Huawei CH121 V3 (Intel Xeon E5-2698 v4)

SPECint²006 = NC
SPECint_base²006 = NC

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

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

Hardware
CPU Name: Intel Xeon E5-2698 v4
CPU Characteristics: Intel Turbo Boost Technology up to 3.60 GHz
CPU MHz: 2200
FPU: Integrated
CPU(s) enabled: 40 cores, 2 chips, 20 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: 50 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 600GB SAS, 10000 RPM
Other Hardware: None

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: 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
Huawei

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<table>
<thead>
<tr>
<th>Benchmark</th>
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<th>Peak Seconds</th>
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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 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 Snooze Mode to ES mode
Set Patrol Scrub to Disable
Set Hyper-Threading to Disable
Sysinfo program /spec/spec16/config/sysinfo.rev6914
$Rev: 6914 $ $Date:: 2014-06-25 $ e3fbb8667b5a285932ceab81e28219e1
running on localhost.localdomain Mon Nov 17 13:09:46 2014

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

Platform Notes (Continued)

From /proc/cpuinfo

model name : Intel(R) Xeon(R) CPU E5-2698 v4 @ 2.20GHz
2 "physical id"s (chips)
40 "processors"
cores, siblings (Caution: counting these is low and system dependent. The following excerpts from /proc/cpuinfo might not be reliable. Use with caution.)
cpu cores : 20
siblings : 20
physical 0: cores 0 1 2 3 4 8 9 10 11 12 16 17 18 19 20 24 25 26 27 28
physical 1: cores 0 1 2 3 4 8 9 10 11 12 16 17 18 19 20 24 25 26 27 28
cache size : 51200 KB

From /proc/meminfo
MemTotal: 263568392 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)"
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 Nov 17 07:43

SPEC is set to: /spec/spec16
Filesystem Type Size Used Avail Use% Mounted on
/dev/sda2 xfs 549G 12G 538G 3% /

Additional information from dmidecode:
Continued on next page
# SPEC CINT2006 Result

## Huawei

### Huawei CH121 V3 (Intel Xeon E5-2698 v4)

<table>
<thead>
<tr>
<th>SPECint2006</th>
<th>NC</th>
</tr>
</thead>
<tbody>
<tr>
<td>SPECint_base2006</td>
<td>NC</td>
</tr>
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</table>

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

**Test date:** Feb-2016  
**Hardware Availability:** Mar-2016  
**Software Availability:** Mar-2016

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

**BIOS**  
Insysde 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 = "/spec/spec16/libs/32:/spec/spec16/libs/64:/spec/spec16/sh"
- OMP_NUM_THREADS = "40"

**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
- echo never > /sys/kernel/mm/transparent_hugepage/disabled

**runspec command invoked through numactl i.e.**
- numactl --interleave=all runspec <etc>

The Huawei CH121 V3 and Huawei CH222 V3 are electronically equivalent.

The results have been measured on a Huawei CH121 V3 model.

### Base Compiler Invocation

**C benchmarks:**
- icc -m64

**C++ benchmarks:**
- icpc -m64
**Huawei CH121 V3 (Intel Xeon E5-2698 v4)**

**SPECint2006 = NC**

**SPECint_base2006 = NC**

**CPU2006 license:** 3175  
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**Base Portability Flags**

<table>
<thead>
<tr>
<th>Benchmark</th>
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<tr>
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<tr>
<td>483.xalancbmk</td>
<td>-DSPEC_CPU_LP64 -DSPEC_CPU_LINUX</td>
</tr>
</tbody>
</table>

**Base Optimization Flags**

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

**C benchmarks:**

**C++ benchmarks:**

- Wl,-z,muldefs -sh -L/sh -lsmartheap64

**Base Other Flags**

- 403.gcc -Dalloca=_alloca

**Peak Compiler Invocation**

**C benchmarks (except as noted below):**

```bash
icc -m64
```

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

**C++ benchmarks (except as noted below):**

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

Continued on next page

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**Non-Compliant**

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](http://spec.org/cpu2006/Docs/runrules.html#rule_1.3.2) and the SPEC Open Systems Group policy on [general availability](https://www.spec.org/osg/policy.html#AppendixC).
Huawei

Huawei CH121 V3 (Intel Xeon E5-2698 v4)

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

Huawei CH121 V3 (Intel Xeon E5-2698 v4)

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Test date: Feb-2016
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Peak Compiler Invocation (Continued)

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 -DSPEC_CPU_LINUX
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:

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) -opt-prefetch
  -alias

401.bzip2: -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

429.mcf: -xCORE-AVX2 -ipo -O3 -no-prec-div -inline-calloc
  -opt-malloc-options=3 -auto-ilp32

445.gobmk: basepeak = yes

Continued on next page
SPEC CINT2006 Result

Huawei

Huawei CH121 V3 (Intel Xeon E5-2698 v4)

SPECint2006 = NC
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Peak Optimization Flags (Continued)

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 2)
-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: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-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:

493.gcc: -Dalloca=_alloca

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

Standard Performance Evaluation Corporation
info@spec.org
http://www.spec.org/
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For questions about this result, please contact the tester. For other inquiries, please contact webmaster@spec.org.

Tested with SPEC CPU2006 v1.2.
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