SPEC® CFP2006 Result

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Huawei

Huawei CH220 V3 (Intel Xeon E5-2620 v4)

SPECfp®_rate2006 = NC

SPECfp_rate_base2006 = NC

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

Test date: May-2016
Hardware Availability: Mar-2016
Software Availability: Mar-2016

SPEC has determined that this result is not in compliance with the SPEC CPU2006 run and reporting rules. Specifically, the memory was not a href="http://spec.org/cpu2006/Docs/runrules.html#rule_1.3.2">SPEC CPU ru up policy on <a href="https://www.spec.org/osg/policy.html#AppendixC">gener

Copies
410.bwaves
416.gamess
433.milc
434.zeusmp
435.gromacs
436.cactusADM
437.leslie3d
444.namd
447.dealII
450.soplex
453.povray
454.calculix
459.GemsFDTD
4[illegible]lbm
481.wrf
482.sphinx3

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Hardware

CPU Name:	Intel Xeon E5-2620 v4
CPU Characteristics:	Intel Turbo Boost Technology up to 3.00 GHz
CPU MHz:	2100
FPU:	Integrated
CPU(s) enabled:	16 cores, 2 chips, 8 cores/chip, 2 threads/core
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
L3 Cache:	20 MB I+D on chip per chip
Other Cache:	None
Memory:	256 GB (16 x 16 GB 2Rx4 PC4-240[illegible]R, runnin[illegible] 2133 MHz)
Disk Subsystem:	1 x 1000 GB SATA, 7200 RPM
Other Hardware:	None

Software

Operating System:	Red Hat Enterprise Linux Server release 7.2 (Maipo) 3.10.0-327.el7.x86_64
Compiler:	C/C++: Version 16.0.0.101 of Intel C++ Studio XE for Linux; Fortran: Version 16.0.0.101 of Intel Fortran Studio XE for Linux
[illegible] Parallel:	No
File [illegible]stem:	ext4
[illegible]stem [illegible]ate:	Run level 3 (multi-user)
[illegible] Pointers:	32/64-bit
Peak Pointers:	32/64-bit
Other Software:	None

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Results Table

Benchmark	Base							Peak						
	Copies	Seconds	Ratio	Seconds	Ratio	Seconds	Ratio	Copies	Seconds	Ratio	Seconds	Ratio	Seconds	Ratio
410.bwaves	32	NC	NC	NC	NC	NC	NC	32	NC	NC	NC	NC	NC	NC
416.gamess	32	NC	NC	NC	NC	NC	NC	32	NC	NC	NC	NC	NC	NC
433.milc	32	NC	NC	NC	NC	NC	NC	32	NC	NC	NC	NC	NC	NC
434.zeusmp	32	NC	NC	NC	NC	NC	NC	32	NC	NC	NC	NC	NC	NC
435.gromacs	32	NC	NC	NC	NC	NC	NC	32	NC	NC	NC	NC	NC	NC
436.cactusADM	32	NC	NC	NC	NC	NC	NC	32	NC	NC	NC	NC	NC	NC
437.leslie3d	32	NC	NC	NC	NC	NC	NC	32	NC	NC	NC	NC	NC	NC
444.namd	32	NC	NC	NC	NC	NC	NC	32	NC	NC	NC	NC	NC	NC
447.dealII	32	NC	NC	NC	NC	NC	NC	32	NC	NC	NC	NC	NC	NC
450.soplex	32	NC	NC	NC	NC	NC	NC	16	NC	NC	NC	NC	NC	NC
453.povray	32	NC	NC	NC	NC	NC	NC	32	NC	NC	NC	NC	NC	NC
454.calculix	32	NC	NC	NC	NC	NC	NC	32	NC	NC	NC	NC	NC	NC
459.GemsFDTD	32	NC	NC	NC	NC	NC	NC	32	NC	NC	NC	NC	NC	NC
465.tonto	32	NC	NC	NC	NC	NC	NC	32	NC	NC	NC	NC	NC	NC
470.lbm	32	NC	NC	NC	NC	NC	NC	32	NC	NC	NC	NC	NC	NC
481.wrf	32	NC	NC	NC	NC	NC	NC	32	NC	NC	NC	NC	NC	NC
482.sphinx3	32	NC	NC	NC	NC	NC	NC	32	NC	NC	NC	NC	NC	NC

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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Platform Notes

```
BIOS configuration:
Set Power Efficiency Mode to Peformance
Set Snoop Mode to ES mode
Set Patrol Scrub to Disable
Set Hyper-Threading to enabled
Sysinfo program /spec16/config/sysinfo.rev6914
$Rev: 6914 $ $Date:: 2014-06-25 #$ e3fbb8667b5a285932ceab81e28219e1
running on localhost.localdomain Sat May  7 19:15:08 2016

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 E5-2620 v4 @ 2.10GHz
      2 "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  : 16
      physical 0: cores 0 1 2 3 4 5 6 7
      physical 1: cores 0 1 2 3 4 5 6 7
   cache size : 20480 KB

From /proc/meminfo
   MemTotal:       263568000 kB
   HugePages_Total:       0
   Hugepagesize:       2048 kB

From /etc/*release* /etc/*version*
   os-release:
      NAME="Red Hat Enterprise Linux Server"
      VERSION="7.2 (Maipo)"
      ID="rhel"
      ID_LIKE="fedora"
      VERSION_ID="7.2"
      PRETTY_NAME="Red Hat Enterprise Linux Server 7.2 (Maipo)"
      ANSI_COLOR="0;31"
      CPE_NAME="cpe:/o:redhat:enterprise_linux:7.2:GA:server"
   redhat-release: Red Hat Enterprise Linux Server release 7.2 (Maipo)
   system-release: Red Hat Enterprise Linux Server release 7.2 (Maipo)
   system-release-cpe: cpe:/o:redhat:enterprise_linux:7.2:ga:server
```

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Platform Notes (Continued)

```
uname -a:
   Linux localhost.localdomain 3.10.0-327.el  x86_64 #  SMP  hu Oct 29 17:29:29
   EDT 2015 x86_64 x86_64 x86_64 GNU/Linux

run-level 3 May 21 07:37

SPEC is set to: /spec16
   Filesystem     Type  Size  Used A ail Us % Mounted on
   /dev/sda2      ext4  850G    28G   10G  13  /
Additional information from  midecode

   Warning: Use caution wh n you interpret this section. The 'dmidecode' program
   reads system data which is "intende  to allow hardware to be accurately
   determined", but the in nt may not be met, as there are frequent changes to
   hardware, firmware, and  "DMTF SMBIOS" standard.

  BIOS Insyde Corp. 3.09 02/22/2016
  Memory:
   8x Samsung M393A2G40EB  CRC 16 GB 1 rank 2400 MHz, configured at 2133 MHz
   8x Samsung M393A  EB1-CRC 16 GB 2 rank 2400 MHz, configured at 2133 MHz

(End of data fro  sysinfo  ogram)
```

General Notes

```
Enviro ment  ariable  set by runspec before the start of the run:
LD_LIBR RY_PA   = "/ pec16/libs/32:/spec16/libs/64:/spec16/sh"

Binaries c mpiled on a system with 1x Intel Core i5-4670K CPU + 32GB
      RedHat EL 7.1
Transparent Huge Pages enabled with:
ech  always > /sys/kernel/mm/transparent_hugepage/enabled
File ystem page cache cleared with:
echo 1>      /proc/sys/vm/drop_caches
runspec command invoked through numactl i.e.:
numactl --interleave=all runspec <etc>
```

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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
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 -opt-prefetch -auto-p32
-ansi-alias -opt-mem-layout-trans=3

Continued on next page

SPEC has determined that this result is not in compliance with the SPEC CPU2006 run and reporting rules. Specifically, the memory was not a href="http://spec.org/cpu2006/Docs/runrules.html#rule_1.3.2">SPEC CPU ru up policy on <a href="https://www.spec.org/osg/policy.html#AppendixC">gener

Base Optimization Flags (Continued)

C++ benchmarks:
-xCORE-AVX2 -ipo -O3 -no-prec-div -opt-prefetch -auto-p3
-ansi-alias -opt-mem-layout-trans=3

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

Benchmarks using both Fortran and C:
-xCORE-AVX2 -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 (except as noted below):
icpc -m64

450.soplex: icpc -m32 -L/opt/intel/compilers_and_libraries_2016/linux/compiler/lib/ia32_lin

Fortran benchmarks:
ifort -m64

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

Continued on next page

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Peak Portability Flags (Continued)

450.soplex: -D_FILE_OFFSET_BITS=64
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_LINUX
482.sphinx3: -DSPEC_CPU_LP64

Peak Optimization Flags

C benchmarks:

433.milc: basepeak = yes

470.lbm: basepeak = yes

482.sphinx3: basepeak = yes

C++ benchmarks:

444.namd: -xCORE-AVX2(pass 2) -prof-gen:threadsafe(pass 1)
-ipo(pass 2) -O3(pass 2) -no-prec-div(pass 2)
-par-num-threads=1(pass 1) -opt-mem-layout-trans=3(pass 2)
-prof-use(pass 2) -fno-alias -auto-ilp32

447.dealII: basepeak = yes

-xCORE-AVX2(pass 2) -prof-gen:threadsafe(pass 1)
-ipo(pass 2) -O3(pass 2) -no-prec-div(pass 2)
-par-num-threads=1(pass 1) -opt-mem-layout-trans=3(pass 2)
-prof-use(pass 2) -opt-malloc-options=3

453.povray: -xCORE-AVX2(pass 2) -prof-gen:threadsafe(pass 1)
-ipo(pass 2) -O3(pass 2) -no-prec-div(pass 2)
-par-num-threads=1(pass 1) -opt-mem-layout-trans=3(pass 2)
-prof-use(pass 2) -unroll4 -ansi-alias

Fortran benchmarks:

Continued on next page

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Peak Optimization Flags (Continued)

410.bwaves: basepeak = yes

416.gamess: -xCORE-AVX2(pass 2) -prof-gen:thre fe(pass
-ipo(pass 2) -O3(pass 2) -no-prec-di (pass
-par-num-threads=1(pass 1) -prof e(pass unroll2
-inline-level=0 -scalar-rep-

434.zeusmp: basepeak = yes

437.leslie3d: basepeak = yes

459.GemsFDTD: basepeak = yes

465.tonto: -xCORE-AVX2(pas 2) -prof-gen threadsafe(pass 1)
-ipo(pass 2) -O3(2) -no-prec-div(pass 2)
-par-num-threads pass 1) -prof-use(pass 2) -unroll4 -auto
-inline-calloc -op loc-options=3

Benchmarks using both Fortran and C:

435.gromacs: -xCORE-AV pass 2) -prof-gen:threadsafe(pass 1)
-ipo(ss 2) - pass 2) -no-prec-div(pass 2)
-par- m-threads=1(pass 1) -opt-mem-layout-trans=3(pass 2)
-prof-u pass 2) -opt-prefetch -auto-ilp32

436.cactusADM: basepeak = yes

454.calculix: basepeak = yes

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-ic16.0-official-linux64.html
http://www.spec.org/cpu2006/flags/Huawei-Platform-Settings-BDW-V1.0.html

You can also download the XML flags sources by saving the following links:
http://www.spec.org/cpu2006/flags/Intel-ic16.0-official-linux64.xml
http://www.spec.org/cpu2006/flags/Huawei-Platform-Settings-BDW-V1.0.xml

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