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

$SPECfp^{®}2006 = $ **Not Run**

ProLiant DL560 Gen10
(2.00 GHz, Intel Xeon Platinum 8153)

$SPECfp_base2006 = $ **113**

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


```
410.bwaves                                                                    1920
416.gamess      37.2
433.milc        73.2
434.zeusmp           204
435.gromacs     37.6
436.cactusADM                        616
437.leslie3d              313
444.namd        27.0
447.dealII      56.6
450.soplex      42.7
453.povray      52.6
454.calculix    56.0
459.GemsFDTD         149
465.tonto       37.0
470.lbm                                                              1550
481.wrf              113
482.sphinx3     56.3
```

SPECfp_base2006 = 113

Hardware

CPU Name:	Intel Xeon Platinum 8153
CPU Characteristics:	Intel Turbo Boost Technology up to 2.80 GHz
CPU MHz:	2000
FPU:	Integrated
CPU(s) enabled:	64 cores, 4 chips, 16 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

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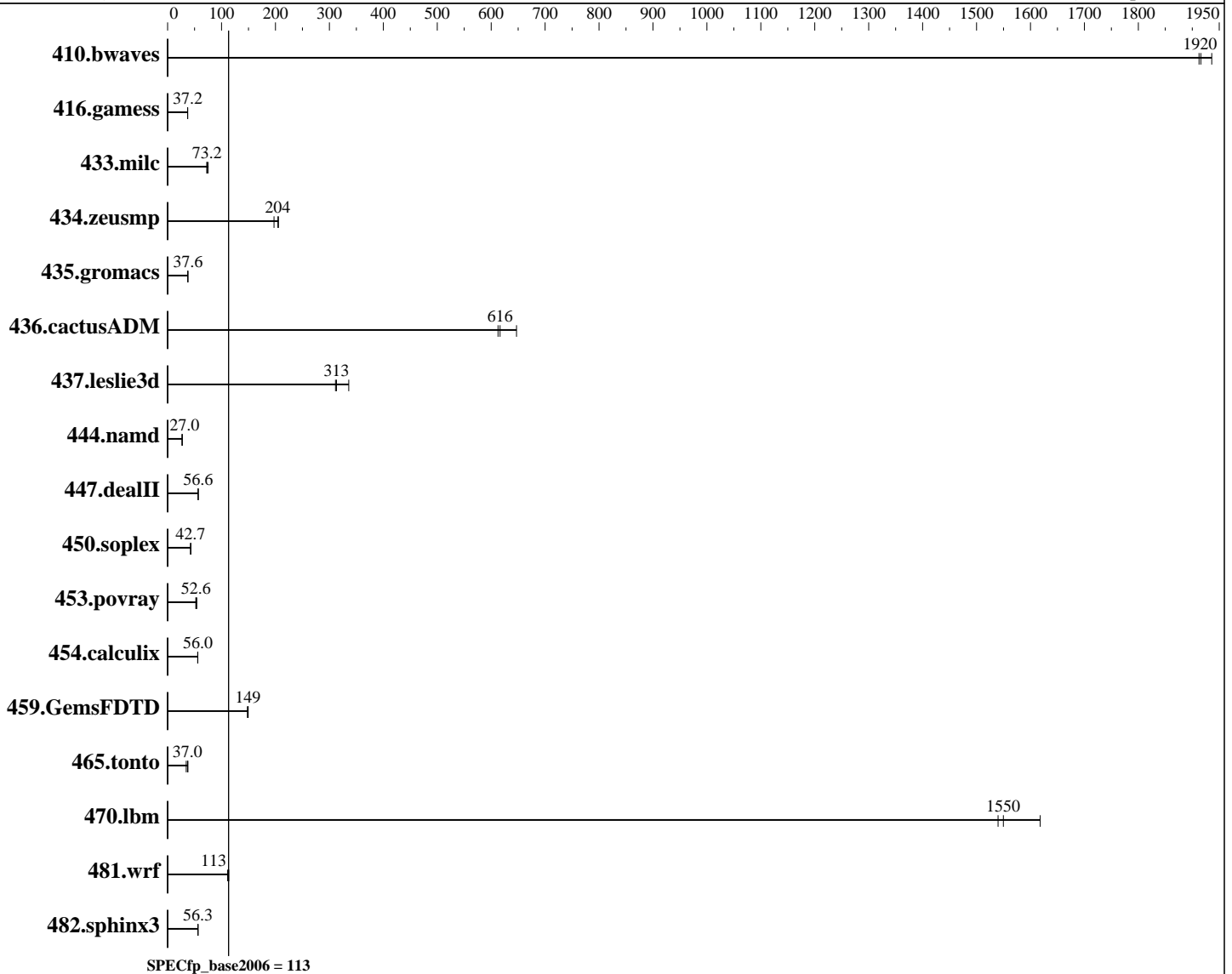$SPECfp2006 =$ **Not Run**

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L3 Cache:	22 MB I+D on chip per chip
Other Cache:	None
Memory:	768 GB (48 x 16 GB 2Rx8 PC4-2666V-R)
Disk Subsystem:	1 x 480 GB SSD SATA, 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	7.02	1940	7.11	1910	**7.09**	**1920**						
416.gamess	**527**	**37.2**	527	37.2	527	37.2						
433.milc	**125**	**73.2**	122	75.2	126	72.6						
434.zeusmp	**44.5**	**204**	44.3	206	46.1	197						
435.gromacs	190	37.7	**190**	**37.6**	192	37.2						
436.cactusADM	18.5	647	19.5	613	**19.4**	**616**						
437.leslie3d	30.2	311	**30.0**	**313**	28.0	336						
444.namd	**297**	**27.0**	297	27.0	297	27.0						
447.dealII	202	56.6	**202**	**56.6**	202	56.7						
450.soplex	195	42.7	194	42.9	**195**	**42.7**						
453.povray	98.3	54.1	101	52.5	**101**	**52.6**						
454.calculix	147	56.0	**147**	**56.0**	148	55.7						
459.GemsFDTD	71.0	149	**71.2**	**149**	71.7	148						
465.tonto	261	37.7	285	34.5	**266**	**37.0**						
470.lbm	**8.87**	**1550**	8.92	1540	8.49	1620						
481.wrf	100	111	98.5	113	**99.1**	**113**						
482.sphinx3	346	56.4	347	56.2	**346**	**56.3**						

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 Hyperthreading set to Disabled
 Thermal Configuration set to Maximum Cooling
 Memory Patrol Scrubbing set to Disabled
 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 Enabled
   Workload Pofile set to General Peak Frequency Compute
    Energy/Performance Bias set to Maximum Performance
    Uncore Frequency Scaling set to Auto
   Workload Pofile set to Custom
    NUMA Group Size Optimization set to Flat

   Sysinfo program /cpu2006/config/sysinfo.rev6993
   Revision 6993 of 2015-11-06 (b5e8d4b4eb51ed28d7f98696cbe290c1)
   running on DL560-Gen10 Fri Oct 13 19:28:50 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) Platinum 8153 CPU @ 2.00GHz
         4 "physical id"s (chips)
         64 "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
         physical 2: cores 0 1 2 3 4 5 6 7 8 9 10 11 12 13 14 15
         physical 3: 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:       792073812 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 DL560-Gen10 3.10.0-514.el7.x86_64 #1 SMP Wed Oct 19 11:24:13 EDT 2016
```

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Platform Notes (Continued)

```
   x86_64 x86_64 x86_64 GNU/Linux

 run-level 3 Oct 13 16:19

 SPEC is set to: /cpu2006
    Filesystem     Type  Size  Used Avail Use% Mounted on
    /dev/sdb1      xfs   447G   12G  436G   3% /
 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 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 = "/cpu2006/lib/ia32:/cpu2006/lib/intel64:/cpu2006/sh10.2"
OMP_NUM_THREADS = "64"

 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

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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-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 other inquiries, please contact webmaster@spec.org.

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