SPEC® CFP2006 Result
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Sugon

Sugon TC6600/CB50-G20 (Intel Xeon E5-2680 v4)

$SPECfp^®2006 =$ 111
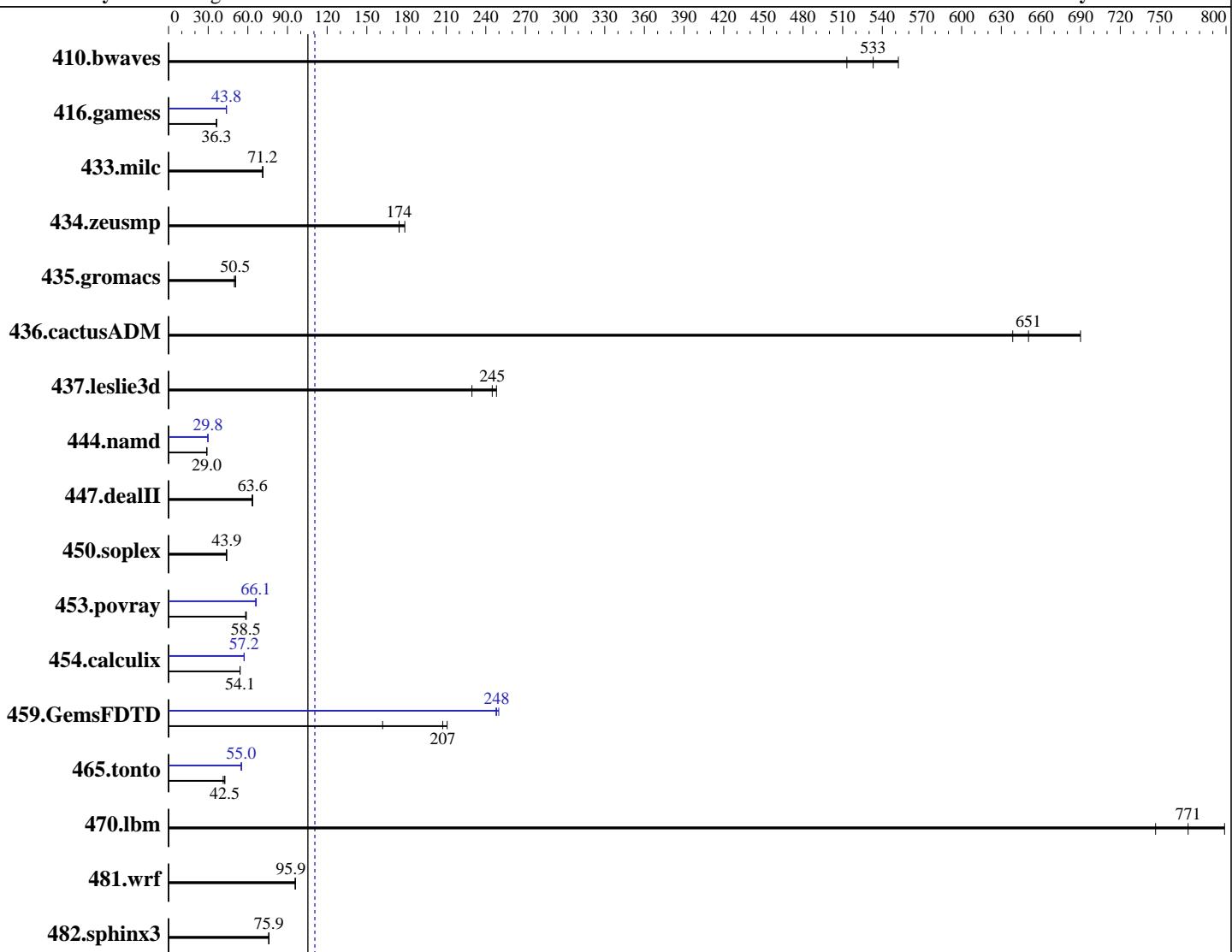
$SPECfp\_base2006 =$ 105

CPU2006 license: 9046
Test sponsor: Sugon
Tested by: Sugon

Test date: Oct-2016
Hardware Availability: May-2016
Software Availability: Mar-2016

SPECfp_base2006 = 105

SPECfp2006 = 111

Hardware		
CPU Name:	Intel Xeon E5-2680 v4	
CPU Characteristics:	Intel Turbo Boost Technology up to 3.30 GHz	
CPU MHz:	2400	
FPU:	Integrated	
CPU(s) enabled:	28 cores, 2 chips, 14 cores/chip, 2 threads/core	
CPU(s) orderable:	1,2 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:	Red Hat Enterprise Linux Server release 7.2 (Maipo) 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:	ext4

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L3 Cache:	35 MB I+D on chip per chip
Other Cache:	None
Memory:	256 GB (16 x 16 GB 2Rx8 PC4-2400T-R)
Disk Subsystem:	2 x SATA, 300 GB, RAID 0
Other Hardware:	None
System State:	Run level 3 (multi-user)
Base Pointers:	64-bit
Peak Pointers:	32/64-bit
Other Software:	None

Results Table

Benchmark	Base						Peak					
	Seconds	Ratio	Seconds	Ratio	Seconds	Ratio	Seconds	Ratio	Seconds	Ratio	Seconds	Ratio
410.bwaves	**_25.5_**	**_533_**	26.5	513	24.6	552	**_25.5_**	**_533_**	26.5	513	24.6	552
416.gamess	539	36.3	540	36.3	**_539_**	**_36.3_**	447	43.8	**_447_**	**_43.8_**	448	43.7
433.milc	129	71.4	**_129_**	**_71.2_**	129	71.2	129	71.4	**_129_**	**_71.2_**	129	71.2
434.zeusmp	**_52.2_**	**_174_**	52.2	174	50.9	179	**_52.2_**	**_174_**	52.2	174	50.9	179
435.gromacs	141	50.8	**_141_**	**_50.5_**	143	49.8	141	50.8	**_141_**	**_50.5_**	143	49.8
436.cactusADM	17.3	690	**_18.4_**	**_651_**	18.7	639	17.3	690	**_18.4_**	**_651_**	18.7	639
437.leslie3d	40.9	230	37.9	248	**_38.4_**	**_245_**	40.9	230	37.9	248	**_38.4_**	**_245_**
444.namd	276	29.0	**_277_**	**_29.0_**	278	28.9	270	29.7	269	29.8	**_269_**	**_29.8_**
447.dealII	**_180_**	**_63.6_**	181	63.2	180	63.6	**_180_**	**_63.6_**	181	63.2	180	63.6
450.soplex	191	43.7	**_190_**	**_43.9_**	190	44.0	191	43.7	**_190_**	**_43.9_**	190	44.0
453.povray	91.2	58.3	90.4	58.9	**_90.9_**	**_58.5_**	80.1	66.4	80.7	65.9	**_80.5_**	**_66.1_**
454.calculix	**_153_**	**_54.1_**	153	54.1	152	54.1	144	57.2	**_144_**	**_57.2_**	144	57.2
459.GemsFDTD	65.5	162	**_51.2_**	**_207_**	50.3	211	42.8	248	**_42.7_**	**_248_**	42.5	250
465.tonto	**_232_**	**_42.5_**	231	42.6	238	41.4	**_179_**	**_55.0_**	179	55.0	178	55.3
470.lbm	**_17.8_**	**_771_**	17.2	799	18.4	747	**_17.8_**	**_771_**	17.2	799	18.4	747
481.wrf	116	96.0	**_116_**	**_95.9_**	117	95.9	116	96.0	**_116_**	**_95.9_**	117	95.9
482.sphinx3	257	75.9	257	75.8	**_257_**	**_75.9_**	257	75.9	257	75.8	**_257_**	**_75.9_**

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

```
This System is electrically equal to TC4600E/CB50-G20
BIOS Configuration:
Hyper-Threading set to Enabled
Set Fan Speed to Full Speed
Sysinfo program /benchmarks/cpu2006/config/sysinfo.rev6914
$Rev: 6914 $ $Date:: 2014-06-25 #$ e3fbb8667b5a285932ceab81e28219e1
running on c1302 Thu Oct 27 02:07:23 2016

This section contains SUT (System Under Test) info as seen by
some common utilities.  To remove or add to this section, see:
```

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CPU2006 license: 9046   **Test date:** Oct-2016
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Tested by: Sugon   **Software Availability:** Mar-2016

Platform Notes (Continued)

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

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 : 17920 KB

From /proc/meminfo
   MemTotal:       264040064 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)
   system-release-cpe: cpe:/o:redhat:enterprise_linux:7.2:ga:server

uname -a:
   Linux c1302 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 Oct 26 17:38

SPEC is set to: /benchmarks/cpu2006
   Filesystem      Type  Size  Used Avail Use% Mounted on
   /dev/sda2       ext4  544G   89G  428G  18% /
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. 5.11 05/18/2016
   Memory:
```

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Platform Notes (Continued)

```
    16x Hynix Semiconductor HMA82GR7MFR8N-UH 16 GB 2 rank 2400 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 = "/benchmarks/cpu2006/libs/32:/benchmarks/cpu2006/libs/64:/benchmarks/cpu2006/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.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
```

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Base Portability Flags (Continued)

```
  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:

Continued on next page

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Hardware Availability: May-2016
Software Availability: Mar-2016

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) -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

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Tested by:	Sugon		**Software Availability:**	Mar-2016

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/Sugon-Platform-Settings-V1.2-BDW-revB.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/Sugon-Platform-Settings-V1.2-BDW-revB.xml

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

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