## SPECint® CINT2006 Result

### Hewlett-Packard Company

**ProLiant DL180 Gen9**
(1.80 GHz, Intel Xeon E5-2630L v3)

**SPECint_rate2006 = 581**
**SPECint_rate_base2006 = 557**

**CPU2006 license:** 3  
**Test sponsor:** Hewlett-Packard Company  
**Tested by:** Hewlett-Packard Company  
**Test date:** Nov-2014  
**Hardware Availability:** Sep-2014  
**Software Availability:** Sep-2014

### Hardware

<table>
<thead>
<tr>
<th>Component</th>
<th>Specification</th>
</tr>
</thead>
<tbody>
<tr>
<td>CPU Name</td>
<td>Intel Xeon E5-2630L v3</td>
</tr>
<tr>
<td>CPU Characteristics</td>
<td>Intel Turbo Boost Technology up to 2.90 GHz</td>
</tr>
<tr>
<td>CPU MHz</td>
<td>1800</td>
</tr>
<tr>
<td>FPU</td>
<td>Integrated</td>
</tr>
<tr>
<td>CPU(s) enabled</td>
<td>16 cores, 2 chips, 8 cores/chip, 2 threads/core</td>
</tr>
<tr>
<td>CPU(s) orderable</td>
<td>1.2 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>20 MB I+D on chip per chip</td>
</tr>
<tr>
<td>Other Cache</td>
<td>None</td>
</tr>
<tr>
<td>Memory</td>
<td>256 GB (16 x 16 GB 2Rx4 PC4-2133P-R, running at 1866 MHz)</td>
</tr>
<tr>
<td>Disk Subsystem</td>
<td>1 x 400 GB SAS SSD, RAID 0</td>
</tr>
<tr>
<td>Other Hardware</td>
<td>None</td>
</tr>
</tbody>
</table>

### Software

<table>
<thead>
<tr>
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</table>
| Operating System   | Red Hat Enterprise Linux Server release 7.0 (Maipo)  
|                    | Kernel 3.10.0-123.el7.x86_64 |
| Compiler           | C/C++: Version 15.0.0.090 of Intel C++ Studio XE for Linux |
| Auto Parallel      | No |
| File System        | xfs |
| System State       | Run level 3 (multi-user) |
| Base Pointers      | 32-bit |
| Peak Pointers      | 32/64-bit |
| Other Software     | Microquill SmartHeap V10.0 |

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**Table:**

<table>
<thead>
<tr>
<th>Benchmark</th>
<th>Copies</th>
<th>SPECint_rate2006</th>
<th>SPECint_rate_base2006</th>
</tr>
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<tbody>
<tr>
<td>400.perlbench</td>
<td>32</td>
<td>483</td>
<td>483</td>
</tr>
<tr>
<td>401.bzip2</td>
<td>32</td>
<td>299</td>
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<tr>
<td>403.gcc</td>
<td>32</td>
<td>449</td>
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</tr>
<tr>
<td>429.mcf</td>
<td>32</td>
<td>812</td>
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<tr>
<td>445.gobmk</td>
<td>32</td>
<td>357</td>
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<tr>
<td>456.hmmer</td>
<td>32</td>
<td>754</td>
<td>754</td>
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<tr>
<td>458.sjeng</td>
<td>32</td>
<td>392</td>
<td>392</td>
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<tr>
<td>462.libquantum</td>
<td>32</td>
<td>5600</td>
<td>5600</td>
</tr>
<tr>
<td>464.h264ref</td>
<td>32</td>
<td>636</td>
<td>636</td>
</tr>
<tr>
<td>471.omnetpp</td>
<td>32</td>
<td>363</td>
<td>363</td>
</tr>
<tr>
<td>473.astar</td>
<td>32</td>
<td>345</td>
<td>345</td>
</tr>
<tr>
<td>483.xalancbmk</td>
<td>32</td>
<td>609</td>
<td>609</td>
</tr>
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**Note:**

The figure shows the performance results for various SPEC benchmarks, along with the hardware and software configurations used for the test.
Hewlett-Packard Company

ProLiant DL180 Gen9
(1.80 GHz, Intel Xeon E5-2630L v3)

Results Table

<table>
<thead>
<tr>
<th>Benchmark</th>
<th>Copies</th>
<th>Seconds Base</th>
<th>Ratio</th>
<th>Seconds Peak</th>
<th>Ratio</th>
</tr>
</thead>
<tbody>
<tr>
<td>400.perlbench</td>
<td>32</td>
<td>816</td>
<td>383</td>
<td>817</td>
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<tr>
<td>401.bzip2</td>
<td>32</td>
<td>1126</td>
<td>274</td>
<td>1127</td>
<td>274</td>
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<tr>
<td>403.gcc</td>
<td>32</td>
<td>574</td>
<td>449</td>
<td>569</td>
<td>453</td>
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<tr>
<td>429.mcf</td>
<td>32</td>
<td>359</td>
<td>812</td>
<td>359</td>
<td>813</td>
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<tr>
<td>445.gobmk</td>
<td>32</td>
<td>947</td>
<td>355</td>
<td>948</td>
<td>354</td>
</tr>
<tr>
<td>456.hmmer</td>
<td>32</td>
<td>396</td>
<td>754</td>
<td>397</td>
<td>752</td>
</tr>
<tr>
<td>458.sjeng</td>
<td>32</td>
<td>1028</td>
<td>377</td>
<td>1030</td>
<td>376</td>
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<tr>
<td>462.libquantum</td>
<td>32</td>
<td>120</td>
<td>5510</td>
<td>121</td>
<td>5500</td>
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<tr>
<td>464.h264ref</td>
<td>32</td>
<td>1129</td>
<td>627</td>
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<td>626</td>
</tr>
<tr>
<td>471.omnetpp</td>
<td>32</td>
<td>580</td>
<td>345</td>
<td>577</td>
<td>347</td>
</tr>
<tr>
<td>473.astar</td>
<td>32</td>
<td>697</td>
<td>322</td>
<td>702</td>
<td>320</td>
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<td>32</td>
<td>363</td>
<td>609</td>
<td>363</td>
<td>606</td>
</tr>
</tbody>
</table>

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/transparent_hugepage/enabled
```

Filesystem page cache cleared with:

```
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
Collaborative Power Control set to Disabled
QPI Snoop Configuration set to Early Snoop
Thermal Configuration set to Maximum Cooling
Processor Power and Utilization Monitoring set to Disabled
Memory Refresh Rate set to 1x Refresh

Sysinfo program /home/cpu2006/config/sysinfo.rev6914

$Rev: 6914 $ $Date:: 2014-06-25 #$ e3fbb8667b5a285932ceab81e28219e1
running on kokomo-bottom Sat Nov 29 17:12:29 2014

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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 E5-2630L v3 @ 1.80GHz
2 "physical id"s (chips)
32 "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 : 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: 263713628 kB
HugePages_Total: 0
Hugepagesize: 2048 kB

From /etc/*release* /etc/*version*

NAME="Red Hat Enterprise Linux Server"
VERSION="7.0 (Maipo)"
ID="rhel"
ID_LIKE="fedora"
VERSION_ID="7.0"
PRETTY_NAME="Red Hat Enterprise Linux Server 7.0 (Maipo)"
ANSI_COLOR="0;31"
CPE_NAME="cpe:/o:redhat:enterprise_linux:7.0:GA:server"
redhat-release: Red Hat Enterprise Linux Server release 7.0 (Maipo)
system-release: Red Hat Enterprise Linux Server release 7.0 (Maipo)
system-release-cpe: cpe:/o:redhat:enterprise_linux:7.0:ga:server

uname -a:
Linux kokomo-bottom 3.10.0-123.el7.x86_64 #1 SMP Mon May 5 11:16:57 EDT 2014
x86_64 x86_64 x86_64 GNU/Linux

run-level 3 Nov 28 10:08

SPEC is set to: /home/cpu2006
Filesystem Type Size Used Avail Use% Mounted on
/dev/mapper/rhel-home xfs 318G 6.1G 312G 2% /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.

Continued on next page
# SPEC CINT2006 Result

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### Platform Notes (Continued)

- BIOS HP U20 08/26/2014
- Memory: 16x HP NOT AVAILABLE 16 GB 2 rank 2133 MHz, configured at 1866 MHz

*(End of data from sysinfo program)*

Regarding the sysinfo display about the memory installed, the correct amount of memory is 256 GB and the dmidecode description should have one line reading as:
16x HP NOT AVAILABLE 16 GB 2 rank 2133 MHz, configured at 1866 MHz

### General Notes

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

Binaries compiled on a system with 1x Core i5-4670K CPU + 16GB memory using RedHat EL 7.0

### Base Compiler Invocation

- C benchmarks:
  
  `icc -m32 -L/opt/intel/composer_xe_2015/lib/ia32`

- C++ benchmarks:
  
  `icpc -m32 -L/opt/intel/composer_xe_2015/lib/ia32`

### Base Portability Flags

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

### Base Optimization Flags

- C benchmarks:
  
  `-xCORE-AVX2 -ipo -O3 -no-prec-div -opt-prefetch`
  `-opt-mem-layout-trans=3`

- C++ benchmarks:
  
  `-xCORE-AVX2 -ipo -O3 -no-prec-div -opt-prefetch`
  `-opt-mem-layout-trans=3 -Wl,-z,muldefs -L/sh -lsmartheap`
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Base Other Flags

C benchmarks:
403.gcc: -Dalloca=_alloca

Peak Compiler Invocation

C benchmarks (except as noted below):
    icc -m32 -L/opt/intel/composer_xe_2015/lib/ia32
400.perlbench: icc -m64
401.bzip2: icc -m64
456.hmmer: icc -m64
458.sjeng: icc -m64

C++ benchmarks:
icpc -m32 -L/opt/intel/composer_xe_2015/lib/ia32

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: -xCORE-AVX2(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: -xCORE-AVX2(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: -xCORE-AVX2 -ipo -O3 -no-prec-div

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Peak Optimization Flags (Continued)

429.mcf: basepeak = yes
445.gobmk: -xCORE-AVX2(pass 2) -prof-gen(pass 1) -prof-use(pass 2)
ansi-alias -opt-mem-layout-trans=3
456.hmmer: -xCORE-AVX2 -ipo -O3 -no-prec-div -unroll2 -auto-ilp32
458.sjeng: -xCORE-AVX2(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: basepeak = yes
464.h264ref: -xCORE-AVX2(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: -xCORE-AVX2(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-ic15.0-official-linux64.html
http://www.spec.org/cpu2006/flags/HP-Platform-Flags-Intel-V1.2-HSW-revE.html

You can also download the XML flags sources by saving the following links:
http://www.spec.org/cpu2006/flags/Intel-ic15.0-official-linux64.xml
http://www.spec.org/cpu2006/flags/HP-Platform-Flags-Intel-V1.2-HSW-revE.xml
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For other inquiries, please contact webmaster@spec.org.

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