SPEC® CFP2006 Result
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Hewlett Packard Enterprise
(Test Sponsor: HPE)

ProLiant BL460c Gen10
(3.20 GHz, Intel Xeon Gold 6134)

$SPECfp^{®}2006 =$ **Not Run**

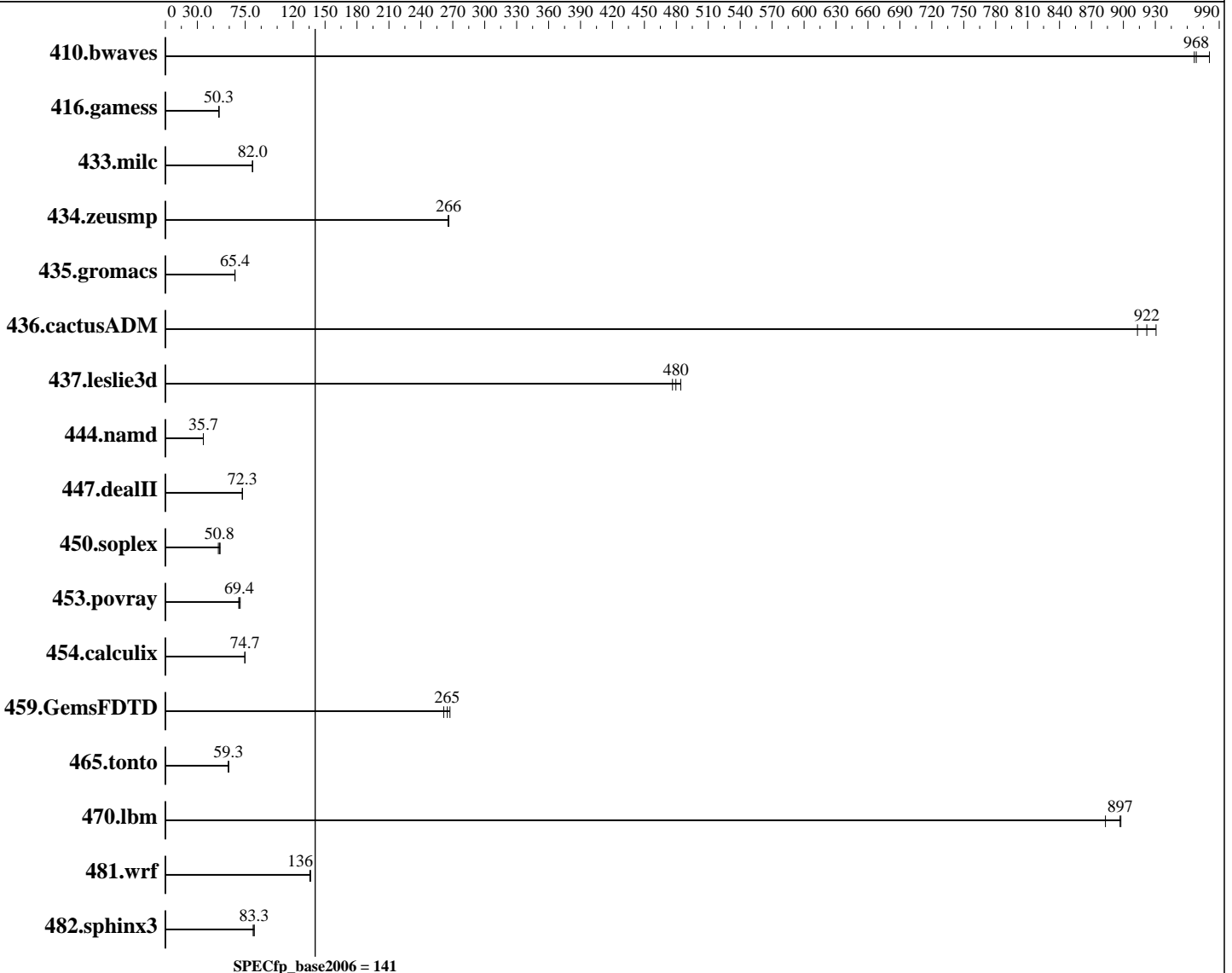$SPECfp\_base2006 =$ **141**

CPU2006 license: 3	**Test date:** Dec-2017
Test sponsor: HPE	**Hardware Availability:** Nov-2017
Tested by: HPE	**Software Availability:** Apr-2017

0 30.0 75.0 120 150 180 210 240 270 300 330 360 390 420 450 480 510 540 570 600 630 660 690 720 750 780 810 840 870 900 930 990

Benchmark	Value
410.bwaves	968
416.gamess	50.3
433.milc	82.0
434.zeusmp	266
435.gromacs	65.4
436.cactusADM	922
437.leslie3d	480
444.namd	35.7
447.dealII	72.3
450.soplex	50.8
453.povray	69.4
454.calculix	74.7
459.GemsFDTD	265
465.tonto	59.3
470.lbm	897
481.wrf	136
482.sphinx3	83.3

SPECfp_base2006 = 141

Hardware

CPU Name:	Intel Xeon Gold 6134
CPU Characteristics:	Intel Turbo Boost Technology up to 3.70 GHz
CPU MHz:	3200
FPU:	Integrated
CPU(s) enabled:	16 cores, 2 chips, 8 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

Continued on next page

Software

Operating System:	Red Hat Enterprise Linux Server release 7.4 (Maipo) Kernel 3.10.0-693.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:	24.75 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

	Base						Peak					
Benchmark	**Seconds**	**Ratio**	**Seconds**	**Ratio**	**Seconds**	**Ratio**	**Seconds**	**Ratio**	**Seconds**	**Ratio**	**Seconds**	**Ratio**
410.bwaves	13.9	981	14.1	967	**14.0**	**968**						
416.gamess	389	50.3	**389**	**50.3**	389	50.3						
433.milc	112	82.0	112	81.7	**112**	**82.0**						
434.zeusmp	34.3	265	34.2	266	**34.2**	**266**						
435.gromacs	**109**	**65.4**	109	65.4	109	65.3						
436.cactusADM	12.8	931	**13.0**	**922**	13.1	913						
437.leslie3d	19.7	476	**19.6**	**480**	19.4	484						
444.namd	225	35.6	225	35.7	**225**	**35.7**						
447.dealII	158	72.4	**158**	**72.3**	158	72.3						
450.soplex	162	51.4	168	49.7	**164**	**50.8**						
453.povray	77.2	68.9	**76.7**	**69.4**	75.7	70.3						
454.calculix	110	74.8	111	74.6	**110**	**74.7**						
459.GemsFDTD	40.6	261	39.7	267	**40.1**	**265**						
465.tonto	165	59.5	167	59.1	**166**	**59.3**						
470.lbm	15.6	883	**15.3**	**897**	15.3	898						
481.wrf	81.9	136	82.3	136	**82.1**	**136**						
482.sphinx3	236	82.4	234	83.4	**234**	**83.3**						

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 bl160c15 Sat Dec 16 03:25:14 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 6134 CPU @ 3.20GHz
          2 "physical id"s (chips)
          16 "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 : 8
          siblings  : 8
          physical 0: cores 0 4 5 7 18 19 21 22
          physical 1: cores 0 4 5 6 16 19 20 22
       cache size : 25344 KB

    From /proc/meminfo
       MemTotal:       197751352 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 bl160c15 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

    run-level 3 Dec 16 01:10
```

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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   839G   38G  802G   5% /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 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 = "16"

 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.

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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
```

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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 other inquiries, please contact webmaster@spec.org.

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