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

ProLiant DL560 Gen10
(3.60 GHz, Intel Xeon Gold 5122)

$SPECfp^{®}2006 =$ **Not Run**
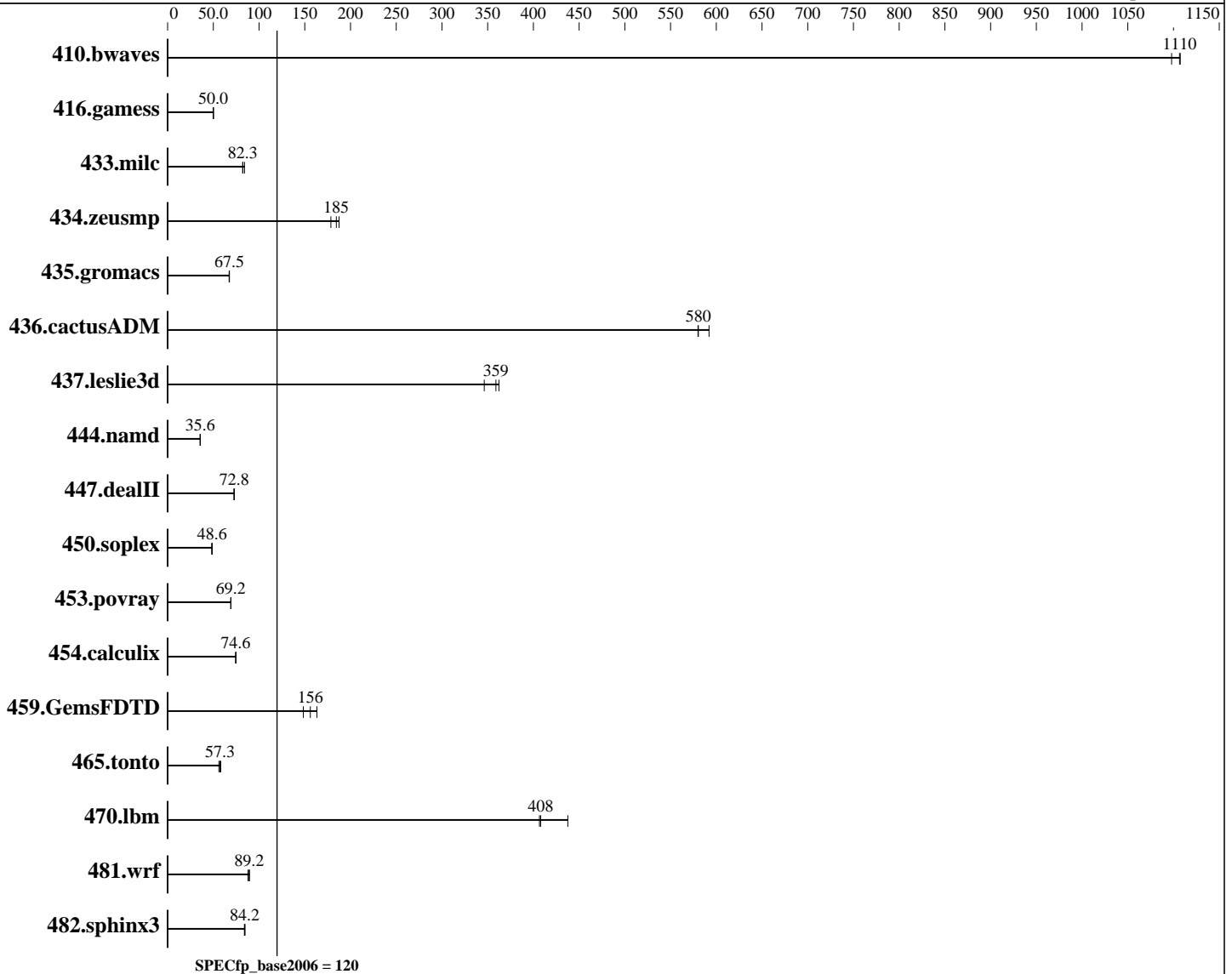
$SPECfp\_base2006 =$ **120**

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

Test date: Nov-2017
Hardware Availability: Oct-2017
Software Availability: Apr-2017

Benchmark	Result
410.bwaves	1110
416.gamess	50.0
433.milc	82.3
434.zeusmp	185
435.gromacs	67.5
436.cactusADM	580
437.leslie3d	359
444.namd	35.6
447.dealII	72.8
450.soplex	48.6
453.povray	69.2
454.calculix	74.6
459.GemsFDTD	156
465.tonto	57.3
470.lbm	408
481.wrf	89.2
482.sphinx3	84.2

SPECfp_base2006 = 120

Hardware
CPU Name: Intel Xeon Gold 5122
CPU Characteristics: Intel Turbo Boost Technology up to 3.70 GHz
CPU MHz: 3600
FPU: Integrated
CPU(s) enabled: 16 cores, 4 chips, 4 cores/chip
CPU(s) orderable: 1, 2, 4 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 7.3 (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
Continued on next page

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L3 Cache:	16.5 MB I+D on chip per chip
Other Cache:	None
Memory:	384 GB (48 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	12.3	1110	12.4	1100	**12.3**	**1110**						
416.gamess	**391**	**50.0**	391	50.1	392	50.0						
433.milc	112	82.1	**112**	**82.3**	109	84.1						
434.zeusmp	**49.3**	**185**	48.5	187	51.0	179						
435.gromacs	106	67.6	106	67.2	**106**	**67.5**						
436.cactusADM	20.6	580	20.2	592	**20.6**	**580**						
437.leslie3d	**26.2**	**359**	27.1	346	25.9	362						
444.namd	225	35.6	**225**	**35.6**	225	35.7						
447.dealII	**157**	**72.8**	158	72.5	157	73.0						
450.soplex	171	48.8	173	48.2	**171**	**48.6**						
453.povray	77.0	69.1	**76.9**	**69.2**	76.8	69.3						
454.calculix	111	74.6	111	74.5	**111**	**74.6**						
459.GemsFDTD	65.0	163	71.5	148	**68.0**	**156**						
465.tonto	176	56.0	**172**	**57.3**	169	58.1						
470.lbm	33.8	407	**33.7**	**408**	31.4	438						
481.wrf	**125**	**89.2**	125	89.6	127	87.9						
482.sphinx3	232	84.0	230	84.7	**231**	**84.2**						

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 Throughtput-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)

```
    Stale A to S set to Enabled
    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 DL560G10 Wed Nov 22 06:23:46 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 5122 CPU @ 3.60GHz
          4 "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 : 4
          siblings  : 4
          physical 0: cores 1 5 9 13
          physical 1: cores 0 5 9 13
          physical 2: cores 1 5 9 13
          physical 3: cores 1 2 5 11
       cache size : 16896 KB

    From /proc/meminfo
       MemTotal:      395931392 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 DL560G10 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 Nov 22 03:50

  SPEC is set to: /home/cpu2006
     Filesystem                    Type  Size  Used Avail Use% Mounted on
     /dev/mapper/rhel_dl560g10-home xfs   839G   37G  803G   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 U34 09/29/2017
   Memory:
    48x 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 = "16"

 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-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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