Hewlett-Packard Company

ProLiant BL420c Gen8
(1.80 GHz, Intel Xeon E5-2450L)

**SPECint\_rate2006 = 445**
SPECint\_rate_base2006 = 428

<table>
<thead>
<tr>
<th>Benchmark</th>
<th>Specint2006</th>
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<tr>
<td>400.perlbench</td>
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<tr>
<td>401.bzip2</td>
<td>248</td>
<td>242</td>
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<tr>
<td>403.gcc</td>
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<td>340</td>
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<tr>
<td>429.mcf</td>
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</tr>
<tr>
<td>445.gobmk</td>
<td>331</td>
<td>324</td>
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<tr>
<td>456.hmmer</td>
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<tr>
<td>462.libquantum</td>
<td>201</td>
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<tr>
<td>464.h264ref</td>
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<td>320</td>
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<tr>
<td>471.omnetpp</td>
<td>287</td>
<td>271</td>
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<tr>
<td>473.astar</td>
<td>256</td>
<td></td>
</tr>
<tr>
<td>483.xalancbmk</td>
<td>408</td>
<td></td>
</tr>
</tbody>
</table>

**Hardware**

- **CPU Name:** Intel Xeon E5-2450L
- **CPU Characteristics:** Intel Turbo Boost Technology up to 2.30 GHz
- **CPU MHz:** 1800
- **FPU:** Integrated
- **CPU(s) enabled:** 16 cores, 2 chips, 8 cores/chip, 2 threads/core
- **CPU(s) orderable:** 1,2 chips
- **Primary Cache:** 32 KB I + 32 KB D on chip per core
- **Secondary Cache:** 256 KB I+D on chip per core
- **L3 Cache:** 20 MB I+D on chip per chip
- **Other Cache:** None
- **Memory:** 96 GB (12 x 8 GB 2Rx4 PC3-12800R-11, ECC)
- **Disk Subsystem:** 2 x 146 GB SAS, RAID 0, 15000 RPM
- **Other Hardware:** None

**Software**

- **Operating System:** Red Hat Enterprise Linux Server release 6.2 (Santiago)
- **Compiler:** C/C++: Version 12.1.3.293 of Intel C++ Studio XE for Linux
- **Auto Parallel:** No
- **File System:** ext4
- **System State:** Run level 3 (multi-user)
- **Base Pointers:** 32-bit
- **Peak Pointers:** 32/64-bit
- **Other Software:** Microquill SmartHeap V9.01
Hewlett-Packard Company

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SPECint_rate2006 = 445
SPECint_rate_base2006 = 428

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

Results Table

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<td>32</td>
<td>542</td>
<td>4.08</td>
<td>540</td>
<td>4.08</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

Platform Notes

BIOS configuration:
HP Power Profile set to Maximum Performance
Sysinfo program /mnt/store/cpu2006/Docs/sysinfo
$Rev: 6775 $ $Date:: 2011-08-16 #$ 8787f7622badcf24e01c368b1db4377c

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 E5-2450L 0 @ 1.80GHz
  2 "physical id"s (chips)
  32 "processors"
cores, siblings (Caution: counting these is hw and system dependent. The
Continued on next page
SPEC CINT2006 Result

Hewlett-Packard Company

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SPECint_rate2006 = 445
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CPU2006 license: 3
Test sponsor: Hewlett-Packard Company
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Platform Notes (Continued)

following excerpts from /proc/cpuinfo might not be reliable. Use with caution.)
  cpu cores : 8
  siblings : 16
  physical 0: cores 0 1 2 3 4 5 6 7
  physical 1: cores 0 1 2 3 4 5 6 7
  cache size : 20480 KB

From /proc/meminfo
  MemTotal: 99026400 kB
  HugePages_Total: 0
  Hugepagesize: 2048 kB

/usr/bin/lsb_release -d
  Red Hat Enterprise Linux Server release 6.2 (Santiago)

From /etc/*release* /etc/*version*
  redhat-release: Red Hat Enterprise Linux Server release 6.2 (Santiago)
  system-release: Red Hat Enterprise Linux Server release 6.2 (Santiago)

uname -a:
  Linux bl420c-cpu 2.6.32-220.el6.x86_64 #1 SMP Wed Nov 9 08:03:13 EST 2011
  x86_64 x86_64 x86_64 GNU/Linux

run-level 3 Aug 7 23:43

SPEC is set to: /mnt/store/cpu2006

<table>
<thead>
<tr>
<th>Filesystem</th>
<th>Type</th>
<th>Size</th>
<th>Used</th>
<th>Avail</th>
<th>Use%</th>
<th>Mounted on</th>
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</thead>
<tbody>
<tr>
<td>/dev/sda5</td>
<td>ext4</td>
<td>191G</td>
<td>14G</td>
<td>168G</td>
<td>8%</td>
<td>/mnt/store</td>
</tr>
</tbody>
</table>

(End of data from sysinfo program)

General Notes

Environment variables set by runspec before the start of the run:
LD_LIBRARY_PATH = "/opt/smartheap/

Binaries compiled on a system with 2x E5-2470 CPU + 192 GB
memory using RHEL 6.2
glibc-static-2.12-1.47.el6.x86_64.rpm and glibc-static-2.12-1.47.el6.1686.rpm
are added to enable static linking
runspec command invoked through numactl i.e.:
numactl --interleave=all runspec <etc>

Base Compiler Invocation

C benchmarks:
  icc  -m32

Continued on next page
Hewlett-Packard Company

ProLiant BL420c Gen8
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<table>
<thead>
<tr>
<th>CPU2006 license</th>
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<td>Tested by</td>
<td>Hewlett-Packard Company</td>
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<tr>
<td>Test date</td>
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</tr>
<tr>
<td>Hardware Availability</td>
<td>Jun-2012</td>
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<tr>
<td>Software Availability</td>
<td>Feb-2012</td>
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</tbody>
</table>

**SPECint_rate2006 = 445**

**SPECint_rate_base2006 = 428**

### Base Compiler Invocation (Continued)

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/opt/smartheap -lsmartheap
```

### Base Other Flags

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

### Peak Compiler Invocation

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

400.perlbench: `icc -m64`

401.bzip2: `icc -m64`

456.hmmer: `icc -m64`

458.sjeng: `icc -m64`

C++ benchmarks:
```
icpc -m32
```
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CPU2006 license: 3
Test sponsor: Hewlett-Packard Company
Tested by: Hewlett-Packard Company

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

462.libquantum: -xAVX -ipo -o3 -no-prec-div -opt-prefetch
    -opt-mem-layout-trans=3

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/opt/smartheap -lsmartheap

473.astar: basepeak = yes

Continued on next page
### SPEC CINT2006 Result

**Hewlett-Packard Company**  
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</table>

**CPU2006 license:** 3  
**Test date:** Aug-2012  
**Test sponsor:** Hewlett-Packard Company  
**Hardware Availability:** Jun-2012  
**Tested by:** Hewlett-Packard Company  
**Software Availability:** Feb-2012

#### Peak Optimization Flags (Continued)

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:


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

- [http://www.spec.org/cpu2006/flags/Intel-ic12.1-official-linux64.20120425.xml](http://www.spec.org/cpu2006/flags/Intel-ic12.1-official-linux64.20120425.xml)
- [http://www.spec.org/cpu2006/flags/HP-Platform-Flags-Intel-V1.2-A.20120829.xml](http://www.spec.org/cpu2006/flags/HP-Platform-Flags-Intel-V1.2-A.20120829.xml)

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

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