Supermicro  
SuperServer 6018R-TDTP  
(X10DRD-LTP, Intel Xeon E5-2680 v4)  

SPECfp®2006 = 120  
SPECfp_base2006 = 114  

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

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

### Hardware

<table>
<thead>
<tr>
<th>Item</th>
<th>Specification</th>
</tr>
</thead>
<tbody>
<tr>
<td>CPU Name</td>
<td>Intel Xeon E5-2680 v4</td>
</tr>
<tr>
<td>CPU Characteristics</td>
<td>Intel Turbo Boost Technology up to 3.30 GHz</td>
</tr>
<tr>
<td>CPU MHz</td>
<td>2400</td>
</tr>
<tr>
<td>FPU</td>
<td>Integrated</td>
</tr>
<tr>
<td>CPU(s) enabled</td>
<td>28 cores, 2 chips, 14 cores/chip, 2 threads/core</td>
</tr>
<tr>
<td>CPU(s) orderable</td>
<td>1,2 chips</td>
</tr>
<tr>
<td>Primary Cache</td>
<td>32 KB I + 32 KB D on chip per core</td>
</tr>
<tr>
<td>Secondary Cache</td>
<td>256 KB I+D on chip per core</td>
</tr>
</tbody>
</table>

### Software

<table>
<thead>
<tr>
<th>Item</th>
<th>Specification</th>
</tr>
</thead>
<tbody>
<tr>
<td>Operating System</td>
<td>Red Hat Enterprise Linux Server release 7.2,</td>
</tr>
<tr>
<td></td>
<td>Kernel 3.10.0-327.el7.x86_64</td>
</tr>
<tr>
<td>Compiler</td>
<td>C/C++: Version 16.0.0.101 of Intel C++ Studio XE</td>
</tr>
<tr>
<td></td>
<td>for Linux;</td>
</tr>
<tr>
<td></td>
<td>Fortran: Version 16.0.0.101 of Intel Fortran</td>
</tr>
<tr>
<td></td>
<td>Studio XE for Linux</td>
</tr>
<tr>
<td>Auto Parallel</td>
<td>Yes</td>
</tr>
<tr>
<td>File System</td>
<td>xfs</td>
</tr>
<tr>
<td>System State</td>
<td>Run level 3 (multi-user)</td>
</tr>
</tbody>
</table>
**SPEC CFP2006 Result**

Supermicro
SuperServer 6018R-TDTP  
(X10DRD-LTP, Intel Xeon E5-2680 v4)

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**SPECfp_base2006 =** 114

**CPU2006 license:** 001176

**Test sponsor:** Supermicro

**Tested by:** Supermicro

**L3 Cache:** 35 MB I+D on chip per chip

**Other Cache:** None

**Memory:** 256 GB (8 x 32 GB 2Rx4 PC4-2400T-R)

**Disk Subsystem:** 1 x 400 GB SATA III SSD

**Other Hardware:** None

**Base Pointers:** 64-bit

**Peak Pointers:** 32/64-bit

**Other Software:** None

---

**Results Table**

<table>
<thead>
<tr>
<th>Benchmark</th>
<th>Seconds</th>
<th>Ratio</th>
<th>Seconds</th>
<th>Ratio</th>
<th>Seconds</th>
<th>Ratio</th>
<th>Seconds</th>
<th>Ratio</th>
</tr>
</thead>
<tbody>
<tr>
<td>410.bwaves</td>
<td>23.0</td>
<td>591</td>
<td>22.9</td>
<td>593</td>
<td>22.8</td>
<td>595</td>
<td>23.0</td>
<td>591</td>
</tr>
<tr>
<td>416.gamess</td>
<td>540</td>
<td>36.3</td>
<td>539</td>
<td>36.3</td>
<td>536</td>
<td>36.5</td>
<td>446</td>
<td>43.9</td>
</tr>
<tr>
<td>433.milc</td>
<td>136</td>
<td>67.7</td>
<td>136</td>
<td>67.6</td>
<td>136</td>
<td>67.7</td>
<td>136</td>
<td>67.7</td>
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<tr>
<td>434.zesmp</td>
<td>42.9</td>
<td>212</td>
<td>42.8</td>
<td>213</td>
<td>43.1</td>
<td>211</td>
<td>42.9</td>
<td>212</td>
</tr>
<tr>
<td>435.gromacs</td>
<td>145</td>
<td>49.3</td>
<td>144</td>
<td>49.5</td>
<td>142</td>
<td>50.2</td>
<td>145</td>
<td>49.3</td>
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<tr>
<td>436.cactusADM</td>
<td>12.8</td>
<td>937</td>
<td>13.1</td>
<td>911</td>
<td>13.1</td>
<td>911</td>
<td>12.8</td>
<td>937</td>
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<tr>
<td>437.leslie3d</td>
<td>25.6</td>
<td>367</td>
<td>26.4</td>
<td>356</td>
<td>27.0</td>
<td>348</td>
<td>25.6</td>
<td>367</td>
</tr>
<tr>
<td>444.namd</td>
<td>276</td>
<td>29.1</td>
<td>276</td>
<td>29.0</td>
<td>276</td>
<td>29.0</td>
<td>268</td>
<td>29.9</td>
</tr>
<tr>
<td>447.dealII</td>
<td>186</td>
<td>61.5</td>
<td>185</td>
<td>61.7</td>
<td>187</td>
<td>61.3</td>
<td>186</td>
<td>61.5</td>
</tr>
<tr>
<td>450.soplex</td>
<td>183</td>
<td>45.6</td>
<td>182</td>
<td>45.8</td>
<td>181</td>
<td>46.1</td>
<td>183</td>
<td>45.6</td>
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<tr>
<td>453.povray</td>
<td>90.6</td>
<td>58.7</td>
<td>90.7</td>
<td>58.7</td>
<td>90.6</td>
<td>58.7</td>
<td>79.6</td>
<td>66.8</td>
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<tr>
<td>454.calculix</td>
<td>155</td>
<td>53.3</td>
<td>155</td>
<td>53.3</td>
<td>155</td>
<td>53.3</td>
<td>144</td>
<td>57.2</td>
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<tr>
<td>459.GemsFDTD</td>
<td>45.7</td>
<td>232</td>
<td>45.1</td>
<td>236</td>
<td>43.5</td>
<td>244</td>
<td>36.2</td>
<td>293</td>
</tr>
<tr>
<td>465.tonto</td>
<td>230</td>
<td>42.8</td>
<td>232</td>
<td>42.4</td>
<td>236</td>
<td>41.7</td>
<td>179</td>
<td>55.0</td>
</tr>
<tr>
<td>470.lbm</td>
<td>16.0</td>
<td>858</td>
<td>16.3</td>
<td>842</td>
<td>15.9</td>
<td>865</td>
<td>16.0</td>
<td>858</td>
</tr>
<tr>
<td>481.wrf</td>
<td>99.0</td>
<td>113</td>
<td>98.3</td>
<td>114</td>
<td>95.3</td>
<td>117</td>
<td>99.0</td>
<td>113</td>
</tr>
<tr>
<td>482.sphinx3</td>
<td>263</td>
<td>74.2</td>
<td>263</td>
<td>74.1</td>
<td>261</td>
<td>74.5</td>
<td>263</td>
<td>74.2</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 Settings:
Early Snoop = Disable

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

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

running on localhost.localdomain Tue May 31 18:11:21 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

Standard Performance Evaluation Corporation
info@spec.org
http://www.spec.org/
Supermicro
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SPEC CFP2006 Result

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Platform Notes (Continued)

From /proc/cpuinfo
model name : Intel(R) Xeon(R) CPU E5-2680 v4 @ 2.40GHz
  2 "physical id"s (chips)
  56 "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 : 14
siblings : 28
physical 0: cores 0 1 2 3 4 5 6 8 9 10 11 12 13 14
physical 1: cores 0 1 2 3 4 5 6 8 9 10 11 12 13 14
cache size : 35840 KB

From /proc/meminfo
MemTotal: 263858092 kB
HugePages_Total: 0
Hugepagesize: 2048 kB

From /etc/*release*/etc/*version*
name: Red Hat Enterprise Linux Server
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)

run-level 3 May 31 18:10

SPEC is set to: /home/cpu2006_ic16
Filesystem Type Size Used Avail Use% Mounted on
/dev/mapper/rhel-home xfs 216G 4.4G 212G 3% /home

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

Continued on next page
**SPEC CFP2006 Result**

Supermicro
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<tr>
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**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 = "28"

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**

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.leshe3d: -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

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Base Portability Flags (Continued)

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:
433.milc: basepeak = yes

Continued on next page
Peak Optimization Flags (Continued)

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) -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) -O3(pass 2) -no-prec-div(pass 2)
           -par-num-threads=1(pass 1) -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) -O3(pass 2) -no-prec-div(pass 2)
           -par-num-threads=1(pass 1) -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) -O3(pass 2) -no-prec-div(pass 2)
           -par-num-threads=1(pass 1) -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) -O3(pass 2) -no-prec-div(pass 2)
           -par-num-threads=1(pass 1) -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

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Peak Optimization Flags (Continued)

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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For other inquiries, please contact webmaster@spec.org.

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