SPEC® CFP2006 Result
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Huawei

Huawei CH240 (Intel Xeon E5-4603 v2)

$SPECfp^{®}_rate2006 = $ 509
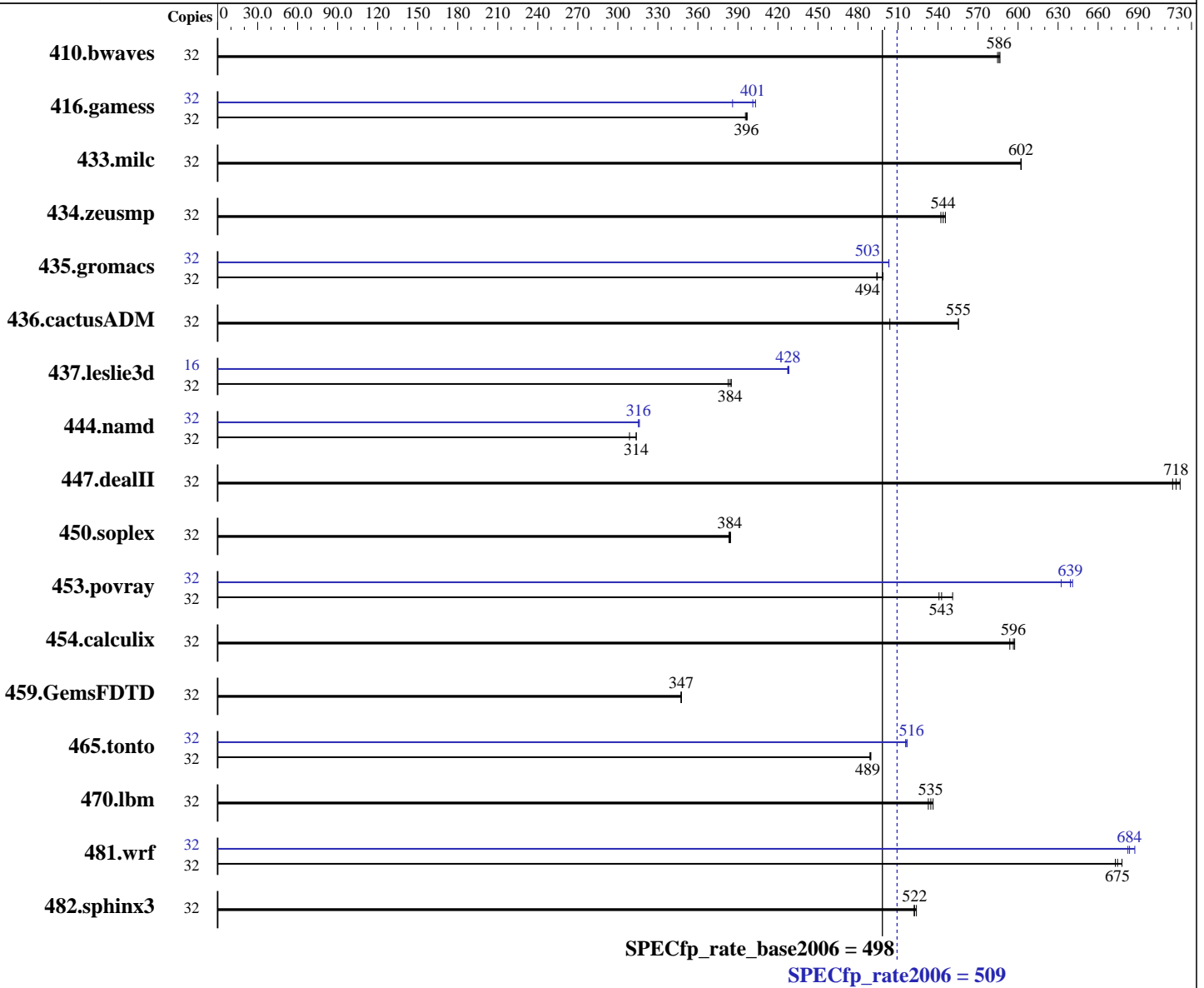
SPECfp_rate_base2006 = 498

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

Test date: Jul-2014
Hardware Availability: Mar-2014
Software Availability: Nov-2013

Benchmark	Copies	Result
410.bwaves	32	586
416.gamess	32	401
416.gamess	32	396
433.milc	32	602
434.zeusmp	32	544
435.gromacs	32	503
435.gromacs	32	494
436.cactusADM	32	555
437.leslie3d	16	428
437.leslie3d	32	384
444.namd	32	316
444.namd	32	314
447.dealII	32	718
450.soplex	32	384
453.povray	32	639
453.povray	32	543
454.calculix	32	596
459.GemsFDTD	32	347
465.tonto	32	516
465.tonto	32	489
470.lbm	32	535
481.wrf	32	684
481.wrf	32	675
482.sphinx3	32	522

SPECfp_rate_base2006 = 498
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Hardware

CPU Name: Intel Xeon E5-4603 v2
CPU Characteristics:
CPU MHz: 2200
FPU: Integrated
CPU(s) enabled: 16 cores, 4 chips, 4 cores/chip, 2 threads/core
CPU(s) orderable: 2,4 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

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L3 Cache:	10 MB I+D on chip per chip
Other Cache:	None
Memory:	256 GB (32 x 8 GB 2Rx4 PC3-10600R-09 ,ECC)
Disk Subsystem:	1 x 300 GB SAS, 10000 RPM
Other Hardware:	None

System State:	Run level 3 (multi-user)
Base Pointers:	32/64-bit
Peak Pointers:	32/64-bit
Other Software:	None

Results Table

Benchmark	Base Copies	Seconds	Ratio	Seconds	Ratio	Seconds	Ratio	Peak Copies	Seconds	Ratio	Seconds	Ratio	Seconds	Ratio
410.bwaves	32	742	586	744	585	**742**	**586**	32	742	586	744	585	**742**	**586**
416.gamess	32	1578	397	1584	396	**1581**	**396**	32	1623	386	1554	403	**1562**	**401**
433.milc	32	**488**	**602**	488	602	488	602	32	**488**	**602**	488	602	488	602
434.zeusmp	32	534	546	537	542	**535**	**544**	32	534	546	537	542	**535**	**544**
435.gromacs	32	**462**	**494**	458	499	462	494	32	454	503	**454**	**503**	454	503
436.cactusADM	32	**689**	**555**	689	555	759	504	32	**689**	**555**	689	555	759	504
437.leslie3d	32	786	383	781	385	**783**	**384**	16	351	428	**352**	**428**	352	427
444.namd	32	818	314	831	309	**818**	**314**	32	**813**	**316**	812	316	814	315
447.dealII	32	507	721	511	716	**510**	**718**	32	507	721	511	716	**510**	**718**
450.soplex	32	694	384	696	383	**695**	**384**	32	694	384	696	383	**695**	**384**
453.povray	32	315	541	309	551	**314**	**543**	32	269	632	266	641	**266**	**639**
454.calculix	32	445	594	442	597	**443**	**596**	32	445	594	442	597	**443**	**596**
459.GemsFDTD	32	977	347	**977**	**347**	977	348	32	977	347	**977**	**347**	977	348
465.tonto	32	**643**	**489**	644	489	643	490	32	611	516	**610**	**516**	609	517
470.lbm	32	**822**	**535**	820	536	825	533	32	**822**	**535**	820	536	825	533
481.wrf	32	527	678	531	673	**530**	**675**	32	**523**	**684**	524	682	520	688
482.sphinx3	32	1191	524	**1194**	**522**	1195	522	32	1191	524	**1194**	**522**	1195	522

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 /spec14/config/sysinfo.rev6818
    $Rev: 6818 $ $Date:: 2012-07-17 #$ e86d102572650a6e4d596a3cee98f191
    running on localhost.localdomain Wed Jul 2 18:16:35 2014

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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 E5-4603 v2 @ 2.20GHz
      4 "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 : 4
      siblings  : 8
      physical 0: cores 0 1 2 3
      physical 1: cores 0 1 2 3
      physical 2: cores 0 1 2 3
      physical 3: cores 0 1 2 3
   cache size : 10240 KB

From /proc/meminfo
   MemTotal:       264479480 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.localdomain 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 Jul 2 03:44

SPEC is set to: /spec14
   Filesystem      Type  Size  Used Avail Use% Mounted on
   /dev/sda1       ext4  268G   44G  211G  18% /

Additional information from dmidecode:
  BIOS Insyde Corp. OARYV388 04/23/2014
  Memory:
   7x Hynix HMT31GR7AFR4C-H9 8 GB 1333 MHz 2 rank
   25x Hynix HMT31GR7BFR4C-H9 8 GB 1333 MHz 2 rank
   16x NO DIMM NO DIMM

(End of data from sysinfo program)
```

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General Notes

```
Environment variables set by runspec before the start of the run:
LD_LIBRARY_PATH = "/spec14/libs/32:/spec14/libs/64:/spec14/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
        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 -opt-prefetch -auto-p32 -ansi-alias
-opt-mem-layout-trans=3
```

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

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

Benchmarks using both Fortran and C:
```
-xAVX -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
```

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) -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: `-xAVX(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: `-xAVX(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: `-xAVX -ipo -O3 -no-prec-div -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(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`

    436.cactusADM: basepeak = yes

    454.calculix: basepeak = yes

    481.wrf: `-xAVX -ipo -O3 -no-prec-div -auto-ilp32`

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-V1.0-IVB-RevG.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-ic14.0-official-linux64.20140128.xml
http://www.spec.org/cpu2006/flags/Huawei-Platform-Settings-V1.0-IVB-RevG.xml

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