**SPEC® CINT2006 Result**

**Huawei**

Huawei RH2288H V3 (Intel Xeon E5-2603 v4)

<table>
<thead>
<tr>
<th>Copies</th>
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<tbody>
<tr>
<td>400.perlbench</td>
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<td>483.xalancbmk</td>
</tr>
</tbody>
</table>

**Hardware**

- CPU Name: Intel Xeon E5-2603 v4
- CPU Characteristics:
  - CPU MHz: 1700
  - FPU: Integrated
  - CPU(s) enabled: 12 cores, 2 chips, 6 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: 15 MB I+D on chip per chip
  - Other Cache: None
  - Memory: 256 GB (16 x 16 GB 2Rx4 PC4-2400T-R, running at 1866 MHz)
  - Disk Subsystem: 1 x 2 TB SATA, 7200 RPM

**Software**

- Operating System: Red Hat Enterprise Linux Server release 7.0 (Maipo) 3.10.0-123.el7.x86_64
- Compiler: C/C++: Version 16.0.0.101 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 V10.2

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**SPEC has determined that this result is not in compliance with the SPEC CPU2006 run and reporting rules. Specifically, the memory was not available as required by <a href="http://spec.org/cpu2006/Docs/runrules.html#rule_1.3.2">SPEC CPU rule 1.3.2</a> and the SPEC Open Systems Group policy on <a href="https://www.spec.org/osg/policy.html#AppendixC">general availability</a>.**

Non-Compliant
Huawei RH2288H V3 (Intel Xeon E5-2603 v4)

CPU2006 license: 3175
Test sponsor: Huawei
Tested by: Huawei
Hardware Availability: Mar-2016
Software Availability: Mar-2016

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### Results Table

<table>
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</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 ES mode
Set Patrol Scrub to Disable
Sysinfo program /speccpu/spec16/config/sysinfo.rev6914
$Rev: 6914 $ $Date:: 2014-06-25 #$ e3fbb8667b5a285932ceab81e28219e1
running on localhost.localdomain Wed Mar 2 07:05:12 2016

Continued on next page
SPEC CINT2006 Result

Huawei

Huawei RH2288H V3 (Intel Xeon E5-2603 v4)

SPECint_rate2006 = NC
SPECint_rate_base2006 = NC

CPU2006 license: 3175
Test sponsor: Huawei
Test date: Mar-2016
Tested by: Huawei
Hardware Availability: Mar-2016
Software Availability: Mar-2016

SPEC has determined that this result is not in compliance with the SPEC CPU2006 run and reporting rules. Specifically, the memory was not available as required by SPEC CPU rule 1.3.2 and the SPEC Open Systems Group policy on general availability.

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 E5-2603 v4 @ 1.70GHz
2 "physical id"s (chips)
12 "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 : 6
siblings : 6
physical 0: cores 0 1 2 3 4 5
physical 1: cores 0 1 2 3 4 5
cache size : 15360 KB

From /proc/meminfo
MemTotal: 263571640 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)"
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-upgrade-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 Mar 2 06:58

SPEC is set to: /speccpu/spec16

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Huawei RH2288H V3 (Intel Xeon E5-2603 v4)

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Platform Notes (Continued)

Filesystem     Type  Size  Used  Avail Use% Mounted on
/dev/sda2      ext4  1.6T   11G  1.6T   1% /

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 if there are frequent changes to hardware, firmware, and the "DMTF SMBIOS" standard.

BIOS Insyde Corp. 3.09 02/22/2016
Memory:
8x NO DIMM NO DIMM 3 rank
8x Samsung M393A2G40EB1-CRC 16 GB 1 rank 2400 MHz, configured at 1867 MHz
8x Samsung M393A2G40EB1-CRC 16 GB 2 rank 2400 MHz, configured at 1867 MHz

General Notes

Environment variables set by runspec before the start of the run:
LD_LIBRARY_PATH = "/speccpu/spec16/libs/32:/speccpu/spec16/libs/64:/speccpu/spec16/sh"

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
Filesystem page cache cleared with:
echo 1 > /proc/sys/vm/drop_caches
runspec command invoked through numactl i.e.:
numactl --interleave=all runspec <etc>

Base Compiler Invocation

C benchmarks:
icc -m32 -L/opt/intel/compilers_and_libraries_2016/linux/compiler/lib/ia32_lin

C++ benchmarks:
icpc -m32 -L/opt/intel/compilers_and_libraries_2016/linux/compiler/lib/ia32_lin
Huawei RH2288H V3 (Intel Xeon E5-2603 v4)

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### Base Portability Flags

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<tr>
<th>Benchmark</th>
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<tr>
<td>400.perlbench</td>
<td>-D_FILE_OFFSET_BITS=64 -DSPEC_CPU_LINUX_IA32</td>
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<td>-D_FILE_OFFSET_BITS=64 -DSPEC_CPU_LINUX</td>
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</tr>
<tr>
<td>483.xalancbmk</td>
<td>-D_FILE_OFFSET_BITS=64 -DSPEC_CPU_LINUX</td>
</tr>
</tbody>
</table>

### 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:**

- alloca=_alloca

### Peak Compiler Invocation

C benchmarks (except as noted below):

```bash
icc -m32 -L/opt/intel/compilers_and_libraries_2016/linux/compiler/lib/ia32_lin

400.perlbench: icc -m64
```

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SPEC CINT2006 Result

Huawei

Huawei RH2288H V3 (Intel Xeon E5-2603 v4)

SPECint\_rate2006 = NC
SPECint\_rate\_base2006 = NC

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Peak Compiler Invocation (Continued)

```plaintext
401.bzip2: icc -m64
456.hmmer: icc -m64
458.sjeng: icc -m64
C++ benchmarks:
icpc -m32 -L/opt/intel/compilers_and_libraries_2016/linux/compiler/lib/ia32_lin

Peak Portability Flags```

```plaintext
400.perlbench: -D_FILE_OFFSET_BITS=64 -DSPEC\_CPU\_LP64 -DSPEC\_CPU\_LINUX\_X64
401.bzip2: -D_FILE_OFFSET_BITS=64 -DSPEC\_CPU\_LP64
403.gcc: -D_FILE_OFFSET_BITS=64
429.mcf: -D_FILE_OFFSET_BITS=64
445.gobmk: -D_FILE_OFFSET_BITS=64
456.hmmer: -D_FILE_OFFSET_BITS=64 -DSPEC\_CPU\_LP64
458.sjeng: -D_FILE_OFFSET_BITS=64 -DSPEC\_CPU\_LP64
462.libquantum: -D_FILE_OFFSET_BITS=64 -DSPEC\_CPU\_LINUX
464.h264ref: -D_FILE_OFFSET_BITS=64
471.omnetpp: -D_FILE_OFFSET_BITS=64
473.astar: -D_FILE_OFFSET_BITS=64
483.xalancbmk: -D_FILE_OFFSET_BITS=64 -DSPEC\_CPU\_LINUX
```

Peak Optimization Flags

```plaintext
C benchmarks:
400.perlbench: -xCORE\_AVX2(pass 2) -prof\_gen:threadsafe(pass 1)
-ipo(pass 2) -O3(pass 2) -no-prec\_div(pass 2)
-par-num\_threads=1(pass 1) -prof\_use(pass 2) -auto\_ilp32

401.bzip2: -xCORE\_AVX2(pass 2) -prof\_gen:threadsafe(pass 1)
-ipo(pass 2) -O3(pass 2) -no-prec\_div(pass 2)
-par-num\_threads=1(pass 1) -prof\_use(pass 2) -opt\_prefetch
-auto\_ilp32 -ansi\_alias

403.gcc: -xCORE\_AVX2 -ipo -O3 -no-prec\_div
```

Continued on next page
Huawei

Huawei RH2288H V3 (Intel Xeon E5-2603 v4)

SPEC CINT2006 Result

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Peak Optimization Flags (Continued)

429.mcf: basepeak = yes
445.gobmk: -xCORE-AVX2(pass 2) -prof-gen:threadsafe(pass 1)
           -prof-use(pass 2) -par-num-threads=1(pass 1) -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:threadsafe(pass 1)
           -ipo(pass 2) -O3(pass 2) -no-prec-div(pass 2)
           -par-num-threads=1(pass 1) - prof-use(pass 2) -unroll14
           -auto-ilp32
462.libquantum: basepeak = yes
464.h264ref: -xCORE-AVX2(pass 2) -prof-gen:threadsafe(pass 1)
             -ipo(pass 2) -O3(pass 2) -no-prec-div(pass 2)
             -par-num-threads=1(pass 1) -prof-use(pass 2) -unroll12
             -ansi-alias

C++ benchmarks:
471.omnetpp: -xCORE-AVX2(pass 2) -prof-gen:threadsafe(pass 1)
             -ipo(pass 2) -O3(pass 2) -no-prec-div(pass 2)
             -par-num-threads=1(pass 1) - prof-use(pass 2) -ansi-alias
             -opt-ra-region-strategy=block -fl, -z, muldefs
             -L/sh -llsmartheap
472.astar: basepeak = yes
493.xalancbmk: basepeak = yes

Peak Other Flags

C benchmarks:
403.gcc: -Dalloca=_alloca

Non-Compliant
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The flags files that were used to format this result can be browsed at:
- 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:
- http://www.spec.org/cpu2006/flags/Intel-ic16.0-official-linux64.xml
- http://www.spec.org/cpu2006/flags/Huawei-Platform-Settings-BDW-V1.0.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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