SPEC® CFP2006 Result
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Inspur Corporation

$SPECfp^{®}2006 = 112$

Inspur NF5280M4 (Intel Xeon E5-2620 v4)

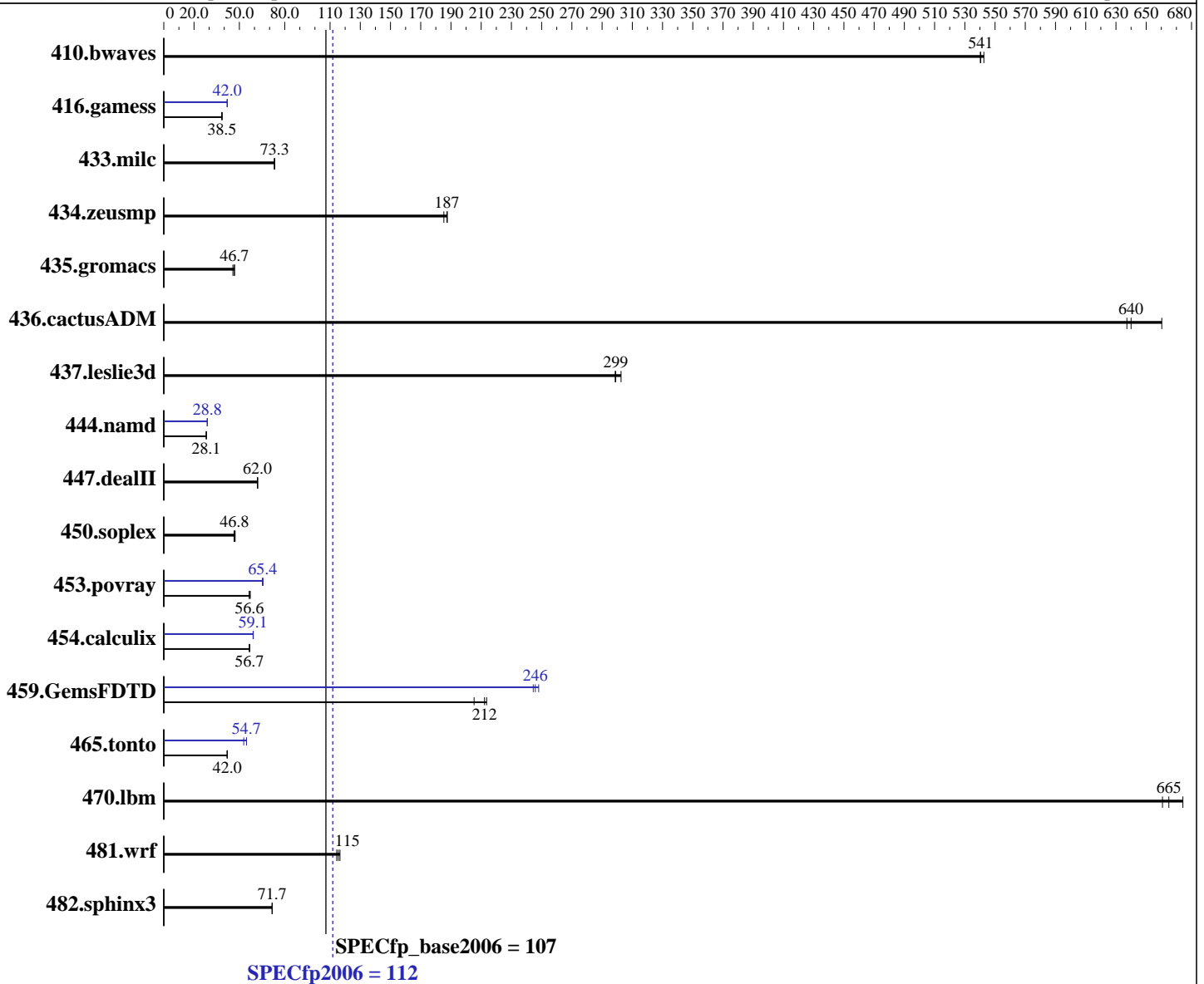$SPECfp\_base2006 = 107$

CPU2006 license: 3358
Test sponsor: Inspur Corporation
Tested by: Inspur Corporation

Test date: Jul-2017
Hardware Availability: Apr-2016
Software Availability: Apr-2017

SPECfp_base2006 = 107

SPECfp2006 = 112

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
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

Continued on next page

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:	20 MB I+D on chip per chip	System State:	Run level 5 (multi-user)
Other Cache:	None	Base Pointers:	64-bit
Memory:	256 GB (16 x 16 GB 2Rx4 PC4-2400T-R, running at 2133 MHz)	Peak Pointers:	32/64-bit
		Other Software:	None
Disk Subsystem:	1 x 900 GB SATA SSD		
Other Hardware:	None		

Results Table

Benchmark	Base						Peak					
	Seconds	Ratio	Seconds	Ratio	Seconds	Ratio	Seconds	Ratio	Seconds	Ratio	Seconds	Ratio
410.bwaves	**25.1**	**541**	25.0	543	25.2	540	**25.1**	**541**	25.0	543	25.2	540
416.gamess	**509**	**38.5**	507	38.6	510	38.4	467	41.9	**466**	**42.0**	466	42.0
433.milc	**125**	**73.3**	125	73.4	126	73.1	**125**	**73.3**	125	73.4	126	73.1
434.zeusmp	**48.6**	**187**	49.1	185	48.5	188	**48.6**	**187**	49.1	185	48.5	188
435.gromacs	156	45.7	153	46.8	**153**	**46.7**	156	45.7	153	46.8	**153**	**46.7**
436.cactusADM	18.1	660	18.8	637	**18.7**	**640**	18.1	660	18.8	637	**18.7**	**640**
437.leslie3d	31.1	303	**31.4**	**299**	31.5	299	31.1	303	**31.4**	**299**	31.5	299
444.namd	285	28.1	**285**	**28.1**	285	28.1	279	28.8	**279**	**28.8**	279	28.8
447.dealII	184	62.1	**185**	**62.0**	185	62.0	184	62.1	**185**	**62.0**	185	62.0
450.soplex	179	46.5	177	47.2	**178**	**46.8**	179	46.5	177	47.2	**178**	**46.8**
453.povray	**94.0**	**56.6**	93.0	57.2	94.0	56.6	81.5	65.3	**81.3**	**65.4**	81.0	65.6
454.calculix	145	56.8	**145**	**56.7**	146	56.6	**140**	**59.1**	140	59.1	139	59.2
459.GemsFDTD	49.7	214	**50.0**	**212**	51.7	205	43.4	244	**43.2**	**246**	42.8	248
465.tonto	235	41.8	234	42.0	**234**	**42.0**	186	52.9	180	54.7	**180**	**54.7**
470.lbm	20.4	674	20.8	661	**20.7**	**665**	20.4	674	20.8	661	**20.7**	**665**
481.wrf	97.6	114	95.8	117	**96.7**	**115**	97.6	114	95.8	117	**96.7**	**115**
482.sphinx3	**272**	**71.7**	272	71.6	272	71.7	**272**	**71.7**	272	71.6	272	71.7

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 Wed Jul 26 07:32:35 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 E5-2620 v4 @ 2.10GHz
      2 "physical id"s (chips)
      16 "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 : 8
      siblings  : 8
      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:       263852996 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 25 22:32

SPEC is set to: /home/CPU2006
   Filesystem              Type   Size   Used Avail Use% Mounted on
   /dev/mapper/rhel-home xfs    877G    97G  780G  12% /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 = "16"

 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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