# SPEC® CINT2006 Result

## Huawei

Huawei XH620 V3 (Intel Xeon E5-2697 v3)

<table>
<thead>
<tr>
<th>SPECint®_rate2006</th>
<th>1260</th>
</tr>
</thead>
<tbody>
<tr>
<td>SPECint_rate_base2006</td>
<td>1220</td>
</tr>
</tbody>
</table>

**CPU2006 license:** 3175  
**Test date:** May-2015  
**Test sponsor:** Huawei  
**Hardware Availability:** Sep-2014  
**Tested by:** Huawei  
**Software Availability:** Sep-2014

### Hardware

<table>
<thead>
<tr>
<th>Specification</th>
<th>Detail</th>
</tr>
</thead>
<tbody>
<tr>
<td>CPU Name</td>
<td>Intel Xeon E5-2697 v3</td>
</tr>
<tr>
<td>CPU Characteristics</td>
<td>Intel Turbo Boost Technology up to 3.60 GHz</td>
</tr>
<tr>
<td>CPU MHz</td>
<td>2600</td>
</tr>
<tr>
<td>FPU</td>
<td>Integrated</td>
</tr>
<tr>
<td>CPU(s) enabled</td>
<td>28 cores, 2 chips, 14 cores/chip, 2 threads/core</td>
</tr>
<tr>
<td>CPU(s) orderable</td>
<td>1.2 chip</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>35 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)</td>
</tr>
<tr>
<td>Disk Subsystem</td>
<td>1 x 500 GB SATA, 7200 RPM</td>
</tr>
<tr>
<td>Other Hardware</td>
<td>None</td>
</tr>
</tbody>
</table>

### Software

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

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**CINT2006 Result Chart**

<table>
<thead>
<tr>
<th>Benchmark</th>
<th>SPECint Rate 2006</th>
<th>SPECint Rate Base2006</th>
</tr>
</thead>
<tbody>
<tr>
<td>400.perlbench</td>
<td>964</td>
<td>1200</td>
</tr>
<tr>
<td>401.bzip2</td>
<td>655</td>
<td>629</td>
</tr>
<tr>
<td>403.gcc</td>
<td>938</td>
<td></td>
</tr>
<tr>
<td>429.mcf</td>
<td>1600</td>
<td></td>
</tr>
<tr>
<td>445.gobmk</td>
<td>859</td>
<td>846</td>
</tr>
<tr>
<td>456.hmmer</td>
<td>1830</td>
<td>1720</td>
</tr>
<tr>
<td>458.sjeng</td>
<td>990</td>
<td>948</td>
</tr>
<tr>
<td>462.libquantum</td>
<td></td>
<td></td>
</tr>
<tr>
<td>464.h264ref</td>
<td>1500</td>
<td></td>
</tr>
<tr>
<td>471.omnetpp</td>
<td>651</td>
<td>636</td>
</tr>
<tr>
<td>473.astar</td>
<td>667</td>
<td></td>
</tr>
<tr>
<td>483.xalancbmk</td>
<td>1230</td>
<td></td>
</tr>
</tbody>
</table>

**CINT2006 Rate Base 2006**

- SPECint_rate_base2006 = 1220

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The Hardware and Software specifications are detailed above, along with the benchmark results and their corresponding SPECint rates.
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SPECint_rate2006 = 1260
SPECint_rate_base2006 = 1220

CPU2006 license: 3175
Test date: May-2015
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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>
<th>Seconds</th>
<th>Ratio</th>
<th>Seconds</th>
<th>Ratio</th>
<th>Seconds</th>
<th>Ratio</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Base</td>
<td></td>
<td></td>
<td>Peak</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>400.perlbench</td>
<td>56</td>
<td>568</td>
<td>964</td>
<td>569</td>
<td>962</td>
<td>567</td>
<td>966</td>
<td>56</td>
<td>455</td>
<td>1200</td>
<td>452</td>
</tr>
<tr>
<td>401.bzip2</td>
<td>56</td>
<td>856</td>
<td>631</td>
<td>860</td>
<td>629</td>
<td>859</td>
<td>629</td>
<td>56</td>
<td>826</td>
<td>654</td>
<td>824</td>
</tr>
<tr>
<td>403.gcc</td>
<td>56</td>
<td>481</td>
<td>938</td>
<td>482</td>
<td>935</td>
<td>478</td>
<td>944</td>
<td>56</td>
<td>481</td>
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<td>482</td>
</tr>
<tr>
<td>429.mcf</td>
<td>56</td>
<td>319</td>
<td>1600</td>
<td>319</td>
<td>1600</td>
<td>318</td>
<td>1600</td>
<td>56</td>
<td>319</td>
<td>1600</td>
<td>319</td>
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<tr>
<td>445.gobmk</td>
<td>56</td>
<td>695</td>
<td>845</td>
<td>694</td>
<td>846</td>
<td>694</td>
<td>846</td>
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<td>685</td>
<td>857</td>
<td>683</td>
</tr>
<tr>
<td>456.hmmer</td>
<td>56</td>
<td>303</td>
<td>1720</td>
<td>304</td>
<td>1720</td>
<td>304</td>
<td>1720</td>
<td>56</td>
<td>285</td>
<td>1830</td>
<td>285</td>
</tr>
<tr>
<td>458.sjeng</td>
<td>56</td>
<td>716</td>
<td>947</td>
<td>715</td>
<td>948</td>
<td>715</td>
<td>948</td>
<td>56</td>
<td>685</td>
<td>990</td>
<td>684</td>
</tr>
<tr>
<td>462.libquantum</td>
<td>56</td>
<td>108</td>
<td>10800</td>
<td>108</td>
<td>10800</td>
<td>107</td>
<td>10800</td>
<td>56</td>
<td>108</td>
<td>10800</td>
<td>107</td>
</tr>
<tr>
<td>464.h264ref</td>
<td>56</td>
<td>862</td>
<td>1440</td>
<td>840</td>
<td>1480</td>
<td>835</td>
<td>1480</td>
<td>56</td>
<td>821</td>
<td>1510</td>
<td>828</td>
</tr>
<tr>
<td>471.omnetpp</td>
<td>56</td>
<td>550</td>
<td>636</td>
<td>545</td>
<td>642</td>
<td>554</td>
<td>632</td>
<td>56</td>
<td>537</td>
<td>651</td>
<td>533</td>
</tr>
<tr>
<td>473.astar</td>
<td>56</td>
<td>589</td>
<td>668</td>
<td>589</td>
<td>667</td>
<td>590</td>
<td>666</td>
<td>56</td>
<td>589</td>
<td>668</td>
<td>589</td>
</tr>
<tr>
<td>483.xalancbmk</td>
<td>56</td>
<td>313</td>
<td>1240</td>
<td>313</td>
<td>1230</td>
<td>314</td>
<td>1230</td>
<td>56</td>
<td>313</td>
<td>1240</td>
<td>313</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"

Platform Notes

BIOS configuration:
Set Power Efficiency Mode to Performance
Set Snoop Mode to COD mode
Set Patrol Scrub to Disable
Sysinfo program /spec15/config/sysinfo.rev6914
$Rev: 6914 $ $Date:: 2014-06-25 $$ e3fbb8667b5a285932ceab81e28219e1
running on localhost.localdomain Mon May 18 05:35:52 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 E5-2697 v3 @ 2.60GHz
2 "physical id"s (chips)
56 "processors"
cores, siblings (Caution: counting these is hw and system dependent. The
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Platform Notes (Continued)

following excerpts from /proc/cpuinfo might not be reliable. Use with caution.)
  cpu cores : 7
  siblings : 14
  physical 0: cores 0 1 2 3 4 5 6 8 9 10 11 12 13 14
  physical 1: cores 0 1 2 3 4 5 6 8 9 10 11 12 13 14
  cache size : 17920 KB

From /proc/meminfo
MemTotal: 263574232 kB
HugePages_Total: 0
Hugepagesize: 2048 kB

From /etc/*release* /etc/*version*
os-release:
  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 localhost.localdomain 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 May 18 05:34
SPEC is set to: /spec15

Filesystem Type Size Used Avail Use% Mounted on
/dev/sda2 xfs 440G 129G 312G 30% /

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.

BIOS Insyde Corp. 1.35 03/30/2015
Memory:
  8x Micron 36ASF2G72PZ-2G1A2 16 GB 1 rank 2133 MHz
  8x Micron 36ASF2G72PZ-2G1A2 16 GB 2 rank 2133 MHz

(End of data from sysinfo program)
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General Notes

Environment variables set by runspec before the start of the run:
LD_LIBRARY_PATH = "/spec15/libs/32:/spec15/libs/64:/spec15/sh"

Binaries compiled on a system with 1x Core i5-4670K CPU + 16GB memory using RedHat EL 7.0
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.:
umactl --interleave=all runspec <etc>

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

Base Other Flags

C benchmarks:
403.gcc: -Dalloca=_alloca
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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: basepeak = yes
  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)
  -unroll3 -auto-ilp32

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Peak Optimization Flags (Continued)

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/Huawei-Platform-Settings-HASWELL-V1.4.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/Huawei-Platform-Settings-HASWELL-V1.4.xml

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For questions about this result, please contact the tester.
For other inquiries, please contact webmaster@spec.org.

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