SPEC® CFP2006 Result

Huawei

$SPECfp^{®}2006 =$ 100

Huawei CH121 V3 (Intel Xeon E5-2658 v3)

$SPECfp\_base2006 =$ 96.5

Benchmark	Result
410.bwaves	544
416.gamess	34.3 / 31.1
433.milc	62.3 / 61.6
434.zeusmp	198
435.gromacs	37.6
436.cactusADM	742
437.leslie3d	365
444.namd	25.2 / 24.6
447.dealII	47.0
450.soplex	39.6
453.povray	49.9 / 44.3
454.calculix	48.3 / 45.1
459.GemsFDTD	255 / 212
465.tonto	41.9 / 35.2
470.lbm	693
481.wrf	83.0
482.sphinx3	66.8

SPECfp_base2006 = 96.5

SPECfp2006 = 100
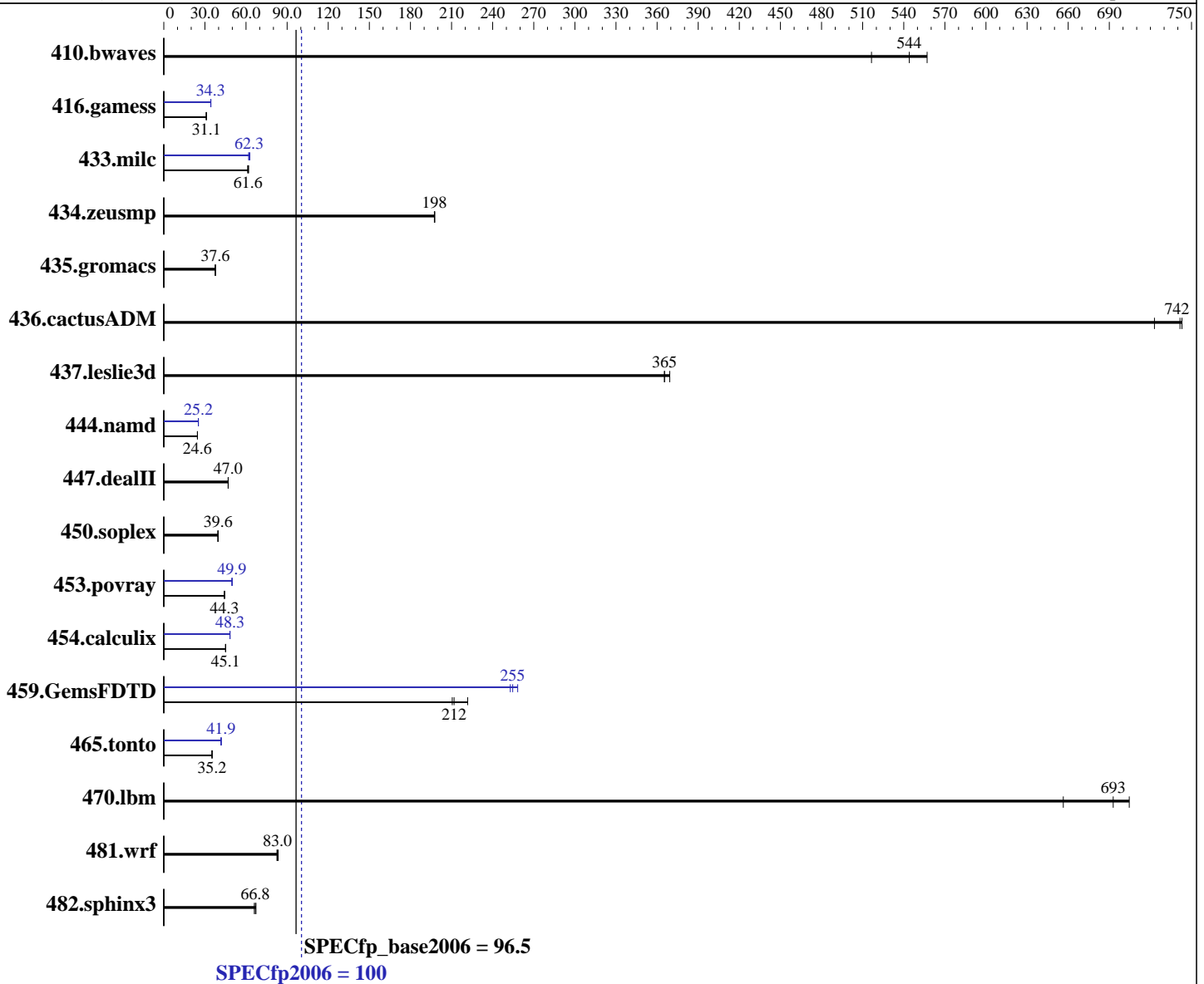
Hardware

CPU Name: Intel Xeon E5-2658 v3
CPU Characteristics: Intel Turbo Boost Technology up to 2.90 GHz
CPU MHz: 2200
FPU: Integrated
CPU(s) enabled: 24 cores, 2 chips, 12 cores/chip
CPU(s) orderable: 1,2 chip
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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CPU2006 license: 3175
Test sponsor: Huawei
Tested by: Huawei

Test date: Apr-2015
Hardware Availability: Mar-2015
Software Availability: Sep-2014

L3 Cache:	30 MB I+D on chip per chip	System State:	Run level 3 (multi-user)
Other Cache:	None	Base Pointers:	64-bit
Memory:	256 GB (16 x 16 GB 2Rx4 PC4-2133P-R)	Peak Pointers:	32/64-bit
Disk Subsystem:	1 x 500 GB SATA, 7200 RPM	Other Software:	None
Other Hardware:	None		

Results Table

Benchmark	Base Seconds	Base Ratio	Base Seconds	Base Ratio	Base Seconds	Base Ratio	Peak Seconds	Peak Ratio	Peak Seconds	Peak Ratio	Peak Seconds	Peak Ratio
410.bwaves	26.3	516	**25.0**	**544**	24.4	557	26.3	516	**25.0**	**544**	24.4	557
416.gamess	**630**	**31.1**	633	31.0	630	31.1	572	34.2	569	34.4	**571**	**34.3**
433.milc	150	61.2	148	61.9	**149**	**61.6**	148	61.9	146	62.8	**147**	**62.3**
434.zeusmp	46.0	198	**46.1**	**198**	46.1	197	46.0	198	**46.1**	**198**	46.1	197
435.gromacs	190	37.6	190	37.6	**190**	**37.6**	190	37.6	190	37.6	**190**	**37.6**
436.cactusADM	16.5	723	16.1	743	**16.1**	**742**	16.5	723	16.1	743	**16.1**	**742**
437.leslie3d	25.5	369	**25.7**	**365**	25.7	365	25.5	369	**25.7**	**365**	25.7	365
444.namd	327	24.6	327	24.5	**327**	**24.6**	318	25.2	**318**	**25.2**	318	25.2
447.dealII	243	47.0	**243**	**47.0**	244	46.9	243	47.0	**243**	**47.0**	244	46.9
450.soplex	211	39.6	**211**	**39.6**	211	39.5	211	39.6	**211**	**39.6**	211	39.5
453.povray	120	44.4	120	44.2	**120**	**44.3**	107	49.7	**107**	**49.9**	107	49.9
454.calculix	183	45.1	183	45.2	**183**	**45.1**	**171**	**48.3**	171	48.3	171	48.3
459.GemsFDTD	50.4	210	47.8	222	**50.1**	**212**	**41.7**	**255**	42.0	253	41.1	258
465.tonto	280	35.2	279	35.3	**280**	**35.2**	236	41.7	**235**	**41.9**	235	41.9
470.lbm	**19.8**	**693**	20.9	656	19.5	705	**19.8**	**693**	20.9	656	19.5	705
481.wrf	**135**	**83.0**	134	83.4	135	82.6	**135**	**83.0**	134	83.4	135	82.6
482.sphinx3	290	67.3	**292**	**66.8**	295	66.1	290	67.3	**292**	**66.8**	295	66.1

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 Custom
    Set Snoop Mode to HS
    Set Hyper-Threading to Disabled
    Set Patrol Scrub to Disable
    Baseboard Management Controller used to adjust the fan speed to 100%
    Sysinfo program /spec/config/sysinfo.rev6914
    $Rev: 6914 $ $Date:: 2014-06-25 #$ e3fbb8667b5a285932ceab81e28219e1
    running on localhost.localdomain Thu Apr 16 04:37:15 2015

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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 E5-2658 v3 @ 2.20GHz
      2 "physical id"s (chips)
      24 "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
   cache size : 30720 KB

From /proc/meminfo
   MemTotal:       263720556 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 localhost.localdomain 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 Apr 16 04:32

SPEC is set to: /spec
   Filesystem     Type  Size  Used Avail Use% Mounted on
   /dev/sda2      xfs   440G  134G  306G  31% /
Additional information from dmidecode:

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

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Platform Notes (Continued)

```
     BIOS Insyde Corp. 1.19 10/10/2014
     Memory:
      8x Micron 36ASF2G72PZ-2G1A2 16 GB 1 rank 2133 MHz
      8x Micron 36ASF2G72PZ-2G1A2 16 GB 2 rank 2133 MHz
      8x NO DIMM NO DIMM   3 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,1,0"
LD_LIBRARY_PATH = "/spec/libs/32:/spec/libs/64:/spec/sh"
OMP_NUM_THREADS = "24"

 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
 The Huawei CH121 V3 and Huawei CH222 V3
 are electronically equivalent.
 The results have been measured on a Huawei CH121 V3 model
```

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
```

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Base Portability Flags (Continued)

```
    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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Test sponsor: Huawei
Tested by: Huawei

Test date: Apr-2015
Hardware Availability: Mar-2015
Software Availability: Sep-2014

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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Software Availability: Sep-2014

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-HASWELL-V1.4.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-HASWELL-V1.4.xml

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