Huawei
Tecal RH5885 V2

<table>
<thead>
<tr>
<th>SPECfp®2006</th>
<th>62.5</th>
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<tbody>
<tr>
<td>SPECfp_base2006</td>
<td>60.1</td>
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</tbody>
</table>

CPU2006 license: 3175  Test date: Oct-2012
Test sponsor: Huawei  Hardware Availability: Oct-2012
Tested by: Huawei  Software Availability: Oct-2012

| SPECfp®2006 = 62.5 |

- SPECfp_base2006 = 60.1

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**Hardware**

- **CPU Name:** Intel Xeon E7-4870
- **CPU Characteristics:** Intel Turbo Boost Technology up to 2.80 GHz
- **CPU MHz:** 2400
- **FPU:** Integrated
- **CPU(s) enabled:** 40 cores, 4 chips, 10 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

**Software**

- **Operating System:** Red Hat Enterprise Linux Server release 6.2 (Santiago)
- **Compiler:** C/C++: Version 13.0.0.079 of Intel C++ Studio XE for Linux;
  Fortran: Version 13.0.0.079 of Intel Fortran Studio XE for Linux
- **Auto Parallel:** Yes
- **File System:** ext4

---

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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 PC3L-10600R-9, ECC, running at 1066 MHz)
Disk Subsystem: 1 x 300GB 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

<table>
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<tr>
<th>Benchmark</th>
<th>Seconds</th>
<th>Ratio</th>
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<td>417</td>
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<td>413</td>
<td>47.2</td>
</tr>
</tbody>
</table>

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:
Intel Hyper-Threading set to Disabled
Set Power Efficiency Mode to Performance
Sysinfo program /root/benchmark/cpu2006/config/sysinfo.rev6818
$Rev: 6818 $ $Date:: 2012-07-17 $S 5569a0425e2ad530534e4c79a46e4d28
running on Huawei-RH5885 Tue Oct 16 20:20:50 2012

This section contains SUT (System Under Test) info as seen by some common utilities. To remove or add to this section, see:
Continued on next page
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CPU2006 license: 3175
Test sponsor: Huawei
Tested by: Huawei
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Hardware Availability: Oct-2012
Software Availability: Oct-2012

Platform Notes (Continued)

http://www.spec.org/cpu2006/Docs/config.html#sysinfo

From /proc/cpuinfo
   model name : Intel(R) Xeon(R) CPU E7- 4870 @ 2.40GHz
   4 "physical id"s (chips)
   40 "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 : 10
   siblings : 10
   physical 0: cores 0 1 2 8 9 16 17 18 24 25
   physical 1: cores 0 1 2 8 9 16 17 18 24 25
   physical 2: cores 0 1 2 8 9 16 17 18 24 25
   physical 3: cores 0 1 2 8 9 16 17 18 24 25
   cache size : 30720 KB

From /proc/meminfo
   MemTotal: 1058611024 kB
   HugePages_Total: 0
   Hugepagesize: 2048 kB

/usr/bin/lsb_release -d
   Red Hat Enterprise Linux Server release 6.2 (Santiago)

From /etc/*release* /etc/*version*
   redhat-release: Red Hat Enterprise Linux Server release 6.2 (Santiago)
   system-release: Red Hat Enterprise Linux Server release 6.2 (Santiago)

uname -a:
   Linux Huawei-RH5885 2.6.32-220.el6.x86_64 #1 SMP Wed Nov 9 08:03:13 EST 2011
   x86_64 x86_64 x86_64 GNU/Linux

run-level 3 Oct 16 12:06

SPEC is set to: /root/benchmark/cpu2006
   Filesystem Type Size Used Avail Use% Mounted on
   /dev/sda1     ext4  274G  9.9G  250G   4% /root/benchmark

Additional information from dmidecode:
   BIOS American Megatrends Inc. RGPUC-BIOS-V019 09/18/2012
   Memory:
   64x   16 GB
   64x Micron 36KSF2G72PZ-1G4D1 16 GB 1067 MHz 2 rank

(End of data from sysinfo program)
   Descriptions about memory generated by sysinfo are not correct,
   only 64 DIMMs are installed not 128, see descriptions below.
   Memory:
   64x Hyundai HMT42GR7BMR4C-H9 16 GB 1067 MHz 4 rank
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General Notes

Environment variables set by runspec before the start of the run:
KMP_AFFINITY = "granularity=fine,compact,1,0"
LD_LIBRARY_PATH = "/root/benchmark/cpu2006/libs/32:/root/benchmark/cpu2006/libs/64"
OMP_NUM_THREADS = "40"

Binaries compiled on a system with 4xE7-8870 CPU + 1024GB memory using RHEL6.2
Transparent Huge Pages enabled with:
echo always > /sys/kernel/mm/redhat_transparent_hugepage/enabled
runspec command invoked through numactl i.e.:
numactl --interleave=all runspec <etc>

Base Compiler Invocation

C benchmarks:
icc  -m64

C++ benchmarks:
icc  -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 -nofor_main
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
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Base Optimization Flags

C benchmarks:
- xsSE4.2 -ipo -O3 -no-prec-div -static -parallel -opt-prefetch
  -ansi-alias

C++ benchmarks:
- xsSE4.2 -ipo -O3 -no-prec-div -static -opt-prefetch -ansi-alias

Fortran benchmarks:
- xsSE4.2 -ipo -O3 -no-prec-div -static -parallel -opt-prefetch

Benchmarks using both Fortran and C:
- xsSE4.2 -ipo -O3 -no-prec-div -static -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: basepeak = yes
- 470.lbm: basepeak = yes
- 482.sphinx3: -xsSE4.2 -ipo -O3 -no-prec-div -unroll2 -ansi-alias
  -parallel

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SPEC CFP2006 Result

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

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SPECfp2006 = 62.5
SPECfp_base2006 = 60.1

Peak Optimization Flags (Continued)

C++ benchmarks:

444.namd: -xSSE4.2(pass 2) -prof-gen(pass 1) -ipo(pass 2) -03(pass 2)
-0prec-div(pass 2) -prof-use(pass 2) -fno-alias
-auto-ilp32

447.dealII: basepeak = yes

450.soplex: basepeak = yes

453.povray: -xSSE4.2(pass 2) -prof-gen(pass 1) -ipo(pass 2) -03(pass 2)
-0prec-div(pass 2) -prof-use(pass 2) -unroll4 -ansi-alias

Fortran benchmarks:

410.bwaves: basepeak = yes

416.gamess: -xSSE4.2(pass 2) -prof-gen(pass 1) -ipo(pass 2) -03(pass 2)
-0prec-div(pass 2) -prof-use(pass 2) -unroll2
-intrinsics-level=0 -scalar-rep -static

434.zeusmp: basepeak = yes

437.leslie3d: basepeak = yes

459.GemsFDTD: -xSSE4.2(pass 2) -prof-gen(pass 1) -ipo(pass 2) -03(pass 2)
-0prec-div(pass 2) -prof-use(pass 2) -unroll2
-intrinsics-level=0 -opt-prefetch -parallel

465.tonto: -xSSE4.2(pass 2) -prof-gen(pass 1) -ipo(pass 2) -03(pass 2)
-0prec-div(pass 2) -prof-use(pass 2) -inline-call
-opt-malloc-options=3 -auto -unroll4

Benchmarks using both Fortran and C:

435.gromacs: basepeak = yes

436.cactusADM: basepeak = yes

454.calculix: -xSSE4.2 -ipo -03 -0prec-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/Huawei-Platform-Settings-revF.html
http://www.spec.org/cpu2006/flags/Intel-ic12.1-official-linux64.20111122.html

You can also download the XML flags sources by saving the following links:
http://www.spec.org/cpu2006/flags/Huawei-Platform-Settings-revF.xml
http://www.spec.org/cpu2006/flags/Intel-ic12.1-official-linux64.20111122.xml
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For other inquiries, please contact webmaster@spec.org.

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