



SPEC[®] CFP2006 Result

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M Computers s.r.o.

SPECfp[®]2006 = 111

HPC HD S2600KPR (Intel Xeon E5-2630 v4, 2.2 GHz)

SPECfp_base2006 = 105

CPU2006 license: 4204

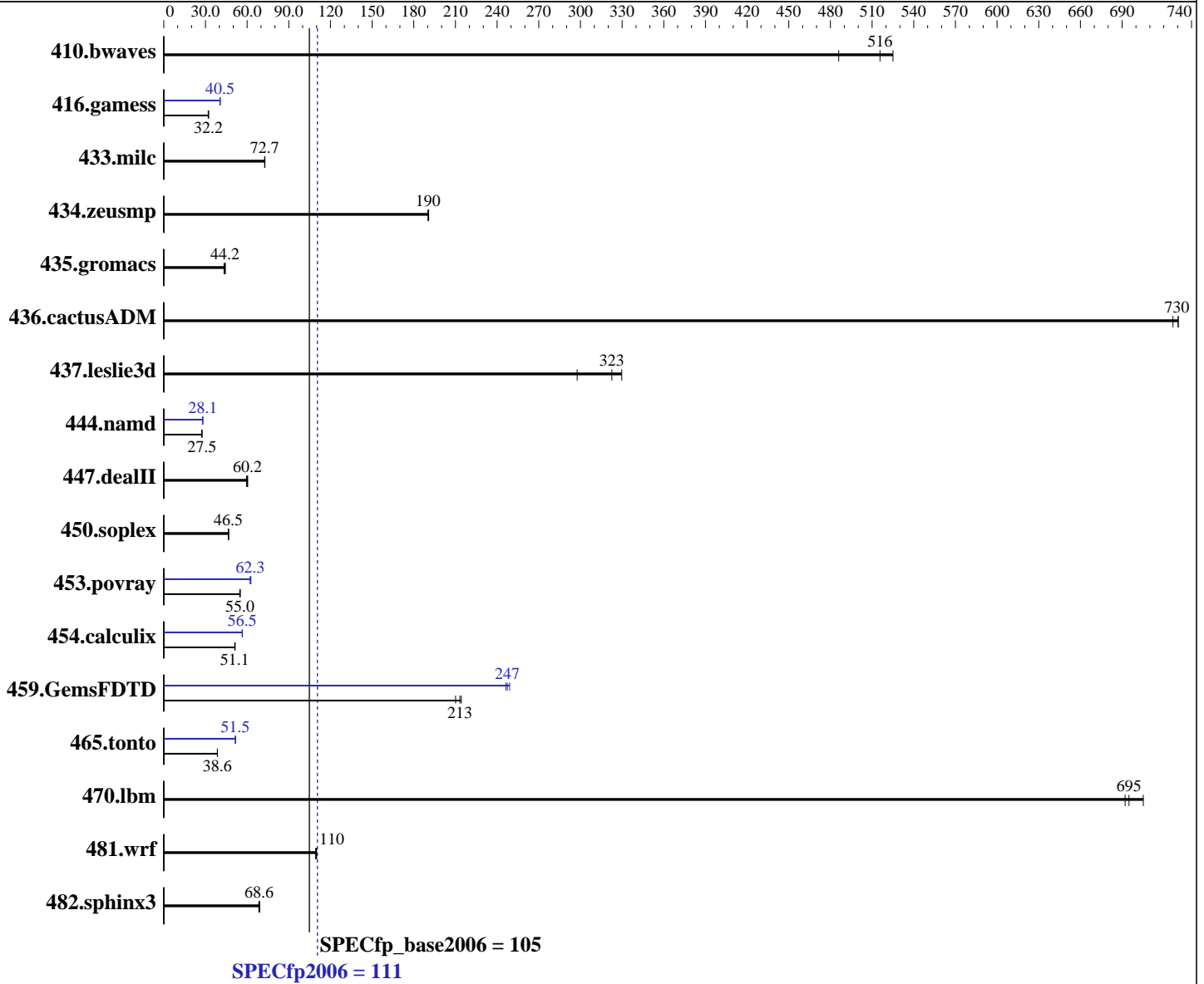
Test date: Jun-2016

Test sponsor: M Computers s.r.o.

Hardware Availability: Mar-2016

Tested by: M Computers s.r.o.

Software Availability: Feb-2016



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Hardware

CPU Name: Intel Xeon E5-2630 v4
 CPU Characteristics: Intel Turbo Boost Technology up to 3.10 GHz
 CPU MHz: 2200
 FPU: Integrated
 CPU(s) enabled: 20 cores, 2 chips, 10 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

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Software

Operating System: CentOS Linux release 7.2.1511 (Core)
 3.10.0-327.18.2.el7.x86_64
 Compiler: C/C++: Version 16.0.2.181 of Intel C++ Studio XE for Linux;
 Fortran: Version 16.0.2.181 of Intel Fortran Studio XE for Linux
 Auto Parallel: Yes
 File System: xfs
 System State: Run level 3 (multi-user)

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L3 Cache: 25 MB I+D on chip per chip
Other Cache: None
Memory: 128 GB (8 x 16 GB 2Rx4 PC4-2133T-R)
Disk Subsystem: 420 GB SATA SSHD
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	<u>26.4</u>	<u>516</u>	28.0	486	25.9	525	<u>26.4</u>	<u>516</u>	28.0	486	25.9	525
416.gamess	607	32.2	<u>608</u>	<u>32.2</u>	613	31.9	<u>483</u>	<u>40.5</u>	484	40.4	481	40.7
433.milc	<u>126</u>	<u>72.7</u>	126	72.6	126	72.8	<u>126</u>	<u>72.7</u>	126	72.6	126	72.8
434.zeusmp	<u>47.8</u>	<u>190</u>	47.7	191	47.8	190	<u>47.8</u>	<u>190</u>	47.7	191	47.8	190
435.gromacs	<u>162</u>	<u>44.2</u>	161	44.3	165	43.4	<u>162</u>	<u>44.2</u>	161	44.3	165	43.4
436.cactusADM	16.4	727	<u>16.4</u>	<u>730</u>	16.4	730	16.4	727	<u>16.4</u>	<u>730</u>	16.4	730
437.leslie3d	<u>29.1</u>	<u>323</u>	31.6	298	28.5	330	<u>29.1</u>	<u>323</u>	31.6	298	28.5	330
444.namd	292	27.4	<u>292</u>	<u>27.5</u>	292	27.5	286	28.0	286	28.1	<u>286</u>	<u>28.1</u>
447.dealII	192	59.5	<u>190</u>	<u>60.2</u>	189	60.4	192	59.5	<u>190</u>	<u>60.2</u>	189	60.4
450.soplex	180	46.5	<u>179</u>	<u>46.5</u>	178	46.8	180	46.5	<u>179</u>	<u>46.5</u>	178	46.8
453.povray	97.3	54.7	96.7	55.0	<u>96.8</u>	<u>55.0</u>	85.5	62.3	<u>85.4</u>	<u>62.3</u>	84.8	62.7
454.calculix	161	51.4	161	51.1	<u>161</u>	<u>51.1</u>	<u>146</u>	<u>56.5</u>	146	56.6	146	56.4
459.GemsFDTD	49.5	214	50.5	210	<u>49.8</u>	<u>213</u>	42.6	249	<u>42.9</u>	<u>247</u>	43.1	246
465.tonto	255	38.6	255	38.6	<u>255</u>	<u>38.6</u>	191	51.6	191	51.5	<u>191</u>	<u>51.5</u>
470.lbm	<u>19.8</u>	<u>695</u>	19.5	705	19.9	692	<u>19.8</u>	<u>695</u>	19.5	705	19.9	692
481.wrf	101	110	<u>102</u>	<u>110</u>	102	109	101	110	<u>102</u>	<u>110</u>	102	109
482.sphinx3	282	69.1	<u>284</u>	<u>68.6</u>	285	68.5	282	69.1	<u>284</u>	<u>68.6</u>	285	68.5

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"
Transparent Huge Pages enabled with:
echo always > /sys/kernel/mm/transparent_hugepage/enabled

Platform Notes

BIOS Configuration:
CPU and Power Performance Policy = Performance
Set Fan Profile = Performance
Fan PWM Offset = 100
Intel(R) Hyper-Threading Tech = Disabled
Sysinfo program /spec/config/sysinfo.rev6993
Revision 6993 of 2015-11-06 (29e49c5ec6f7040ebc9f9f10d0f38210)
running on beth Sat Jun 18 08:14:41 2016

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Platform Notes (Continued)

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>

From /proc/cpuinfo

```
model name : Intel(R) Xeon(R) CPU E5-2630 v4 @ 2.20GHz
 2 "physical id"s (chips)
 20 "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 : 10
siblings   : 10
physical 0: cores 0 1 2 3 4 8 9 10 11 12
physical 1: cores 0 1 2 3 4 8 9 10 11 12
cache size : 25600 KB
```

From /proc/meminfo

```
MemTotal:      131746768 kB
HugePages_Total: 0
Hugepagesize:   2048 kB
```

From /etc/*release* /etc/*version*

```
centos-release: CentOS Linux release 7.2.1511 (Core)
centos-release-upstream: Derived from Red Hat Enterprise Linux 7.2 (Source)
os-release:
NAME="CentOS Linux"
VERSION="7 (Core)"
ID="centos"
ID_LIKE="rhel fedora"
VERSION_ID="7"
PRETTY_NAME="CentOS Linux 7 (Core)"
ANSI_COLOR="0;31"
CPE_NAME="cpe:/o:centos:centos:7"
redhat-release: CentOS Linux release 7.2.1511 (Core)
system-release: CentOS Linux release 7.2.1511 (Core)
system-release-cpe: cpe:/o:centos:centos:7
```

uname -a:

```
Linux beth 3.10.0-327.18.2.el7.x86_64 #1 SMP Thu May 12 11:03:55 UTC 2016
x86_64 x86_64 x86_64 GNU/Linux
```

run-level 3 Jun 17 12:29

SPEC is set to: /spec

```
Filesystem      Type  Size  Used Avail Use% Mounted on
/dev/sdal        xfs   420G   87G  333G  21% /
```

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

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Platform Notes (Continued)

determined", but the intent may not be met, as there are frequent changes to hardware, firmware, and the "DMTF SMBIOS" standard.

BIOS SE5C610.86B.01.01.0016.033120161139 03/31/2016

Memory:

4x Hynix HMA42GR7MFR4N-TF 16 GB 2 rank 2133 MHz, configured at 2134 MHz

4x Samsung M393A2G40DB0-CPB 16 GB 2 rank 2133 MHz, configured at 2134 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 = "/spec/libs/32:/spec/libs/64:/opt/intel/compilers_and_libraries_2016.2.181/linux/compiler/lib/intel64_lin"

OMP_NUM_THREADS = "20"

Binaries compiled on a system with 2x Intel Xeon E5-2630 v4 CPU + 128GB memory using CentOS 7.2

Transparent Huge Pages Disabled with:

echo never > /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

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Base Portability Flags (Continued)

```

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
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



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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: -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:

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Peak Optimization Flags (Continued)

435.gromacs: basepeak = yes

436.cactusADM: basepeak = yes

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

481.wrf: basepeak = yes

The flags file that was used to format this result can be browsed at

<http://www.spec.org/cpu2006/flags/Intel-ic16.0-official-linux64.html>

You can also download the XML flags source by saving the following link:

<http://www.spec.org/cpu2006/flags/Intel-ic16.0-official-linux64.xml>

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