SPEC® CFP2006 Result
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Huawei

Huawei RH5885H V3 (Intel Xeon E7-4809 v3)

$SPECfp^{®}2006 =$ 75.4

$SPECfp\_base2006 =$ 72.0

CPU2006 license:	3175	**Test date:**	May-2015
Test sponsor:	Huawei	**Hardware Availability:**	May-2015
Tested by:	Huawei	**Software Availability:**	Sep-2014

Benchmark results graph (scale 0 to 760):

- 410.bwaves: 478
- 416.gamess: 26.4 / 24.3
- 433.milc: 46.9 / 46.7
- 434.zeusmp: 123
- 435.gromacs: 28.5
- 436.cactusADM: 543
- 437.leslie3d: 219
- 444.namd: 18.0 / 17.5
- 447.dealII: 34.8
- 450.soplex: 28.1
- 453.povray: 40.0 / 35.1
- 454.calculix: 36.2 / 33.2
- 459.GemsFDTD: 210 / 167
- 465.tonto: 32.6 / 26.4
- 470.lbm: 748
- 481.wrf: 49.6
- 482.sphinx3: 50.9
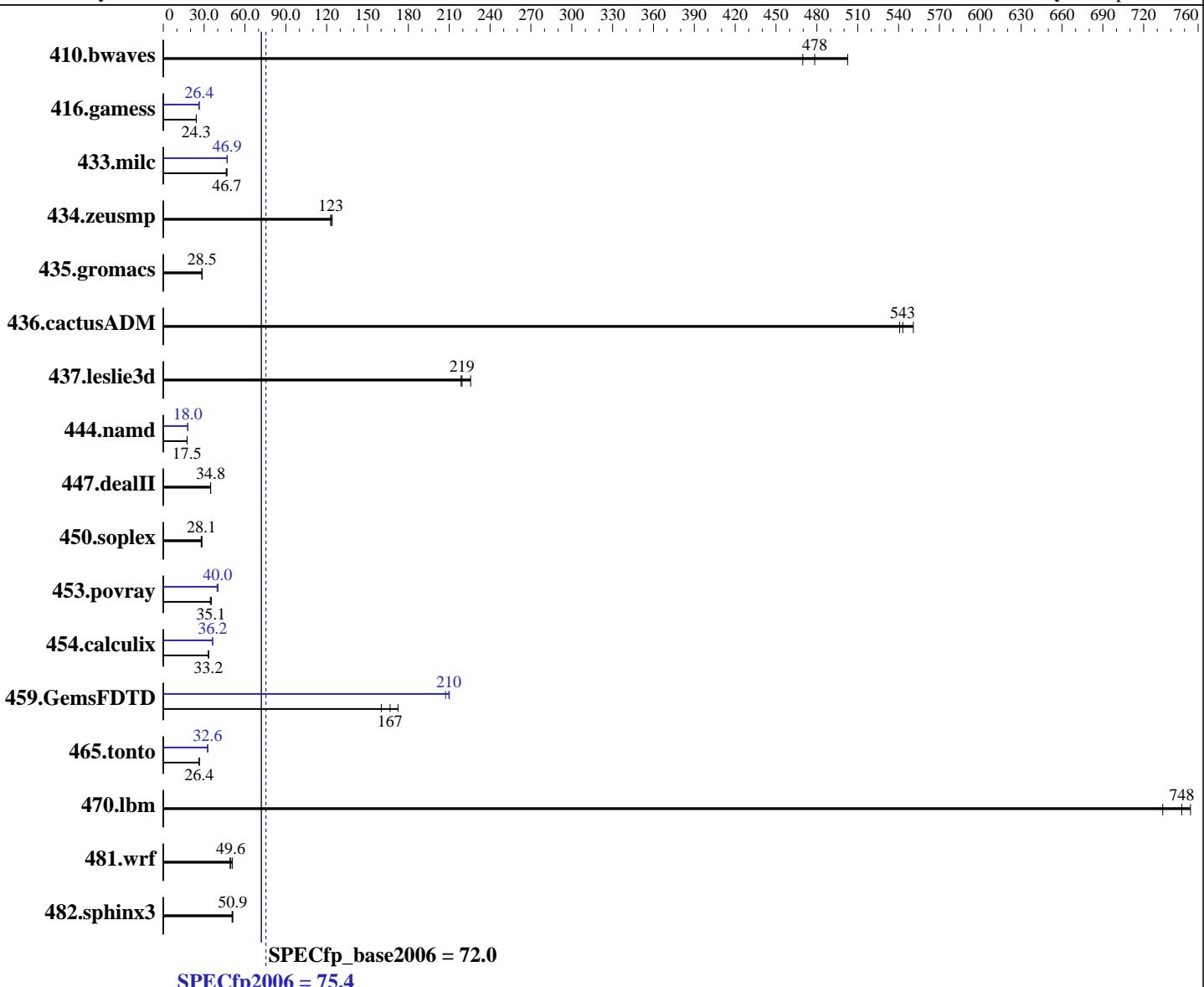
SPECfp_base2006 = 72.0
SPECfp2006 = 75.4

Hardware

CPU Name:	Intel Xeon E7-4809 v3
CPU Characteristics:	
CPU MHz:	2000
FPU:	Integrated
CPU(s) enabled:	32 cores, 4 chips, 8 cores/chip
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 7.0 (Maipo) 3.10.0-123.el7.x86_64
Compiler:	C/C++: Version 15.0.0.090 of Intel C++ Studio XE for Linux; Fortran: Version 15.0.0.090 of Intel Fortran Studio XE for Linux
Auto Parallel:	Yes
File System:	xfs

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L3 Cache:	20 MB I+D on chip per chip
Other Cache:	None
Memory:	1 TB (64 x 16 GB 2Rx4 PC4-2133P-R, running at 1333 MHz)
Disk Subsystem:	2 x 300 GB SAS, 10K RPM
Other Hardware:	None

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

Results Table

Benchmark	Base						Peak					
	Seconds	Ratio	Seconds	Ratio	Seconds	Ratio	Seconds	Ratio	Seconds	Ratio	Seconds	Ratio
410.bwaves	27.0	503	**28.4**	**478**	28.9	470	27.0	503	**28.4**	**478**	28.9	470
416.gamess	809	24.2	**806**	**24.3**	806	24.3	741	26.4	**742**	**26.4**	748	26.2
433.milc	199	46.2	**197**	**46.7**	196	46.7	195	47.1	**196**	**46.9**	196	46.8
434.zeusmp	73.3	124	74.0	123	**73.9**	**123**	73.3	124	74.0	123	**73.9**	**123**
435.gromacs	**250**	**28.5**	250	28.6	252	28.3	**250**	**28.5**	250	28.6	252	28.3
436.cactusADM	**22.0**	**543**	21.7	551	22.1	541	**22.0**	**543**	21.7	551	22.1	541
437.leslie3d	**42.8**	**219**	41.6	226	43.0	219	**42.8**	**219**	41.6	226	43.0	219
444.namd	459	17.5	458	17.5	**458**	**17.5**	446	18.0	**446**	**18.0**	446	18.0
447.dealII	329	34.8	329	34.8	**329**	**34.8**	329	34.8	329	34.8	**329**	**34.8**
450.soplex	**296**	**28.1**	293	28.4	300	27.8	**296**	**28.1**	293	28.4	300	27.8
453.povray	154	34.5	**152**	**35.1**	151	35.3	132	40.2	135	39.5	**133**	**40.0**
454.calculix	248	33.3	249	33.2	**248**	**33.2**	228	36.2	**228**	**36.2**	228	36.1
459.GemsFDTD	66.2	160	61.5	172	**63.7**	**167**	51.2	207	50.5	210	**50.6**	**210**
465.tonto	**372**	**26.4**	372	26.5	375	26.3	302	32.6	302	32.6	**302**	**32.6**
470.lbm	**18.4**	**748**	18.7	734	18.2	754	**18.4**	**748**	18.7	734	18.2	754
481.wrf	220	50.8	**225**	**49.6**	228	49.0	220	50.8	**225**	**49.6**	228	49.0
482.sphinx3	382	51.0	**383**	**50.9**	386	50.5	382	51.0	**383**	**50.9**	386	50.5

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"
```

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%
Set DRAM Maintenace to Manual
Set DRAM Maintenace Mode to pTRR
Set Hyper Threading to disabled
Sysinfo program /spec/config/sysinfo.rev6914
$Rev: 6914 $ $Date:: 2014-06-25 #$ e3fbb8667b5a285932ceab81e28219e1
```

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Platform Notes (Continued)

```
running on RH5885HV3 Mon May 18 15:44:44 2015

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 E7-4809 v3 @ 2.00GHz
      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 : 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
      physical 2: cores 0 1 2 3 4 5 6 7
      physical 3: cores 0 1 2 3 4 5 6 7
   cache size : 20480 KB

From /proc/meminfo
   MemTotal:       1056475220 kB
   HugePages_Total:        0
   Hugepagesize:       2048 kB

From /etc/*release* /etc/*version*
   os-release:
      NAME="Red Hat Enterprise Linux Server"
      VERSION="7.0 (Maipo)"
      ID="rhel"
      ID_LIKE="fedora"
      VERSION_ID="7.0"
      PRETTY_NAME="Red Hat Enterprise Linux Server 7.0 (Maipo)"
      ANSI_COLOR="0;31"
      CPE_NAME="cpe:/o:redhat:enterprise_linux:7.0:GA:server"
   redhat-release: Red Hat Enterprise Linux Server release 7.0 (Maipo)
   system-release: Red Hat Enterprise Linux Server release 7.0 (Maipo)
   system-release-cpe: cpe:/o:redhat:enterprise_linux:7.0:ga:server

uname -a:
   Linux RH5885HV3 3.10.0-123.el7.x86_64 #1 SMP Mon May 5 11:16:57 EDT 2014
   x86_64 x86_64 x86_64 GNU/Linux

run-level 3 May 18 15:39

SPEC is set to: /spec
   Filesystem     Type  Size  Used Avail Use% Mounted on
   /dev/sda3      xfs   537G   37G  501G   7% /
Additional information from dmidecode:

   Warning: Use caution when you interpret this section. The 'dmidecode' program
```

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Platform Notes (Continued)

```
     reads system data which is "intended to allow hardware to be accurately
     determined", but the intent may not be met, as there are frequent changes to
     hardware, firmware, and the "DMTF SMBIOS" standard.

  BIOS American Megatrends Inc. BLISV705 03/30/2015
  Memory:
    32x NO DIMM NO DIMM
    64x Samsung M393A2G40DB0-CPB 16 GB 2 rank 2133 MHz, configured at 1333 MHz

 (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:
    32x NO DIMM NO DIMM
    64x Samsung M393A2G40DB0-CPB 16 GB 2 rank 2133 MHz, configured at 1333 MHz
```

General Notes

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

 Binaries compiled on a system with 1x Core i5-4670K CPU + 16GB
 memory using RedHat EL 7.0
 Transparent Huge Pages enabled with:
 echo always > /sys/kernel/mm/transparent_hugepage/enabled
 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

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Base Portability Flags (Continued)

```
   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:
```
-xCORE-AVX2 -ipo -O3 -no-prec-div -parallel -opt-prefetch
-ansi-alias
```

C++ benchmarks:
```
-xCORE-AVX2 -ipo -O3 -no-prec-div -opt-prefetch -ansi-alias
```

Fortran benchmarks:
```
-xCORE-AVX2 -ipo -O3 -no-prec-div -parallel -opt-prefetch
```

Benchmarks using both Fortran and C:
```
-xCORE-AVX2 -ipo -O3 -no-prec-div -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
```

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Peak Portability Flags

Same as Base Portability Flags

Peak Optimization Flags

C benchmarks:

> 433.milc: -xCORE-AVX2(pass 2) -prof-gen(pass 1) -ipo(pass 2)
> -O3(pass 2) -no-prec-div(pass 2) -prof-use(pass 2)
> -auto-ilp32 -ansi-alias

> 470.lbm: basepeak = yes

> 482.sphinx3: basepeak = yes

C++ benchmarks:

> 444.namd: -xCORE-AVX2(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: -xCORE-AVX2(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: basepeak = yes

> 416.gamess: -xCORE-AVX2(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: basepeak = yes

> 459.GemsFDTD: -xCORE-AVX2(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: -xCORE-AVX2(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

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Peak Optimization Flags (Continued)

Benchmarks using both Fortran and C:

435.gromacs: basepeak = yes

436.cactusADM: basepeak = yes

454.calculix: -xCORE-AVX2 -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-ic15.0-official-linux64.html
http://www.spec.org/cpu2006/flags/Huawei-Platform-Settings-V1.0-HSW-RevG.html

You can also download the XML flags sources by saving the following links:
http://www.spec.org/cpu2006/flags/Intel-ic15.0-official-linux64.xml
http://www.spec.org/cpu2006/flags/Huawei-Platform-Settings-V1.0-HSW-RevG.xml

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

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