SPEC® CFP2006 Result
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Huawei

Huawei RH5885H V3 (Intel Xeon E7-4820 v2)

$SPECfp®\_rate2006 =$ 874

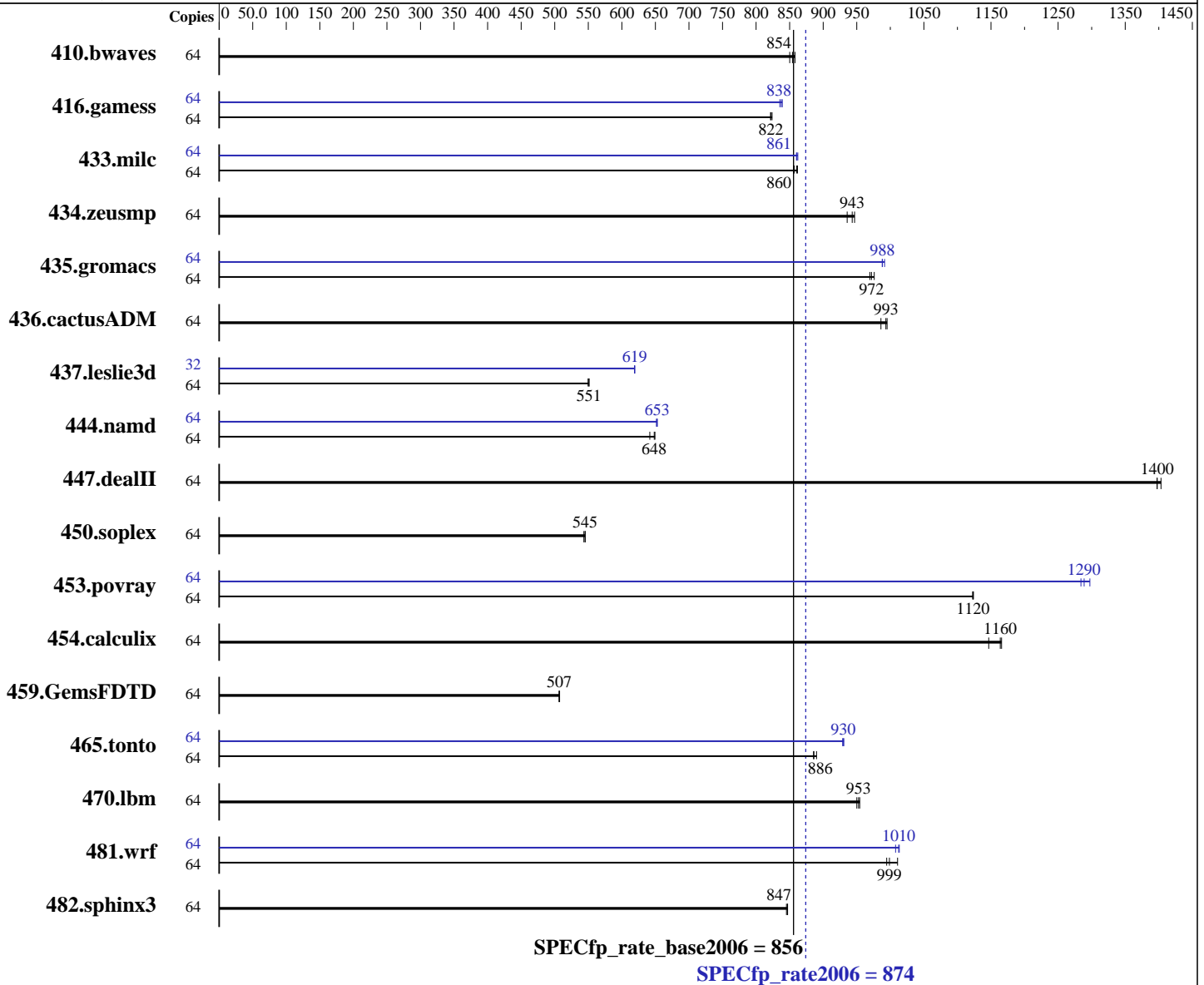$SPECfp\_rate\_base2006 =$ 856

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

Test date: Oct-2014
Hardware Availability: Feb-2014
Software Availability: Nov-2013

Copies		
410.bwaves	64	854
416.gamess	64	838
	64	822
433.milc	64	861
	64	860
434.zeusmp	64	943
435.gromacs	64	988
	64	972
436.cactusADM	64	993
437.leslie3d	32	619
	64	551
444.namd	64	653
	64	648
447.dealII	64	1400
450.soplex	64	545
453.povray	64	1290
	64	1120
454.calculix	64	1160
459.GemsFDTD	64	507
465.tonto	64	930
	64	886
470.lbm	64	953
481.wrf	64	1010
	64	999
482.sphinx3	64	847

SPECfp_rate_base2006 = 856

SPECfp_rate2006 = 874

Hardware

CPU Name:	Intel Xeon E7-4820 v2
CPU Characteristics:	Intel Turbo Boost Technology up to 2.50 GHz
CPU MHz:	2000
FPU:	Integrated
CPU(s) enabled:	32 cores, 4 chips, 8 cores/chip, 2 threads/core
CPU(s) orderable:	2,4 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 6.5 (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:	16 MB I+D on chip per chip	System State:	Run level 3 (multi-user)
Other Cache:	None	Base Pointers:	32/64-bit
Memory:	1 TB (64 x 16 GB 2Rx4 PC3-12800R-11, ECC, running at 1066 MHz and CL7)	Peak Pointers:	32/64-bit
		Other Software:	None
Disk Subsystem:	2 x 300 GB SAS, 10K RPM		
Other Hardware:	None		

Results Table

Benchmark	Base Copies	Seconds	Ratio	Seconds	Ratio	Seconds	Ratio	Peak Copies	Seconds	Ratio	Seconds	Ratio	Seconds	Ratio
410.bwaves	64	1014	858	**1018**	**854**	1023	850	64	1014	858	**1018**	**854**	1023	850
416.gamess	64	1521	824	1525	822	**1524**	**822**	64	**1496**	**838**	1493	839	1500	835
433.milc	64	682	862	**683**	**860**	686	857	64	681	862	**683**	**861**	683	860
434.zeusmp	64	615	947	622	936	**617**	**943**	64	615	947	622	936	**617**	**943**
435.gromacs	64	**470**	**972**	471	970	468	976	64	463	988	461	991	**462**	**988**
436.cactusADM	64	776	986	**770**	**993**	768	995	64	776	986	**770**	**993**	768	995
437.leslie3d	64	**1092**	**551**	1095	550	1092	551	32	**486**	**619**	486	619	486	619
444.namd	64	790	649	**792**	**648**	800	642	64	**787**	**653**	788	652	786	653
447.dealII	64	524	1400	522	1400	**524**	**1400**	64	524	1400	522	1400	**524**	**1400**
450.soplex	64	979	545	**979**	**545**	982	543	64	979	545	**979**	**545**	982	543
453.povray	64	**303**	**1120**	303	1120	303	1120	64	**264**	**1290**	265	1280	262	1300
454.calculix	64	460	1150	453	1170	**454**	**1160**	64	460	1150	453	1170	**454**	**1160**
459.GemsFDTD	64	1341	507	1339	507	**1340**	**507**	64	1341	507	1339	507	**1340**	**507**
465.tonto	64	**711**	**886**	711	886	708	890	64	678	929	677	931	**677**	**930**
470.lbm	64	921	954	**923**	**953**	926	950	64	921	954	**923**	**953**	926	950
481.wrf	64	719	995	707	1010	**716**	**999**	64	**706**	**1010**	709	1010	705	1010
482.sphinx3	64	1473	847	1476	845	**1473**	**847**	64	1473	847	1476	845	**1473**	**847**

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"

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Test date: Oct-2014
Hardware Availability: Feb-2014
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Platform Notes

```
BIOS configuration:
Set Power Efficiency Mode to Performance
Set Lock_step 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 RH5885HV3 Wed Oct 22 08:57:05 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 E7-4820 v2 @ 2.00GHz
      4 "physical id"s (chips)
      64 "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
      physical 2: cores 0 1 2 3 4 5 6 7
      physical 3: cores 0 1 2 3 4 5 6 7
   cache size : 16384 KB

From /proc/meminfo
   MemTotal:       1058601720 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 RH5885HV3 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 Oct 21 13:10

SPEC is set to: /spec
   Filesystem      Type  Size  Used Avail Use% Mounted on
   /dev/sda5       ext4  321G   60G  245G  20% /spec

Additional information from dmidecode:
 BIOS American Megatrends Inc. BLISV395 07/25/2014
```

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CPU2006 license: 3175
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Test date: Oct-2014
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Platform Notes (Continued)

```
      Memory:
    64x    16 GB
    60x Hynix HMT42GR7AFR4C-PB 16 GB 1066 MHz 2 rank
    4x Hynix HMT42GR7MFR4C-PB 16 GB 1066 MHz 2 rank
    32x NO DIMM NO DIMM

  (End of data from sysinfo program)
  Regarding the sysinfo display about the memory installed, the correct amount of
  memory is 1 TB and the dmidecode description should have two lines reading as:
    60x Hynix HMT42GR7AFR4C-PB 16 GB 1066 MHz 2 rank
    4x Hynix HMT42GR7MFR4C-PB 16 GB 1066 MHz 2 rank
```

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
```

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Huawei

Huawei RH5885H V3 (Intel Xeon E7-4820 v2)

SPECfp_rate2006 =   874

SPECfp_rate_base2006 =   856

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

Test date: Oct-2014
Hardware Availability: Feb-2014
Software Availability: Nov-2013

Base Portability Flags (Continued)

```
    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 -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
```

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Huawei

Huawei RH5885H V3 (Intel Xeon E7-4820 v2)

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SPECfp_rate_base2006 =   856

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

Test date: Oct-2014
Hardware Availability: Feb-2014
Software Availability: Nov-2013

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) -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: -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:

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$SPECfp_rate2006 = $ **874**

$SPECfp_rate_base2006 = $ **856**

Peak Optimization Flags (Continued)

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-revC.html
http://www.spec.org/cpu2006/flags/Huawei-Platform-Settings-V1.0-IVB-RevG.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-revC.xml
http://www.spec.org/cpu2006/flags/Huawei-Platform-Settings-V1.0-IVB-RevG.xml

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

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