Hewlett Packard Enterprise
(Test Sponsor: HPE)
ProLiant DL380 Gen10
(2.20 GHz, Intel Xeon Gold 5120)

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

Copy CINT2006 Result

SPECint\_rate2006 = 1320
SPECint\_rate_base2006 = 1240

CPU Name: Intel Xeon Gold 5120
CPU Characteristics: Intel Turbo Boost Technology up to 3.20 GHz
CPU MHz: 2200
FPU: Integrated
CPU(s) enabled: 28 cores, 2 chips, 14 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: 19.25 MB I+D on chip per core
Other Cache: None
Memory: 384 GB (24 x 16 GB 2Rx8 PC4-2666V-R, running at 2400)
Disk Subsystem: 2 x 600 GB 10 K SAS HDD, RAID 1
Other Hardware: None

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
Auto Parallel: Yes
File System: xfs
System State: Run level 3 (multi-user)
Base Pointers: 32-bit
Peak Pointers: 32/64-bit
Other Software: Microquill SmartHeap V10.2
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Results Table

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</tbody>
</table>

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  
runcspec command invoked through numactl i.e.:  
numactl --interleave=all runspec <etc>

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 Profile set to General Throughput Compute  
Minimum Processor Idle Power Core C-State set to C1E

Sysinfo program /cpu2006/config/sysinfo.rev6993  
Revision 6993 of 2015-11-06 (b5e8d4b4e51ed28d7f98696cbe290c1)  
running on pl15 Thu Oct 12 08:13:14 2017

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SPECint_rate2006 = 1320
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CPU2006 license: 3
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Platform Notes (Continued)

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 5120 CPU @ 2.20GHz
    2 "physical id"s (chips)
    56 "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 : 14
    siblings : 28
    physical 0: cores 0 1 2 3 4 5 6 8 9 10 11 12 13 14
    physical 1: cores 0 1 2 3 4 5 6 8 9 10 11 12 13 14
    cache size : 19712 KB

From /proc/meminfo
    MemTotal: 395925564 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"
        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 pl15 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 12 08:08

    SPEC is set to: /cpu2006

    Filesystem  Type  Size  Used Avail Use% Mounted on
    /dev/sda2    xfs  559G  191G  369G  35%  /

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
Continued on next page
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**SPEC CINT2006 Result**

| SPECint_rate2006 | 1320 |
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**Platform Notes (Continued)**

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 HPE 840756-091 16 GB 2 rank 2666 MHz, configured at 2400 MHz

(End of data from sysinfo program)

**General Notes**

Environment variables set by runspec before the start of the run:  
LD_LIBRARY_PATH = "/cpu2006/lib/ia32:/cpu2006/lib/intel64:/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 -m32 -L/opt/intel/compilers_and_libraries_2017/linux/lib/ia32`

C++ benchmarks:  
`icpc -m32 -L/opt/intel/compilers_and_libraries_2017/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_OFFSETBITS=64 -DSPEC_CPU_LINUX`
464.h264ref: `-D_FILE_OFFSET_BITS=64`
471.omnetpp: `-D_FILE_OFFSET_BITS=64`
473.astar: `-D_FILE_OFFSET_BITS=64`
483.xalancbmk: `-D_FILE_OFFSETBITS=64 -DSPEC_CPU_LINUX`

**Base Optimization Flags**

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

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

Base Optimization Flags (Continued)

C++ benchmarks:
-xCORE-AVX512 -ipo -O3 -no-prec-div -qopt-prefetch
-qopt-mem-layout-trans=3 -Wl,-z,muldefs -L/sh10.2 -lsmartheap

Base Other Flags

C benchmarks:
403.gcc: -Dalloca=_alloca

Peak Compiler Invocation

C benchmarks (except as noted below):
icc -m32 -L/opt/intel/compilers_and_libraries_2017/linux/lib/ia32
400.perlbench: icc -m64
401.bzip2: icc -m64
456.hmmer: icc -m64
458.sjeng: icc -m64

C++ benchmarks:
icpc -m32 -L/opt/intel/compilers_and_libraries_2017/linux/lib/ia32

Peak Portability Flags

400.perlbench: -DSPEC\_CPU\_LP64 -DSPEC\_CPU\_LINUX\_X64
401.bzip2: -DSPEC\_CPU\_LP64
403.gcc: -D\_FILE\_OFFSET\_BITS=64
429.mcf: -D\_FILE\_OFFSET\_BITS=64
445.gobmk: -D\_FILE\_OFFSET\_BITS=64
456.hmmer: -DSPEC\_CPU\_LP64
458.sjeng: -DSPEC\_CPU\_LP64
462.libquantum: -D\_FILE\_OFFSET\_BITS=64 -DSPEC\_CPU\_LINUX
464.h264ref: -D\_FILE\_OFFSET\_BITS=64
471.omnetpp: -D\_FILE\_OFFSET\_BITS=64
473.astar: -D\_FILE\_OFFSET\_BITS=64
483.xalancbmk: -D\_FILE\_OFFSET\_BITS=64 -DSPEC\_CPU\_LINUX
SPEC CINT2006 Result

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Peak Optimization Flags

C benchmarks:

400.perlbench:
- prof-gen(pass 1) -prof-use(pass 2) -xCORE-AVX512(pass 2)
  -par-num-threads=1(pass 1) -ipo(pass 2) -O3(pass 2)
  -no-prec-div(pass 2) -auto-ilp32 -qopt-mem-layout-trans=3

401.bzip2:
- prof-gen(pass 1) -prof-use(pass 2) -xCORE-AVX512(pass 2)
  -par-num-threads=1(pass 1) -ipo(pass 2) -O3(pass 2)
  -no-prec-div(pass 2) -qopt-prefetch -auto-ilp32
  -qopt-mem-layout-trans=3

403.gcc:
-xCORE-AVX512 -ipo -O3 -no-prec-div
  -qopt-mem-layout-trans=3

429.mcf: basepeak = yes

C++ benchmarks:

471.omnetpp:
- prof-gen(pass 1) -prof-use(pass 2) -xCORE-AVX512(pass 2)
  -par-num-threads=1(pass 1) -ipo(pass 2) -O3(pass 2)
  -no-prec-div(pass 2)
  -qopt-ra-region-strategy=block
  -qopt-mem-layout-trans=3 -Wl,-z,muldefs
  -L/sh10.2 -lsmartheap

483.xalancbmk: basepeak = yes
### Hewlett Packard Enterprise

**ProLiant DL380 Gen10**  
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**Tested by:** HPE

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

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#### Peak Other Flags

**C benchmarks:**

403.gcc: -Dalloca=_alloca

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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)