



# SPEC<sup>®</sup> CFP2006 Result

Copyright 2006-2017 Standard Performance Evaluation Corporation

## Dell Inc.

**SPECfp<sup>®</sup>2006 = 113**

PowerEdge C6420 (Intel Xeon Gold 6148F, 2.40 GHz)

**SPECfp\_base2006 = 107**

CPU2006 license: 55

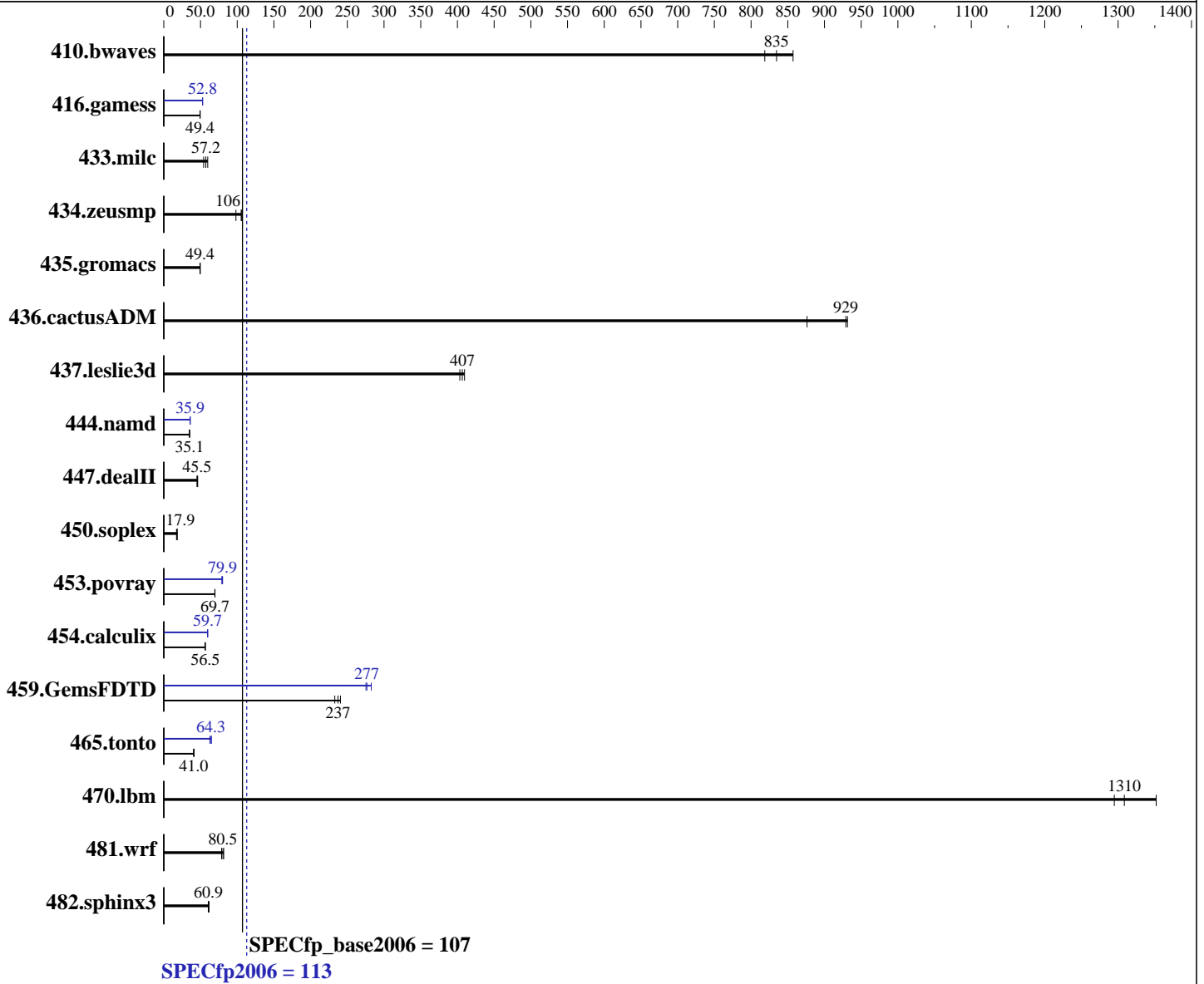
Test date: Jun-2017

Test sponsor: Dell Inc.

Hardware Availability: Jul-2017

Tested by: Dell Inc.

Software Availability: Nov-2016



### Hardware

CPU Name: Intel Xeon Gold 6148F  
 CPU Characteristics: Intel Turbo Boost Technology up to 3.70 GHz  
 CPU MHz: 2400  
 FPU: Integrated  
 CPU(s) enabled: 40 cores, 2 chips, 20 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: 1 MB I+D on chip per core

Continued on next page

### Software

Operating System: SUSE Linux Enterprise Server 12 SP2 (x86\_64) 4.4.21-69-default  
 Compiler: C/C++: Version 17.0.3.191 of Intel C/C++ Compiler for Linux;  
 Fortran: Version 17.0.3.191 of Intel Fortran Compiler for Linux  
 Auto Parallel: Yes  
 File System: btrfs  
 System State: Run level 3 (multi-user)

Continued on next page



# SPEC CFP2006 Result

Copyright 2006-2017 Standard Performance Evaluation Corporation

Dell Inc.

SPECfp2006 = 113

PowerEdge C6420 (Intel Xeon Gold 6148F, 2.40 GHz)

SPECfp\_base2006 = 107

CPU2006 license: 55

Test date: Jun-2017

Test sponsor: Dell Inc.

Hardware Availability: Jul-2017

Tested by: Dell Inc.

Software Availability: Nov-2016

L3 Cache: 27.5 MB I+D on chip per chip  
Other Cache: None  
Memory: 384 GB (12 x 32 GB 2Rx8 PC4-2666V-R)  
Disk Subsystem: 1 x 960 GB SATA SSD  
Other Hardware: None

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	15.9	857	<b>16.3</b>	<b>835</b>	16.6	819	15.9	857	<b>16.3</b>	<b>835</b>	16.6	819
416.gamess	396	49.4	<b>396</b>	<b>49.4</b>	397	49.4	371	52.8	<b>371</b>	<b>52.8</b>	371	52.8
433.milc	<b>160</b>	<b>57.2</b>	153	59.8	169	54.3	<b>160</b>	<b>57.2</b>	153	59.8	169	54.3
434.zeusmp	<b>86.2</b>	<b>106</b>	92.6	98.3	86.1	106	<b>86.2</b>	<b>106</b>	92.6	98.3	86.1	106
435.gromacs	144	49.4	<b>144</b>	<b>49.4</b>	144	49.5	144	49.4	<b>144</b>	<b>49.4</b>	144	49.5
436.cactusADM	12.8	931	13.6	876	<b>12.9</b>	<b>929</b>	12.8	931	13.6	876	<b>12.9</b>	<b>929</b>
437.leslie3d	22.9	410	<b>23.1</b>	<b>407</b>	23.3	403	22.9	410	<b>23.1</b>	<b>407</b>	23.3	403
444.namd	228	35.1	229	35.0	<b>229</b>	<b>35.1</b>	223	35.9	224	35.8	<b>223</b>	<b>35.9</b>
447.dealII	248	46.2	252	45.3	<b>251</b>	<b>45.5</b>	248	46.2	252	45.3	<b>251</b>	<b>45.5</b>
450.soplex	455	18.3	481	17.3	<b>465</b>	<b>17.9</b>	455	18.3	481	17.3	<b>465</b>	<b>17.9</b>
453.povray	76.6	69.5	<b>76.4</b>	<b>69.7</b>	76.3	69.8	67.4	79.0	66.4	80.1	<b>66.6</b>	<b>79.9</b>
454.calculix	<b>146</b>	<b>56.5</b>	146	56.6	147	56.1	138	59.8	<b>138</b>	<b>59.7</b>	139	59.6
459.GemsFDTD	44.1	241	45.5	233	<b>44.7</b>	<b>237</b>	38.5	275	<b>38.3</b>	<b>277</b>	37.5	283
465.tonto	243	40.5	<b>240</b>	<b>41.0</b>	238	41.3	157	62.7	152	64.9	<b>153</b>	<b>64.3</b>
470.lbm	<b>10.5</b>	<b>1310</b>	10.6	1290	10.2	1350	<b>10.5</b>	<b>1310</b>	10.6	1290	10.2	1350
481.wrf	142	78.7	137	81.6	<b>139</b>	<b>80.5</b>	142	78.7	137	81.6	<b>139</b>	<b>80.5</b>
482.sphinx3	<b>320</b>	<b>60.9</b>	321	60.7	316	61.6	<b>320</b>	<b>60.9</b>	321	60.7	316	61.6

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 settings:  
Sub NUMA Cluster disabled  
Virtualization Technology disabled  
System Profile set to Custom  
CPU Performance set to Maximum Performance  
C States set to Autonomous  
C1E disabled  
Energy Efficient Turbo disabled  
Uncore Frequency set to Dynamic  
Energy Efficiency Policy set to Performance

Continued on next page



# SPEC CFP2006 Result

Copyright 2006-2017 Standard Performance Evaluation Corporation

Dell Inc.

SPECfp2006 = 113

PowerEdge C6420 (Intel Xeon Gold 6148F, 2.40 GHz)

SPECfp\_base2006 = 107

CPU2006 license: 55

Test date: Jun-2017

Test sponsor: Dell Inc.

Hardware Availability: Jul-2017

Tested by: Dell Inc.

Software Availability: Nov-2016

## Platform Notes (Continued)

```

Memory Patrol Scrub disabled
Logical Processor enabled
CPU Interconnect Bus Link Power Management disabled
PCI ASPM L1 Link Power Management disabled
Sysinfo program /root/cpu2006-1.2_ic17u3/config/sysinfo.rev6993
Revision 6993 of 2015-11-06 (b5e8d4b4eb51ed28d7f98696cbe290c1)
running on linux-7lna Wed Jun 28 18:01:26 2017

```

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) Gold 6148F CPU @ 2.40GHz
 2 "physical id"s (chips)
 80 "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 : 20
  siblings  : 40
  physical 0: cores 0 1 2 3 4 8 9 10 11 12 16 17 18 19 20 24 25 26 27 28
  physical 1: cores 0 1 2 3 4 8 9 10 11 12 16 17 18 19 20 24 25 26 27 28
cache size : 28160 KB

```

```

From /proc/meminfo
MemTotal:      395642524 kB
HugePages_Total:      0
Hugepagesize:    2048 kB

```

```

From /etc/*release* /etc/*version*
SuSE-release:
SUSE Linux Enterprise Server 12 (x86_64)
VERSION = 12
PATCHLEVEL = 2
# This file is deprecated and will be removed in a future service pack or
release.
# Please check /etc/os-release for details about this release.
os-release:
NAME="SLES"
VERSION="12-SP2"
VERSION_ID="12.2"
PRETTY_NAME="SUSE Linux Enterprise Server 12 SP2"
ID="sles"
ANSI_COLOR="0;32"
CPE_NAME="cpe:/o:suse:sles:12:sp2"

```

```

uname -a:
Linux linux-7lna 4.4.21-69-default #1 SMP Tue Oct 25 10:58:20 UTC 2016
(9464f67) x86_64 x86_64 x86_64 GNU/Linux

```

run-level 3 Jun 28 11:21

Continued on next page



# SPEC CFP2006 Result

Copyright 2006-2017 Standard Performance Evaluation Corporation

Dell Inc.

SPECfp2006 = 113

PowerEdge C6420 (Intel Xeon Gold 6148F, 2.40 GHz)

SPECfp\_base2006 = 107

CPU2006 license: 55

Test date: Jun-2017

Test sponsor: Dell Inc.

Hardware Availability: Jul-2017

Tested by: Dell Inc.

Software Availability: Nov-2016

## Platform Notes (Continued)

```

SPEC is set to: /root/cpu2006-1.2_ic17u3
Filesystem      Type  Size  Used Avail Use% Mounted on
/dev/sda6       btrfs 272G  9.7G 262G   4% /

```

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 Dell Inc. 1.0.6 06/22/2017

Memory:

```

4x 002C00B3002C 36ASF4G72PZ-2G6D1 32 GB 2 rank 2666 MHz
4x 002C0632002C 36ASF4G72PZ-2G6D1 32 GB 2 rank 2666 MHz
4x 00AD063200AD HMA84GR7AFR4N-VK 32 GB 2 rank 2666 MHz
4x Not Specified Not Specified

```

(End of data from sysinfo program)

## General Notes

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

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

LD\_LIBRARY\_PATH = "/root/cpu2006-1.2\_ic17u3/lib/ia32:/root/cpu2006-1.2\_ic17u3/lib/intel64:/root/cpu2006-1.2\_ic17u3/sh10.2"

OMP\_NUM\_THREADS = "40"

Binaries compiled on a system with 1x Intel Core i7-4790 CPU + 32GB RAM memory using Redhat Enterprise Linux 7.2

Transparent Huge Pages enabled by default.

Filesystem page cache cleared with:

shell invocation of 'sync; echo 3 > /proc/sys/vm/drop\_caches' prior to run

## 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



# SPEC CFP2006 Result

Copyright 2006-2017 Standard Performance Evaluation Corporation

Dell Inc.

SPECfp2006 = 113

PowerEdge C6420 (Intel Xeon Gold 6148F, 2.40 GHz)

SPECfp\_base2006 = 107

CPU2006 license: 55

Test date: Jun-2017

Test sponsor: Dell Inc.

Hardware Availability: Jul-2017

Tested by: Dell Inc.

Software Availability: Nov-2016

## 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:
-xCORE-AVX2 -ipo -O3 -no-prec-div -parallel -qopt-prefetch

C++ benchmarks:
-xCORE-AVX2 -ipo -O3 -no-prec-div -qopt-prefetch

Fortran benchmarks:
-xCORE-AVX2 -ipo -O3 -no-prec-div -parallel -qopt-prefetch

Benchmarks using both Fortran and C:
-xCORE-AVX2 -ipo -O3 -no-prec-div -parallel -qopt-prefetch

```

## 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

```



# SPEC CFP2006 Result

Copyright 2006-2017 Standard Performance Evaluation Corporation

Dell Inc.

SPECfp2006 = 113

PowerEdge C6420 (Intel Xeon Gold 6148F, 2.40 GHz)

SPECfp\_base2006 = 107

CPU2006 license: 55

Test date: Jun-2017

Test sponsor: Dell Inc.

Hardware Availability: Jul-2017

Tested by: Dell Inc.

Software Availability: Nov-2016

## 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: -prof-gen(pass 1) -prof-use(pass 2) -xCORE-AVX2(pass 2)  
-par-num-threads=1(pass 1) -ipo(pass 2) -O3(pass 2)  
-no-prec-div(pass 2) -fno-alias -auto-ilp32

447.dealII: basepeak = yes

450.soplex: basepeak = yes

453.povray: -prof-gen(pass 1) -prof-use(pass 2) -xCORE-AVX2(pass 2)  
-par-num-threads=1(pass 1) -ipo(pass 2) -O3(pass 2)  
-no-prec-div(pass 2) -unroll4 -ansi-alias

Fortran benchmarks:

410.bwaves: basepeak = yes

416.gamess: -prof-gen(pass 1) -prof-use(pass 2) -xCORE-AVX2(pass 2)  
-par-num-threads=1(pass 1) -ipo(pass 2) -O3(pass 2)  
-no-prec-div(pass 2) -unroll2 -inline-level=0 -scalar-rep-

434.zeusmp: basepeak = yes

437.leslie3d: basepeak = yes

459.GemsFDTD: -prof-gen(pass 1) -prof-use(pass 2) -xCORE-AVX2(pass 2)  
-par-num-threads=1(pass 1) -ipo(pass 2) -O3(pass 2)  
-no-prec-div(pass 2) -unroll2 -inline-level=0  
-qopt-prefetch -parallel

465.tonto: -prof-gen(pass 1) -prof-use(pass 2) -xCORE-AVX2(pass 2)  
-par-num-threads=1(pass 1) -ipo(pass 2) -O3(pass 2)  
-no-prec-div(pass 2) -inline-calloc -qopt-malloc-options=3  
-auto -unroll4

Continued on next page



# SPEC CFP2006 Result

Copyright 2006-2017 Standard Performance Evaluation Corporation

Dell Inc.

SPECfp2006 = 113

PowerEdge C6420 (Intel Xeon Gold 6148F, 2.40 GHz)

SPECfp\_base2006 = 107

CPU2006 license: 55

Test date: Jun-2017

Test sponsor: Dell Inc.

Hardware Availability: Jul-2017

Tested by: Dell Inc.

Software Availability: Nov-2016

## 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

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-ic17.0-official-linux64-revF.html>

<http://www.spec.org/cpu2006/flags/Dell-Platform-Flags-PowerEdge14G-revC.html>

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

<http://www.spec.org/cpu2006/flags/Intel-ic17.0-official-linux64-revF.xml>

<http://www.spec.org/cpu2006/flags/Dell-Platform-Flags-PowerEdge14G-revC.xml>

SPEC and SPECfp are registered trademarks of the Standard Performance Evaluation Corporation. All other brand and product names appearing in this result are trademarks or registered trademarks of their respective holders.

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

Tested with SPEC CPU2006 v1.2.  
Report generated on Wed Aug 23 13:13:32 2017 by SPEC CPU2006 PS/PDF formatter v6932.  
Originally published on 22 August 2017.