



SPEC[®] CFP2006 Result

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Hewlett Packard Enterprise

(Test Sponsor: HPE)

ProLiant DL380 Gen10
(2.00 GHz, Intel Xeon Gold 6138)

SPECfp[®]2006 = **Not Run**

SPECfp_base2006 = **138**

CPU2006 license: 3

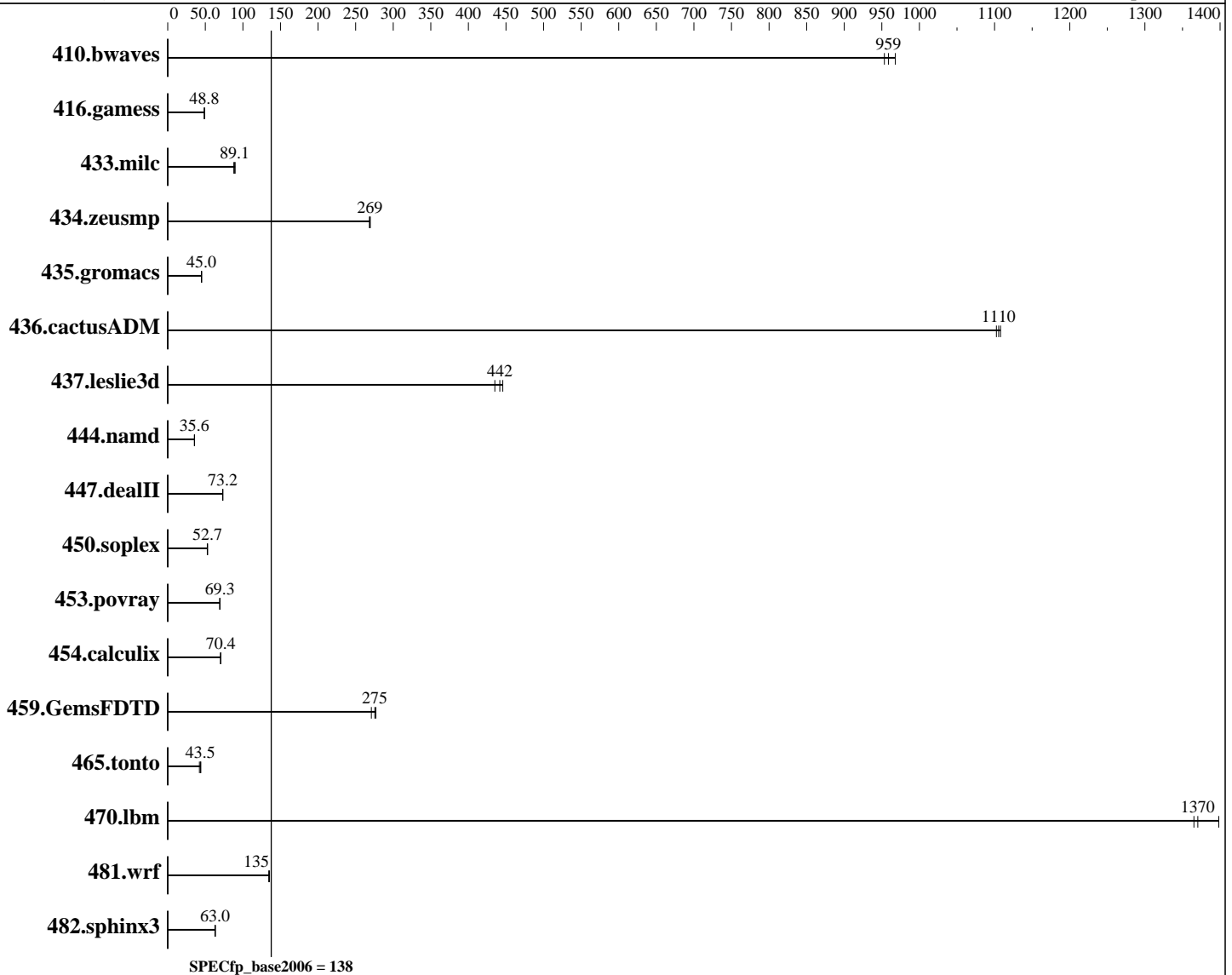
Test sponsor: HPE

Tested by: HPE

Test date: Oct-2017

Hardware Availability: Oct-2017

Software Availability: Apr-2017



Hardware

CPU Name: Intel Xeon 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 960 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 | 14.3 | 953 | <u>14.2</u> | <u>959</u> | 14.0 | 968 | | | | | | |
| 416.gamess | 401 | 48.8 | <u>401</u> | <u>48.8</u> | 402 | 48.7 | | | | | | |
| 433.milc | <u>103</u> | <u>89.1</u> | 102 | 89.6 | 104 | 87.9 | | | | | | |
| 434.zeusmp | 33.9 | 268 | <u>33.8</u> | <u>269</u> | 33.8 | 269 | | | | | | |
| 435.gromacs | <u>159</u> | <u>45.0</u> | 159 | 45.0 | 159 | 45.0 | | | | | | |
| 436.cactusADM | <u>10.8</u> | <u>1110</u> | 10.8 | 1110 | 10.8 | 1100 | | | | | | |
| 437.leslie3d | <u>21.3</u> | <u>442</u> | 21.1 | 446 | 21.6 | 435 | | | | | | |
| 444.namd | 226 | 35.6 | <u>226</u> | <u>35.6</u> | 225 | 35.6 | | | | | | |
| 447.dealII | 156 | 73.3 | <u>156</u> | <u>73.2</u> | 156 | 73.1 | | | | | | |
| 450.soplex | 157 | 53.1 | 158 | 52.6 | <u>158</u> | <u>52.7</u> | | | | | | |
| 453.povray | 76.9 | 69.2 | <u>76.7</u> | <u>69.3</u> | 76.5 | 69.6 | | | | | | |
| 454.calculix | 117 | 70.5 | <u>117</u> | <u>70.4</u> | 117 | 70.3 | | | | | | |
| 459.GemsFDTD | 38.3 | 277 | <u>38.5</u> | <u>275</u> | 39.2 | 271 | | | | | | |
| 465.tonto | <u>226</u> | <u>43.5</u> | 223 | 44.1 | 233 | 42.1 | | | | | | |
| 470.lbm | 10.1 | 1370 | <u>10.0</u> | <u>1370</u> | 9.83 | 1400 | | | | | | |
| 481.wrf | <u>82.9</u> | <u>135</u> | 83.0 | 135 | 82.5 | 135 | | | | | | |
| 482.sphinx3 | <u>310</u> | <u>63.0</u> | 307 | 63.5 | 310 | 62.8 | | | | | | |

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/cpu2006/config/sysinfo.rev6993
Revision 6993 of 2015-11-06 (b5e8d4b4eb51ed28d7f98696cbe290c1)
running on DL380Gen10-2 Mon Oct 30 03:08:33 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:      197571144 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 DL380Gen10-2 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 Oct 30 03:05

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Platform Notes (Continued)

SPEC is set to: /home/cpu2006

| Filesystem | Type | Size | Used | Avail | Use% | Mounted on |
|-----------------------|------|------|------|-------|------|------------|
| /dev/mapper/rhel-home | xfs | 504G | 30G | 474G | 6% | /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 U30 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/cpu2006/lib/ia32:/home/cpu2006/lib/intel64:/home/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 other inquiries, please contact webmaster@spec.org.

Tested with SPEC CPU2006 v1.2.

Report generated on Wed Nov 29 12:30:04 2017 by SPEC CPU2006 PS/PDF formatter v6932.

Originally published on 29 November 2017.

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