### SPECint® CINT2006 Result

#### Hewlett-Packard Company

**ProLiant BL660c Gen9**

(2.10 GHz, Intel Xeon E5-4669 v3)

**SPECint<sup>®</sup>_rate2006 = 1230**

**SPECint_rate_base2006 = 1180**

<table>
<thead>
<tr>
<th>CPU2006 license</th>
<th>Test date</th>
<th>Tested by</th>
<th>Hardware Availability</th>
<th>Software Availability</th>
</tr>
</thead>
</table>

**CPU Name:** Intel Xeon E5-4669 v3

**CPU Characteristics:** Intel Turbo Boost Technology up to 2.90 GHz

**CPU MHz:** 2100

**FPU:** Integrated

**CPU(s) enabled:** 36 cores, 2 chips, 18 cores/chip, 2 threads/core

**CPU(s) orderable:** 2.4 chip

**Primary Cache:** 32 KB I + 32 KB D on chip per core

**Secondary Cache:** 256 KB I+D on chip per core

**L3 Cache:** 45 MB I+D on chip per chip

**Other Cache:** None

**Memory:** 256 GB (16 x 16 GB 2Rx4 PC4-2133P-R)

**Disk Subsystem:** 1 x 400 GB SAS SSD, RAID 0

**Other Hardware:** None

**Operating System:** SUSE Linux Enterprise Server 12 (x86_64)

**Kernel:** 3.12.28-4-default

**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

---

### Graph

**Copies**

<table>
<thead>
<tr>
<th>Benchmark</th>
<th>SPECint_rate2006</th>
<th>SPECint_rate_base2006</th>
</tr>
</thead>
<tbody>
<tr>
<td>perlbench</td>
<td></td>
<td></td>
</tr>
<tr>
<td>bzip2</td>
<td></td>
<td></td>
</tr>
<tr>
<td>gcc</td>
<td></td>
<td></td>
</tr>
<tr>
<td>mcf</td>
<td></td>
<td></td>
</tr>
<tr>
<td>gobmk</td>
<td></td>
<td></td>
</tr>
<tr>
<td>hammer</td>
<td></td>
<td></td>
</tr>
<tr>
<td>sjeng</td>
<td></td>
<td></td>
</tr>
<tr>
<td>libquantum</td>
<td></td>
<td></td>
</tr>
<tr>
<td>h264ref</td>
<td></td>
<td></td>
</tr>
<tr>
<td>omnetpp</td>
<td></td>
<td></td>
</tr>
<tr>
<td>astar</td>
<td></td>
<td></td>
</tr>
<tr>
<td>xalancbmk</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

**SPECint_rate2006 = 1230**

**SPECint_rate_base2006 = 1180**
## Results Table

<table>
<thead>
<tr>
<th>Benchmark</th>
<th>Copies</th>
<th>Seconds</th>
<th>Ratio</th>
<th>Seconds</th>
<th>Ratio</th>
<th>Seconds</th>
<th>Ratio</th>
<th>Seconds</th>
<th>Ratio</th>
<th>Seconds</th>
<th>Ratio</th>
</tr>
</thead>
<tbody>
<tr>
<td>Base</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>400.perlbench</td>
<td>72</td>
<td>742</td>
<td>948</td>
<td>748</td>
<td>940</td>
<td>747</td>
<td>941</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>401.bzip2</td>
<td>72</td>
<td>1147</td>
<td>606</td>
<td>1151</td>
<td>604</td>
<td>1143</td>
<td>608</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>403.gcc</td>
<td>72</td>
<td>672</td>
<td>863</td>
<td>673</td>
<td>861</td>
<td>675</td>
<td>859</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>429.mcf</td>
<td>72</td>
<td>438</td>
<td>1500</td>
<td>437</td>
<td>1500</td>
<td>438</td>
<td>1500</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>445.gobmk</td>
<td>72</td>
<td>848</td>
<td>890</td>
<td>849</td>
<td>890</td>
<td>849</td>
<td>889</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>456.hmmer</td>
<td>72</td>
<td>388</td>
<td>1730</td>
<td>384</td>
<td>1750</td>
<td>384</td>
<td>1750</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>458.sjeng</td>
<td>72</td>
<td>926</td>
<td>940</td>
<td>927</td>
<td>940</td>
<td>927</td>
<td>940</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>462.libquantum</td>
<td>72</td>
<td>135</td>
<td>11000</td>
<td>135</td>
<td>11000</td>
<td>135</td>
<td>11000</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>464.h264ref</td>
<td>72</td>
<td>1026</td>
<td>1550</td>
<td>1044</td>
<td>1530</td>
<td>1027</td>
<td>1550</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>471.onetpp</td>
<td>72</td>
<td>732</td>
<td>615</td>
<td>732</td>
<td>615</td>
<td>735</td>
<td>613</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>473.aistar</td>
<td>72</td>
<td>762</td>
<td>663</td>
<td>763</td>
<td>662</td>
<td>763</td>
<td>662</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>483.xalancbmk</td>
<td>72</td>
<td>500</td>
<td>993</td>
<td>501</td>
<td>991</td>
<td>501</td>
<td>992</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Peak</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></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/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 Custom
- HP Power Regulator to HP Static High Performance Mode
- Minimum Processor Idle Power Core State set to C6 State
- Minimum Processor Idle Power Package State set to No Package State
- Energy/Performance Bias set to Maximum Performance
- Collaborative Power Control set to Disabled
- 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

Continued on next page
Hewlett-Packard Company
ProLiant BL660c Gen9
(2.10 GHz, Intel Xeon E5-4669 v3)

SPECint_rate2006 = 1230
SPECint_rate_base2006 = 1180

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

Platform Notes (Continued)

$Rev: 6914 $ $Date:: 2014-06-25 #$ e3fbb8667bSa285932ceab81e28219e1
running on b1660cgen9sles12cpu Thu Apr 23 05:43:19 2015

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 E5-4669 v3 @ 2.10GHz
  2 "physical id"s (chips)
  72 "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 : 18
  siblings : 36
  physical 0: cores 0 1 2 3 4 8 9 10 11 16 17 18 19 20 24 25 26 27
  physical 1: cores 0 1 2 3 4 8 9 10 11 16 17 18 19 20 24 25 26 27
  cache size : 46080 KB

From /proc/meminfo
  MemTotal: 264543308 kB
  HugePages_Total: 0
  Hugepagesize: 2048 kB

From /etc/*release* /etc/*version*
  SuSE-release:
    SUSE Linux Enterprise Server 12 (x86_64)
    VERSION = 12
    PATCHLEVEL = 0
    # This file is deprecated and will be removed in a future service pack or release.
    # Please check /etc/os-release for details about this release.
  os-release:
    NAME="SLES"
    VERSION="12"
    VERSION_ID="12"
    PRETTY_NAME="SUSE Linux Enterprise Server 12"
    ID="sles"
    ANSI_COLOR="0;32"
    CPE_NAME=cpe:/o:suse:sles:12"

uname -a:
Linux b1660cgen9sles12cpu 3.12.28-4-default #1 SMP Thu Sep 25 17:02:34 UTC
2014 (9879bd4) x86_64 x86_64 x86_64 GNU/Linux

run-level 3 Apr 23 05:38

SPEC is set to: /home/cpu2006
  Filesystem Type Size Used Avail Use% Mounted on
  /dev/sda4 xfs 331G 4.0G 327G 2% /home
  Additional information from dmidecode:
  Continued on next page
Hewlett-Packard Company

ProLiant BL660c Gen9
(2.10 GHz, Intel Xeon E5-4669 v3)

SPECint_rate2006 = 1230
SPECint_rate_base2006 = 1180

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

Platform Notes (Continued)

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.

BIOS HP I38 03/05/2015
Memory:
16x UNKNOWN NOT AVAILABLE
16x UNKNOWN NOT AVAILABLE 16 GB 2 rank 2133 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 UNKNOWN NOT AVAILABLE 16 GB 2 rank 2133 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
## Hewlett-Packard Company

ProLiant BL660c Gen9
(2.10 GHz, Intel Xeon E5-4669 v3)

### SPECint_rate2006 = 1230

### SPECint_rate_base2006 = 1180

<table>
<thead>
<tr>
<th>CPU2006 license: 3</th>
<th>Test date: Apr-2015</th>
</tr>
</thead>
<tbody>
<tr>
<td>Test sponsor: Hewlett-Packard Company</td>
<td>Hardware Availability: Jun-2015</td>
</tr>
<tr>
<td>Tested by: Hewlett-Packard Company</td>
<td>Software Availability: Oct-2014</td>
</tr>
</tbody>
</table>

### Base Optimization Flags (Continued)

C++ benchmarks:
- `xCORE-AVX2`
- `-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 -L/opt/intel/composer_xe_2015/lib/ia32`
- `icc -m64`
- `icc -m64`
- `icc -m64`
- `icc -m64`

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

### Peak Portability Flags

- `400.perlbench`: `-DSPEC_CPU_LP64`
- `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`

Continued on next page
Hewlett-Packard Company

ProLiant BL660c Gen9
(2.10 GHz, Intel Xeon E5-4669 v3)

SPECint\_rate2006 = 1230
SPECint\_rate\_base2006 = 1180

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

<table>
<thead>
<tr>
<th>Benchmark</th>
<th>Flags</th>
</tr>
</thead>
<tbody>
<tr>
<td>401.bzip2</td>
<td>-xCORE-AVX2(pass 2) -prof-gen(pass 1) -ipo(pass 2)</td>
</tr>
<tr>
<td></td>
<td>-O3(pass 2) -no-prec-div(pass 2) -prof-use(pass 2)</td>
</tr>
<tr>
<td></td>
<td>-opt-prefetch -auto-ilp32 -ansi-alias</td>
</tr>
<tr>
<td>403.gcc</td>
<td>basepeak = yes</td>
</tr>
<tr>
<td>429.mcf</td>
<td>basepeak = yes</td>
</tr>
<tr>
<td>445.gobmk</td>
<td>-xCORE-AVX2(pass 2) -prof-gen(pass 1) -prof-use(pass 2)</td>
</tr>
<tr>
<td></td>
<td>-ansi-alias -opt-mem-layout-trans=3</td>
</tr>
<tr>
<td>456.hmmer</td>
<td>-xCORE-AVX2 -ipo -O3 -no-prec-div -unroll12 -auto-ilp32</td>
</tr>
<tr>
<td>458.sjeng</td>
<td>-xCORE-AVX2(pass 2) -prof-gen(pass 1) -ipo(pass 2)</td>
</tr>
<tr>
<td></td>
<td>-O3(pass 2) -no-prec-div(pass 2) -prof-use(pass 2)</td>
</tr>
<tr>
<td></td>
<td>-unroll14 -auto-ilp32</td>
</tr>
<tr>
<td>462.libquantum</td>
<td>basepeak = yes</td>
</tr>
<tr>
<td>464.h264ref</td>
<td>-xCORE-AVX2(pass 2) -prof-gen(pass 1) -ipo(pass 2)</td>
</tr>
<tr>
<td></td>
<td>-O3(pass 2) -no-prec-div(pass 2) -prof-use(pass 2)</td>
</tr>
<tr>
<td></td>
<td>-unroll12 -ansi-alias</td>
</tr>
</tbody>
</table>

C++ benchmarks:

471.omnetpp: -xCORE-AVX2(pass 2) -prof-gen(pass 1) -ipo(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
### SPEC CINT2006 Result

<table>
<thead>
<tr>
<th>Hewlett-Packard Company</th>
<th>SPECint_rate2006 = 1230</th>
</tr>
</thead>
<tbody>
<tr>
<td>ProLiant BL660c Gen9</td>
<td>SPECint_rate_base2006 = 1180</td>
</tr>
<tr>
<td>(2.10 GHz, Intel Xeon E5-4669 v3)</td>
<td></td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>CPU2006 license</th>
<th>3</th>
</tr>
</thead>
<tbody>
<tr>
<td>Test sponsor</td>
<td>Hewlett-Packard Company</td>
</tr>
<tr>
<td>Tested by</td>
<td>Hewlett-Packard Company</td>
</tr>
</tbody>
</table>

- **Test date:** Apr-2015
- **Hardware Availability:** Jun-2015
- **Software Availability:** Oct-2014

---

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 2 June 2015.