### SGI UV 20 (Intel Xeon E5-4617, 2.90 GHz)

<table>
<thead>
<tr>
<th>Software</th>
<th>Test date:</th>
<th>Hardware Availability:</th>
<th>Software Availability:</th>
</tr>
</thead>
<tbody>
<tr>
<td>SPECfp\textsuperscript{®}_rate\textsuperscript{2006} = 751</td>
<td>Feb-2013</td>
<td>Nov-2012</td>
<td>Feb-2013</td>
</tr>
</tbody>
</table>

**CPU2006 license:** 4  
**Test sponsor:** SGI  
**Tested by:** SGI

**Hardware**

- **CPU Name:** Intel Xeon E5-4617
- **CPU Characteristics:** Intel Turbo Boost Technology up to 3.40 GHz
- **CPU MHz:** 2900
- **FPU:** Integrated
- **CPU(s) enabled:** 24 cores, 4 chips, 6 cores/chip
- **CPU(s) orderable:** 2,4 chip
- **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:** SUSE Linux Enterprise Server 11 (x86_64)  
  kernel 3.0.42-0.7-default
- **Compiler:** C/C++: Version 13.0.0.133 of Intel C++ Studio XE for Linux;  
  Fortran: Version 13.0.0.133 of Intel Fortran Studio XE for Linux
- **Auto Parallel:** No
- **File System:** xfs
- **System State:** Run level 3 (multi-user)

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<table>
<thead>
<tr>
<th>Benchmark</th>
<th>Copies</th>
<th>SPECfp\textsuperscript{®}_rate\textsuperscript{2006}</th>
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</tbody>
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SGI

SGI UV 20 (Intel Xeon E5-4617, 2.90 GHz)

CPU2006 license: 4
Test sponsor: SGI
Tested by: SGI
L3 Cache: 15 MB I+D on chip per chip
Other Cache: None
Memory: 512 GB (32 x 16 GB 2Rx4 PC3-12800R-11, ECC)
Disk Subsystem: 3.3 TB RAID 0
Other Hardware: None
Base Pointers: 32/64-bit
Peak Pointers: 32/64-bit
Software Availability: Feb-2013

Results Table

<table>
<thead>
<tr>
<th>Benchmark</th>
<th>Copies</th>
<th>Seconds</th>
<th>Ratio</th>
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</tr>
</tbody>
</table>

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"
Platform Notes

Sysinfo program /store/cma/cpu2006-v1.2/config/sysinfo.rev6818
$Rev: 6818 $ $Date:: 2012-07-17 #$ e86d102572650a6e4d596a3cee98f191
running on cy020 Wed Feb 27 06:55:21 2013

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 E5-4617 0 @ 2.90GHz
  4 "physical id"s (chips)
  24 "processors"
core, siblings (Caution: counting these is hw and system dependent. The
following excerpts from /proc/cpuinfo might not be reliable. Use with
cautions.)
cpu cores : 6
siblings : 6
physical 0: cores 0 1 2 3 4 5
physical 1: cores 0 1 2 3 4 5
physical 2: cores 0 1 2 3 4 5
physical 3: cores 0 1 2 3 4 5
cache size : 15360 KB

From /proc/meminfo
MemTotal: 529360172 kB
HugePages_Total: 0
Hugepagesize: 2048 kB

/usr/bin/lsb_release -d
SUSE Linux Enterprise Server 11 (x86_64)

From /etc/*release* /etc/*version*
SuSE-release:
  SUSE Linux Enterprise Server 11 (x86_64)
  VERSION = 11
  PATCHLEVEL = 2
sgi-accelerate-release: SGI Accelerate 1.5, Build 707r85.sles11sp2-1302142007
sgi-foundation-release: SGI Foundation Software 2.7, Build 707r85.sles11sp2-1302142007
sgi-mpi-release: SGI MPI 1.5, Build 707r85.sles11sp2-1302142007
sgi-propack-release: SGI ProPack 706 for Linux, Build 706rp51.sles11sp2-1210312107
sgi-release: SGI Performance Suite 1.5, Build 707r85.sles11sp2-1302142007
sgi-upc-release: SGI UPC 1.5, Build 707r85.sles11sp2-1302142007

uname -a:
Linux cy020 3.0.42-0.7-default #1 SMP Tue Oct 9 11:58:45 UTC 2012 (a8dc443)
x86_64 x86_64 x86_64 GNU/Linux

run-level 3 Feb 19 14:13 last=S

SPEC is set to: /store/cma/cpu2006-v1.2

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SPEC CFP2006 Result

SGI UV 20 (Intel Xeon E5-4617, 2.90 GHz)

SPECfp_rate2006 = 751
SPECfp_rate_base2006 = 736

CPU2006 license: 4
Test sponsor: SGI
Tested by: SGI

SPECfp_rate2006 = 751
SPECfp_rate_base2006 = 736

Platform Notes (Continued)

Filesystem Type Size Used Avail Use% Mounted on
/dev/sdc1 xfs 3.3T 61G 3.3T 2% /scratch

Cannot run dmidecode; consider saying 'chmod +s /usr/sbin/dmidecode'

(End of data from sysinfo program)

General Notes

Environment variables set by runspec before the start of the run:

Binaries compiled on a system with 1x Core i7-860 CPU + 8GB memory using RHEL5.5
Transparent Huge Pages enabled with:
echo always > /sys/kernel/mm/transparent_hugepage/enabled
Filesystem page cache cleared with:
echo 1 > /proc/sys/vm/drop_caches
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
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

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SPEC CFP2006 Result

SGI

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SPECfp_rate2006 = 751
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CPU2006 license: 4
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Tested by: SGI

Test date: Feb-2013
Hardware Availability: Nov-2012
Software Availability: Feb-2013

Base Portability Flags (Continued)

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:
-xAVX -ipo -O3 -no-prec-div -static -opt-prefetch -auto-p32
-ansi-alias -opt-mem-layout-trans=3

C++ benchmarks:
-xAVX -ipo -O3 -no-prec-div -static -opt-prefetch -auto-p32
-ansi-alias -opt-mem-layout-trans=3

Fortran benchmarks:
-xAVX -ipo -O3 -no-prec-div -static -opt-prefetch

Benchmarks using both Fortran and C:
-xAVX -ipo -O3 -no-prec-div -static -opt-prefetch -auto-p32
-ansi-alias -opt-mem-layout-trans=3

Peak Compiler Invocation

C benchmarks (except as noted below):
  icc -m64
  482.sphinx3: icc -m32

C++ benchmarks (except as noted below):
  icpc -m64
  450.soplex: icpc -m32

Fortran benchmarks:
  ifort -m64

Benchmarks using both Fortran and C:
  icc -m64 ifort -m64
SGI UV 20 (Intel Xeon E5-4617, 2.90 GHz)  

 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 -nofor_main  
447.dealII: -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  

 Peak Optimization Flags  

C benchmarks:  

433.milc: -xAVX(pass 2) -prof-gen(pass 1) -ipo(pass 2) -O3(pass 2)  
-no-prec-div(pass 2) -opt-mem-layout-trans=3(pass 2)  
-prof-use(pass 2) -static -auto-ilp32  

470.lbm: basepeak = yes  

482.sphinx3: -xAVX -ipo -O3 -no-prec-div -opt-mem-layout-trans=3  
-unroll2  

C++ benchmarks:  

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

447.dealII: basepeak = yes  

450.soplex: -xAVX(pass 2) -prof-gen(pass 1) -ipo(pass 2) -O3(pass 2)  
-no-prec-div(pass 2) -opt-mem-layout-trans=3(pass 2)  
-prof-use(pass 2) -opt-malloc-options=3  

453.povray: -xAVX(pass 2) -prof-gen(pass 1) -ipo(pass 2) -O3(pass 2)  
-no-prec-div(pass 2) -opt-mem-layout-trans=3(pass 2)  
-prof-use(pass 2) -unroll14 -ansi-alias  

Fortran benchmarks:  

Continued on next page
SPEC CFP2006 Result

SGI

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SPECfp_rate2006 = 751
SPECfp_rate_base2006 = 736

CPU2006 license: 4
Test sponsor: SGI
Tested by: SGI
Test date: Feb-2013
Hardware Availability: Nov-2012
Software Availability: Feb-2013

Peak Optimization Flags (Continued)

410.bwaves: basepeak = yes
416.game5: -xAVX(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 -static
434.zeusmp: basepeak = yes
437.leslie3d: -xAVX -ipo -O3 -no-prec-div -static -opt-prefetch
459.GemsFDTD: basepeak = yes
465.tonto: -xAVX(pass 2) -prof-gen(pass 1) -ipo(pass 2) -O3(pass 2)
           -no-prec-div(pass 2) -prof-use(pass 2) -unroll4 -auto
           -inline-calloc -opt-malloc-options=3

Benchmarks using both Fortran and C:

435.gromacs: -xAVX(pass 2) -prof-gen(pass 1) -ipo(pass 2) -O3(pass 2)
             -no-prec-div(pass 2) -opt-mem-layout-trans=3(pass 2)
             -prof-use(pass 2) -opt-prefetch -static -auto-ilp32
436.cactusADM: basepeak = yes
445.calculix: basepeak = yes
481.wrf: -xAVX -ipo -O3 -no-prec-div -static -auto-ilp32

The flags files that were used to format this result can be browsed at
http://www.spec.org/cpu2006/flags/Intel-ic13-official-linux64.html
http://www.spec.org/cpu2006/flags/SGI-platform.20120912.html

You can also download the XML flags sources by saving the following links:
http://www.spec.org/cpu2006/flags/Intel-ic13-official-linux64.xml
http://www.spec.org/cpu2006/flags/SGI-platform.20120912.xml

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