Supermicro
SuperServer 2048U-RTR4
(X10QRH+, Intel Xeon E5-4655 v3)

CPU2006 license: 001176
Test sponsor: Supermicro
Tested by: Supermicro

Test date: Jun-2015
Hardware Availability: Jun-2015
Software Availability: Oct-2014

SPECfp®2006 = 115
SPECfp_base2006 = 109

Hardware
CPU Name: Intel Xeon E5-4655 v3
CPU Characteristics: Intel Turbo Boost Technology up to 3.20 GHz
CPU MHz: 2900
FPU: Integrated
CPU(s) enabled: 24 cores, 4 chips, 6 cores/chip
CPU(s) orderable: 1,2,4 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: SUSE Linux Enterprise Server 12,
Kernel 3.12.28-4-default
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: ext4
System State: Run level 3 (multi-user)
SPEC CFP2006 Result

Supermicro
SuperServer 2048U-RTR4 (X10QRH+, Intel Xeon E5-4655 v3)

SPECfp2006 = 115
SPECfp_base2006 = 109

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Test date: Jun-2015
Hardware Availability: Jun-2015
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L3 Cache: 30 MB I+D on chip per chip
Other Cache: None
Memory: 512 GB (32 x 16 GB 2Rx4 PC4-2133P-R)
Disk Subsystem: 1 x 512 GB SATA III, SSD
Other Hardware: None

Base Pointers: 64-bit
Peak Pointers: 32/64-bit
Other Software: None

Results Table

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<th>Seconds</th>
<th>Ratio</th>
<th>Seconds</th>
<th>Ratio</th>
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<td>416.gamess</td>
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<td>75.2</td>
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<td>76.3</td>
<td>259</td>
<td>75.2</td>
<td>259</td>
<td>75.1</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 Settings:
Hyper-Threading (ALL) = Disable
Early Snoop = Disable
Enforce POR = Disabled
Sysinfo program /home/SPEC2K6/SPEC2006-V12/config/sysinfo.rev6914
$Rev: 6914 $ $Date:: 2014-06-25 ## e3fbb8667b5a285932ceab81e28219e1
running on linux-rrui Tue Jun 16 12:37:10 2015

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
Supermicro
SuperServer 2048U-RTR4
(X10QRH+, Intel Xeon E5-4655 v3)

SPECfp2006 = 115
SPECfp_base2006 = 109

Platform Notes (Continued)

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

From /proc/cpuinfo

model name : Intel(R) Xeon(R) CPU E5-4655 v3 @ 2.90GHz
4 "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
cautions.)
cpu cores : 6
siblings : 6
physical 0: cores 1 3 5 9 11 12
physical 1: cores 1 3 5 9 11 12
physical 2: cores 1 3 5 9 11 12
physical 3: cores 1 3 5 9 11 12
cache size : 30720 KB

From /proc/meminfo

MemTotal: 529339400 kB
HugePages_Total: 0
Hugepagesize: 2048 kB

/usr/bin/lsb_release -d
SUSE Linux Enterprise Server 12

From /etc/*release */etc/*version*

SuSE-release:
SUSE Linux Enterprise Server 12 (x86_64)
VERSION = 12
PATCHLEVEL = 0
# This file is deprecated and will be removed in a future service pack or
release.
# Please check /etc/os-release for details about this release.

os-release:
NAME="SLES"
VERSION="12"
VERSION_ID="12"
PRETTY_NAME="SUSE Linux Enterprise Server 12"
ID="sles"
ANSI_COLOR="0;32"
CPE_NAME="cpe:/o:suse:sles:12"

uname -a:
Linux linux-rrui 3.12.28-4-default #1 SMP Thu Sep 25 17:02:34 UTC 2014
(9879bd4) x86_64 x86_64 x86_64 GNU/Linux

cpu cores : 6
siblings : 6
physical 0: cores 1 3 5 9 11 12
physical 1: cores 1 3 5 9 11 12
physical 2: cores 1 3 5 9 11 12
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cache size : 30720 KB

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cache size : 30720 KB

From /proc/meminfo
MemTotal: 529339400 kB
HugePages_Total: 0
Hugepagesize: 2048 kB

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Linux linux-rrui 3.12.28-4-default #1 SMP Thu Sep 25 17:02:34 UTC 2014
(9879bd4) x86_64 x86_64 x86_64 GNU/Linux

Additional information from dmidecode:
Continued on next page
Platform Notes (Continued)

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.

BIOS American Megatrends Inc. 1.00 06/01/2015
Memory:
16x NO DIMM NO DIMM
1x Samsung(data:13/44) M393A2G40DB0-CPB 16 GB 2 rank 2133 MHz
1x Samsung(data:13/48) M393A2G40DB0-CPB 16 GB 2 rank 2133 MHz
3x Samsung(data:13/51) M393A2G40DB0-CPB 16 GB 2 rank 2133 MHz
2x Samsung(data:14/13) M393A2G40DB0-CPB 16 GB 2 rank 2133 MHz
1x Samsung(data:14/16) M393A2G40DB0-CPB 16 GB 2 rank 2133 MHz
5x Samsung(data:14/17) M393A2G40DB0-CPB 16 GB 2 rank 2133 MHz
1x Samsung(data:14/25) M393A2G40DB0-CPB 16 GB 2 rank 2133 MHz
14x Samsung(data:14/26) M393A2G40DB0-CPB 16 GB 2 rank 2133 MHz
4x Samsung(data:14/47) M393A2G40DB0-CPB 16 GB 2 rank 2133 MHz

(End of data from sysinfo program)

General Notes

Environment variables set by runspec before the start of the run:
KMP_AFFINITY = "granularity=fine,compact,0,1"
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

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
Supermicro
SuperServer 2048U-RTR4
(X10QRH+, Intel Xeon E5-4655 v3)

SPECfp2006 = 115
SPECfp_base2006 = 109

CPU2006 license: 001176
Test sponsor: Supermicro
Tested by: Supermicro

Test date: Jun-2015
Hardware Availability: Jun-2015
Software Availability: Oct-2014

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 -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

Continued on next page
Peak Compiler Invocation (Continued)

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.lbmc: basepeak = yes
482.sphinx3: -xCORE-AVX2 -ipo -O3 -no-prec-div -unroll2 -ansi-alias -parallel
```

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
```

Continued on next page
## SPEC CFP2006 Result

**Supermicro**

SuperServer 2048U-RTR4  
(X10QRH+, Intel Xeon E5-4655 v3)

<table>
<thead>
<tr>
<th>SPECfp2006</th>
<th>115</th>
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<tbody>
<tr>
<td>SPECfp_base2006</td>
<td>109</td>
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</table>

- **CPU2006 license:** 001176  
- **Test date:** Jun-2015
- **Test sponsor:** Supermicro
- **Hardware Availability:** Jun-2015
- **Tested by:** Supermicro
- **Software Availability:** Oct-2014

### Peak Optimization Flags (Continued)

- 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

### 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

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/Supermicro-Platform-Settings-V1.2-revG.20141230.00.xml

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For questions about this result, please contact the tester.  
For other inquiries, please contact webmaster@spec.org.

Tested with SPEC CPU2006 v1.2.  
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