# SPEC® CINT2006 Result

## Hewlett-Packard Company

ProLiant ML350 G6  
(2.93 GHz, Intel Xeon X5670)  

<table>
<thead>
<tr>
<th>Hardware</th>
<th>Software</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>CPU Name:</strong></td>
<td>Operating System:</td>
</tr>
<tr>
<td></td>
<td>Red Hat Enterprise Linux Server release 5.4</td>
</tr>
<tr>
<td><strong>CPU Characteristics:</strong></td>
<td><strong>Compiler:</strong></td>
</tr>
<tr>
<td>Intel Xeon X5670</td>
<td>Intel C++ Compiler 11.1 for Linux</td>
</tr>
<tr>
<td><strong>CPU MHz:</strong></td>
<td><strong>Build:</strong></td>
</tr>
<tr>
<td>2933</td>
<td>Build 20090827 Package ID: l_cproc_p_11.1.056</td>
</tr>
<tr>
<td><strong>FPU:</strong></td>
<td><strong>Auto Parallel:</strong></td>
</tr>
<tr>
<td>Integrated</td>
<td>No</td>
</tr>
<tr>
<td><strong>CPU(s) enabled:</strong></td>
<td><strong>File System:</strong></td>
</tr>
<tr>
<td>12 cores, 2 chips, 6 cores/chip, 2 threads/core</td>
<td>ext3</td>
</tr>
<tr>
<td><strong>CPU(s) orderable:</strong></td>
<td><strong>System State:</strong></td>
</tr>
<tr>
<td>1.2 chips</td>
<td>Run level 3 (multi-user)</td>
</tr>
<tr>
<td><strong>Primary Cache:</strong></td>
<td><strong>Base Pointers:</strong></td>
</tr>
<tr>
<td>32 KB I + 32 KB D on chip per core</td>
<td>32-bit</td>
</tr>
<tr>
<td><strong>Secondary Cache:</strong></td>
<td><strong>Peak Pointers:</strong></td>
</tr>
<tr>
<td>256 KB I+D on chip per core</td>
<td>32/64-bit</td>
</tr>
<tr>
<td><strong>L3 Cache:</strong></td>
<td><strong>Other Software:</strong></td>
</tr>
<tr>
<td>12 MB I+D on chip per chip</td>
<td>Microquill SmartHeap V8.1</td>
</tr>
<tr>
<td><strong>Other Cache:</strong></td>
<td>Binutils 2.17.50.0.18</td>
</tr>
<tr>
<td>None</td>
<td></td>
</tr>
<tr>
<td><strong>Memory:</strong></td>
<td></td>
</tr>
<tr>
<td>48 GB (12x4 GB 2Rx8 PC3-10600R CL9)</td>
<td></td>
</tr>
<tr>
<td><strong>Disk Subsystem:</strong></td>
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<tr>
<td>1x500 GB 7.2 K SATA</td>
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<tr>
<td><strong>Other Hardware:</strong></td>
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<tr>
<td>None</td>
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</table>

| 400.perlbench | SPECint_rate2006 = 357 |
| 401.bzip2 | |
| 403.gcc | |
| 429.mcf | |
| 445.gobmk | |
| 456.hmmer | |
| 458.sjeng | |
| 462.libquantum | |
| 464.h264ref | |
| 471.omnetpp | |
| 473.astar | |
| 483.xalancbmk | SPECint_rate_base2006 = 332 |

<table>
<thead>
<tr>
<th>Copies</th>
<th>SPECint_rate2006</th>
<th>SPECint_rate_base2006</th>
</tr>
</thead>
<tbody>
<tr>
<td>24</td>
<td>357</td>
<td>332</td>
</tr>
</tbody>
</table>

**Test date:** Apr-2010  
**Hardware Availability:** Jun-2010  
**Software Availability:** Sep-2009
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CPU2006 license: 3
Test sponsor: Hewlett-Packard Company
Tested by: Hewlett-Packard Company

Results Table

<table>
<thead>
<tr>
<th>Benchmark</th>
<th>Copies</th>
<th>Base</th>
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<th></th>
<th>Peak</th>
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<td>400.perlbench</td>
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<td>745</td>
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<td>401.bzip2</td>
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<td>403.gcc</td>
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<td>813</td>
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<td>807</td>
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<td>814</td>
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<td>429.mcf</td>
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<td>456.hmmer</td>
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<td>489</td>
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<td>458.sjeng</td>
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<td>462.libquantum</td>
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<td>464.h264ref</td>
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<td>471.omnetpp</td>
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<td>662</td>
<td>226</td>
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<td>473.astar</td>
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<td>802</td>
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<td>483.xalancbmk</td>
<td>24</td>
<td>460</td>
<td>360</td>
<td>459</td>
<td>361</td>
<td>460</td>
<td>360</td>
<td>24</td>
<td>460</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.
numactl was used to bind copies to the cores

Operating System Notes

'ulimit -s unlimited' was used to set the stacksize to unlimited prior to run

Platform Notes

BIOS configuration:
HP Power Profile set to Maximum Performance
Thermal Configuration set to Increased Cooling
Memory Speed with 2 DIMMs per Channel set to 1333 MHz Maximum
Data Reuse set to Disabled

Base Compiler Invocation

C benchmarks:
icc

C++ benchmarks:
icpc
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**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`
- `-static`
- `-inline-calloc`
- `-opt-malloc-options=3`
- `-opt-prefetch`

**C++ benchmarks**:

- `-xSSE4.2`
- `-ipo`
- `-O3`
- `-no-prec-div`
- `-opt-prefetch`
- `-Wl,-z,muldefs`
- `-L/cpu2006/SmartHeap_8.1/lib -lsmartheap`

**Base Other Flags**

- `403.gcc`: `-Dalloca=_alloca`

**Peak Compiler Invocation**

**C benchmarks (except as noted below):**

- `icc`

  - `401.bzip2`: `/opt/intel/Compiler/11.1/056/bin/intel64/icc`
  - `456.hmmer`: `/opt/intel/Compiler/11.1/056/bin/intel64/icc`
  - `458.sjeng`: `/opt/intel/Compiler/11.1/056/bin/intel64/icc`

**C++ benchmarks:**

- `icpc`

**Peak Portability Flags**

- `400.perlbench`: `-DSPEC_CPU_LINUX_IA32`
- `401.bzip2`: `-DSPEC_CPU_LP64`
- `456.hmmer`: `-DSPEC_CPU_LP64`
- `458.sjeng`: `-DSPEC_CPU_LP64`
- `462.libquantum`: `-DSPEC_CPU_LINUX`

---

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Peak Portability Flags (Continued)

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) -static(pass 2)
  -prof-use(pass 2) -ansi-alias -opt-prefetch

401.bzip2: -xSSE4.2(pass 2) -prof-gen(pass 1) -ipo(pass 2)
  -o3(pass 2) -no-prec-div(pass 2) -static(pass 2)
  -prof-use(pass 2) -opt-prefetch -ansi-alias -auto-ilp32

403.gcc: -xSSE4.2 -ipo -o3 -no-prec-div -static -inline-calloc
  -opt-malloc-options=3

429.mcf: -xSSE4.2(pass 2) -prof-gen(pass 1) -ipo(pass 2)
  -o3(pass 2) -no-prec-div(pass 2) -static(pass 2)
  -prof-use(pass 2) -opt-prefetch

445.gobmk: -xSSE4.2(pass 2) -prof-gen(pass 1) -prof-use(pass 2) -O2
  -ipo -no-prec-div -ansi-alias

456.hmmer: -xSSE4.2 -ipo -o3 -no-prec-div -static -unroll2
  -ansi-alias -auto-ilp32

458.sjeng: -xSSE4.2(pass 2) -prof-gen(pass 1) -ipo(pass 2)
  -o3(pass 2) -no-prec-div(pass 2) -static(pass 2)
  -prof-use(pass 2) -unroll4 -auto-ilp32

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) -static(pass 2)
  -prof-use(pass 2) -unroll2 -ansi-alias

C++ benchmarks:

471.omnetpp: basepeak = yes

473.astar: -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=routine -Wl,-z,muldefs
  -L/cpu2006/SmartHeap_8.1/lib -lsmartheap

483.xalancbmk: basepeak = yes
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</tbody>
</table>

**Peak Other Flags**

C benchmarks:

403.gcc -Dalloca=_alloca

The flags files that were used to format this result can be browsed at


You can also download the XML flags sources by saving the following links:

http://www.spec.org/cpu2006/flags/HP-Intel-Linux-Settings-flags.20100525.xml

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For other inquiries, please contact webmaster@spec.org.

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