# SPEC® CINT2006 Result

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## Hewlett Packard Enterprise

(Test Sponsor: HPE)

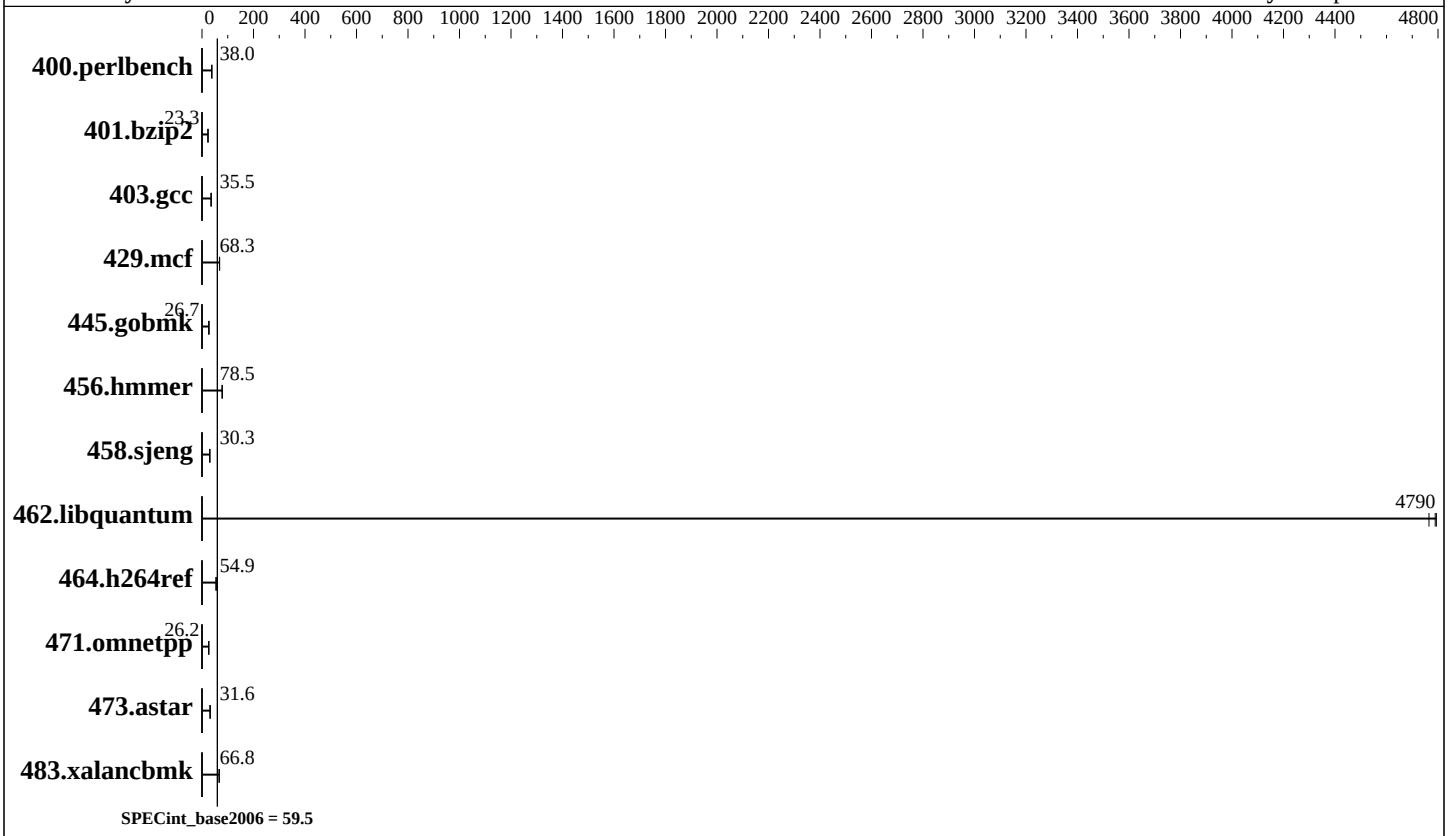
ProLiant DL360 Gen10
(2.20 GHz, Intel Xeon Silver 4114)

SPECint®2006 = Not Run

SPECint_base2006 = 59.5

**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 Silver 4114 |
| CPU Characteristics: | Intel Turbo Boost Technology up to 3.00 GHz |
| CPU MHz: | 2200 |
| FPU: | Integrated |
| CPU(s) enabled: | 20 cores, 2 chips, 10 cores/chip |
| 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: | 13.75 MB I+D on chip per chip |
| Other Cache: | None |
| Memory: | 192 GB (24 x 8 GB 2Rx8 PC4-2666V-R, running at 2400) |
| Disk Subsystem: | 1 x 600 GB SATA SSD, RAID 0 |
| Other Hardware: | None |

### Software

| | |
|---|---|
| Operating System: | Red Hat Enterprise Linux Server release 7.3 (Maipo)<br>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 |

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## Results Table

| Benchmark | Base | | | | | | Peak | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | Seconds | Ratio | Seconds | Ratio | Seconds | Ratio | Seconds | Ratio | Seconds | Ratio | Seconds | Ratio |
| 400.perlbench | 257 | 38.0 | 257 | 38.0 | **257** | **38.0** | | | | | | |
| 401.bzip2 | **414** | **23.3** | 414 | 23.3 | 413 | 23.3 | | | | | | |
| 403.gcc | 227 | 35.5 | 227 | 35.5 | **227** | **35.5** | | | | | | |
| 429.mcf | 134 | 68.3 | 135 | 67.7 | **134** | **68.3** | | | | | | |
| 445.gobmk | 393 | 26.7 | **392** | **26.7** | 392 | 26.7 | | | | | | |
| 456.hmmer | **119** | **78.5** | 119 | 78.5 | 119 | 78.5 | | | | | | |
| 458.sjeng | 400 | 30.3 | 400 | 30.3 | **400** | **30.3** | | | | | | |
| 462.libquantum | 4.32 | 4790 | 4.35 | 4760 | **4.33** | **4790** | | | | | | |
| 464.h264ref | **403** | **54.9** | 403 | 55.0 | 403 | 54.9 | | | | | | |
| 471.omnetpp | 237 | 26.3 | 239 | 26.1 | **239** | **26.2** | | | | | | |
| 473.astar | 222 | 31.6 | **222** | **31.6** | 223 | 31.5 | | | | | | |
| 483.xalancbmk | **103** | **66.8** | 103 | 66.9 | 103 | 66.7 | | | | | | |

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 wtih "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
 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 DL360G10 Thu Oct 19 05:09:20 2017

 This section contains SUT (System Under Test) info as seen by
 some common utilities.  To remove or add to this section, see:
```

Continued on next page

## Platform Notes (Continued)

```
      http://www.spec.org/cpu2006/Docs/config.html#sysinfo

    From /proc/cpuinfo
       model name : Intel(R) Xeon(R) Silver 4114 CPU @ 2.20GHz
          2 "physical id"s (chips)
          20 "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 : 10
          siblings  : 10
          physical 0: cores 0 1 2 3 4 8 9 10 11 12
          physical 1: cores 0 1 2 3 4 8 9 10 11 12
       cache size : 14080 KB

    From /proc/meminfo
       MemTotal:       197751212 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)
       system-release-cpe: cpe:/o:redhat:enterprise_linux:7.3:ga:server

    uname -a:
       Linux DL360G10 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 19 04:40

    SPEC is set to: /home/cpu2006
       Filesystem                     Type  Size  Used Avail Use% Mounted on
       /dev/mapper/rhel_dl360g10-home xfs   504G   37G  467G   8% /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:
```

Continued on next page

## Platform Notes (Continued)

```
      24x UNKNOWN NOT AVAILABLE 8 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:
KMP_AFFINITY = "granularity=fine,compact"
LD_LIBRARY_PATH = "/home/cpu2006/lib/ia32:/home/cpu2006/lib/intel64:/home/cpu2006/sh10.2"
OMP_NUM_THREADS = "20"

 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`

## 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`
445.gobmk: `-DSPEC_CPU_LP64`
456.hmmer: `-DSPEC_CPU_LP64`
458.sjeng: `-DSPEC_CPU_LP64`
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-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 questions about this result, please contact the tester.
For other inquiries, please contact webmaster@spec.org.

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