Enterprise Linux Server release 6.4 (Santiago)
system-release: Red Hat Enterprise Linux Server release 6.4 (Santiago)
system-release-cpe: cpe:/o:redhat:enterprise_linux:6server:ga:server

```

```

uname -a:
Linux localhost 2.6.32-358.el6.x86_64 #1 SMP Tue Jan 29 11:47:41 EST 2013
x86_64 x86_64 x86_64 GNU/Linux

```

```

run-level 3 Oct 16 17:44
SPEC is set to: /home/cpu2006
Filesystem      Type      Size  Used Avail Use% Mounted on
/dev/sda3       ext4      1.8T  411G  1.3T  24% /

```

```

Additional information from dmidecode:
BIOS American Megatrends Inc. 067 08/13/2014
Memory:
 16x 16 GB
 8x NO DIMM NO DIMM
 16x Samsung M393A2G40DB0-CPB 16 GB 2133 MHz 2 rank

```

(End of data from sysinfo program)



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## General Notes

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

KMP\_AFFINITY = "granularity=fine,compact,1,0"

LD\_LIBRARY\_PATH = "/home/cpu2006/libs/32:/home/cpu2006/libs/64:/home/cpu2006/sh"

OMP\_NUM\_THREADS = "20"

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

Filesystem page cache cleared with:

echo 1> /proc/sys/vm/drop\_caches

runspec command invoked through numactl i.e.:

numactl --interleave=all runspec <etc>

Submitted\_by: Tian Yuwan <tianyw@sugon.com>

Submitted: Tue Nov 4 04:29:56 EST 2014

Submission: cpu2006-20141104-32749.sub

Submitted\_by: Tian Yuwan <tianyw@sugon.com>

Submitted: Sun Nov 23 22:36:24 EST 2014

Submission: cpu2006-20141104-32749.sub

Submitted\_by: Tian Yuwan <tianyw@sugon.com>

Submitted: Wed Nov 26 05:11:52 EST 2014

Submission: cpu2006-20141104-32749.sub

Submitted\_by: Tian Yuwan <tianyw@sugon.com>

Submitted: Thu Nov 27 00:57:34 EST 2014

Submission: cpu2006-20141104-32749.sub

## 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

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http://www.spec.org/

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Software Availability: Sep-2013

## Base Portability Flags (Continued)

```
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:

```
-xCORE-AVX2 -ipo -O3 -no-prec-div -parallel -opt-prefetch
-ansi-alias
```

C++ benchmarks:

```
-xCORE-AVX2 -ipo -O3 -no-prec-div -opt-prefetch -ansi-alias
```

Fortran benchmarks:

```
-xCORE-AVX2 -ipo -O3 -no-prec-div -parallel -opt-prefetch
```

Benchmarks using both Fortran and C:

```
-xCORE-AVX2 -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
```



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Test date: Oct-2014

Hardware Availability: Sep-2014

Software Availability: Sep-2013

## Peak Portability Flags

Same as Base Portability Flags

## Peak Optimization Flags

C benchmarks:

433.milc: -xCORE-AVX2(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: basepeak = yes

C++ benchmarks:

444.namd: -xCORE-AVX2(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.dealIII: basepeak = yes

450.soplex: basepeak = yes

453.povray: -xCORE-AVX2(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: -xCORE-AVX2(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: -xCORE-AVX2(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: -xCORE-AVX2(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

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Tested by: Sugon

Software Availability: Sep-2013

## Peak Optimization Flags (Continued)

Benchmarks using both Fortran and C:

435.gromacs: basepeak = yes

436.cactusADM: basepeak = yes

454.calculix: -xCORE-AVX2 -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-revC.html>

<http://www.spec.org/cpu2006/flags/Sugon-Platform-Settings-V1.2-HSW-revA.20141203.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-revC.xml>

<http://www.spec.org/cpu2006/flags/Sugon-Platform-Settings-V1.2-HSW-revA.20141203.xml>

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For questions about this result, please contact the tester.  
For other inquiries, please contact [webmaster@spec.org](mailto:webmaster@spec.org).

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