# SPEC® CFP2006 Result

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## Hewlett Packard Enterprise

(Test Sponsor: HPE)

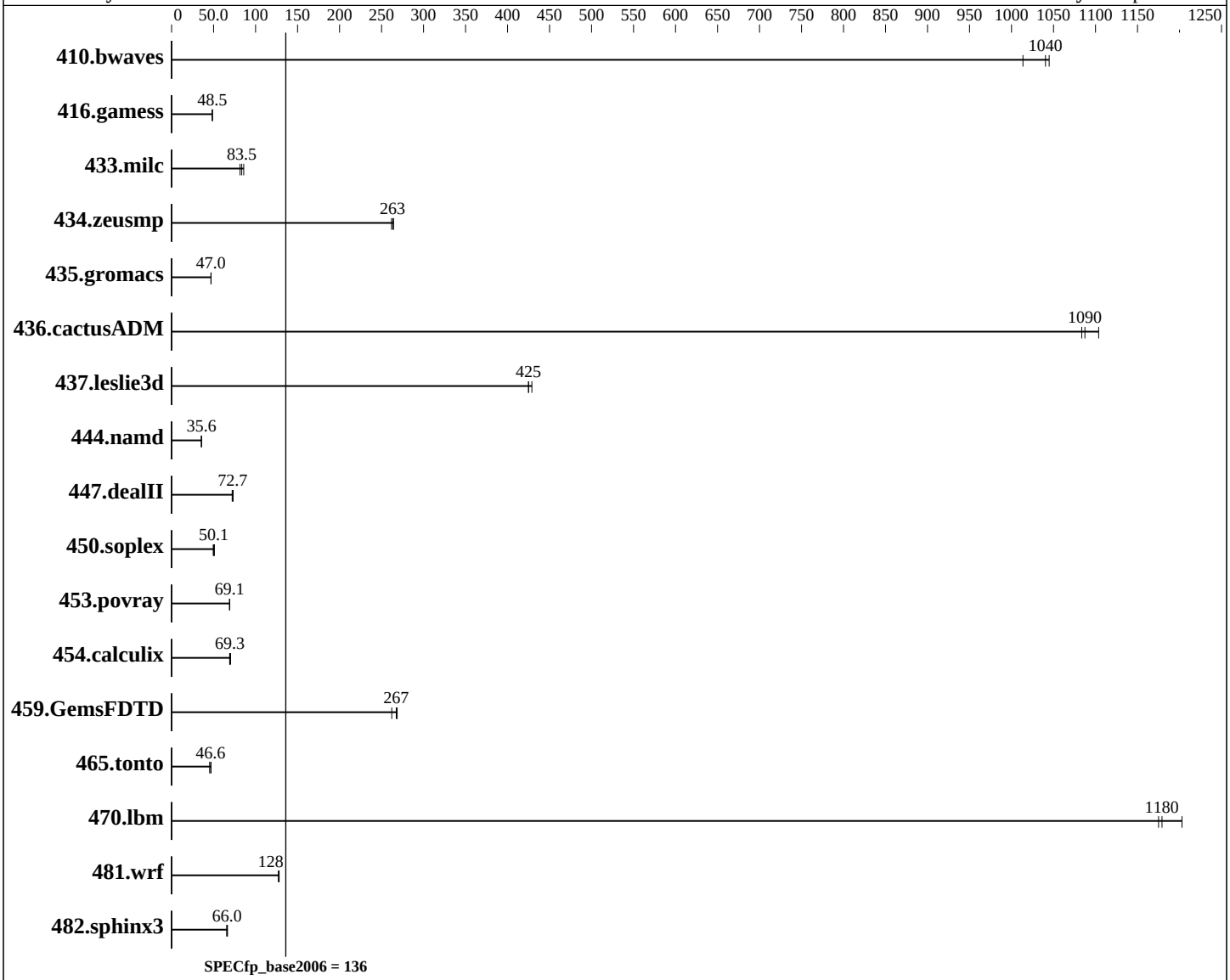
ProLiant BL460c Gen10
(2.10 GHz, Intel Xeon Gold 6130)

SPECfp®2006 = Not Run

SPECfp_base2006 = 136

**CPU2006 license:** 3
**Test sponsor:** HPE
**Tested by:** HPE

**Test date:** Dec-2017
**Hardware Availability:** Nov-2017
**Software Availability:** Apr-2017




## Hardware

| | |
|---|---|
| CPU Name: | Intel Xeon Gold 6130 |
| CPU Characteristics: | Intel Turbo Boost Technology up to 3.70 GHz |
| CPU MHz: | 2100 |
| FPU: | Integrated |
| CPU(s) enabled: | 32 cores, 2 chips, 16 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 7.4 (Maipo)<br>Kernel 3.10.0-693.el7.x86_64 |
| Compiler: | C/C++: Version 17.0.3.191 of Intel C/C++ Compiler for Linux;<br>Fortran: Version 17.0.3.191 of Intel Fortran Compiler for Linux |
| Auto Parallel: | Yes |
| File System: | xfs |

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| | | | |
|---|---|---|---|
| L3 Cache: | 22 MB I+D on chip per chip | System State: | Run level 3 (multi-user) |
| Other Cache: | None | Base Pointers: | 64-bit |
| Memory: | 192 GB (12 x 16 GB 2Rx8 PC4-2666V-R) | Peak Pointers: | Not Applicable |
| Disk Subsystem: | 1 x 480 GB SATA SSD, RAID 0 | Other Software: | None |
| Other Hardware: | None | | |

## Results Table

| Benchmark | Base | | | | | | Peak | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | Seconds | Ratio | Seconds | Ratio | Seconds | Ratio | Seconds | Ratio | Seconds | Ratio | Seconds | Ratio |
| 410.bwaves | 13.0 | 1040 | 13.4 | 1010 | **13.1** | **1040** | | | | | | |
| 416.gamess | 404 | 48.5 | **404** | **48.5** | 404 | 48.5 | | | | | | |
| 433.milc | **110** | **83.5** | 113 | 81.5 | 107 | 85.9 | | | | | | |
| 434.zeusmp | 34.4 | 264 | **34.6** | **263** | 34.7 | 262 | | | | | | |
| 435.gromacs | 152 | 47.1 | **152** | **47.0** | 152 | 46.9 | | | | | | |
| 436.cactusADM | 10.8 | 1100 | **11.0** | **1090** | 11.0 | 1080 | | | | | | |
| 437.leslie3d | **22.1** | **425** | 21.9 | 429 | 22.1 | 425 | | | | | | |
| 444.namd | 225 | 35.7 | 226 | 35.4 | **225** | **35.6** | | | | | | |
| 447.dealII | 159 | 72.1 | **157** | **72.7** | 156 | 73.3 | | | | | | |
| 450.soplex | 168 | 49.6 | **166** | **50.1** | 164 | 51.0 | | | | | | |
| 453.povray | 77.2 | 68.9 | 76.8 | 69.3 | **77.0** | **69.1** | | | | | | |
| 454.calculix | **119** | **69.3** | 117 | 70.3 | 119 | 69.1 | | | | | | |
| 459.GemsFDTD | 40.5 | 262 | **39.7** | **267** | 39.5 | 269 | | | | | | |
| 465.tonto | 217 | 45.3 | 209 | 47.0 | **211** | **46.6** | | | | | | |
| 470.lbm | **11.7** | **1180** | 11.4 | 1200 | 11.7 | 1180 | | | | | | |
| 481.wrf | 87.2 | 128 | 87.9 | 127 | **87.4** | **128** | | | | | | |
| 482.sphinx3 | **295** | **66.0** | 297 | 65.7 | 293 | 66.6 | | | | | | |

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"
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 wtih "tuned-adm profile throughput-performance"
```

## Platform Notes

```
BIOS Configuration:
 Intel Hyper-Threading 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
 Uncore Frequency Scaling set to Auto
Sysinfo program /home/cpu2006/config/sysinfo.rev6993
Revision 6993 of 2015-11-06 (b5e8d4b4eb51ed28d7f98696cbe290c1)
running on BL460c_RHEL7.4BL460c_RHEL7.4BL460c_RHEL7.4BL460c_RHEL7.4BL460c_R Mon
Dec 18 17:01:58 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 6130 CPU @ 2.10GHz
      2 "physical id"s (chips)
      32 "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 : 16
      siblings  : 16
      physical 0: cores 0 1 2 3 4 5 6 7 8 9 10 11 12 13 14 15
      physical 1: cores 0 1 2 3 4 5 6 7 8 9 10 11 12 13 14 15
   cache size : 22528 KB

From /proc/meminfo
   MemTotal:       197749752 kB
   HugePages_Total:       0
   Hugepagesize:       2048 kB

From /etc/*release* /etc/*version*
   os-release:
      NAME="Red Hat Enterprise Linux Server"
      VERSION="7.4 (Maipo)"
      ID="rhel"
      ID_LIKE="fedora"
      VARIANT="Server"
      VARIANT_ID="server"
      VERSION_ID="7.4"
      PRETTY_NAME="Red Hat Enterprise Linux Server 7.4 (Maipo)"
   redhat-release: Red Hat Enterprise Linux Server release 7.4 (Maipo)
   system-release: Red Hat Enterprise Linux Server release 7.4 (Maipo)
   system-release-cpe: cpe:/o:redhat:enterprise_linux:7.4:ga:server

uname -a:
   Linux BL460c_RHEL7.4BL460c_RHEL7.4BL460c_RHEL7.4BL460c_RHEL7.4BL460c_R
   3.10.0-693.el7.x86_64 #1 SMP Thu Jul 6 19:56:57 EDT 2017 x86_64 x86_64 x86_64
   GNU/Linux
```

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## Platform Notes (Continued)

```
 run-level 3 Dec 18 14:44

 SPEC is set to: /home/cpu2006
    Filesystem     Type  Size  Used Avail Use% Mounted on
    /dev/sdb4      xfs   442G   62G  381G  14% /
 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 I41 11/14/2017
   Memory:
    4x UNKNOWN NOT AVAILABLE
    12x UNKNOWN NOT AVAILABLE 16 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 = "32"

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

No: The test sponsor attests, as of date of publication, that CVE-2017-5754 (Meltdown)
is mitigated in the system as tested and documented.
No: The test sponsor attests, as of date of publication, that CVE-2017-5753 (Spectre variant 1)
is mitigated in the system as tested and documented.
No: The test sponsor attests, as of date of publication, that CVE-2017-5715 (Spectre variant 2)
is mitigated in the system as tested and documented.


This benchmark result is intended to provide perspective on
past performance using the historical hardware and/or
software described on this result page.

The system as described on this result page was formerly
generally available. At the time of this publication, it may
not be shipping, and/or may not be supported, and/or may fail
to meet other tests of General Availability described in the
SPEC OSG Policy document, http://wwww.spec.org/osg/policy.htm.

This measured result may not be representative of the result
that would be measured were this benchmark run with hardware
and software available as of the publication date.
```

## 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
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-revH.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-revH.xml


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For questions about this result, please contact the tester.
For other inquiries, please contact webmaster@spec.org.

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