SPEC® CFP2006 Result

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Huawei

Huawei XH320 V2 (Intel Xeon E5-2470)

$SPECfp^{®}2006 =$ 79.4
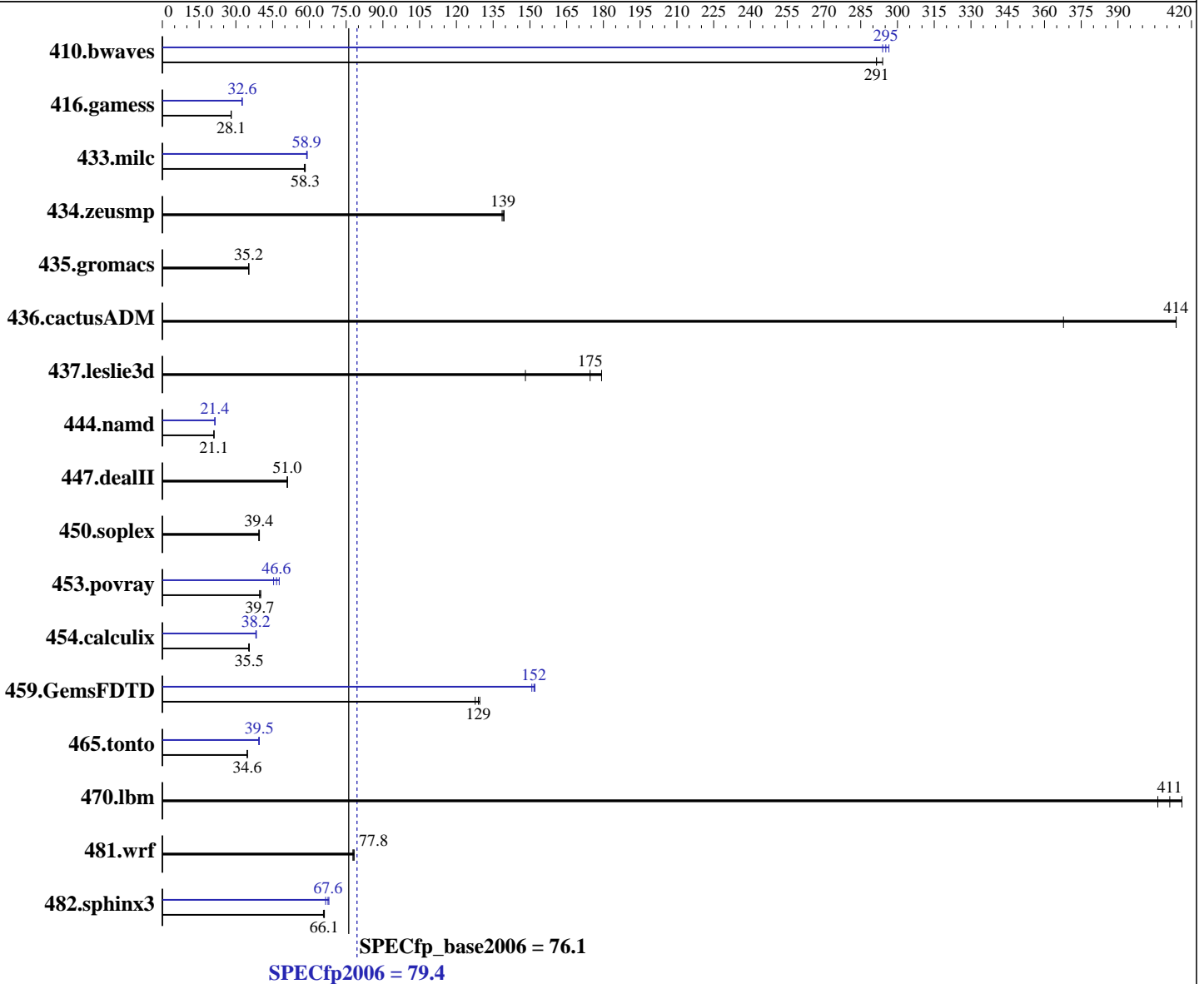
$SPECfp\_base2006 =$ 76.1

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

Test date: Jul-2012
Hardware Availability: May-2012
Software Availability: Dec-2011

Benchmark results chart:

Benchmark	Peak	Base
410.bwaves	295	291
416.gamess	32.6	28.1
433.milc	58.9	58.3
434.zeusmp		139
435.gromacs		35.2
436.cactusADM		414
437.leslie3d		175
444.namd	21.4	21.1
447.dealII		51.0
450.soplex		39.4
453.povray	46.6	39.7
454.calculix	38.2	35.5
459.GemsFDTD	152	129
465.tonto	39.5	34.6
470.lbm		411
481.wrf		77.8
482.sphinx3	67.6	66.1

SPECfp_base2006 = 76.1
SPECfp2006 = 79.4

Hardware

CPU Name: Intel Xeon E5-2470
CPU Characteristics: Intel Turbo Boost Technology up to 3.10 GHz
CPU MHz: 2300
FPU: Integrated
CPU(s) enabled: 16 cores, 2 chips, 8 cores/chip
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 6.2 (Santiago)
2.6.32-220.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: 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:	96 GB (12 x 8 GB 1Rx4 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					
	Seconds	Ratio	Seconds	Ratio	Seconds	Ratio	Seconds	Ratio	Seconds	Ratio	Seconds	Ratio
410.bwaves	46.6	291	**46.6**	**291**	46.2	294	**46.0**	**295**	45.8	297	46.2	294
416.gamess	697	28.1	698	28.1	**697**	**28.1**	602	32.5	601	32.6	**601**	**32.6**
433.milc	158	57.9	**157**	**58.3**	157	58.3	**156**	**58.9**	156	58.9	155	59.1
434.zeusmp	**65.4**	**139**	65.2	139	65.6	139	**65.4**	**139**	65.2	139	65.6	139
435.gromacs	203	35.2	202	35.3	**203**	**35.2**	203	35.2	202	35.3	**203**	**35.2**
436.cactusADM	32.5	368	28.9	414	**28.9**	**414**	32.5	368	28.9	414	**28.9**	**414**
437.leslie3d	63.4	148	**53.8**	**175**	52.4	179	63.4	148	**53.8**	**175**	52.4	179
444.namd	381	21.1	381	21.1	**381**	**21.1**	374	21.4	**374**	**21.4**	374	21.4
447.dealII	224	51.0	224	51.0	**224**	**51.0**	224	51.0	224	51.0	**224**	**51.0**
450.soplex	211	39.6	212	39.4	**212**	**39.4**	211	39.6	212	39.4	**212**	**39.4**
453.povray	**134**	**39.7**	134	39.7	132	40.2	**114**	**46.6**	112	47.7	117	45.4
454.calculix	234	35.2	**232**	**35.5**	232	35.5	**216**	**38.2**	216	38.2	215	38.4
459.GemsFDTD	81.9	130	83.1	128	**82.3**	**129**	69.8	152	70.4	151	**70.0**	**152**
465.tonto	**284**	**34.6**	284	34.6	283	34.7	**249**	**39.5**	250	39.3	249	39.5
470.lbm	**33.4**	**411**	33.8	406	33.0	416	**33.4**	**411**	33.8	406	33.0	416
481.wrf	144	77.8	**144**	**77.8**	143	78.3	144	77.8	**144**	**77.8**	143	78.3
482.sphinx3	297	65.7	**295**	**66.1**	295	66.1	287	68.0	293	66.6	**288**	**67.6**

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"
Transparent Huge Pages enabled with:
echo always > /sys/kernel/mm/redhat_transparent_hugepage/enabled
Select only test related files when installing the operating system
```

Platform Notes

```
BIOS configuration:
Intel Hyper-Threading set to Disabled
Set Power Efficiency Mode to Performance
Sysinfo program /spec/config/sysinfo.rev6800
$Rev: 6800 $ $Date:: 2011-10-11 #$ 6f2ebdff5032aaa42e583f96b07f99d3
running on RH62-yjp2 Thu Jul 26 00:53:00 2012
```

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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 E5-2470 0 @ 2.30GHz
      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:        99043072 kB
   HugePages_Total:        0
   Hugepagesize:        2048 kB

From /etc/*release* /etc/*version*
   redhat-release: Red Hat Enterprise Linux Server release 6.2 (Santiago)
   system-release: Red Hat Enterprise Linux Server release 6.2 (Santiago)
   system-release-cpe: cpe:/o:redhat:enterprise_linux:6server:ga:server

uname -a:
   Linux RH62-yjp2 2.6.32-220.el6.x86_64 #1 SMP Wed Nov 9 08:03:13 EST 2011
   x86_64 x86_64 x86_64 GNU/Linux

run-level 3 Jul 23 23:12

SPEC is set to: /spec
   Filesystem      Type     Size  Used Avail Use% Mounted on
   /dev/sda1       ext3     270G   91G  165G  36% /

Additional information from dmidecode:
  Memory:
   12x Samsu M393B 8 GB 1600 MHz 1 rank

(End of data from sysinfo program)
```

General Notes

```
Environment variables set by runspec before the start of the run:
KMP_AFFINITY = "granularity=fine,compact,0,1"
LD_LIBRARY_PATH = "/spec/libs/32:/spec/libs/64"
OMP_NUM_THREADS = "16"

 Binaries compiled on a system with 2 x Xeon X5645 CPU + 16GB memory
```

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General Notes (Continued)

```
using RHEL 6.1
```

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
```

Base Optimization Flags

C benchmarks:
```
    -xAVX -ipo -O3 -no-prec-div -static -parallel -opt-prefetch
    -ansi-alias
```

C++ benchmarks:
```
    -xAVX -ipo -O3 -no-prec-div -static -opt-prefetch -ansi-alias
```

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Test sponsor: Huawei　　　　　　　　　　**Hardware Availability:** May-2012
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Base Optimization Flags (Continued)

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

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

Peak Optimization Flags

C benchmarks:

```
  433.milc: -xAVX(pass 2) -prof-gen(pass 1) -ipo(pass 2) -O3(pass 2)
            -no-prec-div(pass 2) -prof-use(pass 2) -static -auto-ilp32
            -ansi-alias

  470.lbm: basepeak = yes

482.sphinx3: -xAVX -ipo -O3 -no-prec-div -unroll2 -ansi-alias
            -parallel
```

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
```

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Peak Optimization Flags (Continued)

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) -unroll4 -ansi-alias

Fortran benchmarks:

410.bwaves: -xAVX -ipo -O3 -no-prec-div -opt-prefetch -parallel
           -static

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- -static

434.zeusmp: basepeak = yes

437.leslie3d: basepeak = yes

459.GemsFDTD: -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 -opt-prefetch -parallel

465.tonto: -xAVX(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

454.calculix: -xAVX -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-ic12.1-official-linux64.20120425.html
http://www.spec.org/cpu2006/flags/Huawei-Platform-Settings-revE.20120703.html

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.20120703.xml

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

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