Hewlett-Packard Company
ProLiant DL360p Gen8
(3.50 GHz, Intel Xeon E5-2643 v2)

| SPECint\_rate2006 | 637 |
| SPECint\_rate\_base2006 | 613 |

| CPU2006 license: | 3 |
| Test sponsor: | Hewlett-Packard Company |
| Tested by: | Hewlett-Packard Company |
| Test date: | Feb-2014 |
| Hardware Availability: | Dec-2013 |
| Software Availability: | Sep-2013 |

| SPECint Rate | 637 |
| SPECint Rate Base | 613 |

<table>
<thead>
<tr>
<th>Hardware</th>
<th>Software</th>
</tr>
</thead>
<tbody>
<tr>
<td>CPU Name:</td>
<td>Operating System: Red Hat Enterprise Linux Server release 6.4 (Santiago)</td>
</tr>
<tr>
<td>CPU Characteristics:</td>
<td>Compiler: C/C++: Version 14.0.0.080 of Intel C++ Studio XE for Linux</td>
</tr>
<tr>
<td>CPU MHz:</td>
<td>Auto Parallel: No</td>
</tr>
<tr>
<td>FPU:</td>
<td>File System: ext4</td>
</tr>
<tr>
<td>CPU(s) enabled:</td>
<td>System State: Run level 3 (multi-user)</td>
</tr>
<tr>
<td>CPU(s) orderable:</td>
<td>Base Pointers: 32-bit</td>
</tr>
<tr>
<td>Primary Cache:</td>
<td>Peak Pointers: 32/64-bit</td>
</tr>
<tr>
<td>Secondary Cache:</td>
<td>Other Software: Microquill SmartHeap V10.0</td>
</tr>
<tr>
<td>L3 Cache:</td>
<td></td>
</tr>
<tr>
<td>Other Cache:</td>
<td></td>
</tr>
<tr>
<td>Memory:</td>
<td></td>
</tr>
<tr>
<td>Disk Subsystem:</td>
<td></td>
</tr>
<tr>
<td>Other Hardware:</td>
<td></td>
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</table>

| SPECint Rate | 637 |

<table>
<thead>
<tr>
<th>Software</th>
<th>Hardware</th>
</tr>
</thead>
<tbody>
<tr>
<td>Operating System:</td>
<td>CPU Name: Intel Xeon E5-2643 v2</td>
</tr>
<tr>
<td>Compiler:</td>
<td>CPU Characteristics: Intel Turbo Boost Technology up to 3.80 GHz</td>
</tr>
<tr>
<td>Auto Parallel:</td>
<td>CPU MHz: 3500</td>
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<tr>
<td>File System:</td>
<td>FPU: Integrated</td>
</tr>
<tr>
<td>System State:</td>
<td>CPU(s) enabled: 12 cores, 2 chips, 6 cores/chip, 2 threads/core</td>
</tr>
<tr>
<td>Base Pointers:</td>
<td>CPU(s) orderable: 1.2 chips</td>
</tr>
<tr>
<td>Peak Pointers:</td>
<td>Primary Cache: 32 KB I + 32 KB D on chip per core</td>
</tr>
<tr>
<td>Other Software:</td>
<td>Secondary Cache: 256 KB I+D on chip per core</td>
</tr>
<tr>
<td>Operating System: Red Hat Enterprise Linux Server release 6.4 (Santiago)</td>
<td>Auto Parallel: No</td>
</tr>
<tr>
<td>Compiler: C/C++: Version 14.0.0.080 of Intel C++ Studio XE for Linux</td>
<td>File System: ext4</td>
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<td>System State: Run level 3 (multi-user)</td>
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<tr>
<td>Other Software: Microquill SmartHeap V10.0</td>
<td>Peak Pointers: 32/64-bit</td>
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### Results Table

<table>
<thead>
<tr>
<th>Benchmark</th>
<th>Copies</th>
<th>Seconds</th>
<th>Ratio</th>
<th>Seconds</th>
<th>Ratio</th>
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<td>400.perlbench</td>
<td>24</td>
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<td>401.bzip2</td>
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<td>667</td>
<td>347</td>
<td>670</td>
<td>346</td>
<td>666</td>
<td>348</td>
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<tr>
<td>403.mcf</td>
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<td>388</td>
<td>498</td>
<td>385</td>
<td>502</td>
<td>386</td>
<td>501</td>
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<td>429.mcf</td>
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<td>227</td>
<td>963</td>
<td>228</td>
<td>960</td>
<td>227</td>
<td>966</td>
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<td>445.gobmk</td>
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<td>571</td>
<td>441</td>
<td>572</td>
<td>440</td>
<td>571</td>
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<tr>
<td>456.hmmer</td>
<td>24</td>
<td>277</td>
<td>810</td>
<td>275</td>
<td>814</td>
<td>275</td>
<td>813</td>
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<td>458.sjeng</td>
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<td>679</td>
<td>428</td>
<td>680</td>
<td>427</td>
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<td>428</td>
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<tr>
<td>462.libquantum</td>
<td>24</td>
<td>126</td>
<td>3940</td>
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<td>3940</td>
<td>126</td>
<td>3940</td>
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<tr>
<td>464.h264ref</td>
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<td>717</td>
<td>741</td>
<td>715</td>
<td>743</td>
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<td>743</td>
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<td>471.omnetpp</td>
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<td>345</td>
<td>435</td>
<td>345</td>
<td>435</td>
<td>345</td>
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<tr>
<td>473.astar</td>
<td>24</td>
<td>470</td>
<td>358</td>
<td>467</td>
<td>360</td>
<td>473</td>
<td>356</td>
</tr>
<tr>
<td>483.xalancbmk</td>
<td>24</td>
<td>240</td>
<td>691</td>
<td>239</td>
<td>693</td>
<td>239</td>
<td>692</td>
</tr>
</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 with:
```
echo always > /sys/kernel/mm/redhat_transparent_hugepage/enabled
```
filesystem page cache cleared with:
```
echo 1 > /proc/sys/vm/drop_caches
```
runcspec 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 Maximum Performance
- Thermal Configuration set so Maximum Cooling
- Processor Power and Utilization Monitoring set to Disabled
- Memory Refresh Rate set to 1x Refresh

Sysinfo program /cpu2006/config/sysinfo.rev6818
$Rev: 6818 $ $Date:: 2012-07-17 $ e86d102572650a6e4d596a3cee98f191
running on pl12.epc.external.hp.com Tue Feb 25 14:54:19 2014

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CPU2006 license: 3
Test sponsor: Hewlett-Packard Company
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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) CPU E5-2643 v2 @ 3.50GHz
2 "physical id"s (chips)
24 "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 2 3 4 8 9 10
physical 1: cores 2 3 4 8 9 10
cache size : 25600 KB

From /proc/meminfo
MemTotal: 132119284 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 pl12.epc.external.hp.com 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 Feb 25 14:50

SPEC is set to: /cpu2006
Filesystem Type Size Used Avail Use% Mounted on
/dev/mapper/vg_pl12-lv_root ext4 50G 64G 38G 15% /

Additional information from dmidecode:
BIOS HP P71 12/20/2013
Memory:
16x HP 712382-071 8 GB 1866 MHz 2 rank
8x 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:
16x HP 712382-071 8 GB 1866 MHz 2 rank
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Test date: Feb-2014
Hardware Availability: Dec-2013
Software Availability: Sep-2013

General Notes

Environment variables set by runspec before the start of the run:
LD_LIBRARY_PATH = "/cpu2006/libs/32:/cpu2006/libs/64:/cpu2006/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

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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

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CPU2006 license: 3
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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.xalancbmk: 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-revD.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-revD.xml

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

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