



# SPEC<sup>®</sup> CFP2006 Result

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## M Computers s.r.o.

### SPECfp<sup>®</sup>2006 = 111

### HPC HD S2600TPR (Intel Xeon E5-2630 v4, 2.2 GHz)

### SPECfp\_base2006 = 105

CPU2006 license: 4204

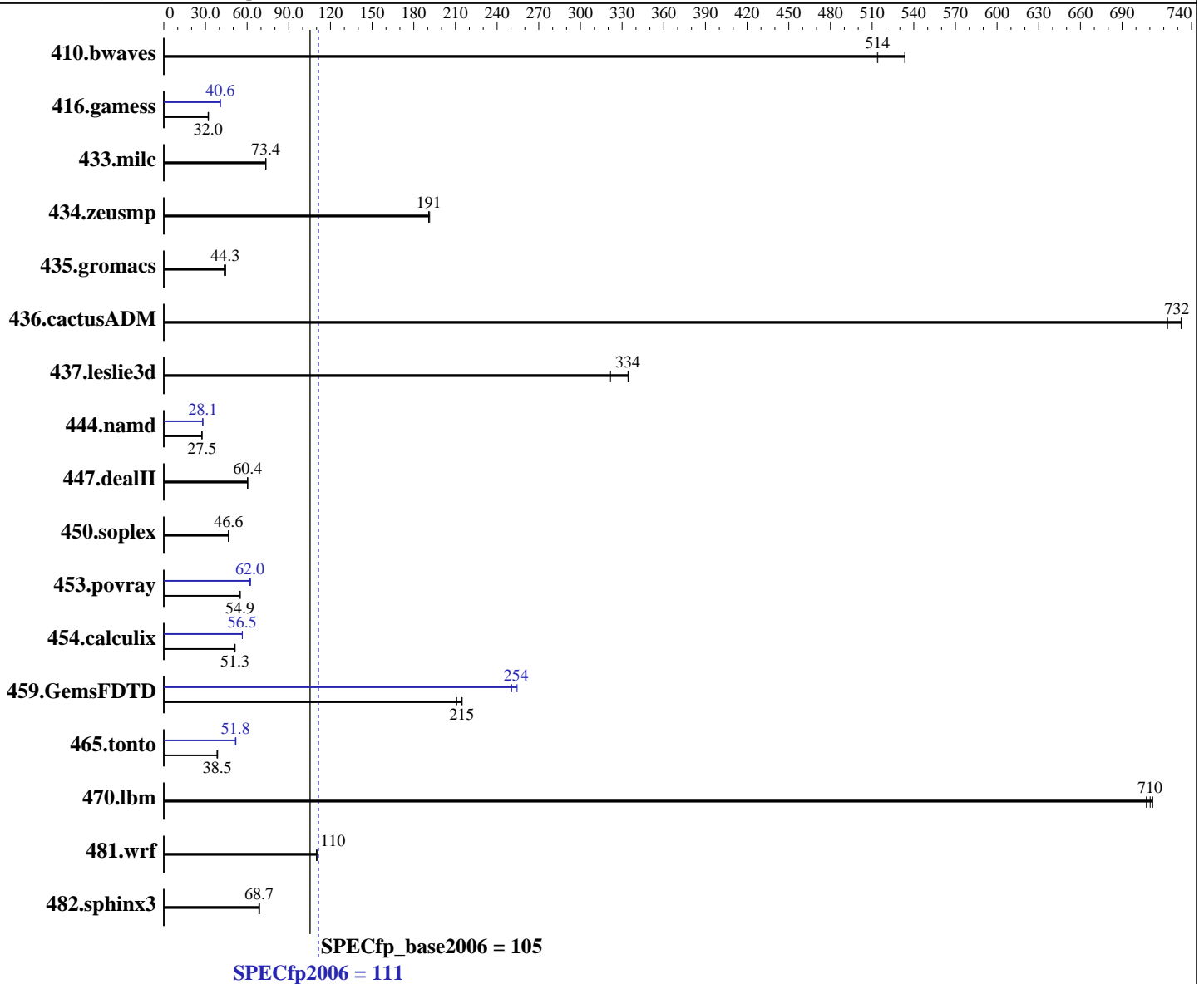
Test date: Jun-2016

Test sponsor: M Computers s.r.o.

Hardware Availability: Mar-2016

Tested by: M Computers s.r.o.

Software Availability: Feb-2016



SPECfp2006 = 111

#### 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: 256 GB (16 x 16 GB 2Rx4 PC4-2400T-R, running at 2133 MHz)  
Disk Subsystem: 430 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	26.5	513	25.5	534	<u>26.4</u>	<u>514</u>	26.5	513	25.5	534	<u>26.4</u>	<u>514</u>
416.gamess	<u>612</u>	<u>32.0</u>	613	31.9	608	32.2	482	40.6	481	40.7	<u>482</u>	<u>40.6</u>
433.milc	125	73.6	125	73.4	<u>125</u>	<u>73.4</u>	125	73.6	125	73.4	<u>125</u>	<u>73.4</u>
434.zeusmp	<u>47.7</u>	<u>191</u>	47.5	191	47.7	191	<u>47.7</u>	<u>191</u>	47.5	191	47.7	191
435.gromacs	161	44.5	164	43.5	<u>161</u>	<u>44.3</u>	161	44.5	164	43.5	<u>161</u>	<u>44.3</u>
436.cactusADM	16.3	733	16.5	723	<u>16.3</u>	<u>732</u>	16.3	733	16.5	723	<u>16.3</u>	<u>732</u>
437.leslie3d	28.1	334	<u>28.1</u>	<u>334</u>	29.2	322	28.1	334	<u>28.1</u>	<u>334</u>	29.2	322
444.namd	292	27.5	<u>292</u>	<u>27.5</u>	292	27.5	<u>286</u>	<u>28.1</u>	286	28.0	286	28.1
447.dealII	190	60.3	189	60.4	<u>189</u>	<u>60.4</u>	190	60.3	189	60.4	<u>189</u>	<u>60.4</u>
450.soplex	179	46.7	<u>179</u>	<u>46.6</u>	179	46.6	179	46.7	<u>179</u>	<u>46.6</u>	179	46.6
453.povray	<u>96.8</u>	<u>54.9</u>	96.7	55.0	98.1	54.2	<u>85.8</u>	<u>62.0</u>	85.2	62.5	86.3	61.6
454.calculix	161	51.3	<u>161</u>	<u>51.3</u>	162	51.1	146	56.6	146	56.5	<u>146</u>	<u>56.5</u>
459.GemsFDTD	<u>49.4</u>	<u>215</u>	49.4	215	50.3	211	<u>41.8</u>	<u>254</u>	41.7	254	42.4	250
465.tonto	254	38.8	<u>256</u>	<u>38.5</u>	257	38.4	189	51.9	<u>190</u>	<u>51.8</u>	191	51.5
470.lbm	19.3	712	<u>19.3</u>	<u>710</u>	19.4	707	19.3	712	<u>19.3</u>	<u>710</u>	19.4	707
481.wrf	<u>101</u>	<u>110</u>	101	110	102	110	<u>101</u>	<u>110</u>	101	110	102	110
482.sphinx3	283	68.9	<u>284</u>	<u>68.7</u>	285	68.5	283	68.9	<u>284</u>	<u>68.7</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 (d0ff56c28028b704bda9287de9eee273)

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## Platform Notes (Continued)

running on grunt Sun Jun 19 08:10:07 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>

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:      263859080 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 grunt 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 19 08:07

SPEC is set to: /spec

```
Filesystem      Type  Size  Used Avail Use% Mounted on
/dev/sdal        xfs   430G   52G  379G  12% /
```

Additional information from dmidecode:

Warning: Use caution when you interpret this section. The 'dmidecode' program  
Continued on next page



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## Platform Notes (Continued)

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 SE5C610.86B.01.01.0016.033120161139 03/31/2016

Memory:

16x Kinston 9965662-004.A00G 16 GB 2 rank 2400 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 + 256GB 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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Software Availability: Feb-2016

## 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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