



# SPEC® CFP2006 Result

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## Sugon

**SPECfp®2006 = 111**

Sugon I620-G20 (Intel Xeon E5-2698 v3)

**SPECfp\_base2006 = 105**

CPU2006 license: 9046

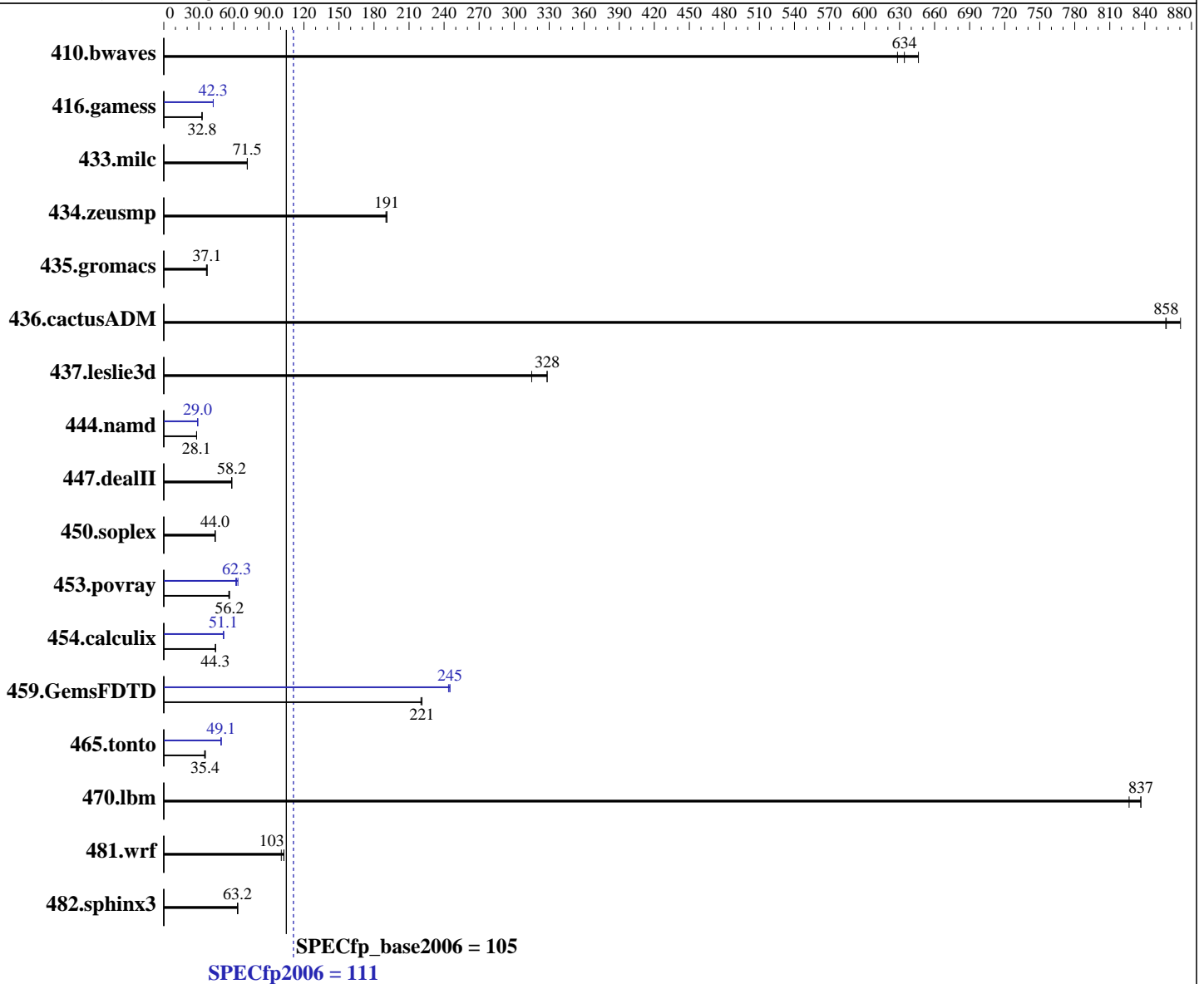
Test date: Oct-2014

Test sponsor: Sugon

Hardware Availability: Sep-2014

Tested by: Sugon

Software Availability: Nov-2013



### Hardware

CPU Name: Intel Xeon E5-2698 v3  
 CPU Characteristics: Intel Turbo Boost Technology up to 3.60 GHz  
 CPU MHz: 2300  
 FPU: Integrated  
 CPU(s) enabled: 32 cores, 2 chips, 16 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 6.5 (Santiago)  
 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

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L3 Cache: 40 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	<b><u>21.4</u></b>	<b><u>634</u></b>	21.6	628	21.0	646	<b><u>21.4</u></b>	<b><u>634</u></b>	21.6	628	21.0	646
416.gamess	597	32.8	599	32.7	<b><u>597</u></b>	<b><u>32.8</u></b>	<b><u>462</u></b>	<b><u>42.3</u></b>	462	42.4	462	42.3
433.milc	<b><u>128</u></b>	<b><u>71.5</u></b>	128	71.4	128	71.6	<b><u>128</u></b>	<b><u>71.5</u></b>	128	71.4	128	71.6
434.zeusmp	<b><u>47.6</u></b>	<b><u>191</u></b>	47.6	191	47.8	190	<b><u>47.6</u></b>	<b><u>191</u></b>	47.6	191	47.8	190
435.gromacs	196	36.5	<b><u>193</u></b>	<b><u>37.1</u></b>	193	37.1	196	36.5	<b><u>193</u></b>	<b><u>37.1</u></b>	193	37.1
436.cactusADM	<b><u>13.9</u></b>	<b><u>858</u></b>	13.7	871	13.9	858	<b><u>13.9</u></b>	<b><u>858</u></b>	13.7	871	13.9	858
437.leslie3d	28.6	328	29.8	315	<b><u>28.6</u></b>	<b><u>328</u></b>	28.6	328	29.8	315	<b><u>28.6</u></b>	<b><u>328</u></b>
444.namd	<b><u>285</u></b>	<b><u>28.1</u></b>	285	28.1	286	28.1	276	29.0	277	29.0	<b><u>276</u></b>	<b><u>29.0</u></b>
447.dealII	<b><u>197</u></b>	<b><u>58.2</u></b>	197	58.2	197	58.2	<b><u>197</u></b>	<b><u>58.2</u></b>	197	58.2	197	58.2
450.soplex	<b><u>190</u></b>	<b><u>44.0</u></b>	190	43.9	189	44.0	<b><u>190</u></b>	<b><u>44.0</u></b>	190	43.9	189	44.0
453.povray	95.6	55.7	<b><u>94.7</u></b>	<b><u>56.2</u></b>	94.7	56.2	83.8	63.5	<b><u>85.4</u></b>	<b><u>62.3</u></b>	86.2	61.7
454.calculix	186	44.3	<b><u>186</u></b>	<b><u>44.3</u></b>	186	44.3	<b><u>162</u></b>	<b><u>51.1</u></b>	162	51.0	161	51.3
459.GemsFDTD	48.2	220	<b><u>48.0</u></b>	<b><u>221</u></b>	48.0	221	43.3	245	43.5	244	<b><u>43.3</u></b>	<b><u>245</u></b>
465.tonto	<b><u>278</u></b>	<b><u>35.4</u></b>	277	35.5	282	34.9	<b><u>200</u></b>	<b><u>49.1</u></b>	201	49.1	200	49.1
470.lbm	16.4	837	16.6	827	<b><u>16.4</u></b>	<b><u>837</u></b>	16.4	837	16.6	827	<b><u>16.4</u></b>	<b><u>837</u></b>
481.wrf	111	101	109	103	<b><u>109</u></b>	<b><u>103</u></b>	111	101	109	103	<b><u>109</u></b>	<b><u>103</u></b>
482.sphinx3	309	63.1	<b><u>308</u></b>	<b><u>63.2</u></b>	308	63.3	309	63.1	<b><u>308</u></b>	<b><u>63.2</u></b>	308	63.3

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.rev6874  
 \$Rev: 6874 \$ \$Date:: 2013-11-20 #\$ 654bd3fcf53b06faef0efe54ed011998  
 running on localhost Fri Oct 24 09:42:24 2014

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Test date: Oct-2014

Hardware Availability: Sep-2014

Software Availability: Nov-2013

## 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 E5-2698 v3 @ 2.30GHz
 2 "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 : 16
  siblings  : 32
  physical 0: cores 0 1 2 3 4 5 6 7 8 9 10 11 12 13 14 15
  physical 1: cores 0 1 2 3 4 5 6 7 8 9 10 11 12 13 14 15
cache size : 40960 KB
```

```
From /proc/meminfo
MemTotal:      264475492 kB
HugePages_Total:      0
Hugepagesize:    2048 kB
```

```
/usr/bin/lsb_release -d
Red Hat Enterprise Linux Server release 6.5 (Santiago)
```

```
From /etc/*release* /etc/*version*
redhat-release: Red Hat Enterprise Linux Server release 6.5 (Santiago)
system-release: Red Hat Enterprise Linux Server release 6.5 (Santiago)
system-release-cpe: cpe:/o:redhat:enterprise_linux:6server:ga:server
```

```
uname -a:
Linux localhost 2.6.32-431.el6.x86_64 #1 SMP Sun Nov 10 22:19:54 EST 2013
x86_64 x86_64 x86_64 GNU/Linux
```

```
run-level 3 Oct 24 04:07
```

```
SPEC is set to: /home/cpu2006
Filesystem      Type  Size  Used Avail Use% Mounted on
/dev/sda3       ext4  1.8T  586G  1.2T  35% /
Additional information from dmidecode:
```

Warning: Use caution when you interpret this section. The 'dmidecode' program reads system data which is "intended to allow hardware to be accurately determined", but the intent may not be met, as there are frequent changes to hardware, firmware, and the "DMTF SMBIOS" standard.

```
BIOS American Megatrends Inc. 068 08/15/2014
Memory:
 16x Hynix Semiconductor HMA42GR7MFR4N-TFTD 16 GB 2 rank 2133 MHz
 8x NO DIMM NO DIMM
```

(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 = "32"

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.:

numactl --interleave=all runspec <etc>

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

Submitted: Tue Nov 4 04:16:18 EST 2014

Submission: cpu2006-20141104-32747.sub

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

Submitted: Wed Nov 19 02:37:11 EST 2014

Submission: cpu2006-20141104-32747.sub

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

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

Submission: cpu2006-20141104-32747.sub

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

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

Submission: cpu2006-20141104-32747.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

416.gamess: -DSPEC\_CPU\_LP64

433.milc: -DSPEC\_CPU\_LP64

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## Base Portability Flags (Continued)

```

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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## Peak Portability Flags

Same as Base Portability Flags

## Peak Optimization Flags

C benchmarks:

433.milc: basepeak = yes

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.deallI: 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

Benchmarks using both Fortran and C:

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Software Availability: Nov-2013

## Peak Optimization Flags (Continued)

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 other inquiries, please contact [webmaster@spec.org](mailto:webmaster@spec.org).

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