SPEC® CFP2006 Result

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Huawei

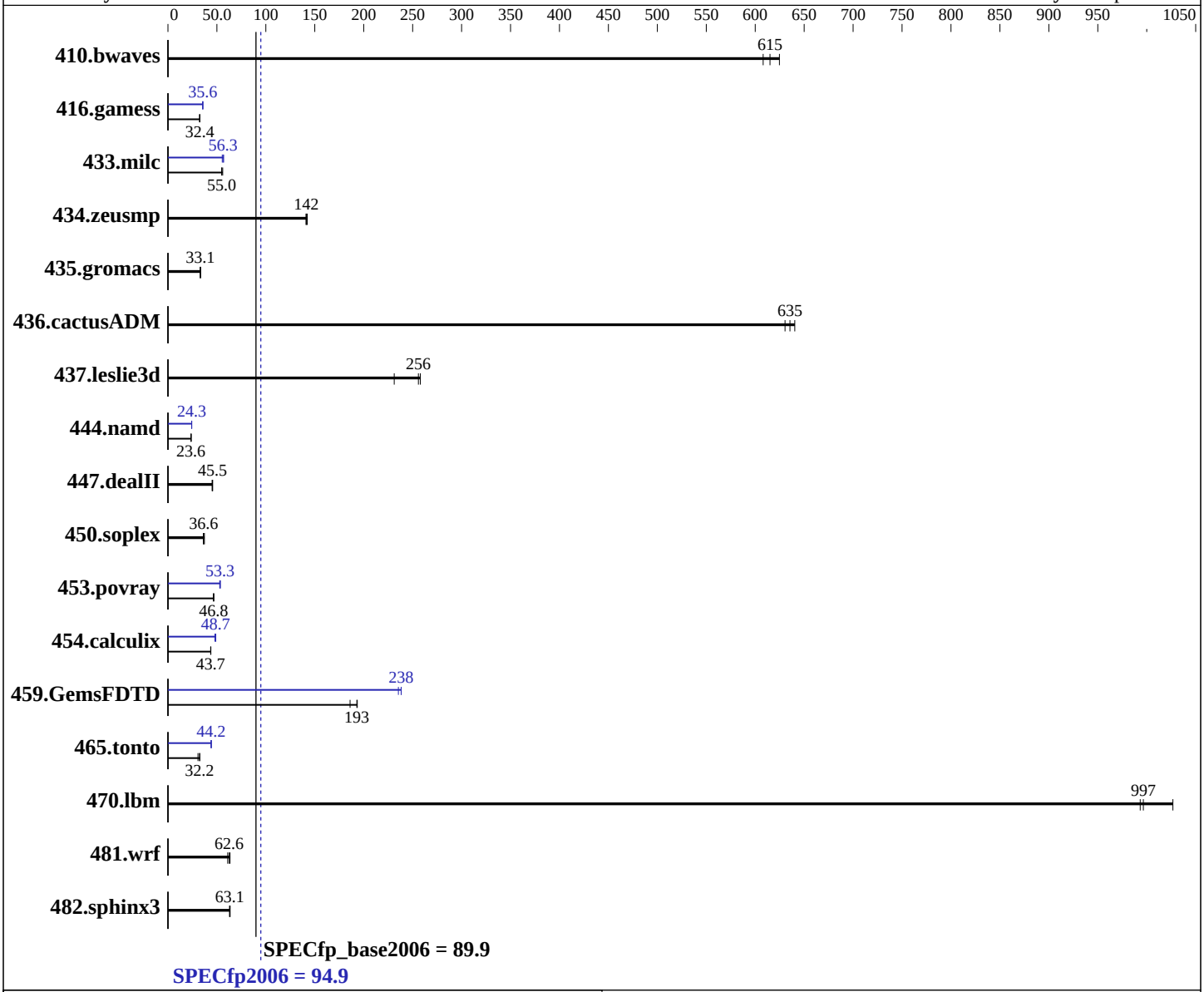
Huawei RH5885H V3 (Intel Xeon E7-4830 v3)

SPECfp®2006 = 94.9

SPECfp_base2006 = 89.9

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

Test date: May-2015
Hardware Availability: May-2015
Software Availability: Sep-2014



Hardware

CPU Name:	Intel Xeon E7-4830 v3
CPU Characteristics:	Intel Turbo Boost Technology up to 2.70 GHz
CPU MHz:	2100
FPU:	Integrated
CPU(s) enabled:	48 cores, 4 chips, 12 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

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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: 30 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	**22.1**	**615**	22.3	608	21.8	625	**22.1**	**615**	22.3	608	21.8	625
416.gamess	**604**	**32.4**	604	32.4	603	32.5	549	35.6	551	35.5	**550**	**35.6**
433.milc	**167**	**55.0**	167	54.9	164	55.9	161	56.9	**163**	**56.3**	166	55.5
434.zeusmp	**64.3**	**142**	64.5	141	63.9	142	**64.3**	**142**	64.5	141	63.9	142
435.gromacs	214	33.3	**216**	**33.1**	216	33.0	214	33.3	**216**	**33.1**	216	33.0
436.cactusADM	**18.8**	**635**	18.7	640	19.0	630	**18.8**	**635**	18.7	640	19.0	630
437.leslie3d	**36.7**	**256**	36.5	258	40.7	231	**36.7**	**256**	36.5	258	40.7	231
444.namd	339	23.6	340	23.6	**340**	**23.6**	331	24.2	**331**	**24.3**	331	24.3
447.dealII	**251**	**45.5**	251	45.7	254	45.1	**251**	**45.5**	251	45.7	254	45.1
450.soplex	224	37.3	**228**	**36.6**	231	36.1	224	37.3	**228**	**36.6**	231	36.1
453.povray	**114**	**46.8**	114	46.8	115	46.4	99.4	53.5	101	52.9	**99.9**	**53.3**
454.calculix	188	43.8	**189**	**43.7**	189	43.6	**169**	**48.7**	169	48.9	172	47.9
459.GemsFDTD	57.0	186	**55.0**	**193**	54.8	193	45.1	235	44.5	238	**44.5**	**238**
465.tonto	302	32.6	**305**	**32.2**	321	30.7	223	44.2	**223**	**44.2**	223	44.1
470.lbm	**13.8**	**997**	13.4	1030	13.8	993	**13.8**	**997**	13.4	1030	13.8	993
481.wrf	**178**	**62.6**	183	61.0	176	63.4	**178**	**62.6**	183	61.0	176	63.4
482.sphinx3	**309**	**63.1**	307	63.5	309	63.0	**309**	**63.1**	307	63.5	309	63.0

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 Sun May 24 15:03:09 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 E7-4830 v3 @ 2.10GHz
      4 "physical id"s (chips)
      48 "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  : 12
      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 : 30720 KB

From /proc/meminfo
   MemTotal:       1056473364 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 24 14:59

SPEC is set to: /spec
   Filesystem            Type  Size  Used Avail Use% Mounted on
   /dev/mapper/rhel-root xfs   342G   20G  323G   6% /
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 = "48"

 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`

Continued on next page

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

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

Continued on next page

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`

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For other inquiries, please contact webmaster@spec.org.

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