SPEC® CFP2006 Result
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Huawei

Huawei RH1288 V3 (Intel Xeon E5-2658 v3)

$SPECfp^{®}2006 =$ 100

$SPECfp\_base2006 =$ 96.4

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

410.bwaves 548
416.gamess 34.1 / 31.0
433.milc 61.7 / 61.1
434.zeusmp 195
435.gromacs 37.2
436.cactusADM 744
437.leslie3d 363
444.namd 25.2 / 24.5
447.dealII 46.8
450.soplex 39.4
453.povray 49.6 / 43.9
454.calculix 48.1 / 44.6
459.GemsFDTD 253 / 223
465.tonto 41.7 / 35.0
470.lbm 694
481.wrf 83.1
482.sphinx3 66.4

SPECfp_base2006 = 96.4

SPECfp2006 = 100
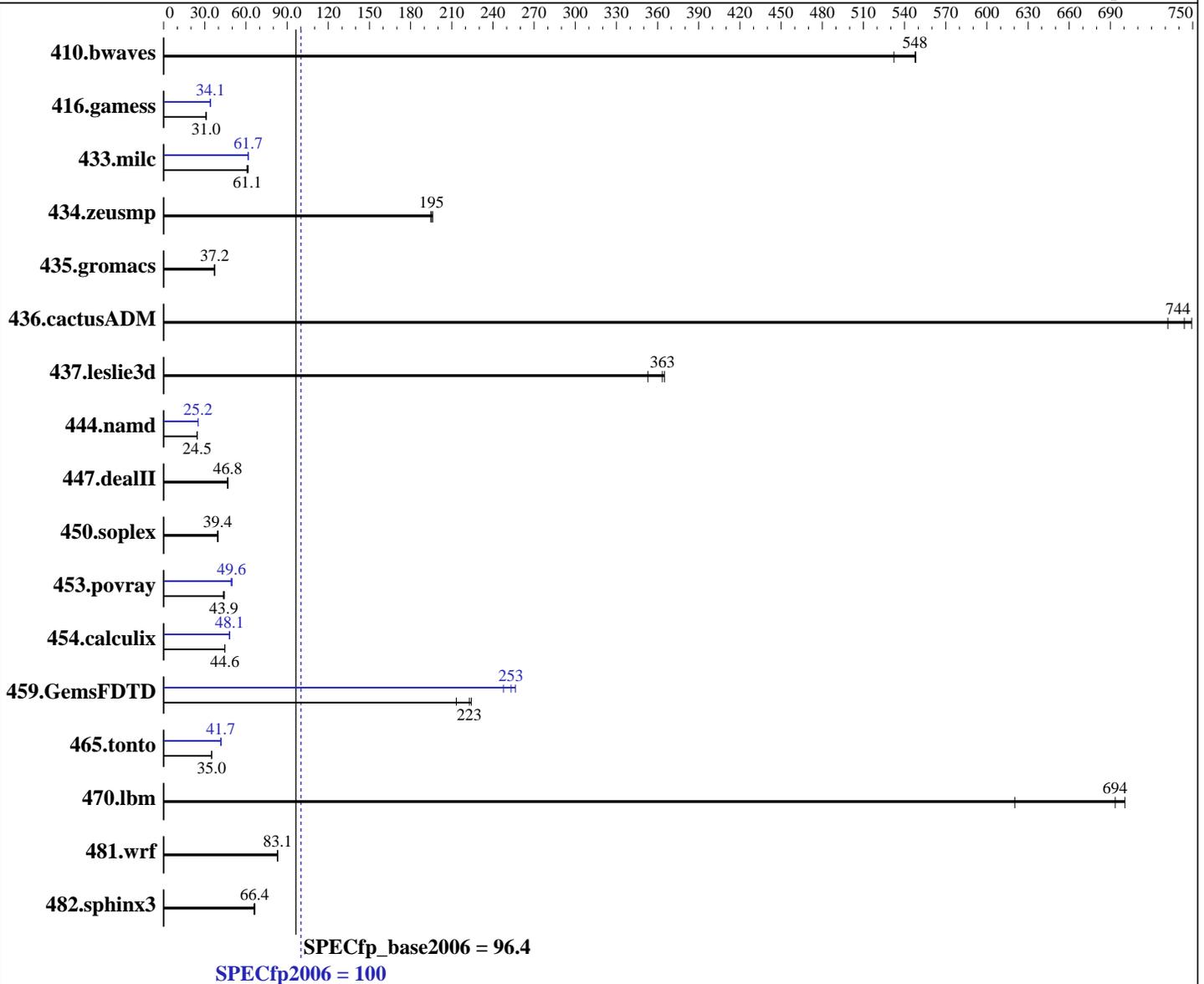
Hardware

CPU Name:	Intel Xeon E5-2658 v3
CPU Characteristics:	Intel Turbo Boost Technology up to 2.90 GHz
CPU MHz:	2200
FPU:	Integrated
CPU(s) enabled:	24 cores, 2 chips, 12 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

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 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:	30 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)	Peak Pointers:	32/64-bit
Disk Subsystem:	1 x 500 GB SATA, 7200 RPM	Other Software:	None
Other Hardware:	None		

Results Table

Benchmark	Base						Peak					
	Seconds	Ratio	Seconds	Ratio	Seconds	Ratio	Seconds	Ratio	Seconds	Ratio	Seconds	Ratio
410.bwaves	24.8	548	**24.8**	**548**	25.5	532	24.8	548	**24.8**	**548**	25.5	532
416.gamess	633	31.0	**632**	**31.0**	631	31.0	574	34.1	573	34.2	**574**	**34.1**
433.milc	**150**	**61.1**	149	61.7	151	60.8	**149**	**61.7**	149	61.8	149	61.4
434.zeusmp	46.7	195	**46.6**	**195**	46.4	196	46.7	195	**46.6**	**195**	46.4	196
435.gromacs	**192**	**37.2**	193	37.0	191	37.4	**192**	**37.2**	193	37.0	191	37.4
436.cactusADM	**16.1**	**744**	15.9	749	16.3	732	**16.1**	**744**	15.9	749	16.3	732
437.leslie3d	25.7	365	26.6	353	**25.9**	**363**	25.7	365	26.6	353	**25.9**	**363**
444.namd	328	24.5	**327**	**24.5**	327	24.5	319	25.2	319	25.2	**319**	**25.2**
447.dealII	**245**	**46.8**	245	46.7	245	46.8	**245**	**46.8**	245	46.7	245	46.8
450.soplex	**211**	**39.4**	209	39.8	212	39.3	**211**	**39.4**	209	39.8	212	39.3
453.povray	120	44.3	122	43.6	**121**	**43.9**	107	49.9	**107**	**49.6**	108	49.2
454.calculix	**185**	**44.6**	185	44.7	185	44.6	172	48.1	**172**	**48.1**	172	48.1
459.GemsFDTD	47.3	224	**47.6**	**223**	49.7	213	**41.9**	**253**	41.4	256	42.8	248
465.tonto	**281**	**35.0**	283	34.8	281	35.1	236	41.7	235	41.8	**236**	**41.7**
470.lbm	19.6	701	**19.8**	**694**	22.2	620	19.6	701	**19.8**	**694**	22.2	620
481.wrf	**134**	**83.1**	134	83.1	135	82.8	**134**	**83.1**	134	83.1	135	82.8
482.sphinx3	293	66.6	296	65.9	**293**	**66.4**	293	66.6	296	65.9	**293**	**66.4**

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 HS mode
Set Intel Hyper-threading Technology to Disable
Sysinfo program /spec15/config/sysinfo.rev6914
$Rev: 6914 $ $Date:: 2014-06-25 #$ e3fbb8667b5a285932ceab81e28219e1
running on localhost.localdomain Mon Mar 16 21:48:20 2015

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

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Hardware Availability: Feb-2015
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Platform Notes (Continued)

```
   http://www.spec.org/cpu2006/Docs/config.html#sysinfo

From /proc/cpuinfo
   model name : Intel(R) Xeon(R) CPU E5-2658 v3 @ 2.20GHz
      2 "physical id"s (chips)
      24 "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 : 12
      siblings  : 12
      physical 0: cores 0 1 2 3 4 5 8 9 10 11 12 13
      physical 1: cores 0 1 2 3 4 5 8 9 10 11 12 13
   cache size : 30720 KB

From /proc/meminfo
   MemTotal:       263720560 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 Mar 16 05:20

SPEC is set to: /spec15
   Filesystem     Type  Size  Used Avail Use% Mounted on
   /dev/sda1      ext4  458G   38G  397G   9% /
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. 1.17 09/03/2014
   Memory:
```

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Platform Notes (Continued)

```
    8x Micron 36ASF2G72PZ-2G1A2 16 GB 1 rank 2133 MHz
    8x Micron 36ASF2G72PZ-2G1A2 16 GB 2 rank 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,1,0"
LD_LIBRARY_PATH = "/spec15/libs/32:/spec15/libs/64:/spec15/sh"
OMP_NUM_THREADS = "24"

 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
    450.soplex: -DSPEC_CPU_LP64
    453.povray: -DSPEC_CPU_LP64
```

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Base Portability Flags (Continued)

```
    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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Software Availability: Sep-2014

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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