



# SPEC<sup>®</sup> CFP2006 Result

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Dell Inc.

SPECfp<sup>®</sup>2006 = Not Run

PowerEdge R540 (Intel Xeon Gold 6138, 2.00 GHz)

SPECfp\_base2006 = 135

CPU2006 license: 55

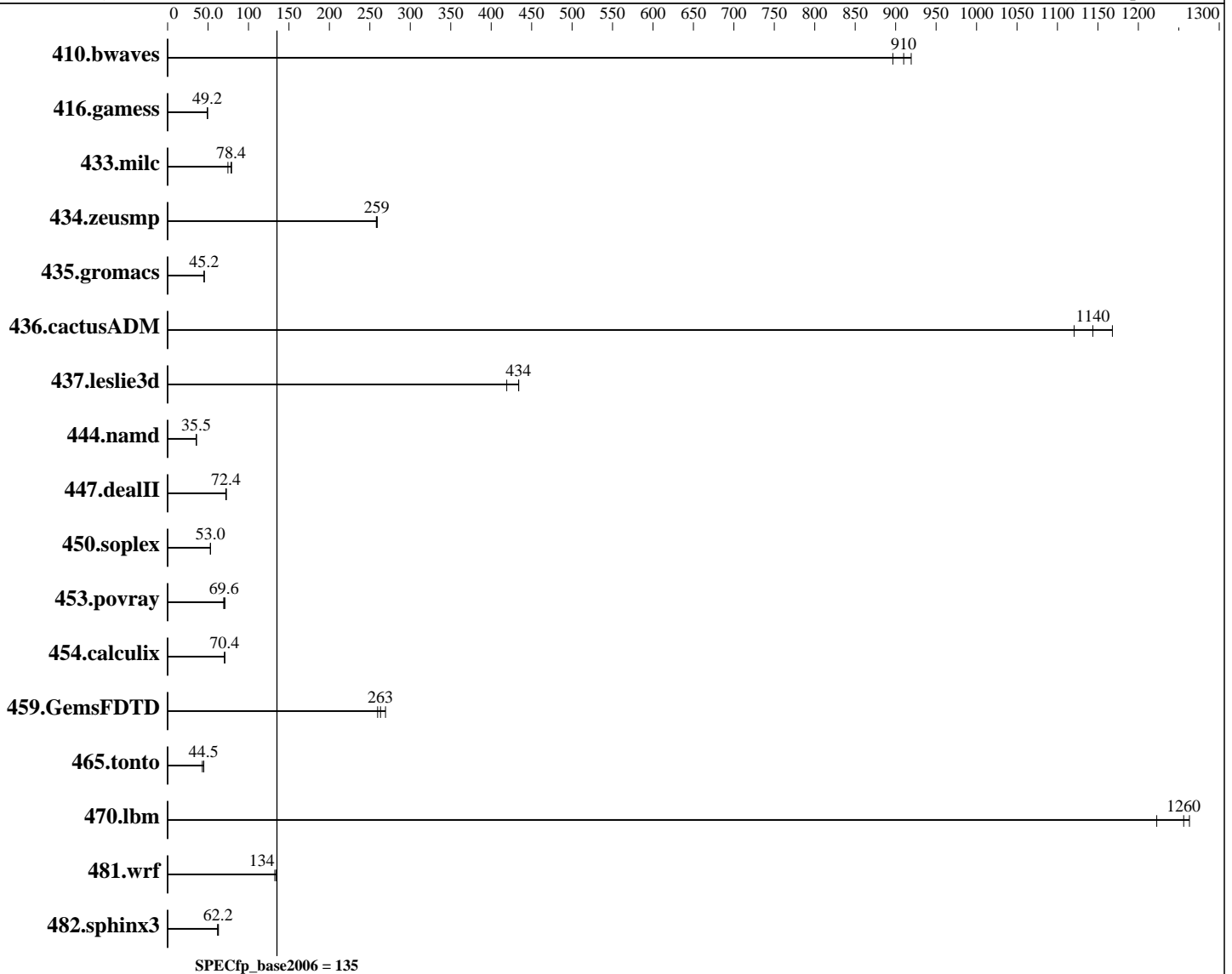
Test date: Aug-2017

Test sponsor: Dell Inc.

Hardware Availability: Sep-2017

Tested by: Dell Inc.

Software Availability: Apr-2017



### Hardware

CPU Name: Intel Xeon Gold 6138  
 CPU Characteristics: Intel Turbo Boost Technology up to 3.70 GHz  
 CPU MHz: 2000  
 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

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### Software

Operating System: SUSE Linux Enterprise Server 12 SP2 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: xfs  
 System State: Run level 3 (multi-user)

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L3 Cache: 27.5 MB I+D on chip per chip  
 Other Cache: None  
 Memory: 192 GB (12 x 16 GB 2Rx8 PC4-2666V-R)  
 Disk Subsystem: 1 x 1 TB SATA 7200 RPM  
 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	14.8	919	<b>14.9</b>	<b>910</b>	15.2	897						
416.gamess	397	49.3	398	49.2	<b>398</b>	<b>49.2</b>						
433.milc	116	79.1	123	74.6	<b>117</b>	<b>78.4</b>						
434.zeusmp	35.1	259	35.3	258	<b>35.2</b>	<b>259</b>						
435.gromacs	158	45.1	158	45.3	<b>158</b>	<b>45.2</b>						
436.cactusADM	<b>10.4</b>	<b>1140</b>	10.2	1170	10.7	1120						
437.leslie3d	<b>21.7</b>	<b>434</b>	22.4	419	21.7	434						
444.namd	<b>226</b>	<b>35.5</b>	226	35.5	226	35.5						
447.dealII	<b>158</b>	<b>72.4</b>	158	72.6	159	71.9						
450.soplex	<b>157</b>	<b>53.0</b>	157	53.1	158	52.8						
453.povray	<b>76.4</b>	<b>69.6</b>	75.1	70.9	76.5	69.5						
454.calculix	117	70.7	<b>117</b>	<b>70.4</b>	117	70.4						
459.GemsFDTD	39.4	269	<b>40.3</b>	<b>263</b>	40.9	260						
465.tonto	229	42.9	220	44.8	<b>221</b>	<b>44.5</b>						
470.lbm	10.9	1260	<b>10.9</b>	<b>1260</b>	11.2	1220						
481.wrf	<b>83.2</b>	<b>134</b>	82.9	135	84.3	132						
482.sphinx3	316	61.8	<b>313</b>	<b>62.2</b>	310	62.9						

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

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## 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-28u4 Thu Aug 31 20:30:58 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 6138 CPU @ 2.00GHz
 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:      196687620 kB
HugePages_Total:      0
Hugepagesize:    2048 kB
```

```
/usr/bin/lsb_release -d
SUSE Linux Enterprise Server 12 SP2
```

```
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-28u4 4.4.21-69-default #1 SMP Tue Oct 25 10:58:20 UTC 2016
```

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## Platform Notes (Continued)

(9464f67) x86\_64 x86\_64 x86\_64 GNU/Linux

run-level 3 Aug 31 18:16

SPEC is set to: /root/cpu2006-1.2\_ic17u3

Filesystem	Type	Size	Used	Avail	Use%	Mounted on
/dev/sda2	xfs	927G	9.9G	917G	2%	/

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. 1.0.0 08/10/2017

Memory:

8x	002C00B3002C	18ASF2G72PDZ-2G6D1	16 GB	2 rank	2666 MHz
4x	002C0632002C	18ASF2G72PDZ-2G6D1	16 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



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## 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

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>



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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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