Hewlett-Packard Company

ProLiant DL560 Gen8
(2.20 GHz, Intel Xeon E5-4607)

SPECint\_rate\_2006 = 183
SPECint\_rate\_base\_2006 = 177

CPU2006 license: 3
Test sponsor: Hewlett-Packard Company
Tested by: Hewlett-Packard Company

Test date: Jan-2014
Hardware Availability: Dec-2013
Software Availability: Oct-2013

### Hardware

<table>
<thead>
<tr>
<th>Component</th>
<th>Details</th>
</tr>
</thead>
<tbody>
<tr>
<td>CPU Name</td>
<td>Intel Xeon E5-4607</td>
</tr>
<tr>
<td>CPU Characteristics:</td>
<td></td>
</tr>
<tr>
<td>CPU MHz:</td>
<td>2200</td>
</tr>
<tr>
<td>FPU:</td>
<td>Integrated</td>
</tr>
<tr>
<td>CPU(s) enabled:</td>
<td>6 cores, 1 chip, 6 cores/chip, 2 threads/core</td>
</tr>
<tr>
<td>CPU(s) orderable:</td>
<td>1.2, 4 chips</td>
</tr>
<tr>
<td>Primary Cache:</td>
<td>32 KB I + 32 KB D on chip per core</td>
</tr>
<tr>
<td>Secondary Cache:</td>
<td>256 KB I+D on chip per core</td>
</tr>
<tr>
<td>L3 Cache:</td>
<td>12 MB I+D on chip per chip</td>
</tr>
<tr>
<td>Other Cache:</td>
<td>None</td>
</tr>
<tr>
<td>Memory:</td>
<td>128 GB (8 x 16 GB 2Rx4 PC3-12800R-11, ECC, running at 1067 MHz and CL7)</td>
</tr>
<tr>
<td>Disk Subsystem:</td>
<td>5 x 300 GB 15 K SAS, RAID 5</td>
</tr>
<tr>
<td>Other Hardware:</td>
<td>None</td>
</tr>
</tbody>
</table>

### Software

<table>
<thead>
<tr>
<th>Component</th>
<th>Details</th>
</tr>
</thead>
<tbody>
<tr>
<td>Operating System:</td>
<td>Red Hat Enterprise Linux Server release 6.4, (Santiago)</td>
</tr>
<tr>
<td>Compiler:</td>
<td>C/C++: Version 14.0.0.080 of Intel C++ Studio XE for Linux</td>
</tr>
<tr>
<td>Auto Parallel:</td>
<td>No</td>
</tr>
<tr>
<td>File System:</td>
<td>ext4</td>
</tr>
<tr>
<td>System State:</td>
<td>Run level 3 (multi-user)</td>
</tr>
<tr>
<td>Base Pointers:</td>
<td>32-bit</td>
</tr>
<tr>
<td>Peak Pointers:</td>
<td>32/64-bit</td>
</tr>
<tr>
<td>Other Software:</td>
<td>Microquill SmartHeap V10.0</td>
</tr>
</tbody>
</table>
## SPEC CINT2006 Result

### Hewlett-Packard Company

ProLiant DL560 Gen8  
(2.20 GHz, Intel Xeon E5-4607)

---

**SPECint_rate2006** = 183

**SPECint_rate_base2006** = 177

---

**CPU2006 license:** 3  
**Test sponsor:** Hewlett-Packard Company  
**Tested by:** Hewlett-Packard Company  
**Test date:** Jan-2014  
**Hardware Availability:** Dec-2013  
**Software Availability:** Oct-2013

### Results Table

<table>
<thead>
<tr>
<th>Benchmark</th>
<th>Copies</th>
<th>Seconds Base</th>
<th>Ratio</th>
<th>Seconds</th>
<th>Ratio</th>
<th>Seconds Peak</th>
<th>Ratio</th>
</tr>
</thead>
<tbody>
<tr>
<td>400.perlbench</td>
<td>12</td>
<td>898</td>
<td>131</td>
<td>899</td>
<td>130</td>
<td>898</td>
<td>131</td>
</tr>
<tr>
<td>401.bzip2</td>
<td>12</td>
<td>1198</td>
<td>96.7</td>
<td>1215</td>
<td>95.3</td>
<td>1216</td>
<td>95.2</td>
</tr>
<tr>
<td>403.gcc</td>
<td>12</td>
<td>692</td>
<td>140</td>
<td>690</td>
<td>140</td>
<td>702</td>
<td>138</td>
</tr>
<tr>
<td>429.mcf</td>
<td>12</td>
<td>421</td>
<td>260</td>
<td>421</td>
<td>260</td>
<td>421</td>
<td>260</td>
</tr>
<tr>
<td>445.gobmk</td>
<td>12</td>
<td>967</td>
<td>130</td>
<td>972</td>
<td>129</td>
<td>969</td>
<td>130</td>
</tr>
<tr>
<td>456.hmmer</td>
<td>12</td>
<td>481</td>
<td>233</td>
<td>484</td>
<td>231</td>
<td>491</td>
<td>228</td>
</tr>
<tr>
<td>458.sjeng</td>
<td>12</td>
<td>1113</td>
<td>130</td>
<td>1111</td>
<td>131</td>
<td>1108</td>
<td>131</td>
</tr>
<tr>
<td>462.libquantum</td>
<td>12</td>
<td>229</td>
<td>1090</td>
<td>228</td>
<td>1090</td>
<td>229</td>
<td>1090</td>
</tr>
<tr>
<td>464.h264ref</td>
<td>12</td>
<td>1152</td>
<td>231</td>
<td>1154</td>
<td>230</td>
<td>1170</td>
<td>227</td>
</tr>
<tr>
<td>471.omnetpp</td>
<td>12</td>
<td>705</td>
<td>106</td>
<td>712</td>
<td>105</td>
<td>708</td>
<td>106</td>
</tr>
<tr>
<td>473.astar</td>
<td>12</td>
<td>793</td>
<td>106</td>
<td>790</td>
<td>107</td>
<td>790</td>
<td>107</td>
</tr>
<tr>
<td>483.xalancbmk</td>
<td>12</td>
<td>426</td>
<td>194</td>
<td>425</td>
<td>195</td>
<td>424</td>
<td>195</td>
</tr>
</tbody>
</table>

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

### Submit Notes

The taskset 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 with:  
```bash  
echo always > /sys/kernel/mm/redhat_transparent_hugepage/enabled  
```

Filesystem page cache cleared with:  
```bash  
echo 1 > /proc/sys/vm/drop_caches  
```

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

### Platform Notes

**BIOS Configuration:**  
HP Power Profile set to Maximum Performance  
Memory Power Savings Mode set to Disabled  
Thermal Configuration set so Maximum Cooling  
Processor Power and Utilization Monitoring set to Disabled

Sysinfo program /home/cpu/config/sysinfo.rev6818  
$Rev: 6818 $ $Date:: 2012-07-17 $ e86d102572650a6e4d596a3cee98f191  
running on PL67 Fri Jan 24 16:15:12 2014

Continued on next page
SPEC CINT2006 Result

Hewlett-Packard Company
ProLiant DL560 Gen8
(2.20 GHz, Intel Xeon E5-4607)

SPECint_rate2006 = 183
SPECint_rate_base2006 = 177

CPU2006 license: 3
Test sponsor: Hewlett-Packard Company
Tested by: Hewlett-Packard Company

SPECint_rate2006 = 183
SPECint_rate_base2006 = 177

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) CPU E5-4607 0 @ 2.20GHz
1 "physical id"s (chips)
12 "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 : 6
siblings : 12
physical 0: cores 0 1 2 3 4 5
cache size : 12288 KB

From /proc/meminfo
MemTotal:       132111656 kB
HugePages_Total:       0
Hugepagesize:       2048 kB

From /etc/*release*/etc/*version*
redhat-release: Red Hat Enterprise Linux Server release 6.4 (Santiago)
system-release: Red Hat Enterprise Linux Server release 6.4 (Santiago)

uname -a:
Linux PL67 2.6.32-358.el6.x86_64 #1 SMP Tue Jan 29 11:47:41 EST 2013 x86_64
x86_64 x86_64 GNU/Linux
run-level 3 Jan 24 15:43

SPEC is set to: /home/cpu
Filesystem Type Size Used Avail Use% Mounted on
/dev/mapper/vg_pl67-lv_home
ext4 1.1T 50G 945G 5% /home

Additional information from dmidecode:
BIOS HP P77 12/20/2013
Memory:
8x HP 672612-081 16 GB 1067 MHz 2 rank
40x UNKNOWN NOT AVAILABLE

(End of data from sysinfo program)
Regarding the sysinfo display about the memory installed, the correct amount of memory is 128 GB and the dmidecode description should have one line reading as:
8x HP 672612-081 16 GB 1067 MHz 2 rank
SPEC CINT2006 Result

Hewlett-Packard Company
ProLiant DL560 Gen8
(2.20 GHz, Intel Xeon E5-4607)

SPECint_rate2006 = 183
SPECint_rate_base2006 = 177

CPU2006 license: 3
Test sponsor: Hewlett-Packard Company
Tested by: Hewlett-Packard Company

General Notes

Environment variables set by runspec before the start of the run:
LD_LIBRARY_PATH = "/home/cpu/libs/32:/home/cpu/libs/64:/home/cpu/sh"
Binaries compiled on a system with 1x Core i7-860 CPU + 8GB memory using RedHat EL 6.4

Base Compiler Invocation

C benchmarks:
    icc  -m32

C++ benchmarks:
    icpc -m32

Base Portability Flags

400.perlbench: -DSPEC_CPU_LINUX_IA32
462.libquantum: -DSPEC_CPU_LINUX
483.xalancbmk: -DSPEC_CPU_LINUX

Base Optimization Flags

C benchmarks:
    -xSSE4.2 -ipo -O3 -no-prec-div -opt-prefetch -opt-mem-layout-trans=3

C++ benchmarks:
    -xSSE4.2 -ipo -O3 -no-prec-div -opt-prefetch -opt-mem-layout-trans=3
    -Wl,-z,muldefs -L/sh -lsmartheap

Base Other Flags

C benchmarks:
    403.gcc: -Dalloca=_alloca

Peak Compiler Invocation

C benchmarks (except as noted below):
    icc  -m32

Continued on next page
**Peak Compiler Invocation (Continued)**

- 400.perlbench: `icc -m64`
- 401.bzip2: `icc -m64`
- 456.hmmer: `icc -m64`
- 458.sjeng: `icc -m64`
- C++ benchmarks: `icpc -m32`

**Peak Portability Flags**

- 400.perlbench: `-DSPEC_CPU_LP64 -DSPEC_CPU_LINUX_X64`
- 401.bzip2: `-DSPEC_CPU_LP64`
- 456.hmmer: `-DSPEC_CPU_LP64`
- 458.sjeng: `-DSPEC_CPU_LP64`
- 462.libquantum: `-DSPEC_CPU_LINUX`
- 483.xalancbmk: `-DSPEC_CPU_LINUX`

**Peak Optimization Flags**

- C benchmarks:
  - 400.perlbench: `-xSSE4.2(pass 2) -prof-gen(pass 1) -ipo(pass 2) -O3(pass 2) -no-prec-div(pass 2) -prof-use(pass 2) -auto-ilp32`
  - 401.bzip2: `-xSSE4.2(pass 2) -prof-gen(pass 1) -ipo(pass 2) -O3(pass 2) -no-prec-div(pass 2) -prof-use(pass 2) -opt-prefetch -auto-ilp32 -ansi-alias`
  - 403.gcc: `-xSSE4.2 -ipo -O3 -no-prec-div`
  - 429.mcf: `basepeak = yes`
  - 445.gobmk: `-xSSE4.2(pass 2) -prof-gen(pass 1) -prof-use(pass 2) -ansi-alias -opt-mem-layout-trans=3`
  - 456.hmmer: `-xSSE4.2 -ipo -O3 -no-prec-div -unroll2 -auto-ilp32`
  - 458.sjeng: `-xSSE4.2(pass 2) -prof-gen(pass 1) -ipo(pass 2) -O3(pass 2) -no-prec-div(pass 2) -prof-use(pass 2) -unroll4 -auto-ilp32`

Continued on next page
Hewlett-Packard Company
ProLiant DL560 Gen8
(2.20 GHz, Intel Xeon E5-4607)

| SPECint_rate2006 | 183 |
| SPECint_rate_base2006 | 177 |

CPU2006 license: 3  
Test sponsor: Hewlett-Packard Company  
Tested by: Hewlett-Packard Company

Test date: Jan-2014  
Hardware Availability: Dec-2013  
Software Availability: Oct-2013

Peak Optimization Flags (Continued)

462.libquantum: basepeak = yes

464.h264ref: -xSSE4.2(pass 2) -prof-gen(pass 1) -ipo(pass 2)  
-O3(pass 2) -no-prec-div(pass 2) -prof-use(pass 2)  
-unroll2 -ansi-alias

C++ benchmarks:

471.omnetpp: -xSSE4.2(pass 2) -prof-gen(pass 1) -ipo(pass 2)  
-O3(pass 2) -no-prec-div(pass 2) -prof-use(pass 2)  
-ansi-alias -opt-ra-region-strategy=block -Wl,-z,muldefs -L/sh -lsmartheap

473.astar: basepeak = yes

483.xalanchbmk: basepeak = yes

Peak 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-ic14.0-official-linux64.20140128.html  
http://www.spec.org/cpu2006/flags/HP-Platform-Flags-Intel-V1.2-revB.20131009.html

You can also download the XML flags sources by saving the following links:
http://www.spec.org/cpu2006/flags/Intel-ic14.0-official-linux64.20140128.xml  
http://www.spec.org/cpu2006/flags/HP-Platform-Flags-Intel-V1.2-revB.20131009.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.  
Originally published on 11 March 2014.