# SPEC® CFP2006 Result
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## Huawei

Huawei RH5885 V3 (Intel Xeon E7-8850 v2)

$SPECfp^®\_rate2006 =$ 927

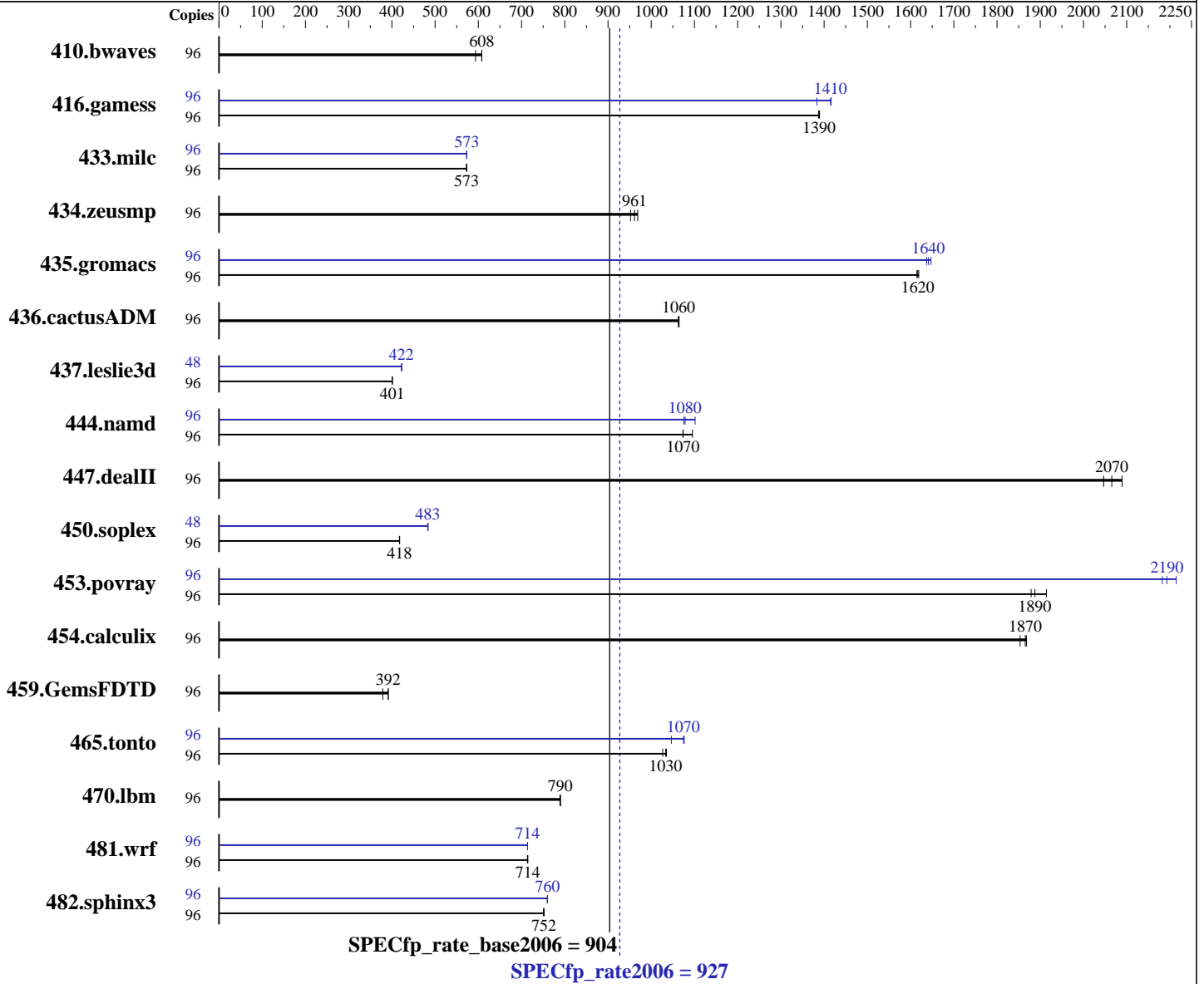$SPECfp\_rate\_base2006 =$ 904

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

**Test date:** Jul-2014
**Hardware Availability:** Feb-2014
**Software Availability:** Nov-2013



| Benchmark | Copies | Result |
|---|---|---|
| 410.bwaves | 96 | 608 |
| 416.gamess | 96 | 1410 |
| | 96 | 1390 |
| 433.milc | 96 | 573 |
| | 96 | 573 |
| 434.zeusmp | 96 | 961 |
| 435.gromacs | 96 | 1640 |
| | 96 | 1620 |
| 436.cactusADM | 96 | 1060 |
| 437.leslie3d | 48 | 422 |
| | 96 | 401 |
| 444.namd | 96 | 1080 |
| | 96 | 1070 |
| 447.dealII | 96 | 2070 |
| 450.soplex | 48 | 483 |
| | 96 | 418 |
| 453.povray | 96 | 2190 |
| | 96 | 1890 |
| 454.calculix | 96 | 1870 |
| 459.GemsFDTD | 96 | 392 |
| 465.tonto | 96 | 1070 |
| | 96 | 1030 |
| 470.lbm | 96 | 790 |
| 481.wrf | 96 | 714 |
| | 96 | 714 |
| 482.sphinx3 | 96 | 760 |
| | 96 | 752 |

SPECfp_rate_base2006 = 904

SPECfp_rate2006 = 927

## Hardware

**CPU Name:** Intel Xeon E7-8850 v2
**CPU Characteristics:** Intel Turbo Boost Technology up to 2.80 GHz
**CPU MHz:** 2300
**FPU:** Integrated
**CPU(s) enabled:** 48 cores, 4 chips, 12 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

**Continued on next page**

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| SPECfp_rate_base2006 = | 904 |

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| | | | |
|---|---|---|---|
| L3 Cache: | 24 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 PC3-12800R-11, ECC, running at 1066 MHz) | Peak Pointers: | 32/64-bit |
| | | Other Software: | None |
| Disk Subsystem: | 2 x 600 GB SAS, 10K 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 | 96 | **2146** | **608** | 2198 | 593 | 2145 | 608 | 96 | **2146** | **608** | 2198 | 593 | 2145 | 608 |
| 416.gamess | 96 | 1353 | 1390 | 1355 | 1390 | **1354** | **1390** | 96 | 1359 | 1380 | 1327 | 1420 | **1328** | **1410** |
| 433.milc | 96 | **1538** | **573** | 1538 | 573 | 1539 | 573 | 96 | **1538** | **573** | 1537 | 573 | 1538 | 573 |
| 434.zeusmp | 96 | 917 | 952 | 902 | 969 | **909** | **961** | 96 | 917 | 952 | 902 | 969 | **909** | **961** |
| 435.gromacs | 96 | **424** | **1620** | 425 | 1610 | 423 | 1620 | 96 | 419 | 1640 | **418** | **1640** | 416 | 1650 |
| 436.cactusADM | 96 | **1079** | **1060** | 1079 | 1060 | 1078 | 1060 | 96 | **1079** | **1060** | 1079 | 1060 | 1078 | 1060 |
| 437.leslie3d | 96 | **2252** | **401** | 2249 | 401 | 2252 | 401 | 48 | **1068** | **422** | 1068 | 422 | 1068 | 423 |
| 444.namd | 96 | 717 | 1070 | 703 | 1100 | **717** | **1070** | 96 | 716 | 1080 | 699 | 1100 | **714** | **1080** |
| 447.dealII | 96 | 526 | 2090 | **532** | **2070** | 537 | 2050 | 96 | 526 | 2090 | **532** | **2070** | 537 | 2050 |
| 450.soplex | 96 | 1918 | 417 | 1915 | 418 | **1917** | **418** | 48 | **829** | **483** | 829 | 483 | 827 | 484 |
| 453.povray | 96 | **271** | **1890** | 272 | 1880 | 267 | 1910 | 96 | 234 | 2180 | **233** | **2190** | 231 | 2210 |
| 454.calculix | 96 | 427 | 1850 | **425** | **1870** | 424 | 1870 | 96 | 427 | 1850 | **425** | **1870** | 424 | 1870 |
| 459.GemsFDTD | 96 | 2688 | 379 | **2602** | **392** | 2601 | 392 | 96 | 2688 | 379 | **2602** | **392** | 2601 | 392 |
| 465.tonto | 96 | 920 | 1030 | 912 | 1040 | **914** | **1030** | 96 | 878 | 1080 | 903 | 1050 | **879** | **1070** |
| 470.lbm | 96 | 1672 | 789 | 1670 | 790 | **1670** | **790** | 96 | 1672 | 789 | 1670 | 790 | **1670** | **790** |
| 481.wrf | 96 | **1501** | **714** | 1501 | 714 | 1503 | 714 | 96 | 1502 | 714 | **1502** | **714** | 1502 | 714 |
| 482.sphinx3 | 96 | 2492 | 751 | **2490** | **752** | 2488 | 752 | 96 | 2462 | 760 | **2462** | **760** | 2463 | 760 |

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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SPECfp_rate_base2006 =  904

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

**Test date:** Jul-2014
**Hardware Availability:** Feb-2014
**Software Availability:** Nov-2013

## 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 RH5885V3 Fri Jul 25 01:29:41 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 E7-8850 v2 @ 2.30GHz
      4 "physical id"s (chips)
      96 "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 : 12
      siblings  : 24
      physical 0: cores 0 1 2 3 4 5 8 9 10 11 12 13
      physical 1: cores 0 1 2 3 4 5 8 9 10 11 12 13
      physical 2: cores 0 1 2 3 4 5 8 9 10 11 12 13
      physical 3: cores 0 1 2 3 4 5 8 9 10 11 12 13
   cache size : 24576 KB

From /proc/meminfo
   MemTotal:       264351944 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 RH5885V3 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 23 16:10

SPEC is set to: /spec
   Filesystem      Type  Size  Used Avail Use% Mounted on
   /dev/sda2       ext4  385G   94G  272G  26% /spec

Additional information from dmidecode:
  BIOS American Megatrends Inc. BLISV050 06/07/2014
```
Continued on next page

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| | | | |
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## Platform Notes (Continued)

```
   Memory:
    16x   16 GB
    14x Hynix HMT42GR7AFR4C-PB 16 GB 1066 MHz 2 rank
    2x 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 256 GB and the dmidecode description should have two lines reading as:
    14x Hynix HMT42GR7AFR4C-PB 16 GB 1066 MHz 2 rank
    2x 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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## 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 (except as noted below):
```
icc    -m64
```

```
482.sphinx3: icc -m32
```

C++ benchmarks (except as noted below):
```
icpc   -m64
```

```
450.soplex: icpc -m32
```

Fortran benchmarks:
```
ifort -m64
```

Continued on next page

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# Peak Compiler Invocation (Continued)

Benchmarks using both Fortran and C:
```
icc   -m64 ifort -m64
```

# Peak 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
          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
```

# 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: -xAVX -ipo -O3 -no-prec-div -opt-mem-layout-trans=3
                 -unroll2
```

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: -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-malloc-options=3
```

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# Peak Optimization Flags (Continued)

  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-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

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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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