SPEC® CFP2006 Result
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Huawei

Huawei RH2285 V2 (Intel Xeon E5-2450)

$SPECfp^®_rate2006 = $ 398

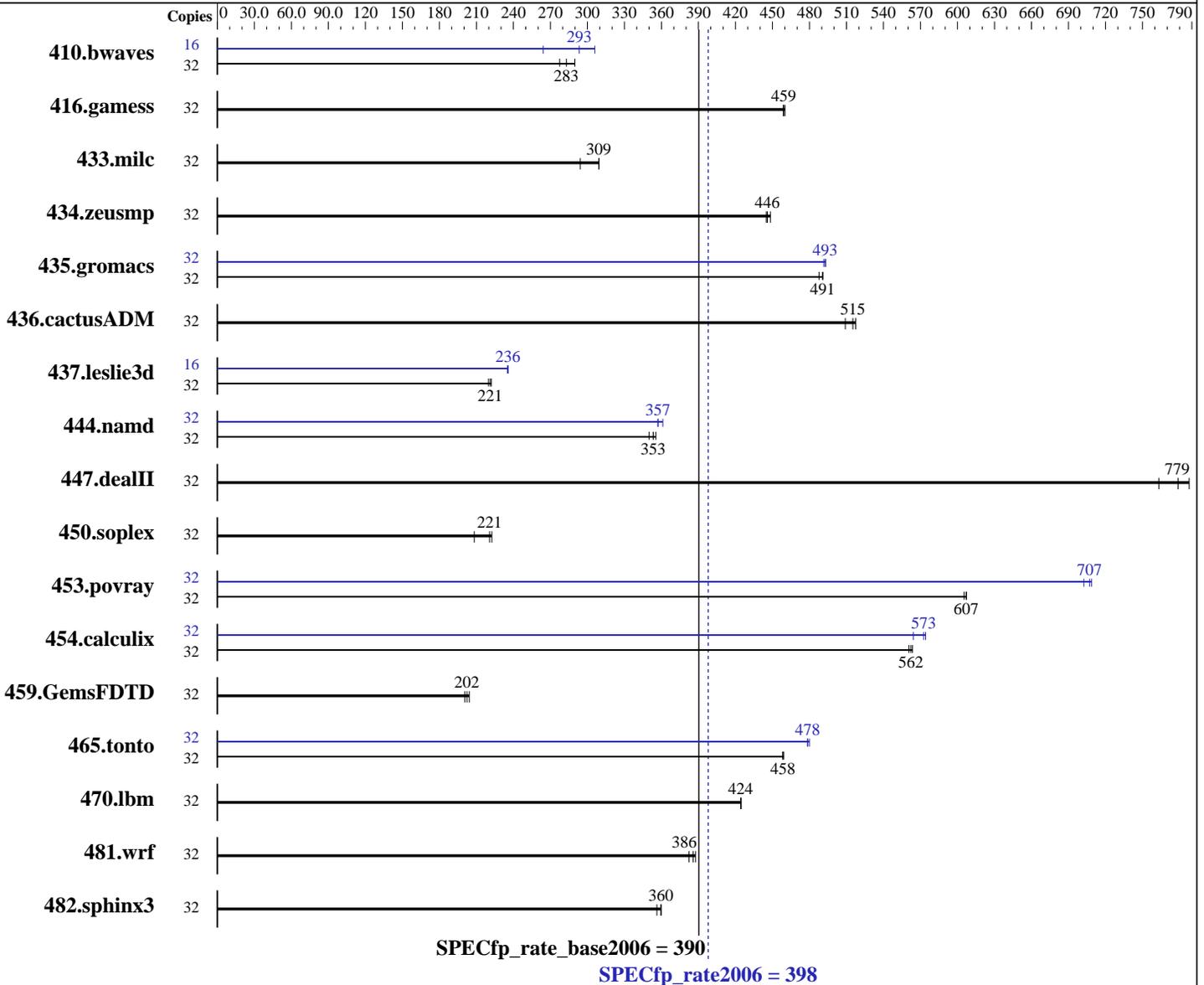$SPECfp_rate_base2006 = $ 390

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

Test date: May-2013
Hardware Availability: May-2013
Software Availability: Feb-2013

Benchmark	Copies	Result
410.bwaves	16	293
	32	283
416.gamess	32	459
433.milc	32	309
434.zeusmp	32	446
435.gromacs	32	493
	32	491
436.cactusADM	32	515
437.leslie3d	16	236
	32	221
444.namd	32	357
	32	353
447.dealII	32	779
450.soplex	32	221
453.povray	32	707
	32	607
454.calculix	32	573
	32	562
459.GemsFDTD	32	202
465.tonto	32	478
	32	458
470.lbm	32	424
481.wrf	32	386
482.sphinx3	32	360

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Hardware

CPU Name: Intel Xeon E5-2450
CPU Characteristics: Intel Turbo Boost Technology up to 2.90 GHz
CPU MHz: 2100
FPU: Integrated
CPU(s) enabled: 16 cores, 2 chips, 8 cores/chip, 2 threads/core
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 6.4 (Santiago)
2.6.32-358.el6.x86_64
Compiler: C/C++: Version 12.1.0.225 of Intel C++ Studio XE for Linux;
Fortran: Version 12.1.0.225 of Intel Fortran Studio XE for Linux
Auto Parallel: No
File System: ext4

Continued on next page

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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:	32/64-bit
Memory:	48 GB (6 x 8 GB 2Rx4 PC3-12800R-11, ECC)	Peak Pointers:	32/64-bit
Disk Subsystem:	1 x 300 GB SAS, 10K RPM	Other Software:	None
Other Hardware:	None		

Results Table

Benchmark	Base							Peak						
	Copies	Seconds	Ratio	Seconds	Ratio	Seconds	Ratio	Copies	Seconds	Ratio	Seconds	Ratio	Seconds	Ratio
410.bwaves	32	1567	277	**1537**	**283**	1501	290	16	711	306	823	264	**741**	**293**
416.gamess	32	1361	460	**1365**	**459**	1366	459	32	1361	460	**1365**	**459**	1366	459
433.milc	32	998	294	**950**	**309**	949	309	32	998	294	**950**	**309**	949	309
434.zeusmp	32	649	448	654	445	**653**	**446**	32	649	448	654	445	**653**	**446**
435.gromacs	32	**466**	**491**	468	488	465	491	32	**464**	**493**	463	493	465	492
436.cactusADM	32	739	518	751	509	**742**	**515**	32	739	518	751	509	**742**	**515**
437.leslie3d	32	1368	220	1355	222	**1359**	**221**	16	638	236	**639**	**236**	639	235
444.namd	32	733	350	722	356	**726**	**353**	32	**718**	**357**	719	357	711	361
447.dealII	32	480	763	**470**	**779**	465	788	32	480	763	**470**	**779**	465	788
450.soplex	32	1199	223	**1209**	**221**	1281	208	32	1199	223	**1209**	**221**	1281	208
453.povray	32	280	607	281	605	**280**	**607**	32	242	702	**241**	**707**	240	709
454.calculix	32	468	564	471	561	**470**	**562**	32	**461**	**573**	468	564	460	574
459.GemsFDTD	32	1693	201	**1678**	**202**	1662	204	32	1693	201	**1678**	**202**	1662	204
465.tonto	32	686	459	687	458	**687**	**458**	32	658	478	**658**	**478**	656	480
470.lbm	32	**1036**	**424**	1036	424	1035	425	32	**1036**	**424**	1036	424	1035	425
481.wrf	32	922	388	935	382	**927**	**386**	32	922	388	935	382	**927**	**386**
482.sphinx3	32	**1734**	**360**	1750	356	1734	360	32	**1734**	**360**	1750	356	1734	360

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

    Sysinfo program /spec/config/sysinfo.rev6800
    $Rev: 6800 $ $Date:: 2011-10-11 #$ 6f2ebdff5032aaa42e583f96b07f99d3
    running on spec3 Fri May 24 15:21:34 2013

Continued on next page

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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 E5-2450 0 @ 2.10GHz
      2 "physical id"s (chips)
      32 "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  : 16
      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:       49383832 kB
   HugePages_Total:       0
   Hugepagesize:       2048 kB

/usr/bin/lsb_release -d
   Red Hat Enterprise Linux Server release 6.4 (Santiago)

From /etc/*release* /etc/*version*
   redhat-release: Red Hat Enterprise Linux Server release 6.4 (Santiago)
   system-release: Red Hat Enterprise Linux Server release 6.4 (Santiago)
   system-release-cpe: cpe:/o:redhat:enterprise_linux:6server:ga:server

uname -a:
   Linux spec3 2.6.32-358.el6.x86_64 #1 SMP Tue Jan 29 11:47:41 EST 2013 x86_64
   x86_64 x86_64 GNU/Linux

run-level 3 May 24 01:30

SPEC is set to: /spec
   Filesystem     Type     Size  Used Avail Use% Mounted on
   /dev/mapper/ddf1_4c534920202020201000005b19e5d204471147119c2abcd4p3
                  ext4     154G   79G   68G  55% /

Additional information from dmidecode:

(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"
```

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General Notes (Continued)

```
Binaries compiled on a system with 2 x Xeon X5645 CPU + 16GB memory
using RHEL 6.1
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
     470.lbm: -DSPEC_CPU_LP64
     481.wrf: -DSPEC_CPU_LP64 -DSPEC_CPU_CASE_FLAG -DSPEC_CPU_LINUX
   482.sphinx3: -DSPEC_CPU_LP64
```

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Base Optimization Flags

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

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

Fortran benchmarks:
```
-xAVX -ipo -O3 -no-prec-div -static -opt-prefetch
```

Benchmarks using both Fortran and C:
```
-xAVX -ipo -O3 -no-prec-div -static -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
```

Peak Optimization Flags

C benchmarks:

433.milc: `basepeak = yes`

470.lbm: `basepeak = yes`

482.sphinx3: `basepeak = yes`

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Peak Optimization Flags (Continued)

C++ benchmarks:

```
  444.namd: -xAVX(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: -xAVX(pass 2) -prof-gen(pass 1) -ipo(pass 2) -O3(pass 2)
            -no-prec-div(pass 2) -prof-use(pass 2) -auto-ilp32
            -opt-mem-layout-trans=3
```

Fortran benchmarks:

```
 410.bwaves: -xAVX(pass 2) -prof-gen(pass 1) -ipo(pass 2) -O3(pass 2)
            -no-prec-div(pass 2) -prof-use(pass 2) -static

 416.gamess: basepeak = yes

 434.zeusmp: basepeak = yes

 437.leslie3d: -xAVX -ipo -O3 -no-prec-div -static -opt-prefetch

 459.GemsFDTD: basepeak = yes

   465.tonto: -xAVX(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: -xAVX(pass 2) -prof-gen(pass 1) -ipo -O3 -no-prec-div
            -prof-use(pass 2) -xSSE4.2 -opt-prefetch -static
            -auto-ilp32 -opt-mem-layout-trans=3

 436.cactusADM: basepeak = yes

 454.calculix: -xAVX -ipo -O3 -no-prec-div -static -auto-ilp32
            -opt-mem-layout-trans=3

     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-ic12.1-official-linux64.20120425.html
http://www.spec.org/cpu2006/flags/Huawei-Platform-Settings-revE.20121120.html

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You can also download the XML flags sources by saving the following links:
http://www.spec.org/cpu2006/flags/Intel-ic12.1-official-linux64.20120425.xml
http://www.spec.org/cpu2006/flags/Huawei-Platform-Settings-revE.20121120.xml

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