



SPEC[®] CFP2006 Result

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Hewlett Packard Enterprise

(Test Sponsor: HPE)

ProLiant DL360 Gen10
(2.40 GHz, Intel Xeon Gold 6148)

SPECfp[®]_rate2006 = Not Run

SPECfp_rate_base2006 = 1440

CPU2006 license: 3

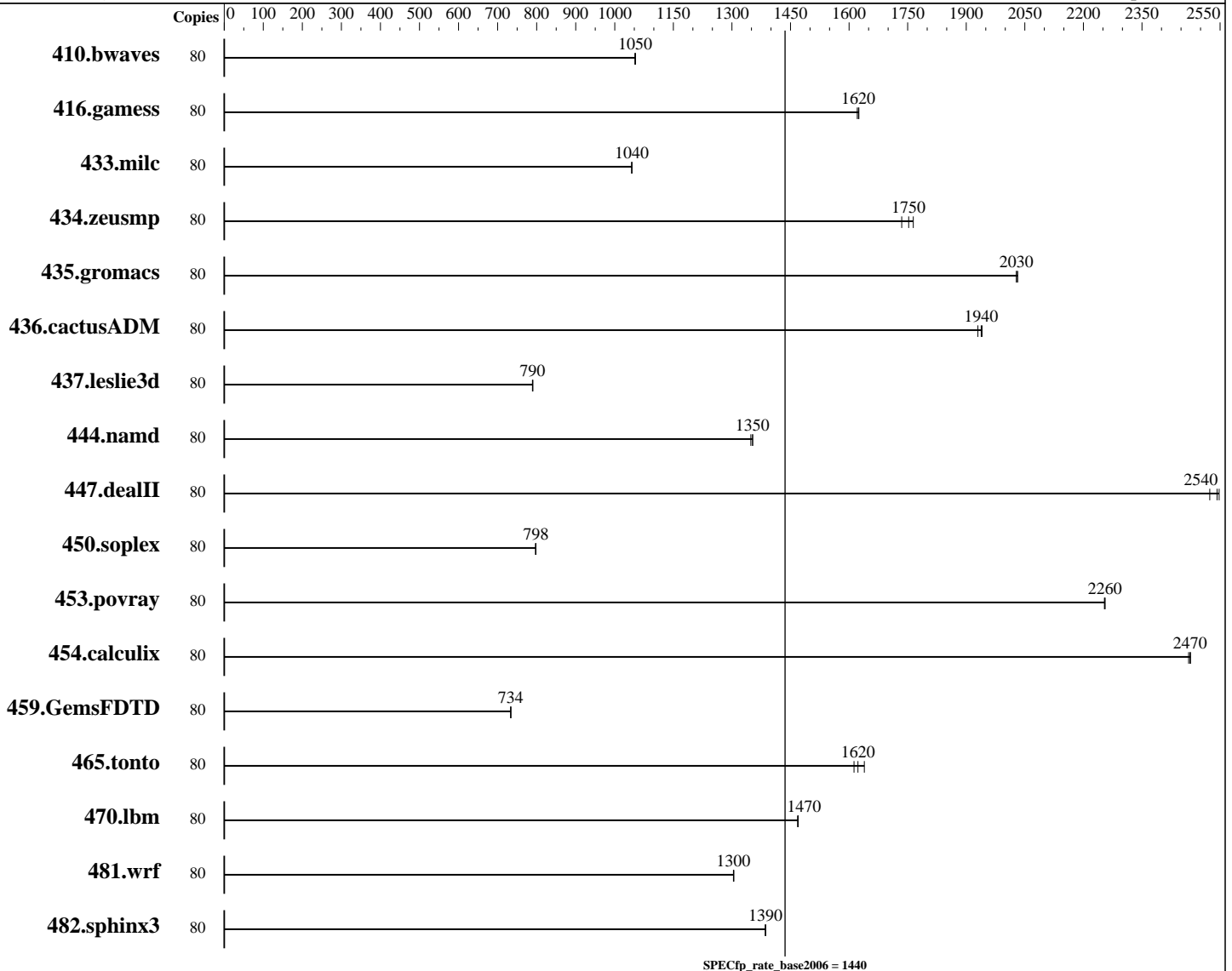
Test sponsor: HPE

Tested by: HPE

Test date: Oct-2017

Hardware Availability: Oct-2017

Software Availability: Apr-2017



Hardware

CPU Name: Intel Xeon Gold 6148
 CPU Characteristics: Intel Turbo Boost Technology up to 3.70 GHz
 CPU MHz: 2400
 FPU: Integrated
 CPU(s) enabled: 40 cores, 2 chips, 20 cores/chip, 2 threads/core
 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: No
 File System: xfs
 System State: Run level 3 (multi-user)

Continued on next page



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L3 Cache: 27.5 MB I+D on chip per chip
Other Cache: None
Memory: 192 GB (24 x 8 GB 2Rx8 PC4-2666V-R)
Disk Subsystem: 1 x 480 GB SATA SSD, RAID 0
Other Hardware: None

Base Pointers: 32/64-bit
Peak Pointers: Not Applicable
Other Software: None

Results Table

| Benchmark | Base | | | | | | | Peak | | | | | | |
|---------------|--------|-------------------|--------------------|--------------------|--------------------|--------------------|--------------------|--------|---------|-------|---------|-------|---------|-------|
| | Copies | Seconds | Ratio | Seconds | Ratio | Seconds | Ratio | Copies | Seconds | Ratio | Seconds | Ratio | Seconds | Ratio |
| 410.bwaves | 80 | 1032 | 1050 | <u>1033</u> | <u>1050</u> | 1034 | 1050 | | | | | | | |
| 416.gamess | 80 | 966 | 1620 | <u>965</u> | <u>1620</u> | 964 | 1630 | | | | | | | |
| 433.milc | 80 | 704 | 1040 | 704 | 1040 | <u>704</u> | <u>1040</u> | | | | | | | |
| 434.zeusmp | 80 | 413 | 1760 | <u>415</u> | <u>1750</u> | 420 | 1730 | | | | | | | |
| 435.gromacs | 80 | <u>282</u> | <u>2030</u> | 282 | 2030 | 281 | 2030 | | | | | | | |
| 436.cactusADM | 80 | 495 | 1930 | <u>493</u> | <u>1940</u> | 493 | 1940 | | | | | | | |
| 437.leslie3d | 80 | 953 | 789 | <u>952</u> | <u>790</u> | 951 | 790 | | | | | | | |
| 444.namd | 80 | 476 | 1350 | 474 | 1350 | <u>474</u> | <u>1350</u> | | | | | | | |
| 447.dealII | 80 | 363 | 2520 | <u>360</u> | <u>2540</u> | 359 | 2550 | | | | | | | |
| 450.soplex | 80 | <u>836</u> | <u>798</u> | 837 | 797 | 836 | 798 | | | | | | | |
| 453.povray | 80 | 189 | 2250 | <u>189</u> | <u>2260</u> | 189 | 2260 | | | | | | | |
| 454.calculix | 80 | 267 | 2470 | 267 | 2470 | <u>267</u> | <u>2470</u> | | | | | | | |
| 459.GemsFDTD | 80 | 1157 | 734 | 1157 | 734 | <u>1157</u> | <u>734</u> | | | | | | | |
| 465.tonto | 80 | <u>485</u> | <u>1620</u> | 480 | 1640 | 488 | 1610 | | | | | | | |
| 470.lbm | 80 | 748 | 1470 | <u>748</u> | <u>1470</u> | 749 | 1470 | | | | | | | |
| 481.wrf | 80 | 685 | 1300 | <u>685</u> | <u>1300</u> | 685 | 1310 | | | | | | | |
| 482.sphinx3 | 80 | 1125 | 1390 | <u>1125</u> | <u>1390</u> | 1125 | 1390 | | | | | | | |

Results appear in the order in which they were run. Bold underlined text indicates a median measurement.

Submit Notes

The numactl mechanism was used to bind copies to processors. The config file option 'submit' was used to generate numactl commands to bind each copy to a specific processor. For details, please see the config file.

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
runspec command invoked through numactl i.e.:
numactl --interleave=all runspec <etc>
irqbalance disabled with "service irqbalance stop"
tuned profile set with "tuned-adm profile throughput-performance"
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Operating System Notes (Continued)

VM Dirty ratio was set to 40 using "echo 40 > /proc/sys/vm/dirty_ratio"
Numa balancing was disabled using "echo 0 > /proc/sys/kernel/numa_balancing"

Platform Notes

BIOS Configuration:

Thermal Configuration set to Maximum Cooling
Memory Patrol Scrubbing set to Disabled
LLC Prefetcher set to Enabled
LLC Dead Line Allocation set to Disabled
Workload Pofile set to General Throughput Compute
Minimum Processor Idle Power Core C-State set to C1E

Sysinfo program /home/specuser/cpu2006/config/sysinfo.rev6993
Revision 6993 of 2015-11-06 (b5e8d4b4eb51ed28d7f98696cbe290c1)
running on linux-lvuc Fri Oct 6 08:21:20 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 6148 CPU @ 2.40GHz
 2 "physical id"s (chips)
 80 "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 : 20
  siblings  : 40
 physical 0: cores 0 1 2 3 8 9 10 11 12 16 17 18 19 20 24 25 26 27 28
 physical 1: cores 0 1 2 3 8 9 10 11 12 16 17 18 19 20 24 25 26 27 28
cache size : 28160 KB
```

From /proc/meminfo

```
MemTotal: 197547324 kB
HugePages_Total: 0
Hugepagesize: 2048 kB
```

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"
```

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Platform Notes (Continued)

PRETTY_NAME="SUSE Linux Enterprise Server 12 SP2"

ID="sles"

ANSI_COLOR="0;32"

CPE_NAME="cpe:/o:suse:sles:12:sp2"

uname -a:

```
Linux linux-lvuc 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 Oct 6 08:19

SPEC is set to: /home/specuser/cpu2006

```
Filesystem      Type  Size  Used Avail Use% Mounted on
/dev/sda4       xfs   405G   83G  323G  21% /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 U32 09/29/2017

Memory:

24x 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:

LD_LIBRARY_PATH = "/home/specuser/cpu2006/lib/ia32:/home/specuser/cpu2006/lib/intel64:/home/specuser/cpu2006/sh10.2"

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 -qopt-prefetch -auto-p32
-qopt-mem-layout-trans=3

```

C++ benchmarks:

```

-xCORE-AVX2 -ipo -O3 -no-prec-div -qopt-prefetch -auto-p32
-qopt-mem-layout-trans=3

```

Fortran benchmarks:

```

-xCORE-AVX2 -ipo -O3 -no-prec-div -qopt-prefetch

```

Benchmarks using both Fortran and C:

```

-xCORE-AVX2 -ipo -O3 -no-prec-div -qopt-prefetch -auto-p32
-qopt-mem-layout-trans=3

```

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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