# SPEC® CINT2006 Result

**Huawei**

Huawei RH2288 V3 (Intel Xeon E5-2650 v4)

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<tr>
<th>SPECint®2006</th>
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## Hardware

- **CPU Name:** Intel Xeon E5-2650 v4
- **CPU Characteristics:** Intel Turbo Boost Technology up to 2.90 GHz
- **CPU MHz:** 2200
- **FPU:** Integrated
- **CPU(s) enabled:** 24 cores, 2 chips, 12 cores/chip
- **CPU(s) orderable:** 1.2 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:** 30 MB I+D on chip per chip
- **Other Cache:** None
- **Memory:** 256 GB (16 x 16 GB 2Rx8 PC4-2400T-R)
- **Disk Subsystem:** 1 x 600 GB SAS, 10000 RPM
- **Other Hardware:** None

## Software

- **Operating System:** SUSE Linux Enterprise Server 12 SP1 3.12.49-11-default
- **Compiler:** C/C++: Version 16.0.0.101 of Intel C++ Studio XE for Linux
- **Auto Parallel:** Yes
- **File System:** ext4
- **System State:** Run level 3 (multi-user)
- **Base Pointers:** 32/64-bit
- **Peak Pointers:** 32/64-bit
- **Other Software:** Microquill SmartHeap V10.2
## Results Table

<table>
<thead>
<tr>
<th>Benchmark</th>
<th>Seconds</th>
<th>Ratio</th>
<th>Seconds</th>
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</tr>
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<tbody>
<tr>
<td>400.perlbench</td>
<td>285</td>
<td>34.3</td>
<td>287</td>
<td>34.0</td>
<td>287</td>
<td>34.0</td>
<td>261</td>
<td>37.4</td>
<td>261</td>
<td>37.4</td>
</tr>
<tr>
<td>403.mcf</td>
<td>244</td>
<td>32.9</td>
<td>244</td>
<td>33.0</td>
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<tr>
<td>429.gobmk</td>
<td>419</td>
<td>25.1</td>
<td>419</td>
<td>25.1</td>
<td>418</td>
<td>25.1</td>
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<td>25.1</td>
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<tr>
<td>456.hmmer</td>
<td>131</td>
<td>71.4</td>
<td>131</td>
<td>71.4</td>
<td>131</td>
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<td>131</td>
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<td>71.3</td>
</tr>
<tr>
<td>458.sjeng</td>
<td>415</td>
<td>29.2</td>
<td>415</td>
<td>29.2</td>
<td>415</td>
<td>29.1</td>
<td>410</td>
<td>29.5</td>
<td>410</td>
<td>29.5</td>
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<tr>
<td>462.libquantum</td>
<td>3.64</td>
<td>5690</td>
<td>3.60</td>
<td>5760</td>
<td>3.63</td>
<td>5710</td>
<td>3.64</td>
<td>5690</td>
<td>3.60</td>
<td>5760</td>
</tr>
<tr>
<td>464.h264ref</td>
<td>458</td>
<td>48.3</td>
<td>459</td>
<td>48.2</td>
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<td>48.3</td>
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<td>48.3</td>
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<tr>
<td>471.omnetpp</td>
<td>177</td>
<td>35.3</td>
<td>176</td>
<td>35.5</td>
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<td>35.5</td>
<td>132</td>
<td>47.5</td>
<td>132</td>
<td>47.4</td>
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<tr>
<td>473.astar</td>
<td>227</td>
<td>30.9</td>
<td>226</td>
<td>31.0</td>
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<td>227</td>
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<td>226</td>
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<tr>
<td>483.xalancbmk</td>
<td>108</td>
<td>64.0</td>
<td>107</td>
<td>64.7</td>
<td>108</td>
<td>64.0</td>
<td>96.5</td>
<td>71.5</td>
<td>96.5</td>
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Results appear in the order in which they were run. Bold underlined text indicates a median measurement.

### Submit Notes

The config file option 'submit' was used.

### Operating System Notes

Stack size set to unlimited using "ulimit -s unlimited"

### Platform Notes

BIOS configuration:
- Set Power Efficiency Mode to Custom
- Set Snoop Mode to ES mode
- Set Patrol Scrub to Disable
- Set Hyper-Threading to Disable

Sysinfo program `/spec16/config/sysinfo.rev6914`
$Rev: 6914 $ $Date:: 2014-06-25 $$ e3fbb8667b5a285932ceab81e28219e1
running on linux-1g2g Tue Nov 15 13:37:39 2016

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 E5-2650 v4@ 2.20GHz
- 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

Continued on next page
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**Platform Notes (Continued)**

| cpu cores | 12 |
| siblings  | 12 |
| physical 0: cores | 0 1 2 3 4 5 8 9 10 11 12 13 |
| physical 1: cores | 0 1 2 3 4 5 8 9 10 11 12 13 |
| cache size | 30720 KB |

From `/proc/meminfo`

- MemTotal: 264076772 kB
- HugePages_Total: 0
- Hugepagesize: 2048 kB

/usr/bin/lsb_release -d

SUSE Linux Enterprise Server 12 SP1

From `/etc/*release*`

SuSE-release:

- SUSE Linux Enterprise Server 12 (x86_64)
- VERSION = 12
- PATCHLEVEL = 1
# 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-SP1"
- VERSION_ID="12.1"
- PRETTY_NAME="SUSE Linux Enterprise Server 12 SP1"
- ID="sles"
- ANSI_COLOR="0;32"
- CPE_NAME="cpe:/o:suse:sles:12:sp1"

uname -a:

Linux linux-1g2g 3.12.49-11-default #1 SMP Wed Nov 11 20:52:43 UTC 2015
(8d714a0) x86_64 x86_64 x86_64 GNU/Linux

run-level 3 Nov 15 12:30

SPEC is set to: /spec16

```
Filesystem   Type Size  Used Avail Use% Mounted on
/dev/sda1    ext4  542G 112G 430G  21% /
```

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. 3.31 08/22/2016

Memory:

- 16x Hynix HMA82GR7A88N-UH 16 GB 2 rank 2400 MHz

Continued on next page
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Platform Notes (Continued)

(End of data from sysinfo program)

General Notes

Environment variables set by runspec before the start of the run:
KMP_AFFINITY = "granularity=fine,compact,1,0"
LD_LIBRARY_PATH = "/spec16/libs/32:/spec16/libs/64:/spec16/sh"
OMP_NUM_THREADS = "24"

Binaries compiled on a system with 1x Intel Core i5-4670K CPU + 32GB memory using RedHat EL 7.1
Transparent Huge Pages enabled with:
echo always > /sys/kernel/mm/transparent_hugepage/enabled
runspec command invoked through numactl i.e.:
umactl --interleave=all runspec <etc>

Base Compiler Invocation

C benchmarks:
  icc -m64

C++ benchmarks:
  icpc -m64

Base Portability Flags

400.perlbench: -DSPEC_CPU_LP64 -DSPEC_CPU_LINUX_X64
401.bzip2: -DSPEC_CPU_LP64
403.gcc: -DSPEC_CPU_LP64
429.mcf: -DSPEC_CPU_LP64
445.gobmk: -DSPEC_CPU_LP64
456.hmmer: -DSPEC_CPU_LP64
458.sjeng: -DSPEC_CPU_LP64
462.libquantum: -DSPEC_CPU_LP64 -DSPEC_CPU_LINUX
464.h264ref: -DSPEC_CPU_LP64
471.omnetpp: -DSPEC_CPU_LP64
473.astar: -DSPEC_CPU_LP64
483.xalancbmk: -DSPEC_CPU_LP64 -DSPEC_CPU_LINUX

Base Optimization Flags

C benchmarks:
  -xCORE-AVX2 -ipo -O3 -no-prec-div -parallel -opt-prefetch -auto-p32

Continued on next page
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### Base Optimization Flags (Continued)

- C++ benchmarks:
  - -xCORE-AVX2  -ipo  -O3  -no-prec-div  -opt-prefetch  -auto-p32
  - -Wl,-z,muldefs -L/sh -lsmartheap64

### Base Other Flags

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

### Peak Compiler Invocation

- C benchmarks (except as noted below):
  - icc  -m64

- 400.perlbench: icc  -m32  -L/opt/intel/compilers_and_libraries_2016/linux/compiler/lib/ia32_lin

- C++ benchmarks (except as noted below):
  - icpc  -m32  -L/opt/intel/compilers_and_libraries_2016/linux/compiler/lib/ia32_lin

  - 473.astar: icpc  -m64

### Peak Portability Flags

- 400.perlbench: -D_FILE_OFFSET_BITS=64  -DSPEC_CPU_LINUX_IA32
- 401.bzip2: -DSPEC_CPU_LP64
- 403.gcc: -DSPEC_CPU_LP64
- 429.mcf: -DSPEC_CPU_LP64
- 445.gobmk: -DSPEC_CPU_LP64
- 456.hmmer: -DSPEC_CPU_LP64
- 458.sjeng: -DSPEC_CPU_LP64
- 462.libquantum: -DSPEC_CPU_LP64  -DSPEC_CPU_LINUX
- 464.h264ref: -DSPEC_CPU_LP64
- 471.omnetpp: -D_FILE_OFFSET_BITS=64
- 473.astar: -DSPEC_CPU_LP64
- 483.xalancbmk: -D_FILE_OFFSET_BITS=64  -DSPEC_CPU_LINUX

### Peak Optimization Flags

- C benchmarks:

Continued on next page
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Peak Optimization Flags (Continued)

400.perlbench: -xCORE-AVX2 (pass 2) -prof-gen:threads=1 (pass 2) -prof-use (pass 2) -opt-prefetch
-ansi-alias

401.bzip2: -xCORE-AVX2 (pass 2) -prof-gen:threads=1 (pass 2) -prof-use (pass 2) -opt-prefetch
-ansi-alias

403.gcc: basepeak = yes
429.mcf: -xCORE-AVX2 -ipo -O3 -no-prec-div -parallel
-parallel -opt-prefetch -auto-p32

456.hmmer: basepeak = yes

458.sjeng: -xCORE-AVX2 (pass 2) -prof-gen:threads=1 (pass 2) -prof-use (pass 2) -opt-prefetch
-ansi-alias

462.libquantum: basepeak = yes

Peak Other Flags

C++ benchmarks:

471.omnetpp: -xCORE-AVX2 (pass 2) -prof-gen:threads=1 (pass 2) -prof-use (pass 2)
-opt-ra-region-strategy=block
-W1,-z,muldefs -L/sh -lsmartheap

483.xalancbmk: -xCORE-AVX2 -ipo -O3 -no-prec-div -opt-prefetch
-ansi-alias -W1,-z,muldefs -L/sh -lsmartheap

C benchmarks:

403.gcc: -Dalloca=_alloca
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The flags files that were used to format this result can be browsed at:
- [Intel ic16.0-official-linux64.html](http://www.spec.org/cpu2006/flags/Intel-ic16.0-official-linux64.html)
- [Huawei Platform Settings BDW V1.0.html](http://www.spec.org/cpu2006/flags/Huawei-Platform-Settings-BDW-V1.0.html)

You can also download the XML flags sources by saving the following links:
- [Intel ic16.0-official-linux64.xml](http://www.spec.org/cpu2006/flags/Intel-ic16.0-official-linux64.xml)
- [Huawei Platform Settings BDW V1.0.xml](http://www.spec.org/cpu2006/flags/Huawei-Platform-Settings-BDW-V1.0.xml)

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