



# SPEC® CFP2006 Result

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**Hewlett Packard Enterprise**

(Test Sponsor: HPE)

ProLiant DL360 Gen10  
(2.20 GHz, Intel Xeon Silver 4114)

**SPECfp®2006 = Not Run**

**SPECfp\_base2006 = 114**

CPU2006 license: 3

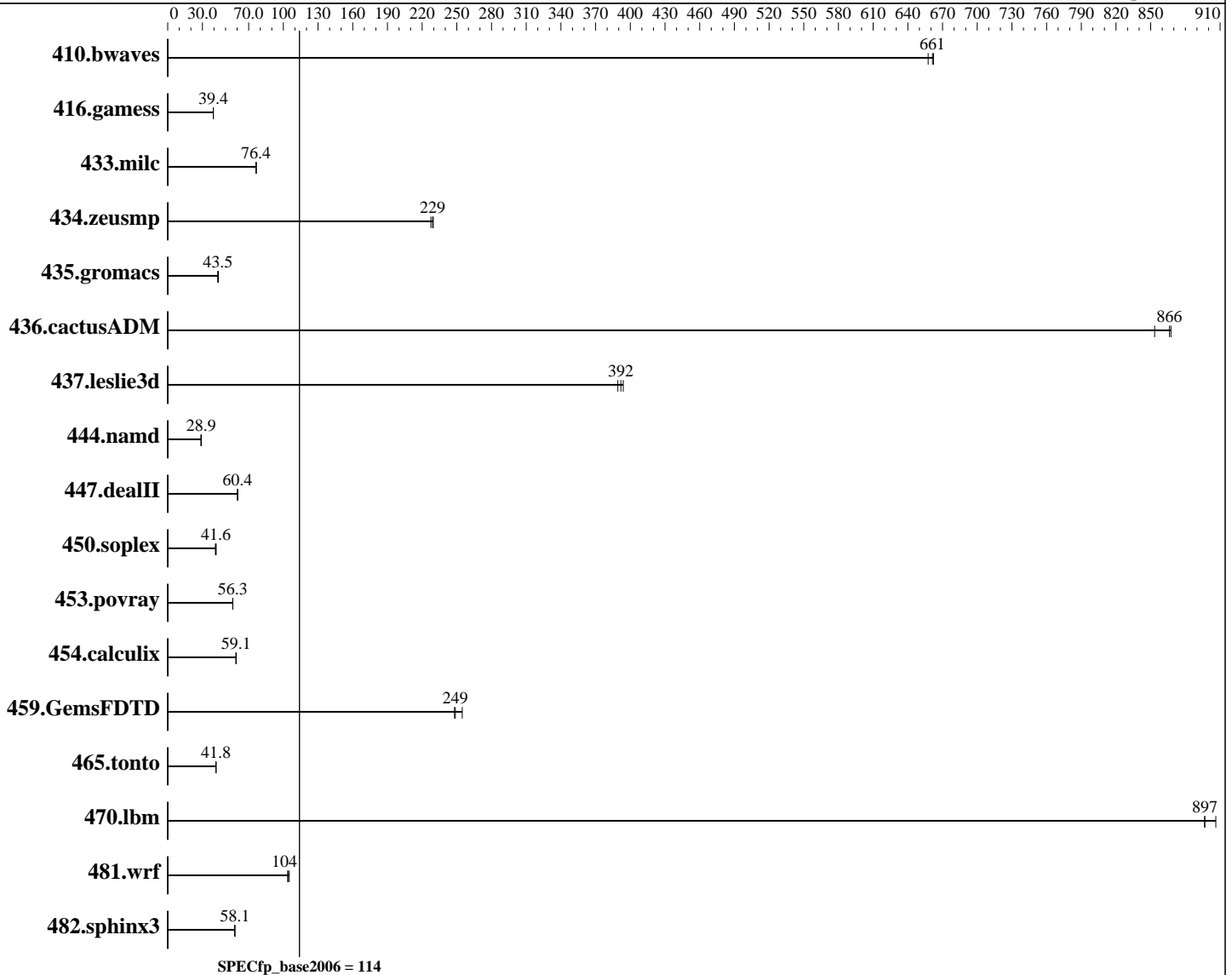
Test sponsor: HPE

Tested by: HPE

Test date: Oct-2017

Hardware Availability: Oct-2017

Software Availability: Apr-2017



### Hardware

CPU Name: Intel Xeon Silver 4114  
 CPU Characteristics: Intel Turbo Boost Technology up to 3.00 GHz  
 CPU MHz: 2200  
 FPU: Integrated  
 CPU(s) enabled: 20 cores, 2 chips, 10 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: 13.75 MB I+D on chip per chip  
Other Cache: None  
Memory: 192 GB (24 x 8 GB 2Rx8 PC4-2666V-R, running at 2400)  
Disk Subsystem: 1 x 600 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	<b><u>20.5</u></b>	<b><u>661</u></b>	20.5	662	20.7	658						
416.gamess	496	39.5	<b><u>497</u></b>	<b><u>39.4</u></b>	497	39.4						
433.milc	120	76.3	120	76.6	<b><u>120</u></b>	<b><u>76.4</u></b>						
434.zeusmp	39.6	230	40.0	228	<b><u>39.7</u></b>	<b><u>229</u></b>						
435.gromacs	163	43.7	165	43.4	<b><u>164</u></b>	<b><u>43.5</u></b>						
436.cactusADM	14.0	853	13.8	868	<b><u>13.8</u></b>	<b><u>866</u></b>						
437.leslie3d	<b><u>24.0</u></b>	<b><u>392</u></b>	24.2	389	23.9	394						
444.namd	278	28.9	277	28.9	<b><u>278</u></b>	<b><u>28.9</u></b>						
447.dealII	189	60.5	<b><u>189</u></b>	<b><u>60.4</u></b>	190	60.3						
450.soplex	<b><u>200</u></b>	<b><u>41.6</u></b>	199	41.9	202	41.2						
453.povray	<b><u>94.5</u></b>	<b><u>56.3</u></b>	94.6	56.2	94.4	56.3						
454.calculix	139	59.2	140	59.0	<b><u>139</u></b>	<b><u>59.1</u></b>						
459.GemsFDTD	41.7	255	42.8	248	<b><u>42.7</u></b>	<b><u>249</u></b>						
465.tonto	<b><u>236</u></b>	<b><u>41.8</u></b>	235	41.8	236	41.6						
470.lbm	<b><u>15.3</u></b>	<b><u>897</u></b>	15.3	897	15.2	906						
481.wrf	<b><u>108</u></b>	<b><u>104</u></b>	108	104	106	105						
482.sphinx3	337	57.8	<b><u>335</u></b>	<b><u>58.1</u></b>	335	58.1						

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"  
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  
irqbalance disabled with "systemctl stop irqbalance"  
tuned profile set with "tuned-adm profile throughput-performance"

## Platform Notes

BIOS Configuration:  
Intel Hyperthreading set to Disabled  
Thermal Configuration set to Maximum Cooling  
LLC Prefetcher set to Enabled

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## Platform Notes (Continued)

LLC Dead Line Allocation set to Disabled  
 Stale A to S set to Disabled  
 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  
 Uncore Frequency scaling set to Auto  
 Sysinfo program /home/cpu2006/config/sysinfo.rev6993  
 Revision 6993 of 2015-11-06 (b5e8d4b4eb51ed28d7f98696cbe290c1)  
 running on DL360G10 Thu Oct 19 07:51:39 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) Silver 4114 CPU @ 2.20GHz
 2 "physical id"s (chips)
 20 "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    : 10
  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    : 14080 KB
```

```
From /proc/meminfo
MemTotal:      197751212 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 DL360G10 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
```

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## Platform Notes (Continued)

run-level 3 Oct 19 04:40

SPEC is set to: /home/cpu2006

Filesystem	Type	Size	Used	Avail	Use%	Mounted on
/dev/mapper/rhel_dl360g10-home	xfs	504G	37G	467G	8%	/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, configured at 2400 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/cpu2006/lib/ia32:/home/cpu2006/lib/intel64:/home/cpu2006/sh10.2"

OMP\_NUM\_THREADS = "20"

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

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## Base Portability Flags (Continued)

```

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/HPE-Platform-Flags-Intel-V1.2-SKX-revD.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-revD.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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