Hewlett Packard Enterprise
(Test Sponsor: HPE)
ProLiant DL380 Gen9
(2.60 GHz, Intel Xeon E5-2623 v4)

SPECint\textsuperscript{2006} = 54.5
SPECint\textsubscript{base2006} = 52.5

CPU2006 license: 3
Test sponsor: HPE
Tested by: HPE
Test date: Mar-2016
Hardware Availability: Mar-2016
Software Availability: Nov-2015

<table>
<thead>
<tr>
<th></th>
<th></th>
<th>SPECint\textsubscript{base2006} = 52.5</th>
</tr>
</thead>
<tbody>
<tr>
<td>400.perlbench</td>
<td>41.6</td>
<td>36.8</td>
</tr>
<tr>
<td>401.bzip2</td>
<td>23.6</td>
<td>23.2</td>
</tr>
<tr>
<td>403.gcc</td>
<td>32.6</td>
<td>32.5</td>
</tr>
<tr>
<td>429.mcf</td>
<td>62.0</td>
<td>61.8</td>
</tr>
<tr>
<td>445.gobmk</td>
<td>26.9</td>
<td>26.9</td>
</tr>
<tr>
<td>456.hmmer</td>
<td>79.2</td>
<td>79.2</td>
</tr>
<tr>
<td>458.sjeng</td>
<td>31.2</td>
<td>31.2</td>
</tr>
<tr>
<td>462.libquantum</td>
<td>31.2</td>
<td>31.4</td>
</tr>
<tr>
<td>464.h264ref</td>
<td>52.4</td>
<td></td>
</tr>
<tr>
<td>471.omnetpp</td>
<td>27.3</td>
<td></td>
</tr>
<tr>
<td>473.astar</td>
<td>31.6</td>
<td>31.6</td>
</tr>
<tr>
<td>483.xalancbmk</td>
<td>63.0</td>
<td>63.0</td>
</tr>
</tbody>
</table>

SPECint\textsuperscript{2006} = 54.5

Hardware
CPU Name: Intel Xeon E5-2623 v4
CPU Characteristics: Intel Turbo Boost Technology up to 3.20 GHz
CPU MHz: 2600
FPU: Integrated
CPU(s) enabled: 8 cores, 2 chips, 4 cores/chip
CPU(s) orderable: 1.2 chip
Primary Cache: 32 KB I + 32 KB D on chip per core
Secondary Cache: 256 KB I+D on chip per core
L3 Cache: 10 MB I+D on chip per chip
Other Cache: None
Memory: 512 GB (16 x 32 GB 2Rx4 PC4-2400T-R, running at 2133 MHz)
Disk Subsystem: 1 x 400 GB SAS SSD, RAID 0
Other Hardware: None

Software
Operating System: Red Hat Enterprise Linux Server release 7.2, (Maipo)
Compiler: C/C++ Version 16.0.0.101 of Intel C++ Studio XE 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
## SPEC CINT2006 Result

### Results Table

<table>
<thead>
<tr>
<th>Benchmark</th>
<th>Seconds</th>
<th>Ratio</th>
<th>Seconds</th>
<th>Ratio</th>
<th>Seconds</th>
<th>Ratio</th>
<th>Seconds</th>
<th>Ratio</th>
<th>Seconds</th>
<th>Ratio</th>
</tr>
</thead>
<tbody>
<tr>
<td>400.perlbench</td>
<td>270</td>
<td>36.1</td>
<td>265</td>
<td>36.9</td>
<td>266</td>
<td>36.8</td>
<td>235</td>
<td>41.6</td>
<td>236</td>
<td>41.5</td>
</tr>
<tr>
<td>401.bzip2</td>
<td>418</td>
<td>23.1</td>
<td>416</td>
<td>23.2</td>
<td>415</td>
<td>23.2</td>
<td>408</td>
<td>23.6</td>
<td>409</td>
<td>23.6</td>
</tr>
<tr>
<td>403.mcf</td>
<td>248</td>
<td>32.5</td>
<td>248</td>
<td>32.5</td>
<td>247</td>
<td>32.6</td>
<td>247</td>
<td>32.6</td>
<td>247</td>
<td>32.6</td>
</tr>
<tr>
<td>429.gcc</td>
<td>148</td>
<td>61.8</td>
<td>150</td>
<td>60.7</td>
<td>147</td>
<td>61.9</td>
<td>150</td>
<td>61.0</td>
<td>147</td>
<td>62.0</td>
</tr>
<tr>
<td>456.hmmer</td>
<td>133</td>
<td>70.2</td>
<td>133</td>
<td>70.2</td>
<td>134</td>
<td>69.7</td>
<td>133</td>
<td>70.2</td>
<td>133</td>
<td>70.2</td>
</tr>
<tr>
<td>458.sjeng</td>
<td>385</td>
<td>31.4</td>
<td>385</td>
<td>31.4</td>
<td>384</td>
<td>31.5</td>
<td>388</td>
<td>31.2</td>
<td>388</td>
<td>31.2</td>
</tr>
<tr>
<td>462.libquantum</td>
<td>11.1</td>
<td>1860</td>
<td>11.2</td>
<td>1850</td>
<td>11.1</td>
<td>1860</td>
<td>11.1</td>
<td>1860</td>
<td>11.2</td>
<td>1850</td>
</tr>
<tr>
<td>464.h264ref</td>
<td>423</td>
<td>52.4</td>
<td>422</td>
<td>52.4</td>
<td>423</td>
<td>52.3</td>
<td>423</td>
<td>52.4</td>
<td>422</td>
<td>52.4</td>
</tr>
<tr>
<td>471.omnetpp</td>
<td>280</td>
<td>22.3</td>
<td>281</td>
<td>22.2</td>
<td>280</td>
<td>22.3</td>
<td>229</td>
<td>27.3</td>
<td>229</td>
<td>27.3</td>
</tr>
<tr>
<td>473.astar</td>
<td>222</td>
<td>31.6</td>
<td>222</td>
<td>31.6</td>
<td>223</td>
<td>31.5</td>
<td>220</td>
<td>32.0</td>
<td>218</td>
<td>32.1</td>
</tr>
<tr>
<td>483.xalancbmk</td>
<td>109</td>
<td>63.1</td>
<td>109</td>
<td>63.0</td>
<td>110</td>
<td>62.9</td>
<td>101</td>
<td>68.4</td>
<td>101</td>
<td>68.4</td>
</tr>
</tbody>
</table>

Results appear in the order in which they were run. Bold underlined text indicates a median measurement.

### Submit Notes

The config file option 'submit' was used.

### Operating System Notes

Stack size set to unlimited using "ulimit -s unlimited"
Transparent Huge Pages enabled with:
echo always > /sys/kernel/mm/transparent_hugepage/enabled

### Platform Notes

BIOS Configuration:
- HP Power Profile set to Custom
- HP Power Regulator to HP Static High Performance Mode
- Minimum Processor Idle Power Core C-State set to CIE State
- Minimum Processor Idle Power Package C-State set to No Package State
- QPI Snoop Configuration set to Home Snoop
- Collaborative Power Control set to Disabled
- Thermal Configuration set to Maximum Cooling
- Processor Power and Utilization Monitoring set to Disabled
- Memory Refresh Rate set to 1x Refresh
- Intel Hyperthreading set to Disabled

Sysinfo program /home/intel_binary/cpu2006/config/sysinfo.rev6914
$Rev: 6914 $ $Date:: 2014-06-25 $e3fbb8667b5a285932ceab81e28219e1

This section contains SUT (System Under Test) info as seen by
Continued on next page
Platform Notes (Continued)

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) CPU E5-2623 v4@ 2.60GHz
   2 "physical id"s (chips)
   8 "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 : 4
   siblings : 4
   physical 0: cores 0 1 2 3
   physical 1: cores 0 1 2 3
   cache size : 10240 KB

From /proc/meminfo
   MemTotal:       528069676 kB
   HugePages_Total:       0
   Hugepagesize:       2048 kB

From /etc/*release* /etc/*version*
   os-release:
      NAME="Red Hat Enterprise Linux Server"
      VERSION="7.2 (Maipo)"
      ID="rhel"
      ID_LIKE="fedora"
      VERSION_ID="7.2"
      PRETTY_NAME="Red Hat Enterprise Linux Server 7.2 (Maipo)"
      ANSI_COLOR="0;31"
      CPE_NAME="cpe:/o:redhat:enterprise_linux:7.2:GA:server"
      redhat-release: Red Hat Enterprise Linux Server release 7.2 (Maipo)
      system-release: Red Hat Enterprise Linux Server release 7.2 (Maipo)

uname -a:
   Linux DL380Gen9allbin 3.10.0-327.el7.x86_64 #1 SMP Thu Oct 29 17:29:29 EDT
   2015 x86_64 x86_64 x86_64 GNU/Linux

run-level 3 Mar 28 21:35

SPEC is set to: /home/intel_binary/cpu2006
   Filesystem     Type  Size  Used Avail Use% Mounted on
   /dev/sda5      xfs   318G   78G  241G  25% /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 HP P89 03/10/2016

Continued on next page
SPEC CINT2006 Result

Hewlett Packard Enterprise
(Test Sponsor: HPE)
ProLiant DL380 Gen9
(2.60 GHz, Intel Xeon E5-2623 v4)

SPECint2006 = 54.5
SPECint_base2006 = 52.5

CPU2006 license: 3
Test sponsor: HPE
Tested by: HPE
Test date: Mar-2016
Hardware Availability: Mar-2016
Software Availability: Nov-2015

Platform Notes (Continued)

Memory:
8x UNKNOWN NOT AVAILABLE
16x UNKNOWN NOT AVAILABLE 32 GB 2 rank 2400 MHz, configured at 2133 MHz

(End of data from sysinfo program)
Regarding the sysinfo display about the memory installed, the correct amount of
memory is 512 GB and the dmidecode description should have one line reading as:
16x UNKNOWN NOT AVAILABLE 32 GB 2 rank 2400 MHz, configured at 2133 MHz

General Notes

Environment variables set by runspec before the start of the run:
KMP_AFFINITY = "granularity=fine,scatter"
LD_LIBRARY_PATH = "/home/cpu2006/libs/32:/home/cpu2006/libs/64:/home/cpu2006/sh"
OMP_NUM_THREADS = "8"

Binaries compiled on a system with 1x Intel Core i5-4670K CPU + 32GB
memory using RedHat EL 7.1
Transparent Huge Pages enabled with:
echo always > /sys/kernel/mm/transparent_hugepage/enabled

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
**SPEC CINT2006 Result**

Hewlett Packard Enterprise  
(Test Sponsor: HPE)  
ProLiant DL380 Gen9  
(2.60 GHz, Intel Xeon E5-2623 v4)  

<table>
<thead>
<tr>
<th>CPU2006 license: 3</th>
<th>CPU2006 license: 3</th>
</tr>
</thead>
<tbody>
<tr>
<td>Test sponsor: HPE</td>
<td>Test sponsor: HPE</td>
</tr>
<tr>
<td>Tested by: HPE</td>
<td>Tested by: HPE</td>
</tr>
</tbody>
</table>

**SPECint2006 = 54.5**  
**SPECint_base2006 = 52.5**

**Base Optimization Flags**

C benchmarks:
- -xAVX -ipo -O3 -no-prec-div -parallel -opt-prefetch -auto-p32

C++ benchmarks:
- -xAVX -ipo -O3 -no-prec-div -opt-prefetch -auto-p32 -L/w -z,muldefs  
- -L/sh -lsmartheap64

**Base Other Flags**

C benchmarks:
- 403.gcc: -Dalloca=_alloca

**Peak Compiler Invocation**

C benchmarks (except as noted below):
- icc -m64
  
- 400.perlbench: icc -m32 -L/opt/intel/compilers_and_libraries_2016/linux/compiler/lib/ia32_lin

C++ benchmarks (except as noted below):
- icpc -m32 -L/opt/intel/compilers_and_libraries_2016/linux/compiler/lib/ia32_lin
  
- 473.astar: icpc -m64

**Peak Portability Flags**

400.perlbench: -D_FILE_OFFSET_BITS=64 -DSPEC_CPU_LINUX_IA32  
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: -D_FILE_OFFSET_BITS=64  
473.astar: -DSPEC_CPU_LP64  
483.xalancbmk: -D_FILE_OFFSET_BITS=64 -DSPEC_CPU_LINUX
Hewlett Packard Enterprise
(Test Sponsor: HPE)
ProLiant DL380 Gen9
(2.60 GHz, Intel Xeon E5-2623 v4)

SPECint2006 = 54.5
SPECint_base2006 = 52.5

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

Peak Optimization Flags

C benchmarks:

400.perlbench: -xAVX(pass 2) -prof-gen:threadsafe(pass 1) -ipo(pass 2) -prof-use(pass 2) -no-prec-div(pass 2) -par-num-threads=1(pass 1) -opt-prefetch -ansi-alias

401.bzip2: -xAVX(pass 2) -prof-gen:threadsafe(pass 1) -ipo(pass 2) -prof-use(pass 2) -auto-ilp32 -opt-prefetch -ansi-alias

403.gcc: -xAVX -ipo -03 -no-prec-div -inline-cALLOC

429.mcf: -xAVX -ipo -03 -no-prec-div -parallel -opt-prefetch -auto-p32

445.gobmk: basepeak = yes

456.hmmer: basepeak = yes

458.sjeng: -xAVX(pass 2) -prof-gen:threadsafe(pass 1) -ipo(pass 2) -prof-use(pass 2) -par-num-threads=1(pass 1) -unroll4

462.libquantum: basepeak = yes

464.h264ref: basepeak = yes

C++ benchmarks:

471.omnetpp: -xAVX(pass 2) -prof-gen:threadsafe(pass 1) -ipo(pass 2) -prof-use(pass 2) -opt-ra-region-strategy=block -ansi-alias -Wl,-z,muldeps -L/sh -lsmartheap

473.astar: -xAVX -ipo -03 -no-prec-div -opt-prefetch -auto-p32 -Wl,-z,muldefs -L/sh -lsmartheap64

483.xalancbmk: -xAVX -ipo -03 -no-prec-div -opt-prefetch -ansi-alias -Wl,-z,muldefs -L/sh -lsmartheap

Peak Other Flags

C benchmarks:

403.gcc: -Dalloca=_alloca
<table>
<thead>
<tr>
<th>SPEC CINT2006 Result</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Hewlett Packard Enterprise</strong></td>
</tr>
<tr>
<td>(Test Sponsor: HPE)</td>
</tr>
<tr>
<td><strong>ProLiant DL380 Gen9</strong></td>
</tr>
<tr>
<td>(2.60 GHz, Intel Xeon E5-2623 v4)</td>
</tr>
<tr>
<td>CPU2006 license: 3</td>
</tr>
<tr>
<td>Test sponsor: HPE</td>
</tr>
<tr>
<td>Tested by: HPE</td>
</tr>
</tbody>
</table>

The flags files that were used to format this result can be browsed at
http://www.spec.org/cpu2006/flags/HP-Platform-Flags-Intel-V1.2-HSW-revE.html
http://www.spec.org/cpu2006/flags/Intel-ic16.0-official-linux64.html

You can also download the XML flags sources by saving the following links:
http://www.spec.org/cpu2006/flags/HP-Platform-Flags-Intel-V1.2-HSW-revE.xml
http://www.spec.org/cpu2006/flags/Intel-ic16.0-official-linux64.xml

SPEC and SPECint are registered trademarks of the Standard Performance Evaluation Corporation. All other brand and product names appearing in this result are trademarks or registered trademarks of their respective holders.

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

Tested with SPEC CPU2006 v1.2.
Report generated on Tue May 3 18:00:24 2016 by SPEC CPU2006 PS/PDF formatter v6932.
Originally published on 3 May 2016.