**SPEC® CFP2006 Result**

**Hewlett Packard Enterprise**  
(Test Sponsor: HPE)  
ProLiant DL380 Gen10  
(2.40 GHz, Intel Xeon Gold 6148)  

**SPECfp®2006 = Not Run**  
**SPECfp_base2006 = 142**

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

<table>
<thead>
<tr>
<th>Benchmark</th>
<th>Result</th>
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<td>49.4</td>
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<td>88.6</td>
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<tr>
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<td>282</td>
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<td>49.9</td>
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<td>1140</td>
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<td>462</td>
</tr>
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<td>48.5</td>
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<td>73.6</td>
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**Hardware**

<table>
<thead>
<tr>
<th>Description</th>
<th>Details</th>
</tr>
</thead>
<tbody>
<tr>
<td>CPU Name:</td>
<td>Intel Xeon Gold 6148</td>
</tr>
<tr>
<td>CPU Characteristics:</td>
<td>Intel Turbo Boost Technology up to 3.70 GHz</td>
</tr>
<tr>
<td>CPU MHz:</td>
<td>2400</td>
</tr>
<tr>
<td>FPU:</td>
<td>Integrated</td>
</tr>
<tr>
<td>CPU(s) enabled:</td>
<td>40 cores, 2 chips, 20 cores/chip</td>
</tr>
<tr>
<td>CPU(s) orderable:</td>
<td>1, 2 chip(s)</td>
</tr>
<tr>
<td>Primary Cache:</td>
<td>32 KB I + 32 KB D on chip per core</td>
</tr>
<tr>
<td>Secondary Cache:</td>
<td>1 MB I+D on chip per core</td>
</tr>
</tbody>
</table>

**Software**

<table>
<thead>
<tr>
<th>Description</th>
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</tr>
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<tbody>
<tr>
<td>Operating System:</td>
<td>Red Hat Enterprise Linux Server release 7.3 (Maipo)</td>
</tr>
<tr>
<td>Compiler:</td>
<td>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</td>
</tr>
<tr>
<td>Auto Parallel:</td>
<td>Yes</td>
</tr>
<tr>
<td>File System:</td>
<td>xfs</td>
</tr>
</tbody>
</table>

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<td>Tested by:</td>
<td>HPE</td>
<td>Software Availability:</td>
<td>Apr-2017</td>
</tr>
</tbody>
</table>

### 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 960 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

<table>
<thead>
<tr>
<th>Benchmark</th>
<th>Seconds</th>
<th>Ratio</th>
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<td>410.bwaves</td>
<td>14.0</td>
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<td>416.gameSS</td>
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<td>459.GemsFDID</td>
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<td>38.8</td>
<td>274</td>
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</table>

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 with "tuned-adm profile throughput-performance"

## Platform Notes

BIOS Configuration:  
Intel Hyperthreading set to Disabled  
Thermal Configuration set to Maximum Cooling  
LLC Prefetcher set to Enabled  
LLC Dead Line Allocation set to Disabled

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CPU2006 license: 3
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Tested by: HPE

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

Platform Notes (Continued)

Stale A to S set to Disabled
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 DL380Gen10 Tue Oct 17 08:50:55 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)
  40 "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 : 20
  physical 0: cores 0 1 2 3 4 8 9 10 11 12 16 17 18 19 20 24 25 26 27 28
  physical 1: cores 0 1 2 3 4 8 9 10 11 12 16 17 18 19 20 24 25 26 27 28
  cache size : 28160 KB

From /proc/meminfo
  MemTotal: 197571144 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)

uname -a:
  Linux DL380Gen10 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

run-level 3 Oct 17 08:49

Continued on next page
Platform Notes (Continued)

SPEC is set to: /home/cpu2006
Filesystem Type Size Used Avail Use% Mounted on
/dev/mapper/rhel-home xfs 839G 30G 810G 4% /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 U30 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:
KMP_AFFINITY = "granularity=core,compact"
LD_LIBRARY_PATH = "/home/cpu2006/lib/ia32:/home/cpu2006/lib/intel64:/home/cpu2006/sh10.2"
OMP_NUM_THREADS = "40"

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
433.milc: -DSPEC_CPU_LP64

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**Base Portability Flags (Continued)**

- Base Portability Flags
  - 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

<table>
<thead>
<tr>
<th>Benchmarks using both Fortran and C:</th>
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<tr>
<td>-xCORE-AVX2 -ipo -O3 -no-prec-div -parallel -qopt-prefetch</td>
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The flags files that were used to format this result can be browsed at:

- [http://www.spec.org/cpu2006/flags/HPE-Platform-Flags-Intel-V1.2-SKX-revD.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/HPE-Platform-Flags-Intel-V1.2-SKX-revD.xml](http://www.spec.org/cpu2006/flags/HPE-Platform-Flags-Intel-V1.2-SKX-revD.xml)
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Tested with SPEC CPU2006 v1.2.