Supermicro
SuperServer 1028R-MCTR
(X10DRL-CT, Intel Xeon E5-2620 v4)

SPECfp®2006 = 101
SPECfp_base2006 = 94.2

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

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

SPECfp2006 = 101
SPECfp_base2006 = 94.2

CPU Name: Intel Xeon E5-2620 v4
CPU Characteristics: Intel Turbo Boost Technology up to 3.00 GHz
CPU MHz: 2100
FPU: Integrated
CPU(s) enabled: 16 cores, 2 chips, 8 cores/chip
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

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)
Supermicro
SuperServer 1028R-MCTR (X10DRL-CT, Intel Xeon E5-2620 v4)

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

L3 Cache: 20 MB I+D on chip per chip
Other Cache: None
Memory: 128 GB (8 x 16 GB 2Rx4 PC4-2400T-R, running at 2133 MHz)
Disk Subsystem: 1 x 240 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>
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<td>66.0</td>
<td>298</td>
<td>65.3</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
Hyper-threading (ALL) = Disabled
Sysinfo program /usr/cpu2006/config/sysinfo.rev6914
$Rev: 6914 $ $Date:: 2014-06-25 #$ e3fbb8667b5a285932ceab81e28219e1
running on X10DRL-CT Fri Nov 4 01:40:25 2016

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 1028R-MCTR
(X10DRL-CT, Intel Xeon E5-2620 v4)

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CPU2006 license: 001176
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Hardware Availability: Mar-2016
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Platform Notes (Continued)

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

From /proc/cpuinfo
  model name : Intel(R) Xeon(R) CPU E5-2620 v4 @ 2.10GHz
  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 : 8
  siblings : 8
  physical 0: cores 0 1 2 3 4 5 6 7
  physical 1: cores 0 1 2 3 4 5 6 7
  cache size : 20480 KB

From /proc/meminfo
  MemTotal: 131921872 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 X10DRL-CT 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 Nov 3 20:09

  SPEC is set to: /usr/cpu2006

  Filesystem Type Size Used Avail Use% Mounted on
  /dev/sda2 xfs 220G 6.9G 213G 4% /

  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 12/18/2015
  Memory:

  Continued on next page
**SPEC CFP2006 Result**

**Supermicro**
SuperServer 1028R-MCTR  
(X10DRL-CT, Intel Xeon E5-2620 v4)

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</table>

**Platform Notes (Continued)**

8x Hynix Semiconductor HMA42GR7AFR4N-UH 16 GB 2 rank 2400 MHz, configured at 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,1,0"
LD_LIBRARY_PATH = "/usr/cpu2006/libs/32:/usr/cpu2006/libs/64:/usr/cpu2006/sh"
OMP_NUM_THREADS = "16"
```

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.game: `-DSPEC_CPU_LP64`
- 433.milc: `-DSPEC_CPU_LP64`
- 434.zesmp: `-DSPEC_CPU_LP64`
- 435.gromacs: `-DSPEC_CPU_LP64` `-nofor_main`
- 436.cactusADM: `-DSPEC_CPU_LP64` `-nofor_main`
- 437.leslie3d: `-DSPEC_CPU_LP64`
- 444.nam: `-DSPEC_CPU_LP64`
- 447.dealII: `-DSPEC_CPU_LP64`
- 450.soplex: `-DSPEC_CPU_LP64`
- 453.povray: `-DSPEC_CPU_LP64`
- 454.caculix: `-DSPEC_CPU_LP64` `-nofor_main`
- 459.GemsFDTD: `-DSPEC_CPU_LP64`

Continued on next page
Supermicro
SuperServer 1028R-MCTR
(X10DRL-CT, Intel Xeon E5-2620 v4)

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Base Portability Flags (Continued)

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

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`: `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.game5`: `-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-
  `-inline-level=0 -opt-prefetch -parallel`
- `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`
  `-opt-malloc-options=3 -auto -unroll4`
- `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:
## SPEC CFP2006 Result

### Supermicro

SuperServer 1028R-MCTR  
(X10DRL-CT, Intel Xeon E5-2620 v4)

| SPECfp2006 = | 101 |
| SPECfp_base2006 = | 94.2 |

- **CPU2006 license:** 001176  
- **Test date:** Nov-2016  
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- **Software Availability:** Sep-2015

#### Peak Optimization Flags (Continued)

435.gromacs: basepeak = yes

436.cactusADM: basepeak = yes

454.calculix: -xCORE-AVX2 -ipo -O3 -no-prec-div -auto-llp32 -ansi-alias

481.wrf: basepeak = yes

The flags files that were used to format this result can be browsed at


You can also download the XML flags sources by saving the following links:


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

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