### SPEC® CFP2006 Result

**Supermicro**

SuperServer 6018R-TDTP
(X10DRD-LTP, Intel Xeon E5-2623 v4)

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**SPECfp®2006 =** 94.4

**SPECfp_base2006 =** 90.5

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**CPU2006 license:** 001176

**Test sponsor:** Supermicro

**Tested by:** Supermicro

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**Test date:** May-2016

**Hardware Availability:** Mar-2016

**Software Availability:** Sep-2015

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**Software**

- **Operating System:** Red Hat Enterprise Linux Server release 7.2, Kernel 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
- **Auto Parallel:** Yes
- **File System:** xfs
- **System State:** Run level 3 (multi-user)

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**Hardware**

- **CPU Name:** Intel Xeon E5-2623 v4
- **CPU Characteristics:** Intel Turbo Boost Technology up to 3.20 GHz
- **CPU MHz:** 2600
- **FPU:** Integrated
- **CPU(s) enabled:** 8 cores, 2 chips, 4 cores/chip, 2 threads/core
- **CPU(s) orderable:** 1,2 chips
- **Primary Cache:** 32 KB I + 32 KB D on chip per core
- **Secondary Cache:** 256 KB I+D on chip per core

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**L3 Cache:** 10 MB I+D on chip per chip  
**Other Cache:** None  
**Memory:** 256 GB (8 x 32 GB 2Rx4 PC4-2400T-R, running at 2133 MHz)  
**Disk Subsystem:** 1 x 400 GB SATA III SSD  
**Other Hardware:** None  
**Base Pointers:** 64-bit  
**Peak Pointers:** 32/64-bit  
**Other Software:** None

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### Results Table

<table>
<thead>
<tr>
<th>Benchmark</th>
<th>Base Seconds</th>
<th>Base Ratio</th>
<th>Peak Seconds</th>
<th>Peak Ratio</th>
</tr>
</thead>
<tbody>
<tr>
<td>bwaves</td>
<td>410.8</td>
<td>325</td>
<td>42.0</td>
<td>323</td>
</tr>
<tr>
<td>games</td>
<td>548</td>
<td>35.8</td>
<td>458</td>
<td>35.7</td>
</tr>
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<td>milc</td>
<td>128</td>
<td>71.5</td>
<td>129</td>
<td>71.4</td>
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<td>zeusmp</td>
<td>58.3</td>
<td>156</td>
<td>58.3</td>
<td>156</td>
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<tr>
<td>gromacs</td>
<td>142</td>
<td>50.4</td>
<td>142</td>
<td>50.3</td>
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<tr>
<td>cactusADM</td>
<td>27.3</td>
<td>438</td>
<td>27.3</td>
<td>437</td>
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<tr>
<td>leslie3d</td>
<td>48.1</td>
<td>195</td>
<td>48.6</td>
<td>193</td>
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<tr>
<td>namd</td>
<td>285</td>
<td>28.1</td>
<td>276</td>
<td>29.0</td>
</tr>
<tr>
<td>dealII</td>
<td>184</td>
<td>62.1</td>
<td>184</td>
<td>62.1</td>
</tr>
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<td>soplex</td>
<td>218</td>
<td>38.2</td>
<td>218</td>
<td>38.2</td>
</tr>
<tr>
<td>calculix</td>
<td>156</td>
<td>52.7</td>
<td>156</td>
<td>52.7</td>
</tr>
<tr>
<td>GemsFDTD</td>
<td>67.6</td>
<td>157</td>
<td>67.9</td>
<td>156</td>
</tr>
<tr>
<td>tonto</td>
<td>231</td>
<td>42.7</td>
<td>231</td>
<td>42.6</td>
</tr>
<tr>
<td>lbm</td>
<td>32.8</td>
<td>419</td>
<td>32.7</td>
<td>421</td>
</tr>
<tr>
<td>wrf</td>
<td>137</td>
<td>81.3</td>
<td>137</td>
<td>81.3</td>
</tr>
<tr>
<td>sphinx3</td>
<td>268</td>
<td>72.8</td>
<td>269</td>
<td>72.3</td>
</tr>
</tbody>
</table>

Results appear in the order in which they were run. Bold underlined text indicates a median measurement.

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### Operating System Notes

Stack size set to unlimited using "ulimit -s unlimited"

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### Platform Notes

**BIOS Settings:**
- Early Snoop = Disable

Sysinfo program /home/cpu2006_ic16/config/sysinfo.rev6914

$Rev: 6914 $ $Date:: 2014-06-25 #$ e3fbb8667b5a285932ceab81e28219e1

running on localhost.localdomain Wed May 11 15:12:50 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

Continued on next page

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Standard Performance Evaluation Corporation  
info@spec.org  
http://www.spec.org/
## Platform Notes (Continued)

From `/proc/cpuinfo`:

- model name: Intel(R) Xeon(R) CPU E5-2623 v4@ 2.60GHz
- 2 "physical id"s (chips)
- 16 "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: 4
  - siblings: 8
  - physical 0: cores 0 1 2 3
  - physical 1: cores 0 1 2 3
- cache size: 10240 KB

From `/proc/meminfo`:

- MemTotal: 263863056 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)

`uname -a`:

```
Linux localhost.localdomain 3.10.0-327.el7.x86_64 #1 SMP Thu Oct 29 17:29:29 EDT 2015 x86_64 x86_64 x86_64 GNU/Linux
run-level 3 Mon 11 15:12
```

 SPEC is set to: `/home/cpu2006_ic16`

<table>
<thead>
<tr>
<th>Filesystem</th>
<th>Type</th>
<th>Size</th>
<th>Used</th>
<th>Avail</th>
<th>Use%</th>
<th>Mounted on</th>
</tr>
</thead>
<tbody>
<tr>
<td>/dev/mapper/rhel-home</td>
<td>xfs</td>
<td>216G</td>
<td>4.1G</td>
<td>212G</td>
<td>2%</td>
<td>/home</td>
</tr>
</tbody>
</table>

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.

BIOS American Megatrends Inc. 2.0 02/26/2016

Memory:

- 8x Micron 36ASF4G72PZ-2G3A1 32 GB 2 rank 2400 MHz, configured at 2133 MHz
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| SPECfp2006 | 94.4 |
| SPECfp_base2006 | 90.5 |

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

**Platform Notes (Continued)**

(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 = "/home/cpu2006_ic16/libs/32:/home/cpu2006_ic16/libs/64:/home/cpu2006_ic16/sh"
- `OMP_NUM_THREADS = "8"

Binaries compiled on a system with 1x Intel Core i5-4670K CPU + 32GB memory using RedHat EL 7.1
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`

### Base Portability Flags

<table>
<thead>
<tr>
<th>Benchmark</th>
<th>Portability Flag</th>
</tr>
</thead>
<tbody>
<tr>
<td>410.bwaves</td>
<td>-DSPEC_CPU_LP64</td>
</tr>
<tr>
<td>416.game5s</td>
<td>-DSPEC_CPU_LP64</td>
</tr>
<tr>
<td>433.milc</td>
<td>-DSPEC_CPU_LP64</td>
</tr>
<tr>
<td>434.zesmp</td>
<td>-DSPEC_CPU_LP64</td>
</tr>
<tr>
<td>435.gromacs</td>
<td>-DSPEC_CPU_LP64 -nofor_main</td>
</tr>
<tr>
<td>436.cactusADM</td>
<td>-DSPEC_CPU_LP64 -nofor_main</td>
</tr>
<tr>
<td>437.leslie3d</td>
<td>-DSPEC_CPU_LP64</td>
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<tr>
<td>444.namd</td>
<td>-DSPEC_CPU_LP64</td>
</tr>
<tr>
<td>447.dealII</td>
<td>-DSPEC_CPU_LP64</td>
</tr>
<tr>
<td>450.soplex</td>
<td>-DSPEC_CPU_LP64</td>
</tr>
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<td>453.povray</td>
<td>-DSPEC_CPU_LP64</td>
</tr>
<tr>
<td>454.calculix</td>
<td>-DSPEC_CPU_LP64 -nofor_main</td>
</tr>
<tr>
<td>459.GemsFDTD</td>
<td>-DSPEC_CPU_LP64</td>
</tr>
<tr>
<td>465.tonto</td>
<td>-DSPEC_CPU_LP64</td>
</tr>
<tr>
<td>470.lbm</td>
<td>-DSPEC_CPU_LP64</td>
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Continued on next page
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Test sponsor: Supermicro
Tested by: Supermicro

Test date: May-2016
Hardware Availability: Mar-2016
Software Availability: Sep-2015

Base Portability Flags (Continued)
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

Peak Portability Flags
Same as Base Portability Flags

Peak Optimization Flags
C benchmarks:

Continued on next page
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Peak Optimization Flags (Continued)

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) -03(pass 2) -no-prec-div(pass 2)
        -par-num-threads=1(pass l) -prof-use(pass 2) -fno-alias
        -auto-ilp32
447.dealII: basepeak = yes
450.soplex: basepeak = yes
453.povray: -xCORE-AVX2(pass 2) -prof-gen:threadsafe(pass 1)
        -ipo(pass 2) -03(pass 2) -no-prec-div(pass 2)
        -par-num-threads=1(pass l) -prof-use(pass 2) -unroll4
        -ansi-alias

Fortran benchmarks:

410.bwaves: basepeak = yes
416.gamess: -xCORE-AVX2(pass 2) -prof-gen:threadsafe(pass 1)
        -ipo(pass 2) -03(pass 2) -no-prec-div(pass 2)
        -par-num-threads=1(pass l) -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:threadsafe(pass 1)
        -ipo(pass 2) -03(pass 2) -no-prec-div(pass 2)
        -par-num-threads=1(pass l) -prof-use(pass 2) -unroll2
        -inline-level=0 -opt-prefetch -parallel
465.tonto: -xCORE-AVX2(pass 2) -prof-gen:threadsafe(pass 1)
        -ipo(pass 2) -03(pass 2) -no-prec-div(pass 2)
        -par-num-threads=1(pass l) -prof-use(pass 2) -inline-calloc
        -opt-malloc-options=3 -auto -unroll4

Benchmarks using both Fortran and C:

435.gromacs: basepeak = yes

Continued on next page
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Peak Optimization Flags (Continued)

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-ic16.0-official-linux64.html
http://www.spec.org/cpu2006/flags/Supermicro-Platform-Settings-V1.2-revH.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/Supermicro-Platform-Settings-V1.2-revH.xml

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