Hewlett Packard Enterprise
(Test Sponsor: HPE)
ProLiant DL560 Gen10
(3.50 GHz, Intel Xeon Gold 6144)

SPECint®2006 = Not Run
SPECint_base2006 = 76.9

<table>
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**Hardware**
- **CPU Name:** Intel Xeon Gold 6144
- **CPU Characteristics:** Intel Turbo Boost Technology up to 4.20 GHz
- **CPU MHZ:** 3500
- **FPU:** Integrated
- **CPU(s) enabled:** 32 cores, 4 chips, 8 cores/chip, 2 threads/core
- **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
- **L3 Cache:** 24.75 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 SATA SSD, RAID 0
- **Other Hardware:** None

**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
- **Auto Parallel:** Yes
- **File System:** xfs
- **System State:** Run level 3 (multi-user)
- **Base Pointers:** 32/64-bit
- **Peak Pointers:** Not Applicable
- **Other Software:** Microquill SmartHeap V10.2
Hewlett Packard Enterprise
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CPU2006 license: 3
Test sponsor: HPE
Tested by: HPE

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Test date: Dec-2017
Hardware Availability: Oct-2017
Software Availability: Sep-2017

Results Table

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<tr>
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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:
    Thermal Configuration set to Maximum Cooling
    LLC Prefetch set to Enabled
    LLC Dead Line Allocation set to Disabled
    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 RHEL7.3-DQW Mon Dec 11 13:43:50 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
Continued on next page
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Test date: Dec-2017  
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**Platform Notes (Continued)**

From `/proc/cpuinfo`
- model name: Intel(R) Xeon(R) Gold 6144 CPU @ 3.50GHz  
  - 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: 8  
    - siblings: 16  
    - physical 0: cores 0 2 3 9 16 19 26 27  
    - physical 1: cores 0 2 3 9 16 19 26 27  
    - physical 2: cores 0 2 3 9 16 19 26 27  
    - physical 3: cores 0 2 3 9 16 19 26 27  
  - cache size: 25344 KB

From `/proc/meminfo`
- MemTotal: 792071360 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 RHEL7.3-DQW 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 Dec 8 11:51

SPEC is set to: /home/cpu2006

Filesystem Type Size Used Avail Use% Mounted on  
/dev/sda4 xfs 442G 24G 419G 6% /

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:  
Continued on next page
## SPEC CINT2006 Result

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### Platform Notes (Continued)

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=fine,compact"
- LD_LIBRARY_PATH = "/home/cpu2006/lib/ia32/:home/cpu2006/lib/intel64:/home/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

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://www.spec.org/osg/policy.htm.

This measured result may not be representative of the result 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
Hewlett Packard Enterprise
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Base Portability Flags

400.perlbench: -DSPEC_CPU_LP64 -DSPEC_CPU_LINUX_X64
401.bzip2: -DSPEC_CPU_LP64
403.gcc: -DSPEC_CPU_LP64
429.mcf: -DSPEC_CPU_LP64
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462.libquantum: -DSPEC_CPU_LP64 -DSPEC_CPU_LINUX
464.h264ref: -DSPEC_CPU_LP64
471.omnetpp: -DSPEC_CPU_LP64
473.astar: -DSPEC_CPU_LP64
483.xalancbmk: -DSPEC_CPU_LP64 -DSPEC_CPU_LINUX

Base Optimization Flags

C benchmarks:
-xCORE-AVX2 -ipo -O3 -no-prec-div -parallel -qopt-prefetch -auto-p32
C++ benchmarks:
-xCORE-AVX2 -ipo -O3 -no-prec-div -qopt-prefetch -auto-p32
-Wl,-z,muldefs -L/sh10.2 -lsmartheap64

Base Other Flags

C benchmarks:
403.gcc: -Dalloca=_alloca

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.

Tested with SPEC CPU2006 v1.2.  
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