



SPEC® CFP2006 Result

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Lenovo Global Technology

ThinkSystem SR630
(3.20 GHz, Intel Xeon Gold 6134)

SPECfp®2006 = 147

SPECfp_base2006 = 143

CPU2006 license: 9017

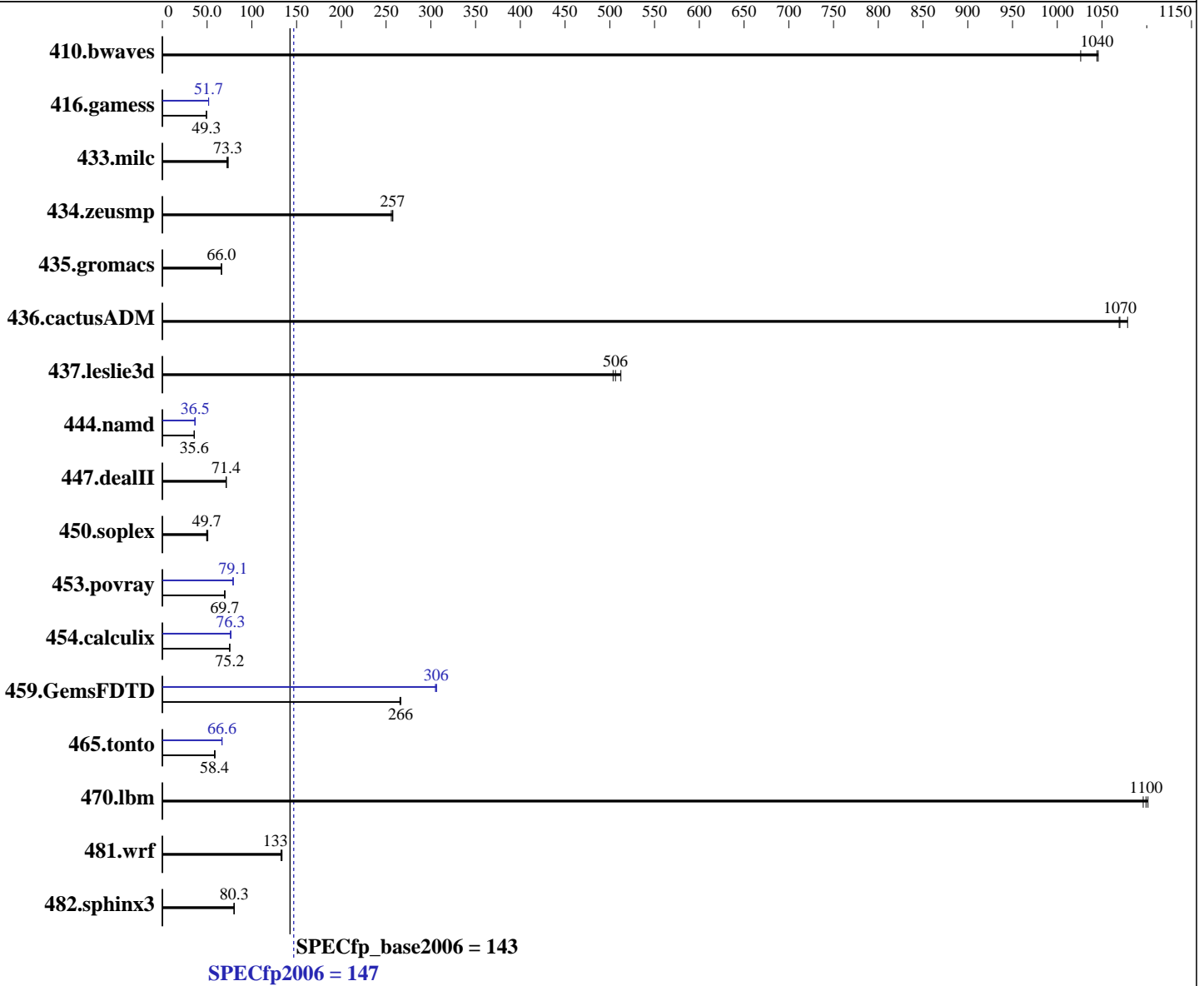
Test sponsor: Lenovo Global Technology

Tested by: Lenovo Global Technology

Test date: Jul-2017

Hardware Availability: Aug-2017

Software Availability: Apr-2017



Hardware

CPU Name: Intel Xeon Gold 6134
 CPU Characteristics: Intel Turbo Boost Technology up to 3.70 GHz
 CPU MHz: 3200
 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: 1 MB I+D on chip per core

Continued on next page

Software

Operating System: SUSE Linux Enterprise Server 12 SP2 (x86_64)
 Kernel 4.4.21-69-default
 Compiler: C/C++: Version 17.0.3.191 of Intel C/C++ Compiler for Linux;
 Fortran: Version 17.0.3.191 of Intel Fortran Compiler for Linux
 Auto Parallel: Yes
 File System: btrfs
 System State: Run level 3 (multi-user)

Continued on next page



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L3 Cache: 24.75 MB I+D on chip per chip
Other Cache: None
Memory: 384 GB (24 x 16 GB 2Rx8 PC4-2666V-R)
Disk Subsystem: 1 x 800 GB SAS SSD
Other Hardware: None

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	13.2	1030	13.0	1050	<u>13.0</u>	<u>1040</u>	13.2	1030	13.0	1050	<u>13.0</u>	<u>1040</u>
416.gamess	397	49.3	<u>397</u>	<u>49.3</u>	398	49.2	379	51.7	379	51.6	<u>379</u>	<u>51.7</u>
433.milc	127	72.2	<u>125</u>	<u>73.3</u>	125	73.5	127	72.2	<u>125</u>	<u>73.3</u>	125	73.5
434.zeusmp	35.6	256	<u>35.4</u>	<u>257</u>	35.3	258	35.6	256	<u>35.4</u>	<u>257</u>	35.3	258
435.gromacs	108	66.0	108	66.1	<u>108</u>	<u>66.0</u>	108	66.0	108	66.1	<u>108</u>	<u>66.0</u>
436.cactusADM	11.1	1080	11.2	1070	<u>11.2</u>	<u>1070</u>	11.1	1080	11.2	1070	<u>11.2</u>	<u>1070</u>
437.leslie3d	18.7	504	<u>18.6</u>	<u>506</u>	18.3	512	18.7	504	<u>18.6</u>	<u>506</u>	18.3	512
444.namd	225	35.6	225	35.6	<u>225</u>	<u>35.6</u>	220	36.5	<u>220</u>	<u>36.5</u>	220	36.5
447.dealII	<u>160</u>	<u>71.4</u>	161	71.2	160	71.5	<u>160</u>	<u>71.4</u>	161	71.2	160	71.5
450.soplex	164	50.8	168	49.6	<u>168</u>	<u>49.7</u>	164	50.8	168	49.6	<u>168</u>	<u>49.7</u>
453.povray	<u>76.3</u>	<u>69.7</u>	76.0	70.0	76.5	69.5	<u>67.3</u>	<u>79.1</u>	67.2	79.2	67.4	78.9
454.calculix	<u>110</u>	<u>75.2</u>	110	75.3	110	75.2	<u>108</u>	<u>76.3</u>	109	76.0	108	76.6
459.GemsFDTD	39.8	266	40.0	265	<u>39.9</u>	<u>266</u>	34.6	306	<u>34.7</u>	<u>306</u>	34.8	305
465.tonto	<u>168</u>	<u>58.4</u>	169	58.3	167	58.9	<u>148</u>	<u>66.6</u>	148	66.7	148	66.6
470.lbm	12.5	1100	<u>12.5</u>	<u>1100</u>	12.5	1100	12.5	1100	<u>12.5</u>	<u>1100</u>	12.5	1100
481.wrf	<u>83.9</u>	<u>133</u>	83.5	134	84.2	133	<u>83.9</u>	<u>133</u>	83.5	134	84.2	133
482.sphinx3	<u>243</u>	<u>80.3</u>	244	79.9	242	80.4	<u>243</u>	<u>80.3</u>	244	79.9	242	80.4

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 configuration:
Choose Operating Mode set to Maximum Performance
Hyper-Threading set to Disable
LLC dead line alloc set to Disable
Sysinfo program /home/cpu2006-1.2-ic17.0u3/config/sysinfo.rev6993
Revision 6993 of 2015-11-06 (b5e8d4b4eb51ed28d7f98696cbe290c1)
running on Cable-SPECcpu2017-SUSE12SP2 Fri Jul 28 00:02:30 2017

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



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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) Gold 6134 CPU @ 3.20GHz
 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 2 3 9 16 19 26 27
  physical 1: cores 0 4 5 6 16 19 20 22
cache size : 25344 KB

```

```

From /proc/meminfo
MemTotal:      395892352 kB
HugePages_Total:      0
Hugepagesize:    2048 kB

```

```

From /etc/*release* /etc/*version*
SuSE-release:
SUSE Linux Enterprise Server 12 (x86_64)
VERSION = 12
PATCHLEVEL = 2
# 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-SP2"
VERSION_ID="12.2"
PRETTY_NAME="SUSE Linux Enterprise Server 12 SP2"
ID="sles"
ANSI_COLOR="0;32"
CPE_NAME="/o:suse:sles:12:sp2"

```

```

uname -a:
Linux Cable-SPECcpu2017-SUSE12SP2 4.4.21-69-default #1 SMP Tue Oct 25
10:58:20 UTC 2016 (9464f67) x86_64 x86_64 x86_64 GNU/Linux

```

run-level 3 Jul 28 00:02

```

SPEC is set to: /home/cpu2006-1.2-ic17.0u3
Filesystem      Type      Size  Used Avail Use% Mounted on
/dev/sda2       btrfs    744G   35G  708G   5% /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.

Continued on next page



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Platform Notes (Continued)

BIOS Lenovo -[IVE109Q-1.00]- 06/28/2017

Memory:

24x Samsung M393A2K43BB1-CTD 16 GB 2 rank 2666 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"

LD_LIBRARY_PATH = "/home/cpu2006-1.2-ic17.0u3/lib/ia32:/home/cpu2006-1.2-ic17.0u3/lib/intel64:/home/cpu2006-1.2-ic17.0u3/sh10.2"

OMP_NUM_THREADS = "16"

Binaries compiled on a system with 1x Intel Core i7-4790 CPU + 32GB RAM
memory using Redhat Enterprise Linux 7.2

Transparent Huge Pages disabled with:

echo never > /sys/kernel/mm/transparent_hugepage/enabled

Filesystem page cache cleared with:

shell invocation of 'sync; echo 3 > /proc/sys/vm/drop_caches' prior to run

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

Continued on next page

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Page 4



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Base Portability Flags (Continued)

```

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 -qopt-prefetch

C++ benchmarks:
-xCORE-AVX2 -ipo -O3 -no-prec-div -qopt-prefetch

Fortran benchmarks:
-xCORE-AVX2 -ipo -O3 -no-prec-div -parallel -qopt-prefetch

Benchmarks using both Fortran and C:
-xCORE-AVX2 -ipo -O3 -no-prec-div -parallel -qopt-prefetch

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



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Peak Optimization Flags

C benchmarks:

433.milc: basepeak = yes

470.lbm: basepeak = yes

482.sphinx3: basepeak = yes

C++ benchmarks:

444.namd: -prof-gen(pass 1) -prof-use(pass 2) -xCORE-AVX2(pass 2)
-par-num-threads=1(pass 1) -ipo(pass 2) -O3(pass 2)
-no-prec-div(pass 2) -fno-alias -auto-ilp32

447.dealII: basepeak = yes

450.soplex: basepeak = yes

453.povray: -prof-gen(pass 1) -prof-use(pass 2) -xCORE-AVX2(pass 2)
-par-num-threads=1(pass 1) -ipo(pass 2) -O3(pass 2)
-no-prec-div(pass 2) -unroll4 -ansi-alias

Fortran benchmarks:

410.bwaves: basepeak = yes

416.gamess: -prof-gen(pass 1) -prof-use(pass 2) -xCORE-AVX2(pass 2)
-par-num-threads=1(pass 1) -ipo(pass 2) -O3(pass 2)
-no-prec-div(pass 2) -unroll2 -inline-level=0 -scalar-rep-

434.zeusmp: basepeak = yes

437.leslie3d: basepeak = yes

459.GemsFDTD: -prof-gen(pass 1) -prof-use(pass 2) -xCORE-AVX2(pass 2)
-par-num-threads=1(pass 1) -ipo(pass 2) -O3(pass 2)
-no-prec-div(pass 2) -unroll2 -inline-level=0
-qopt-prefetch -parallel

465.tonto: -prof-gen(pass 1) -prof-use(pass 2) -xCORE-AVX2(pass 2)
-par-num-threads=1(pass 1) -ipo(pass 2) -O3(pass 2)
-no-prec-div(pass 2) -inline-calloc -qopt-malloc-options=3
-auto -unroll4

Benchmarks using both Fortran and C:

435.gromacs: basepeak = yes

436.cactusADM: basepeak = yes

Continued on next page



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Peak Optimization Flags (Continued)

454.calculix: -xCORE-AVX2 -ipo -O3 -no-prec-div -auto-ilp32

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-ic17.0-official-linux64-revF.html>

<http://www.spec.org/cpu2006/flags/Lenovo-Platform-Flags-V1.2-SKL-C.20171004.html>

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

<http://www.spec.org/cpu2006/flags/Intel-ic17.0-official-linux64-revF.xml>

<http://www.spec.org/cpu2006/flags/Lenovo-Platform-Flags-V1.2-SKL-C.20171004.xml>

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