SPEC® CFP2006 Result
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Huawei

Huawei 5288 V3 (Intel Xeon E5-2640 v3)

$SPECfp^{®}2006 =$ 107

$SPECfp\_base2006 =$ 102

CPU2006 license: 3175	**Test date:** Aug-2015
Test sponsor: Huawei	**Hardware Availability:** Sep-2014
Tested by: Huawei	**Software Availability:** Sep-2014

410.bwaves 452
416.gamess 43.3 / 37.5
433.milc 74.4 / 73.7
434.zeusmp 197
435.gromacs 42.2
436.cactusADM 661
437.leslie3d 261
444.namd 29.5 / 28.7
447.dealII 56.9
450.soplex 45.0
453.povray 64.6 / 57.7
454.calculix 60.6 / 54.0
459.GemsFDTD 235 / 209
465.tonto 54.5 / 39.9
470.lbm 571
481.wrf 91.1
482.sphinx3 76.0
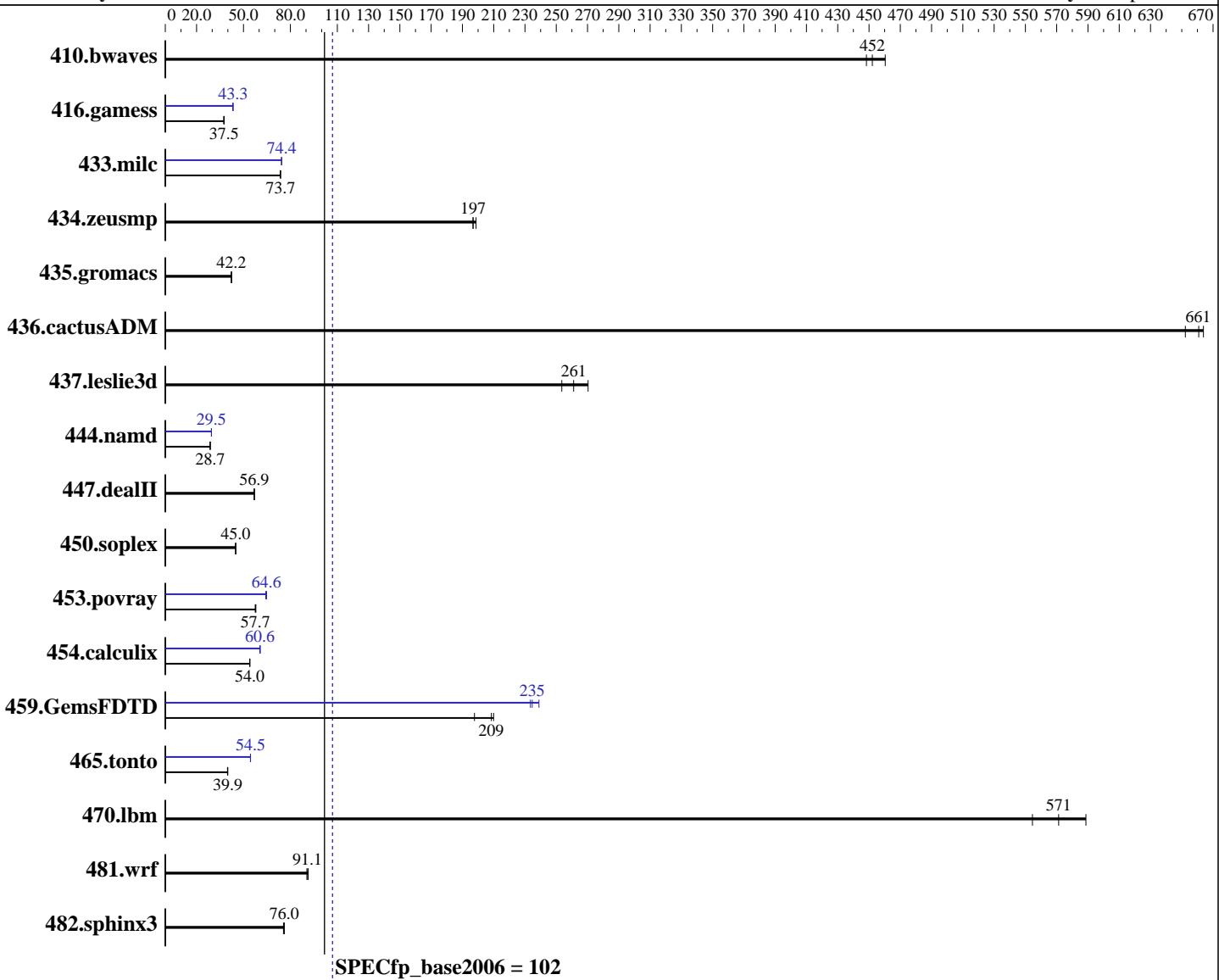
SPECfp_base2006 = 102
SPECfp2006 = 107

Hardware

CPU Name:	Intel Xeon E5-2640 v3
CPU Characteristics:	Intel Turbo Boost Technology up to 3.40 GHz
CPU MHz:	2600
FPU:	Integrated
CPU(s) enabled:	16 cores, 2 chips, 8 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

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Software

Operating System:	Red Hat Enterprise Linux Server release 7.0 (Maipo)
	3.10.0-123.el7.x86_64
Compiler:	C/C++: Version 15.0.0.090 of Intel C++ Studio XE for Linux;
	Fortran: Version 15.0.0.090 of Intel Fortran Studio XE for Linux
Auto Parallel:	Yes
File System:	ext4

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L3 Cache:	20 MB I+D on chip per chip	System State:	Run level 3 (multi-user)
Other Cache:	None	Base Pointers:	64-bit
Memory:	256 GB (16 x 16 GB 2Rx4 PC4-2133P-R, running at 1866 MHz)	Peak Pointers:	32/64-bit
		Other Software:	None
Disk Subsystem:	1 x 500 GB SATA, 7200 RPM		
Other Hardware:	None		

Results Table

	Base						Peak					
Benchmark	**Seconds**	**Ratio**	**Seconds**	**Ratio**	**Seconds**	**Ratio**	**Seconds**	**Ratio**	**Seconds**	**Ratio**	**Seconds**	**Ratio**
410.bwaves	30.3	448	**30.1**	**452**	29.5	460	30.3	448	**30.1**	**452**	29.5	460
416.gamess	522	37.5	**522**	**37.5**	522	37.5	454	43.1	451	43.4	**452**	**43.3**
433.milc	125	73.7	**125**	**73.7**	125	73.5	**123**	**74.4**	123	74.4	124	74.3
434.zeusmp	46.2	197	45.8	199	**46.2**	**197**	46.2	197	45.8	199	**46.2**	**197**
435.gromacs	**169**	**42.2**	169	42.4	169	42.2	**169**	**42.2**	169	42.4	169	42.2
436.cactusADM	18.3	652	**18.1**	**661**	18.0	664	18.3	652	**18.1**	**661**	18.0	664
437.leslie3d	37.1	254	34.8	270	**36.0**	**261**	37.1	254	34.8	270	**36.0**	**261**
444.namd	279	28.7	280	28.7	**279**	**28.7**	272	29.5	**272**	**29.5**	272	29.5
447.dealII	201	56.9	**201**	**56.9**	201	56.9	201	56.9	**201**	**56.9**	201	56.9
450.soplex	186	44.9	**185**	**45.0**	185	45.0	186	44.9	**185**	**45.0**	185	45.0
453.povray	92.5	57.5	**92.2**	**57.7**	91.9	57.9	82.8	64.2	82.2	64.7	**82.3**	**64.6**
454.calculix	153	54.1	**153**	**54.0**	153	54.0	136	60.6	136	60.6	**136**	**60.6**
459.GemsFDTD	**50.9**	**209**	53.7	198	50.5	210	44.4	239	45.4	233	**45.2**	**235**
465.tonto	246	40.0	**247**	**39.9**	247	39.8	181	54.4	**181**	**54.5**	181	54.5
470.lbm	**24.1**	**571**	24.8	554	23.3	589	**24.1**	**571**	24.8	554	23.3	589
481.wrf	122	91.4	123	90.5	**123**	**91.1**	122	91.4	123	90.5	**123**	**91.1**
482.sphinx3	258	75.6	**256**	**76.0**	256	76.0	258	75.6	**256**	**76.0**	256	76.0

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 configuration:
Set Power Efficiency Mode to Custom
Set Snoop Mode to ES mode
Set Patrol Scrub to Disable
Set Intel Hyper-Threading to Disable
Sysinfo program /spec15/config/sysinfo.rev6914
$Rev: 6914 $ $Date:: 2014-06-25 #$ e3fbb8667b5a285932ceab81e28219e1
running on localhost.localdomain Tue Aug  4 14:33:59 2015
```

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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 E5-2640 v3 @ 2.60GHz
      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:       263579376 kB
   HugePages_Total:        0
   Hugepagesize:        2048 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 Aug 4 14:29

SPEC is set to: /spec15
   Filesystem     Type  Size  Used Avail Use% Mounted on
   /dev/sda1      ext4  443G   89G  332G  22% /
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 Insyde Corp. 1.52 06/27/2015
   Memory:
    8x Micron 36ASF2G72PZ-2G1A2 16 GB 1 rank 2133 MHz, configured at 1867 MHz
    8x Micron 36ASF2G72PZ-2G1A2 16 GB 2 rank 2133 MHz, configured at 1867 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 = "/spec15/libs/32:/spec15/libs/64:/spec15/sh"
OMP_NUM_THREADS = "16"

 Binaries compiled on a system with 1x Core i5-4670K CPU + 16GB
 memory using RedHat EL 7.0
 Transparent Huge Pages enabled with:
 echo always > /sys/kernel/mm/transparent_hugepage/enabled
 runspec command invoked through numactl i.e.:
 numactl --interleave=all runspec <etc>
```

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 -opt-prefetch
    -ansi-alias
```

C++ benchmarks:
```
    -xCORE-AVX2 -ipo -O3 -no-prec-div -opt-prefetch -ansi-alias
```

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

Benchmarks using both Fortran and C:
```
    -xCORE-AVX2 -ipo -O3 -no-prec-div -parallel -opt-prefetch
    -ansi-alias
```

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: -xCORE-AVX2(pass 2) -prof-gen(pass 1) -ipo(pass 2)
> -O3(pass 2) -no-prec-div(pass 2) -prof-use(pass 2)
> -auto-ilp32 -ansi-alias

> 470.lbm: basepeak = yes

> 482.sphinx3: basepeak = yes

C++ benchmarks:

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

> 447.dealII: basepeak = yes

> 450.soplex: basepeak = yes

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

Fortran benchmarks:

> 410.bwaves: basepeak = yes

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

> 434.zeusmp: basepeak = yes

> 437.leslie3d: basepeak = yes

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

> 465.tonto: -xCORE-AVX2(pass 2) -prof-gen(pass 1) -ipo(pass 2)
> -O3(pass 2) -no-prec-div(pass 2) -prof-use(pass 2)
> -inline-calloc -opt-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 -ansi-alias

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-ic15.0-official-linux64.html
http://www.spec.org/cpu2006/flags/Huawei-Platform-Settings-HASWELL-V1.4.html

You can also download the XML flags sources by saving the following links:
http://www.spec.org/cpu2006/flags/Intel-ic15.0-official-linux64.xml
http://www.spec.org/cpu2006/flags/Huawei-Platform-Settings-HASWELL-V1.4.xml

For questions about this result, please contact the tester.
For other inquiries, please contact webmaster@spec.org.

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