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

Synergy 480 Gen10
(3.40 GHz, Intel Xeon Gold 6128)

$SPECfp^{®}2006 =$ **Not Run**

$SPECfp\_base2006 =$ **133**

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

0 30.0 70.0 100 130 160 190 220 250 280 310 340 370 400 430 460 490 520 550 580 610 640 670 700 730 760 790 820 850 880 920

Benchmark	Score
410.bwaves	765
416.gamess	50.3
433.milc	79.5
434.zeusmp	255
435.gromacs	68.4
436.cactusADM	906
437.leslie3d	381
444.namd	35.6
447.dealII	72.3
450.soplex	49.0
453.povray	70.6
454.calculix	76.4
459.GemsFDTD	239
465.tonto	62.5
470.lbm	764
481.wrf	106
482.sphinx3	86.4

SPECfp_base2006 = 133

Hardware
CPU Name:	Intel Xeon Gold 6128
CPU Characteristics:	Intel Turbo Boost Technology up to 3.70 GHz
CPU MHz:	2600
FPU:	Integrated
CPU(s) enabled:	12 cores, 2 chips, 6 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:	SUSE Linux Enterprise Server 12 (x86_64) SP2 Kernel 4.4.21-69-default
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
System State:	Run level 3 (multi-user)

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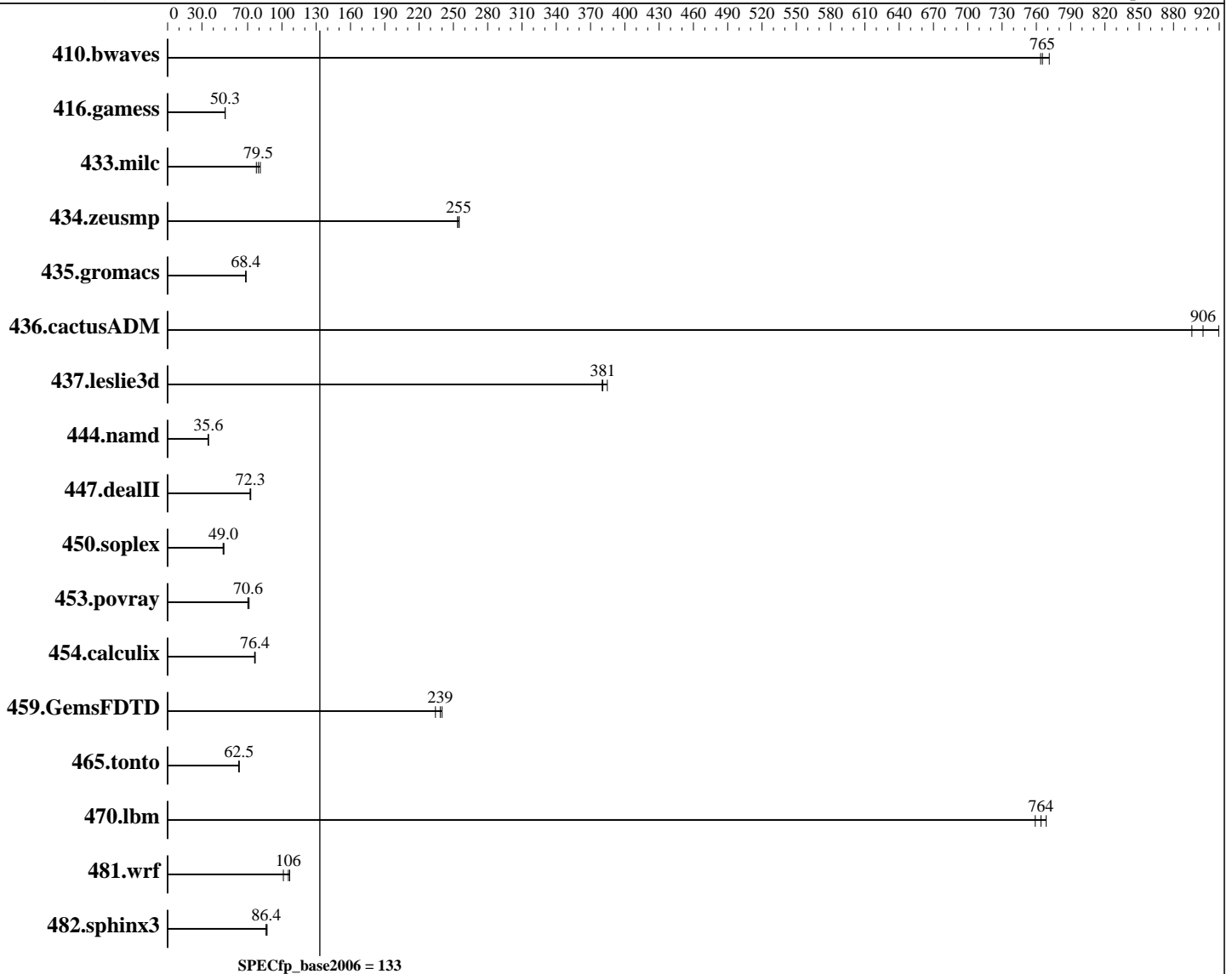
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L3 Cache:	19.25 MB I+D on chip per chip
Other Cache:	None
Memory:	384 GB (24 x 16 GB 2Rx8 PC4-2666V-R)
Disk Subsystem:	1 x 960 GB SATA SSD, RAID 0
Other Hardware:	None

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	17.6	771	17.8	764	**17.8**	**765**						
416.gamess	**389**	**50.3**	389	50.3	389	50.3						
433.milc	113	81.1	118	77.6	**116**	**79.5**						
434.zeusmp	35.7	255	35.9	254	**35.7**	**255**						
435.gromacs	**104**	**68.4**	104	68.6	105	68.3						
436.cactusADM	13.0	920	13.3	896	**13.2**	**906**						
437.leslie3d	24.4	385	**24.7**	**381**	24.7	380						
444.namd	225	35.7	**225**	**35.6**	225	35.6						
447.dealII	**158**	**72.3**	157	72.8	158	72.2						
450.soplex	169	49.2	172	48.5	**170**	**49.0**						
453.povray	**75.4**	**70.6**	75.7	70.2	74.6	71.3						
454.calculix	108	76.6	**108**	**76.4**	108	76.1						
459.GemsFDTD	45.3	234	44.2	240	**44.5**	**239**						
465.tonto	158	62.2	157	62.6	**157**	**62.5**						
470.lbm	**18.0**	**764**	18.1	759	17.9	769						
481.wrf	105	107	110	101	**106**	**106**						
482.sphinx3	**226**	**86.4**	226	86.2	224	87.0						

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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Hardware Availability: Oct-2017
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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 linux-vjuj Fri Dec 15 17:38:47 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 6128 CPU @ 3.40GHz
      2 "physical id"s (chips)
      12 "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 : 6
      siblings  : 6
      physical 0: cores 0 6 9 10 11 13
      physical 1: cores 0 6 9 10 11 13
   cache size : 19712 KB

From /proc/meminfo
   MemTotal:      395932436 kB
   HugePages_Total:       0
   Hugepagesize:       2048 kB

/usr/bin/lsb_release -d
   SUSE Linux Enterprise Server 12 SP2

From /etc/*release* /etc/*version*
   SuSE-release:
      SUSE Linux Enterprise Server 12 (x86_64)
      VERSION = 12
      PATCHLEVEL = 2
      # This file is deprecated and will be removed in a future service pack or
      release.
      # Please check /etc/os-release for details about this release.
   os-release:
      NAME="SLES"
      VERSION="12-SP2"
      VERSION_ID="12.2"
      PRETTY_NAME="SUSE Linux Enterprise Server 12 SP2"
      ID="sles"
      ANSI_COLOR="0;32"
      CPE_NAME="cpe:/o:suse:sles:12:sp2"
```

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Platform Notes (Continued)

```
uname -a:
   Linux linux-vjuj 4.4.21-69-default #1 SMP Tue Oct 25 10:58:20 UTC 2016
   (9464f67) x86_64 x86_64 x86_64 GNU/Linux

run-level 3 Dec 15 11:59

SPEC is set to: /home/cpu2006
   Filesystem     Type  Size  Used Avail Use% Mounted on
   /dev/sda4      xfs   852G   72G  780G   9% /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 I42 09/27/2017
   Memory:
   24x 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 = "12"

 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

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General Notes (Continued)

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

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Base Optimization Flags (Continued)

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 other inquiries, please contact webmaster@spec.org.

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