



# SPEC® CINT2006 Result

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Huawei

SPECint®\_rate2006 = **NC**

Huawei CH121 V3 (Intel Xeon E5-2620 v4)

SPECint\_rate\_base2006 = **NC**

CPU2006 license: 3175

Test sponsor: Huawei

Tested by: Huawei

Test date: Feb-2016

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**  
[http://spec.org/cpu2006/Docs/runrules.html#rule\\_1.3.2](http://spec.org/cpu2006/Docs/runrules.html#rule_1.3.2)**>SPEC CPU run**  
**up policy on** <https://www.spec.org/osg/policy.html#AppendixC>**>gener**

|                | Copies |
|----------------|--------|
| 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 E5-2620 v4  
 CPU Characteristics: Intel Turbo Boost Technology up to 3.00 GHz  
 CPU MHz: 2100  
 FPU: Integrated  
 CPU(s) enabled: 16 cores, 2 chips, 8 cores/chip, 2 threads/core  
 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: 20 MB I+D on chip per chip  
 Other Cache: None  
 Memory: 256 GB (16 x 16 GB 2Rx4 PC4-2400T-R, running at 2133 MHz)  
 Disk Subsystem: 1 x 2 T SATA, 7200 RPM

Continued on next page

### 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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Other Hardware: None

## Results Table

| Benchmark      | Base   |         |       |         |       |         | Peak  |        |         |       |         |       |         |       |
|----------------|--------|---------|-------|---------|-------|---------|-------|--------|---------|-------|---------|-------|---------|-------|
|                | Copies | Seconds | Ratio | Seconds | Ratio | Seconds | Ratio | Copies | Seconds | Ratio | Seconds | Ratio | Seconds | Ratio |
| 400.perlbench  | 32     | NC      | NC    | NC      | NC    | NC      | NC    | 32     | NC      | NC    | NC      | NC    | NC      | NC    |
| 401.bzip2      | 32     | NC      | NC    | NC      | NC    | NC      | NC    | 32     | NC      | NC    | NC      | NC    | NC      | NC    |
| 403.gcc        | 32     | NC      | NC    | NC      | NC    | NC      | NC    | 32     | NC      | NC    | NC      | NC    | NC      | NC    |
| 429.mcf        | 32     | NC      | NC    | NC      | NC    | NC      | NC    | 32     | NC      | NC    | NC      | NC    | NC      | NC    |
| 445.gobmk      | 32     | NC      | NC    | NC      | NC    | NC      | NC    | 32     | NC      | NC    | NC      | NC    | NC      | NC    |
| 456.hammer     | 32     | NC      | NC    | NC      | NC    | NC      | NC    | 32     | NC      | NC    | NC      | NC    | NC      | NC    |
| 458.sjeng      | 32     | NC      | NC    | NC      | NC    | NC      | NC    | 32     | NC      | NC    | NC      | NC    | NC      | NC    |
| 462.libquantum | 32     | NC      | NC    | NC      | NC    | NC      | NC    | 32     | NC      | NC    | NC      | NC    | NC      | NC    |
| 464.h264ref    | 32     | NC      | NC    | NC      | NC    | NC      | NC    | 32     | NC      | NC    | NC      | NC    | NC      | NC    |
| 471.omnetpp    | 32     | NC      | NC    | NC      | NC    | NC      | NC    | 32     | NC      | NC    | NC      | NC    | NC      | NC    |
| 473.aster      | 32     | NC      | NC    | NC      | NC    | NC      | NC    | 32     | NC      | NC    | NC      | NC    | NC      | NC    |
| 483.xalancbmk  | 32     | NC      | NC    | NC      | NC    | NC      | NC    | 32     | NC      | NC    | NC      | NC    | NC      | NC    |

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 Fri Feb 19 22:51:57 2016

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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 set to 1GB. See [http://spec.org/cpu2006/Docs/runrules.html#rule\\_1.3.2](http://spec.org/cpu2006/Docs/runrules.html#rule_1.3.2) for more information. <https://www.spec.org/osg/policy.html#AppendixC> for general information.

## Platform Notes (Continued)

This section contains SUT (System Under Test) info as seen from the test system. Some common utilities. To remove or add to this section, see: <http://www.spec.org/cpu2006/Docs/config.html#sinfo>

```
From /proc/cpuinfo
model name      : Intel(R) Xeon(R) CPU E5-2620 v4 @ 2.10GHz
 2 "physical id"s (chips)
 32 "processors"
cores, siblings (Caution: containing these values is hw and system dependent. The following excerpts from /proc/cpuinfo might not be reliable. Use with caution.)
cpu cores      : 8
siblings       : 16
physical 0:    : cores 0 1 2 3 4 5 6 7
physical 1:    : cores 0 1 2 3 4 5 6 7
cache size     : 20480 KB
```

```
From /proc/meminfo
MemTotal:      263569280 kB
HugePages_Total: 0
Hugepagesize:  48 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 Feb 19 10:38

SPEC is set to: /speccpu/spec16

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## Platform Notes (Continued)

| Filesystem | Type | Size | Used | Avail | Use% | Mounted on |
|------------|------|------|------|-------|------|------------|
| /dev/sda2  | ext4 | 1.6T | 50G  | 1.5T  | 4%   |            |

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. 7.11 02/14/2016

Memory:

8x NO DIMM NO DIMM 3 rank

8x Samsung M393A2G40EB1 CRC 16 GB 1 rank 2400 MHz, configured at 2133 MHz

8x Samsung M393A2G40EB1 CRC 16 GB 2 rank 2400 MHz, configured at 2133 MHz

(End of data from sysinfo program)

## General Notes

Environment variables set by runspec before the start of the run:

LD\_LIBRARY\_PATH = "/spec/cpu/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 Linux 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>

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 -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



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## Base Portability Flags

```

400.perlbench: -D_FILE_OFFSET_BITS=64 -DSPEC_CPU_LINUX_IA32
401.bzip2: -D_FILE_OFFSET_BITS=64
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
458.sjeng: -D_FILE_OFFSET_BITS=64
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

```

## Base Optimization Flags

```

C benchmarks:
-xCORE-AVX2 -ipo -O3 -m -prec-div -opt-prefetch
-opt-mem-layout-trans=3

C++ benchmarks:
-xCORE-AVX2 -ipo -O3 -m -prec-div -opt-prefetch
-opt-mem-layout-trans=3 -Wl,-z,muldefs -L/sh -lsmarthearp

```

## Base Other Flags

```

C benchmarks:
403.gcc: -Dalloca=_alloca

```

## Peak Compiler Invocation

```

C benchmarks (except as noted below):
icc -m32 -I/opt/intel/compilers_and_libraries_2016/linux/compiler/lib/ia32_lin

400.perlbench: icc -m64

```

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## Peak Compiler Invocation (Continued)

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

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.xalanbmk: -D\_FILE\_OFFSET\_BITS=64 -DSPEC\_CPU\_LINUX

## Peak Optimization Flags

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

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## Peak Optimization Flags (Continued)

429.mcf: basepeak = yes

445.gobmk: -xCORE-AVX2(pass 2) -prof-gen:threadsafe(pass 2) -prof-use(pass 2) -par-num-threads=1(pass 1) -ansi-alias -opt-mem-layout-trans=3

456.hmmcr: -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) -unroll4 -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) -unroll2 -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-mem-layout-trans=3 -region-strategy=block -Wl,-z,muldefs -L/sh -lsmartheap

477.astar: basepeak = yes

482.libquantum: basepeak = yes

## Peak Other Flags

C benchmarks:

403.gcc: -Dalloca=\_alloca



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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-BTW-V1.0.html>

You can also download the XML flags sources by using the following links:

<http://www.spec.org/cpu2006/flags/Intel-ic16.0-official-linux64.xml>

<http://www.spec.org/cpu2006/flags/Huawei-Platform-Settings-BTW-V1.0.xml>

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For questions about this result, please contact the tester.  
For other inquiries, please contact [webmaster@spec.org](mailto:webmaster@spec.org).

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