SPEC® CFP2006 Result
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Huawei

Huawei RH2285 V3 (Intel Xeon E5-2609 v3)

$SPECfp®\_rate2006 = 265$

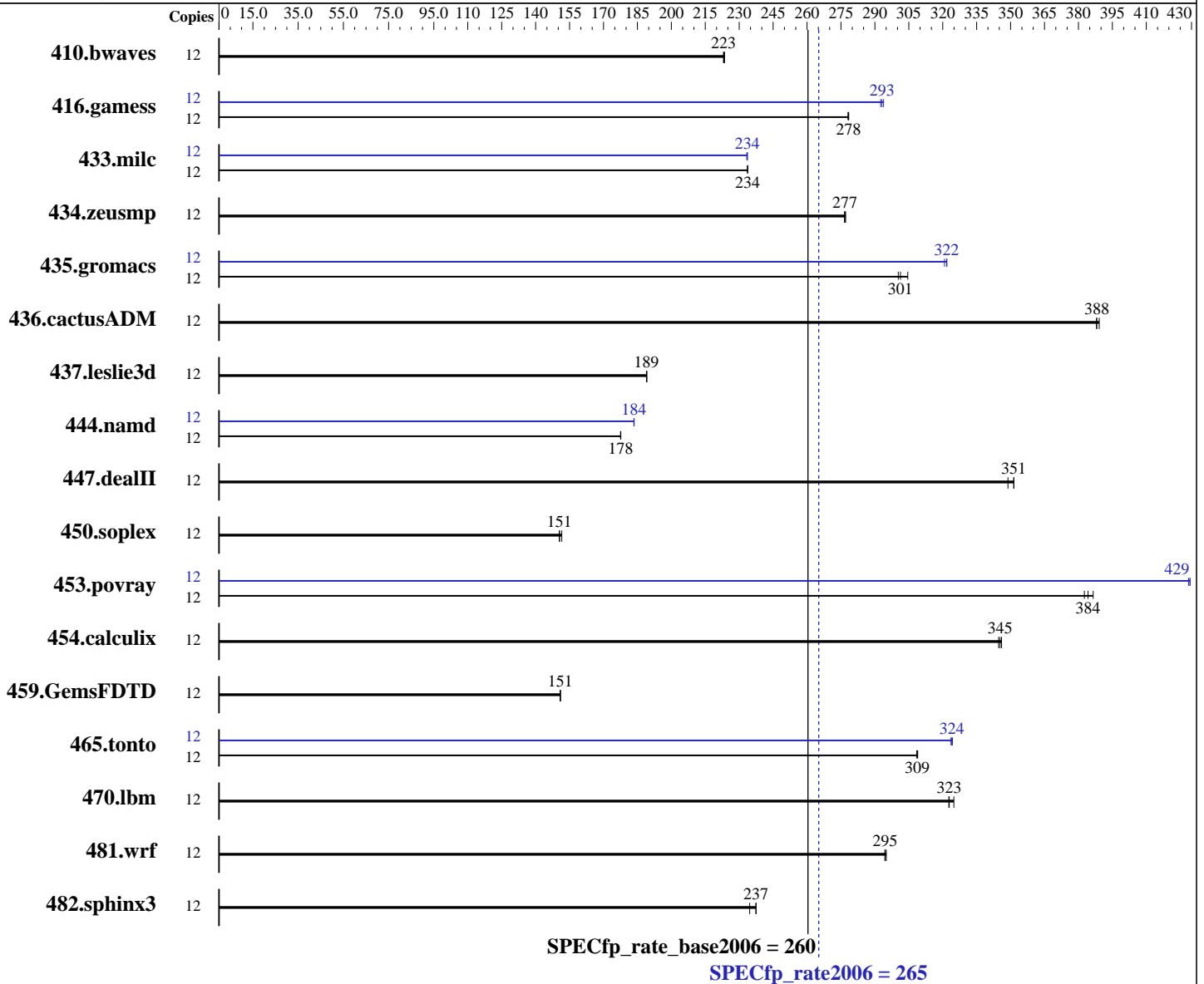$SPECfp\_rate\_base2006 = 260$

CPU2006 license: 3175
Test sponsor: Huawei
Tested by: Huawei

Test date: Sep-2014
Hardware Availability: Sep-2014
Software Availability: Nov-2013

Copies		
410.bwaves	12	223
416.gamess	12	293
	12	278
433.milc	12	234
	12	234
434.zeusmp	12	277
435.gromacs	12	322
	12	301
436.cactusADM	12	388
437.leslie3d	12	189
444.namd	12	184
	12	178
447.dealII	12	351
450.soplex	12	151
453.povray	12	429
	12	384
454.calculix	12	345
459.GemsFDTD	12	151
465.tonto	12	324
	12	309
470.lbm	12	323
481.wrf	12	295
482.sphinx3	12	237

SPECfp_rate_base2006 = 260

SPECfp_rate2006 = 265

Hardware
CPU Name: Intel Xeon E5-2609 v3
CPU Characteristics:
CPU MHz: 1900
FPU: Integrated
CPU(s) enabled: 12 cores, 2 chips, 6 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 6.5 (Santiago)
2.6.32-431.el6.x86_64
Compiler: C/C++: Version 14.0.0.080 of Intel C++ Studio XE for Linux;
Fortran: Version 14.0.0.080 of Intel Fortran Studio XE for Linux
Auto Parallel: No
File System: ext4
Continued on next page

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L3 Cache:	15 MB I+D on chip per chip	System State:	Run level 3 (multi-user)
Other Cache:	None	Base Pointers:	32/64-bit
Memory:	256 GB (16 x 16 GB 2Rx4 PC4-2133P-R, running at 1600 MHz)	Peak Pointers:	32/64-bit
		Other Software:	None
Disk Subsystem:	1 x 500 GB SATA, 7200 RPM		
Other Hardware:	None		

Results Table

Benchmark	Base						Peak						
	Copies	Seconds	Ratio	Seconds	Ratio	Seconds	Ratio	Copies	Seconds	Ratio	Seconds	Ratio	Seconds	Ratio
410.bwaves	12	**731**	**223**	731	223	730	224	12	**731**	**223**	731	223	730	224
416.gamess	12	**844**	**278**	845	278	844	278	12	800	294	803	293	**802**	**293**
433.milc	12	**471**	**234**	471	234	471	234	12	472	233	472	234	**472**	**234**
434.zeusmp	12	395	277	394	277	**395**	**277**	12	395	277	394	277	**395**	**277**
435.gromacs	12	**284**	**301**	285	300	281	305	12	267	321	266	322	**266**	**322**
436.cactusADM	12	370	388	**369**	**388**	368	389	12	370	388	**369**	**388**	368	389
437.leslie3d	12	596	189	597	189	**597**	**189**	12	596	189	597	189	**597**	**189**
444.namd	12	**542**	**178**	542	178	542	178	12	525	183	524	184	**524**	**184**
447.dealII	12	**391**	**351**	391	351	394	349	12	**391**	**351**	391	351	394	349
450.soplex	12	665	151	**665**	**151**	660	152	12	665	151	**665**	**151**	660	152
453.povray	12	**166**	**384**	165	387	167	383	12	**149**	**429**	149	429	149	429
454.calculix	12	287	345	**287**	**345**	286	346	12	287	345	**287**	**345**	286	346
459.GemsFDTD	12	844	151	843	151	**844**	**151**	12	844	151	843	151	**844**	**151**
465.tonto	12	382	309	383	308	**382**	**309**	12	364	324	**364**	**324**	365	324
470.lbm	12	**511**	**323**	511	323	507	325	12	**511**	**323**	511	323	507	325
481.wrf	12	454	295	**455**	**295**	455	294	12	454	295	**455**	**295**	455	294
482.sphinx3	12	997	235	**985**	**237**	985	237	12	997	235	**985**	**237**	985	237

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 Custom
Set Snoop Mode to HS

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Platform Notes (Continued)

```
Set Hyper-Threading to Disabled
Baseboard Management Controller used to adjust the fan speed to 100%
Sysinfo program /spec/config/sysinfo.rev6818
$Rev: 6818 $ $Date:: 2012-07-17 #$ e86d102572650a6e4d596a3cee98f191
running on localhost Tue Sep 16 17:55:47 2014

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 E5-2609 v3 @ 1.90GHz
      2 "physical id"s (chips)
      12 "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 : 6
      siblings  : 6
      physical 0: cores 0 1 2 3 4 5
      physical 1: cores 0 1 2 3 4 5
   cache size : 7680 KB

From /proc/meminfo
   MemTotal:       264277188 kB
   HugePages_Total:        0
   Hugepagesize:        2048 kB

/usr/bin/lsb_release -d
   Red Hat Enterprise Linux Server release 6.5 (Santiago)

From /etc/*release* /etc/*version*
   redhat-release: Red Hat Enterprise Linux Server release 6.5 (Santiago)
   system-release: Red Hat Enterprise Linux Server release 6.5 (Santiago)
   system-release-cpe: cpe:/o:redhat:enterprise_linux:6server:ga:server

uname -a:
   Linux localhost 2.6.32-431.el6.x86_64 #1 SMP Sun Nov 10 22:19:54 EST 2013
   x86_64 x86_64 x86_64 GNU/Linux

run-level 3 Sep 15 06:11

SPEC is set to: /spec
   Filesystem     Type  Size  Used Avail Use% Mounted on
   /dev/sda1      ext4  438G  167G  249G  41% /

Additional information from dmidecode:
  BIOS Insyde Corp. 1.16 09/02/2014
  Memory:
   8x Micron 36ASF2G72PZ-2G1AW 16 GB 1600 MHz 1 rank
   8x Micron 36ASF2G72PZ-2G1AW 16 GB 1600 MHz 2 rank
```

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Platform Notes (Continued)

```
(End of data from sysinfo program)
```

General Notes

```
Environment variables set by runspec before the start of the run:
LD_LIBRARY_PATH = "/spec/libs/32:/spec/libs/64:/spec/sh"

 Binaries compiled on a system with 1x Core i7-860 CPU + 8GB
 memory using RedHat EL 6.4
 Transparent Huge Pages enabled with:
 echo always > /sys/kernel/mm/redhat_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>
```

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
     454.calculix: -DSPEC_CPU_LP64 -nofor_main
    459.GemsFDTD: -DSPEC_CPU_LP64
       465.tonto: -DSPEC_CPU_LP64
```

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Base Portability Flags (Continued)

```
    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 -opt-prefetch -auto-p32
    -ansi-alias -opt-mem-layout-trans=3
```

C++ benchmarks:
```
    -xCORE-AVX2 -ipo -O3 -no-prec-div -opt-prefetch -auto-p32
    -ansi-alias -opt-mem-layout-trans=3
```

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

Benchmarks using both Fortran and C:
```
    -xCORE-AVX2 -ipo -O3 -no-prec-div -opt-prefetch -auto-p32
    -ansi-alias -opt-mem-layout-trans=3
```

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)
> `-opt-mem-layout-trans=3`(pass 2) `-prof-use`(pass 2)
> `-auto-ilp32`

> 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)
> `-opt-mem-layout-trans=3`(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)
> `-opt-mem-layout-trans=3`(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: `basepeak = yes`

> 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) `-unroll4`
> `-auto` `-inline-calloc` `-opt-malloc-options=3`

Benchmarks using both Fortran and C:

> 435.gromacs: `-xCORE-AVX2`(pass 2) `-prof-gen`(pass 1) `-ipo`(pass 2)
> `-O3`(pass 2) `-no-prec-div`(pass 2)
> `-opt-mem-layout-trans=3`(pass 2) `-prof-use`(pass 2)
> `-opt-prefetch` `-auto-ilp32`

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Peak Optimization Flags (Continued)

436.cactusADM: basepeak = yes

454.calculix: basepeak = yes

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-ic14.0-official-linux64.20140128.html
http://www.spec.org/cpu2006/flags/Huawei-Platform-Settings-HASWELL-V1.1.html

You can also download the XML flags sources by saving the following links:
http://www.spec.org/cpu2006/flags/Intel-ic14.0-official-linux64.20140128.xml
http://www.spec.org/cpu2006/flags/Huawei-Platform-Settings-HASWELL-V1.1.xml

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Tested with SPEC CPU2006 v1.2.
Report generated on Tue Nov 18 16:31:09 2014 by SPEC CPU2006 PS/PDF formatter v6932.
Originally published on 18 November 2014.