SPEC® CINT2006 Result

Huawei

Huawei CH225 V3 (Intel Xeon E5-2697 v4)

CPU2006 license: 3175
Test sponsor: Huawei
Tested by: Huawei

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.

<table>
<thead>
<tr>
<th>Application</th>
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<tbody>
<tr>
<td>perlbench</td>
<td>NC</td>
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<tr>
<td>bzip2</td>
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<tr>
<td>gcc</td>
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<tr>
<td>mcf</td>
<td>NC</td>
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<tr>
<td>gobmk</td>
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<tr>
<td>hmmer</td>
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<tr>
<td>sjeng</td>
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<td>libquantum</td>
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<tr>
<td>h264ref</td>
<td>NC</td>
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<tr>
<td>omnetpp</td>
<td>NC</td>
</tr>
<tr>
<td>astar</td>
<td>NC</td>
</tr>
<tr>
<td>xalancbmk</td>
<td>NC</td>
</tr>
</tbody>
</table>

Hardware

CPU Name: Intel Xeon E5-2697 v4
CPU Characteristics: Intel Turbo Boost Technology up to 3.60 GHz
CPU MHz: 2300
FPU: Integrated
CPU(s) enabled: 36 cores, 2 chips, 18 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: 45 MB I+D on chip per chip
Other Cache: None
Memory: 256 GB (16 x 16 GB 2Rx4 PC4-2400T-R)
Disk Subsystem: 1 x 500 GB SATA, 7200 RPM
Other Hardware: None

Software

Operating System: Red Hat Enterprise Linux Server release 7.2 (Maipo)
Compiler: C/C++: Version 16.0.0.101 of Intel C++ Studio XE for Linux
Auto Parallel: Yes
File System: xfs
System State: Run level 3 (multi-user)
Base Pointers: 32/64-bit
Peak Pointers: 32/64-bit
Other Software: Microquill SmartHeap V10.2
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Results Table

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</table>

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
BIO 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 localhost.localdomain Thu May 12 10:42:37 2016

This section contains SUT (System Under Test) info as seen by some common utilities. To remove or add to this section, see:
Continued on next page
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Platform Notes (Continued)

http://www.spec.org/cpu2006/Docs/config.html#sysinfo

From /proc/cpuinfo
model name : Intel(R) Xeon(R) CPU E5-2697 v4 @ 2.30GHz
2 "physical id"s (chips)
36 "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 : 18
physical 0: cores 0 1 2 3 4 8 9 10 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: 263567500 kB
HugePages_Total: 0
Hugepagesize: 2048 kB

From /etc/*release* /etc/*version*
os-release:
NAME="Red Hat Enterprise Linux Server"
VERSION="7.2 (Maipo)"
ID="rhel"
ID_LIKE="fedora"
VERSION_ID="7.2"
PRETTY_NAME="Red Hat Enterprise Linux Server 7.2 (Maipo)"
ANSI_COLOR="0;31"
redhat-release: Red Hat Enterprise Linux Server release 7.2 (Maipo)

uname -a:
Linux localhost.localdomain 3.10.0-327.el7.x86_64 #1 SMP Thu Oct 29 17:29:29
EDT 2015 x86_64 x86_64 x86_64 GNU/Linux

run-level 3 May 12 05:57

SPEC is set to: /spec16
Filesystem Type Size Used Avail Use% Mounted on
/dev/sda2 xfs 535G 152G 384G 29% /

Additional information from dmidecode:

Continued on next page
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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 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
8x Samsung M393A2G40EB1-CRC 16 GB 2 rank 2400 MHz

(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 = "36"

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
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Peak Compiler Invocation (Continued)

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

<table>
<thead>
<tr>
<th>Benchmark</th>
<th>Flags</th>
</tr>
</thead>
<tbody>
<tr>
<td>400.perlbench</td>
<td>-D_FILE_OFFSET_BITS=64 -DSPEC_CPU_LINUX_IA32</td>
</tr>
<tr>
<td>401.bzip2</td>
<td>-DSPEC_CPU_LP64</td>
</tr>
<tr>
<td>403.gcc</td>
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Peak Optimization Flags

C benchmarks:

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<td>400.perlbench</td>
<td>-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 -ansi-alias</td>
</tr>
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<td>401.bzip2</td>
<td>-xCORE-AVX2(pass 2) -prof-gen:threadsafe(pass 1) -ipo(pass 2) -O3(pass 2) -no-prec-div -par-num-threads=1(pass 1) -prof-use(pass 2) -auto-ilp32 -opt-prefetch -ansi-alias</td>
</tr>
<tr>
<td>403.gcc</td>
<td>-xCORE-AVX2 -ipo -O3 -no-prec-div -inline-calloc -opt-malloc-options=3 -auto-ilp32</td>
</tr>
<tr>
<td>429.mcf</td>
<td>-xCORE-AVX2 -ipo -O3 -no-prec-div -parallel -opt-prefetch -auto-p32</td>
</tr>
</tbody>
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Continued on next page
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<tr>
<td>Test date:</td>
<td>May-2016</td>
</tr>
<tr>
<td>Hardware Availability:</td>
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## Peak Optimization Flags (Continued)

445.gobmk: 
-xCORE-AVX2(pass 2) 
-prof-gen:threadsafe(pass 1) 
-prof-use(pass 2) 
-par-num-threads=1(pass 1) 
ansi-alias

456.hmmer: basepeak = yes

458.sjeng: 
-xCORE-AVX2(pass 2) 
-prof-gen:threadsafe(pass 1) 
-ipo(pass 2) 
-O3(pass 2) 
-no-prec-div(pass 1) 
-par-num-threads=1(pass 1) 
-prof-use(pass 2) 
-unroll4

462.libquantum: basepeak = yes

464.h264ref: basepeak = yes

### C++ benchmarks:

471.omnetpp: 
-xCORE-AVX2(pass 2) 
-prof-gen:threadsafepass 1) 
-ipo(pass 2) 
-O3(pass 2) 
-no-prec-div(pass 2) 
-par-num-threads=1(pass 1) 
-prof-use(pass 2) 
-opt-ra-region-strategy=block 
ansi-alias 
-Wl,-z,muldefs -L/sh -lsmartheap

473.astar: 
-xCORE-AVX2 
-ipo 
-O3 
-no-prec-div 
-opt-prefetch 
-auto-p32 
-Wl,-z,muldefs -L/sh -lsmartheap64

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

---

## 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/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:

- [http://www.spec.org/cpu2006/flags/Huawei-Platform-Settings-BDW-V1.0.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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