SPEC® CINT2006 Result

Hewlett Packard Enterprise

(Test Sponsor: HPE)

ProLiant DL380 Gen10
(3.90 GHz, Intel Xeon Gold 6137)

$SPECint^{®}\_rate2006 =$ Not Run

$SPECint\_rate\_base2006 =$ 1210

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

Benchmark	Copies	Result
400.perlbench	32	850
401.bzip2	32	532
403.gcc	32	848
429.mcf	32	1590
445.gobmk	32	727
456.hmmer	32	1790
458.sjeng	32	773
462.libquantum	32	22400
464.h264ref	32	1320
471.omnetpp	32	520
473.astar	32	661
483.xalancbmk	32	1510

SPECint_rate_base2006 = 1210

Hardware

CPU Name:	Intel Xeon Gold 6137
CPU Characteristics:	Intel Turbo Boost Technology up to 4.00 GHz
CPU MHz:	3900
FPU:	Integrated
CPU(s) enabled:	16 cores, 2 chips, 8 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
L3 Cache:	24.75 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

Software

Operating System:	SUSE Linux Enterprise Server 12 SP2 Kernel 4.4.21-69-default
Compiler:	C/C++: Version 18.0.0.128 of Intel C/C++ Compiler for Linux
Auto Parallel:	No
File System:	xfs
System State:	Run level 3 (multi-user)
Base Pointers:	32-bit
Peak Pointers:	Not Applicable
Other Software:	Microquill SmartHeap V10.2

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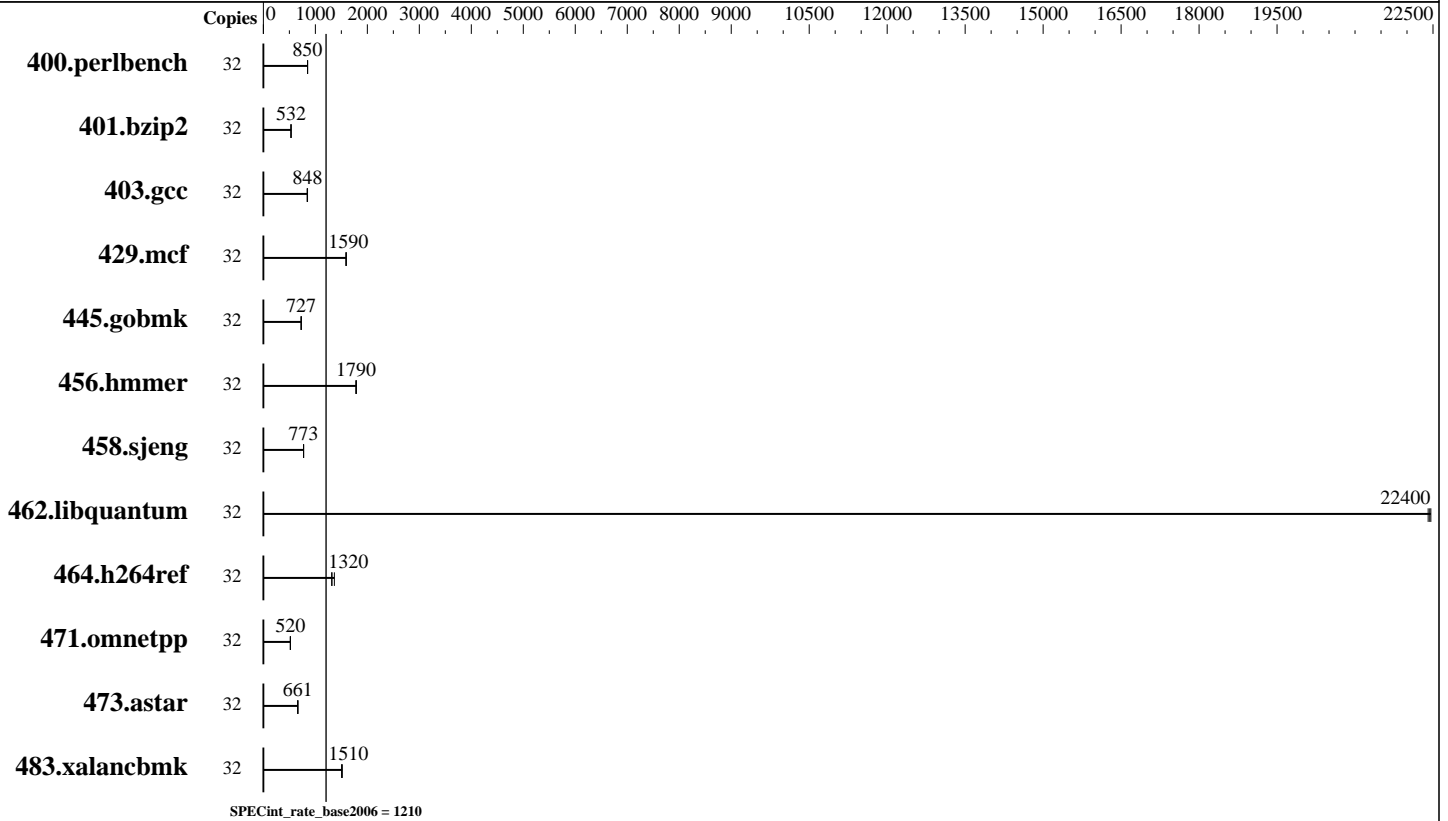SPECint_rate_base2006 = 1210

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Results Table

Benchmark	Base							Peak						
	Copies	Seconds	Ratio	Seconds	Ratio	Seconds	Ratio	Copies	Seconds	Ratio	Seconds	Ratio	Seconds	Ratio
400.perlbench	32	368	850	**368**	**850**	368	849							
401.bzip2	32	**580**	**532**	580	532	581	531							
403.gcc	32	**304**	**848**	303	849	306	841							
429.mcf	32	**183**	**1590**	183	1590	184	1590							
445.gobmk	32	**462**	**727**	462	727	461	728							
456.hmmer	32	168	1780	167	1790	**167**	**1790**							
458.sjeng	32	501	773	501	773	**501**	**773**							
462.libquantum	32	29.6	22400	29.5	22500	**29.6**	**22400**							
464.h264ref	32	519	1370	**536**	**1320**	539	1310							
471.omnetpp	32	385	520	**385**	**520**	385	519							
473.astar	32	**340**	**661**	340	660	338	665							
483.xalancbmk	32	146	1520	147	1500	**146**	**1510**							

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
   irqbalance service stopped using "systemctl stop irqbalance.service"
   Used throughput-performance profile for tuned-adm: "tuned-adm profile throughput-performance profile"
   Numa Balancing disabled using â€œecho 0 > /proc/sys/kernel/numa_balancing"
   runspec command invoked through numactl i.e.:
   numactl --interleave=all runspec <etc>

Platform Notes

   BIOS Configuration:
    Memory Patrol Scrubbing set to Disabled
    Thermal Configuration set to Maximum Cooling
    LLC Prefetch set to Enabled
    LLC Dead Line Allocation set to Disabled
    Stale A to S set to Disabled
    Workload Profile set to General Throughput Compute
    Minimum Processor Idle Power Core C-State set to C1E State
    Sysinfo program /home/cpu2006/config/sysinfo.rev6993
                        Continued on next page

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Platform Notes (Continued)

```
Revision 6993 of 2015-11-06 (b5e8d4b4eb51ed28d7f98696cbe290c1)
running on dl380gen10-2 Fri Dec  1 08:10:55 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 6137 CPU @ 3.90GHz
      2 "physical id"s (chips)
      32 "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 5 16 18 19 20 21
      physical 1: cores 0 2 3 9 16 19 26 27
   cache size : 25344 KB

From /proc/meminfo
   MemTotal:       197554680 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"

uname -a:
   Linux dl380gen10-2 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 1 08:09

SPEC is set to: /home/cpu2006
```

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Platform Notes (Continued)

```
      Filesystem      Type  Size  Used Avail Use% Mounted on
      /dev/sda4       xfs   517G   73G  445G  14% /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:
   LD_LIBRARY_PATH = "/home/cpu2006/libs/32:/home/cpu2006/libs/64:/home/cpu2006/sh10.2"

   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.

Base Compiler Invocation

C benchmarks:
```
      icc -m32 -L/opt/intel/compilers_and_libraries_2018.0.082/linux/lib/ia32
```

C++ benchmarks:
```
      icpc -m32 -L/opt/intel/compilers_and_libraries_2018.0.082/linux/lib/ia32
```

Base Portability Flags

```
   400.perlbench: -D_FILE_OFFSET_BITS=64 -DSPEC_CPU_LINUX_IA32
      401.bzip2: -D_FILE_OFFSET_BITS=64
        403.gcc: -D_FILE_OFFSET_BITS=64
        429.mcf: -D_FILE_OFFSET_BITS=64
      445.gobmk: -D_FILE_OFFSET_BITS=64
      456.hmmer: -D_FILE_OFFSET_BITS=64
      458.sjeng: -D_FILE_OFFSET_BITS=64
   462.libquantum: -D_FILE_OFFSET_BITS=64 -DSPEC_CPU_LINUX
     464.h264ref: -D_FILE_OFFSET_BITS=64
```

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Base Portability Flags (Continued)

```
471.omnetpp: -D_FILE_OFFSET_BITS=64
  473.astar: -D_FILE_OFFSET_BITS=64
483.xalancbmk: -D_FILE_OFFSET_BITS=64 -DSPEC_CPU_LINUX
```

Base Optimization Flags

C benchmarks:

```
-xCORE-AVX512 -ipo -O3 -no-prec-div -qopt-prefetch
-qopt-mem-layout-trans=3
```

C++ benchmarks:

```
-xCORE-AVX512 -ipo -O3 -no-prec-div -qopt-prefetch
-qopt-mem-layout-trans=3 -Wl,-z,muldefs
-L/home/cpu2006/sh10.2 -lsmartheap
```

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

For questions about this result, please contact the tester.
For other inquiries, please contact webmaster@spec.org.

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