



# SPEC® CFP2006 Result

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## Inspur Corporation

SPECfp®2006 = 112

### Inspur NF5170M4 (Intel Xeon E5-2630 v4)

SPECfp\_base2006 = 108

CPU2006 license: 3358

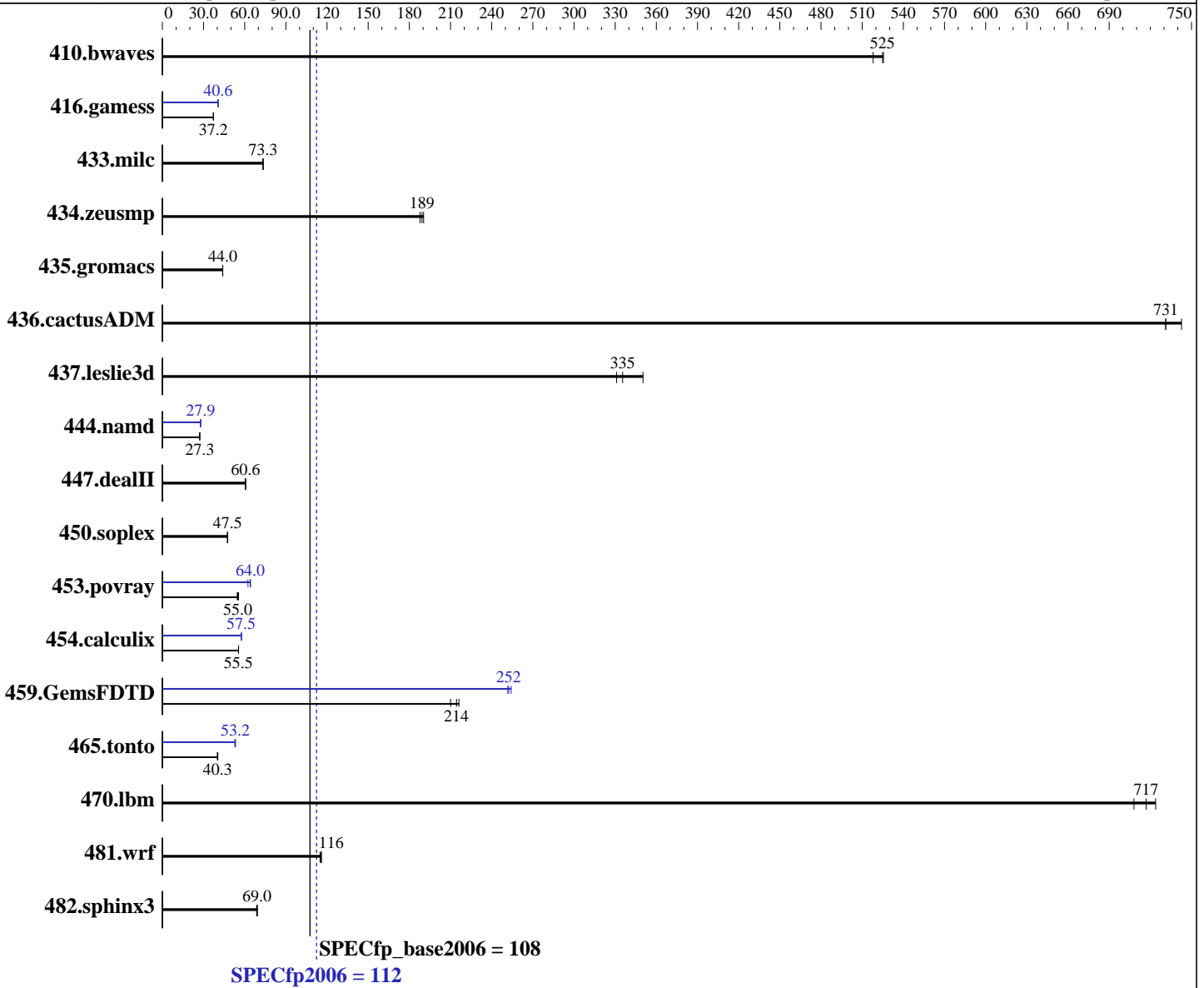
Test date: Jul-2017

Test sponsor: Inspur Corporation

Hardware Availability: Mar-2016

Tested by: Inspur Corporation

Software Availability: Apr-2017



**Hardware**

CPU Name: Intel Xeon E5-2630 v4  
 CPU Characteristics: Intel Turbo Boost Technology up to 3.10 GHz  
 CPU MHz: 2200  
 FPU: Integrated  
 CPU(s) enabled: 20 cores, 2 chips, 10 cores/chip  
 CPU(s) orderable: 1,2 chips  
 Primary Cache: 32 KB I + 32 KB D on chip per core  
 Secondary Cache: 256 KB I+D on chip per core

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**Software**

Operating System: Red Hat Enterprise Linux Server release 7.3 (Maipo)  
 3.10.0-514.el7.x86\_64  
 Compiler: C/C++: Version 17.0.3.191 of Intel C/C++ Compiler for Linux;  
 Fortran: Version 17.0.3.191 of Intel Fortran Compiler for Linux  
 Auto Parallel: Yes  
 File System: xfs

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L3 Cache: 25 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 450 GB SATA SSD  
 Other Hardware: None

System State: Run level 5 (multi-user)  
 Base Pointers: 64-bit  
 Peak Pointers: 32/64-bit  
 Other Software: None

## Results Table

| Benchmark     | Base       |             |             |             |             |             | Peak        |             |             |             |             |             |
|---------------|------------|-------------|-------------|-------------|-------------|-------------|-------------|-------------|-------------|-------------|-------------|-------------|
|               | Seconds    | Ratio       | Seconds     | Ratio       | Seconds     | Ratio       | Seconds     | Ratio       | Seconds     | Ratio       | Seconds     | Ratio       |
| 410.bwaves    | 25.9       | 526         | <b>25.9</b> | <b>525</b>  | 26.2        | 518         | 25.9        | 526         | <b>25.9</b> | <b>525</b>  | 26.2        | 518         |
| 416.gamess    | <b>527</b> | <b>37.2</b> | 527         | 37.2        | 525         | 37.3        | 482         | 40.7        | 483         | 40.6        | <b>482</b>  | <b>40.6</b> |
| 433.milc      | <b>125</b> | <b>73.3</b> | 125         | 73.3        | 125         | 73.5        | <b>125</b>  | <b>73.3</b> | 125         | 73.3        | 125         | 73.5        |
| 434.zeusmp    | 48.5       | 188         | 47.8        | 190         | <b>48.1</b> | <b>189</b>  | 48.5        | 188         | 47.8        | 190         | <b>48.1</b> | <b>189</b>  |
| 435.gromacs   | 162        | 44.0        | 162         | 44.0        | <b>162</b>  | <b>44.0</b> | 162         | 44.0        | 162         | 44.0        | <b>162</b>  | <b>44.0</b> |
| 436.cactusADM | 16.1       | 743         | <b>16.3</b> | <b>731</b>  | 16.3        | 731         | 16.1        | 743         | <b>16.3</b> | <b>731</b>  | 16.3        | 731         |
| 437.leslie3d  | 28.4       | 331         | <b>28.0</b> | <b>335</b>  | 26.8        | 350         | 28.4        | 331         | <b>28.0</b> | <b>335</b>  | 26.8        | 350         |
| 444.namd      | 294        | 27.2        | <b>294</b>  | <b>27.3</b> | 294         | 27.3        | 288         | 27.9        | 288         | 27.9        | <b>288</b>  | <b>27.9</b> |
| 447.dealII    | <b>189</b> | <b>60.6</b> | 189         | 60.7        | 189         | 60.6        | <b>189</b>  | <b>60.6</b> | 189         | 60.7        | 189         | 60.6        |
| 450.soplex    | 175        | 47.6        | 176         | 47.5        | <b>176</b>  | <b>47.5</b> | 175         | 47.6        | 176         | 47.5        | <b>176</b>  | <b>47.5</b> |
| 453.povray    | 97.5       | 54.6        | 95.8        | 55.5        | <b>96.8</b> | <b>55.0</b> | <b>83.1</b> | <b>64.0</b> | 85.3        | 62.4        | 82.8        | 64.3        |
| 454.calculix  | 148        | 55.6        | 149         | 55.5        | <b>149</b>  | <b>55.5</b> | 143         | 57.7        | 143         | 57.5        | <b>143</b>  | <b>57.5</b> |
| 459.GemsFDTD  | 49.1       | 216         | 50.5        | 210         | <b>49.5</b> | <b>214</b>  | <b>42.0</b> | <b>252</b>  | 41.7        | 254         | 42.1        | 252         |
| 465.tonto     | <b>244</b> | <b>40.3</b> | 243         | 40.4        | 246         | 40.0        | 185         | 53.2        | <b>185</b>  | <b>53.2</b> | 186         | 52.8        |
| 470.lbm       | 19.4       | 708         | <b>19.2</b> | <b>717</b>  | 19.0        | 724         | 19.4        | 708         | <b>19.2</b> | <b>717</b>  | 19.0        | 724         |
| 481.wrf       | 97.2       | 115         | <b>96.5</b> | <b>116</b>  | 96.4        | 116         | 97.2        | 115         | <b>96.5</b> | <b>116</b>  | 96.4        | 116         |
| 482.sphinx3   | 284        | 68.7        | <b>282</b>  | <b>69.0</b> | 281         | 69.3        | 284         | 68.7        | <b>282</b>  | <b>69.0</b> | 281         | 69.3        |

Results appear in the order in which they were run. Bold underlined text indicates a median measurement.

## Operating System Notes

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

## Platform Notes

BIOS and OS configuration:  
 SCALING\_GOVERNOR set to Performance  
 Hardware Prefetch set to Disable  
 VT Support set to Disable  
 C1E Support set to Disable  
 Hyper-Threading set to Disable  
 Sysinfo program /home/CPU2006/config/sysinfo.rev6993  
 Revision 6993 of 2015-11-06 (b5e8d4b4eb51ed28d7f98696cbe290c1)  
 running on localhost.localdomain Thu Jul 27 12:18:14 2017

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## 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 E5-2630 v4 @ 2.20GHz
 2 "physical id"s (chips)
 20 "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 : 10
  siblings  : 10
  physical 0: cores 0 1 2 3 4 8 9 10 11 12
  physical 1: cores 0 1 2 3 4 8 9 10 11 12
cache size : 25600 KB

```

```

From /proc/meminfo
MemTotal:      263853716 kB
HugePages_Total:    0
Hugepagesize:    2048 kB

```

```

From /etc/*release* /etc/*version*
os-release:
NAME="Red Hat Enterprise Linux Server"
VERSION="7.3 (Maipo)"
ID="rhel"
ID_LIKE="fedora"
VERSION_ID="7.3"
PRETTY_NAME="Red Hat Enterprise Linux Server 7.3 (Maipo)"
ANSI_COLOR="0;31"
CPE_NAME="cpe:/o:redhat:enterprise_linux:7.3:GA:server"
redhat-release: Red Hat Enterprise Linux Server release 7.3 (Maipo)
system-release: Red Hat Enterprise Linux Server release 7.3 (Maipo)
system-release-cpe: cpe:/o:redhat:enterprise_linux:7.3:ga:server

```

```

uname -a:
Linux localhost.localdomain 3.10.0-514.el7.x86_64 #1 SMP Wed Oct 19 11:24:13
EDT 2016 x86_64 x86_64 x86_64 GNU/Linux

```

run-level 5 Jul 27 06:58

```

SPEC is set to: /home/CPU2006
Filesystem      Type      Size  Used Avail Use% Mounted on
/dev/mapper/rhel-home xfs      392G  11G  382G   3% /home

```

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.

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## Platform Notes (Continued)

BIOS American Megatrends Inc. 4.1.11 09/07/2016

Memory:

8x NO DIMM NO DIMM

16x Samsung M393A2K43BB1-CNC 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:

KMP\_AFFINITY = "granularity=fine,compact"

LD\_LIBRARY\_PATH = "/home/CPU2006/lib/ia32:/home/CPU2006/lib/intel64:/home/CPU2006/sh10.2"

OMP\_NUM\_THREADS = "20"

Binaries compiled on a system with 1x Intel Core i7-4790 CPU + 32GB RAM memory using Redhat Enterprise Linux 7.2

Transparent Huge Pages enabled by default.

Filesystem page cache cleared with:

shell invocation of 'sync; echo 3 > /proc/sys/vm/drop\_caches' prior to run

## Base Compiler Invocation

C benchmarks:

icc -m64

C++ benchmarks:

icpc -m64

Fortran benchmarks:

ifort -m64

Benchmarks using both Fortran and C:

icc -m64 ifort -m64

## Base Portability Flags

410.bwaves: -DSPEC\_CPU\_LP64

416.gamess: -DSPEC\_CPU\_LP64

433.milc: -DSPEC\_CPU\_LP64

434.zeusmp: -DSPEC\_CPU\_LP64

435.gromacs: -DSPEC\_CPU\_LP64 -nofor\_main

436.cactusADM: -DSPEC\_CPU\_LP64 -nofor\_main

437.leslie3d: -DSPEC\_CPU\_LP64

444.namd: -DSPEC\_CPU\_LP64

447.dealII: -DSPEC\_CPU\_LP64

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## Base Portability Flags (Continued)

```

450.soplex: -DSPEC_CPU_LP64
453.povray: -DSPEC_CPU_LP64
454.calculix: -DSPEC_CPU_LP64 -nofor_main
459.GemsFDTD: -DSPEC_CPU_LP64
465.tonto: -DSPEC_CPU_LP64
470.lbm: -DSPEC_CPU_LP64
481.wrf: -DSPEC_CPU_LP64 -DSPEC_CPU_CASE_FLAG -DSPEC_CPU_LINUX
482.sphinx3: -DSPEC_CPU_LP64

```

## Base Optimization Flags

C benchmarks:  
-xCORE-AVX2 -ipo -O3 -no-prec-div -parallel -qopt-prefetch

C++ benchmarks:  
-xCORE-AVX2 -ipo -O3 -no-prec-div -qopt-prefetch

Fortran benchmarks:  
-xCORE-AVX2 -ipo -O3 -no-prec-div -parallel -qopt-prefetch

Benchmarks using both Fortran and C:  
-xCORE-AVX2 -ipo -O3 -no-prec-div -parallel -qopt-prefetch

## Peak Compiler Invocation

C benchmarks:  
icc -m64

C++ benchmarks:  
icpc -m64

Fortran benchmarks:  
ifort -m64

Benchmarks using both Fortran and C:  
icc -m64 ifort -m64

## Peak Portability Flags

Same as Base Portability Flags



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## Peak Optimization Flags

### C benchmarks:

433.milc: basepeak = yes

470.lbm: basepeak = yes

482.sphinx3: basepeak = yes

### C++ benchmarks:

444.namd: -prof-gen(pass 1) -prof-use(pass 2) -xCORE-AVX2(pass 2)  
-par-num-threads=1(pass 1) -ipo(pass 2) -O3(pass 2)  
-no-prec-div(pass 2) -fno-alias -auto-ilp32

447.dealII: basepeak = yes

450.soplex: basepeak = yes

453.povray: -prof-gen(pass 1) -prof-use(pass 2) -xCORE-AVX2(pass 2)  
-par-num-threads=1(pass 1) -ipo(pass 2) -O3(pass 2)  
-no-prec-div(pass 2) -unroll4 -ansi-alias

### Fortran benchmarks:

410.bwaves: basepeak = yes

416.gamess: -prof-gen(pass 1) -prof-use(pass 2) -xCORE-AVX2(pass 2)  
-par-num-threads=1(pass 1) -ipo(pass 2) -O3(pass 2)  
-no-prec-div(pass 2) -unroll2 -inline-level=0 -scalar-rep-

434.zeusmp: basepeak = yes

437.leslie3d: basepeak = yes

459.GemsFDTD: -prof-gen(pass 1) -prof-use(pass 2) -xCORE-AVX2(pass 2)  
-par-num-threads=1(pass 1) -ipo(pass 2) -O3(pass 2)  
-no-prec-div(pass 2) -unroll2 -inline-level=0  
-qopt-prefetch -parallel

465.tonto: -prof-gen(pass 1) -prof-use(pass 2) -xCORE-AVX2(pass 2)  
-par-num-threads=1(pass 1) -ipo(pass 2) -O3(pass 2)  
-no-prec-div(pass 2) -inline-calloc -qopt-malloc-options=3  
-auto -unroll4

### Benchmarks using both Fortran and C:

435.gromacs: basepeak = yes

436.cactusADM: basepeak = yes

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## Peak Optimization Flags (Continued)

454.calculix: -xCORE-AVX2 -ipo -O3 -no-prec-div -auto-ilp32

481.wrf: basepeak = yes

The flags files that were used to format this result can be browsed at

<http://www.spec.org/cpu2006/flags/Intel-ic17.0-official-linux64-revF.html>

<http://www.spec.org/cpu2006/flags/Inspur-Platform-Settings-V1.0-HSW.html>

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

<http://www.spec.org/cpu2006/flags/Intel-ic17.0-official-linux64-revF.xml>

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

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