



# SPEC<sup>®</sup> CFP2006 Result

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Hewlett Packard Enterprise

(Test Sponsor: HPE)

ProLiant DL360 Gen10  
(2.00 GHz, Intel Xeon Gold 6138)

SPECfp<sup>®</sup>2006 = **Not Run**

SPECfp\_base2006 = **138**

CPU2006 license: 3

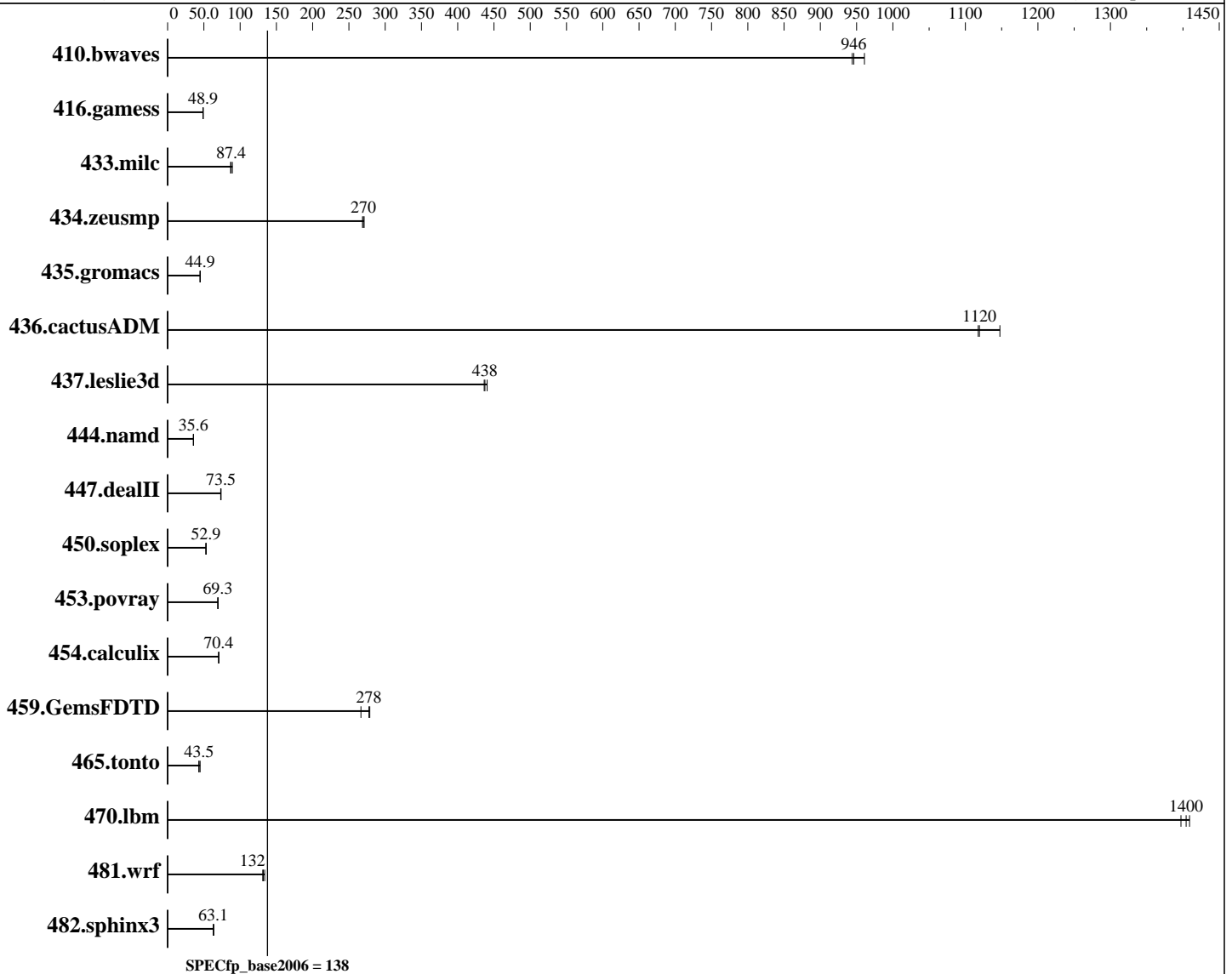
Test sponsor: HPE

Tested by: HPE

Test date: Nov-2017

Hardware Availability: Oct-2017

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  
 CPU(s) orderable: 1, 2 chip(s)  
 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: Red Hat Enterprise Linux Server release 7.3 (Maipo)  
 Kernel 3.10.0-514.el7.x86\_64  
 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

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L3 Cache: 27.5 MB I+D on chip per chip  
Other Cache: None  
Memory: 192 GB (24 x 8 GB 2Rx8 PC4-2666V-R)  
Disk Subsystem: 1 x 480 GB SATA SSD, RAID 0  
Other Hardware: None

System State: Run level 3 (multi-user)  
Base Pointers: 64-bit  
Peak Pointers: Not Applicable  
Other Software: None

## Results Table

Benchmark	Base						Peak					
	Seconds	Ratio	Seconds	Ratio	Seconds	Ratio	Seconds	Ratio	Seconds	Ratio	Seconds	Ratio
410.bwaves	14.1	961	14.4	944	<b>14.4</b>	<b>946</b>						
416.gamess	<b>400</b>	<b>48.9</b>	401	48.9	400	49.0						
433.milc	106	86.9	<b>105</b>	<b>87.4</b>	103	89.3						
434.zeusmp	33.6	271	33.9	269	<b>33.7</b>	<b>270</b>						
435.gromacs	159	44.9	159	44.8	<b>159</b>	<b>44.9</b>						
436.cactusADM	10.4	1150	10.7	1120	<b>10.7</b>	<b>1120</b>						
437.leslie3d	21.3	441	21.5	437	<b>21.5</b>	<b>438</b>						
444.namd	225	35.6	225	35.6	<b>225</b>	<b>35.6</b>						
447.dealII	156	73.2	<b>156</b>	<b>73.5</b>	155	73.6						
450.soplex	<b>158</b>	<b>52.9</b>	158	52.7	157	53.3						
453.povray	<b>76.7</b>	<b>69.3</b>	76.9	69.2	76.4	69.6						
454.calculix	117	70.6	<b>117</b>	<b>70.4</b>	117	70.4						
459.GemsFDTD	39.8	267	<b>38.2</b>	<b>278</b>	38.1	279						
465.tonto	<b>226</b>	<b>43.5</b>	219	44.8	229	43.0						
470.lbm	<b>9.78</b>	<b>1400</b>	9.75	1410	9.83	1400						
481.wrf	85.2	131	83.4	134	<b>84.6</b>	<b>132</b>						
482.sphinx3	310	62.9	306	63.7	<b>309</b>	<b>63.1</b>						

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"  
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  
IRQ balance service was stop using "service irqbalance stop"  
Tuned-adm profile was set to Throughput-Performance

## Platform Notes

BIOS Configuration:  
Intel Hyperthreading set to Disabled  
Thermal Configuration set to Maximum Cooling  
LLC Prefetch set to Enabled  
LLC Dead Line Allocation set to Disabled

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## Platform Notes (Continued)

Memory Patrol Scrubbing set to Disabled  
Workload Profile set to General Peak Frequency Compute  
Energy/Performance Bias set to Maximum Performance  
Workload Profile set to Custom  
NUMA Group Size Optimization set to Flat

Sysinfo program /home/specuser/cpu2006/config/sysinfo.rev6993  
Revision 6993 of 2015-11-06 (b5e8d4b4eb51ed28d7f98696cbe290c1)  
running on dl360gen10rhel73 Sun Nov 12 22:09:38 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)
 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 : 20
  siblings  : 20
  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:      197571152 kB
HugePages_Total:    0
Hugepagesize:     2048 kB
```

From /etc/\*release\* /etc/\*version\*

```
os-release:
NAME="Red Hat Enterprise Linux Server"
VERSION="7.3 (Maipo)"
ID="rhel"
ID_LIKE="fedora"
VERSION_ID="7.3"
PRETTY_NAME="Red Hat Enterprise Linux Server 7.3 (Maipo)"
ANSI_COLOR="0;31"
CPE_NAME="cpe:/o:redhat:enterprise_linux:7.3:GA:server"
redhat-release: Red Hat Enterprise Linux Server release 7.3 (Maipo)
system-release: Red Hat Enterprise Linux Server release 7.3 (Maipo)
system-release-cpe: cpe:/o:redhat:enterprise_linux:7.3:ga:server
```

uname -a:

```
Linux dl360gen10rhel73 3.10.0-514.el7.x86_64 #1 SMP Wed Oct 19 11:24:13 EDT
2016 x86_64 x86_64 x86_64 GNU/Linux
```

run-level 3 Nov 12 20:00

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## Platform Notes (Continued)

SPEC is set to: /home/specuser/cpu2006

Filesystem	Type	Size	Used	Avail	Use%	Mounted on
/dev/mapper/rhel-home	xfs	392G	37G	356G	10%	/home

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 HPE U32 09/29/2017

Memory:

24x UNKNOWN NOT AVAILABLE 8 GB 2 rank 2666 MHz

(End of data from sysinfo program)

## General Notes

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

KMP\_AFFINITY = "granularity=core,compact"

LD\_LIBRARY\_PATH = "/home/specuser/cpu2006/lib/ia32:/home/specuser/cpu2006/lib/intel64:/home/specuser/cpu2006/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

## 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

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## Base Portability Flags (Continued)

```

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/HPE-Platform-Flags-Intel-V1.2-SKX-revF.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/HPE-Platform-Flags-Intel-V1.2-SKX-revF.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).

Tested with SPEC CPU2006 v1.2.

Report generated on Wed Nov 29 12:30:15 2017 by SPEC CPU2006 PS/PDF formatter v6932.

Originally published on 29 November 2017.

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