SPEC® CFP2006 Result

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M Computers s.r.o.

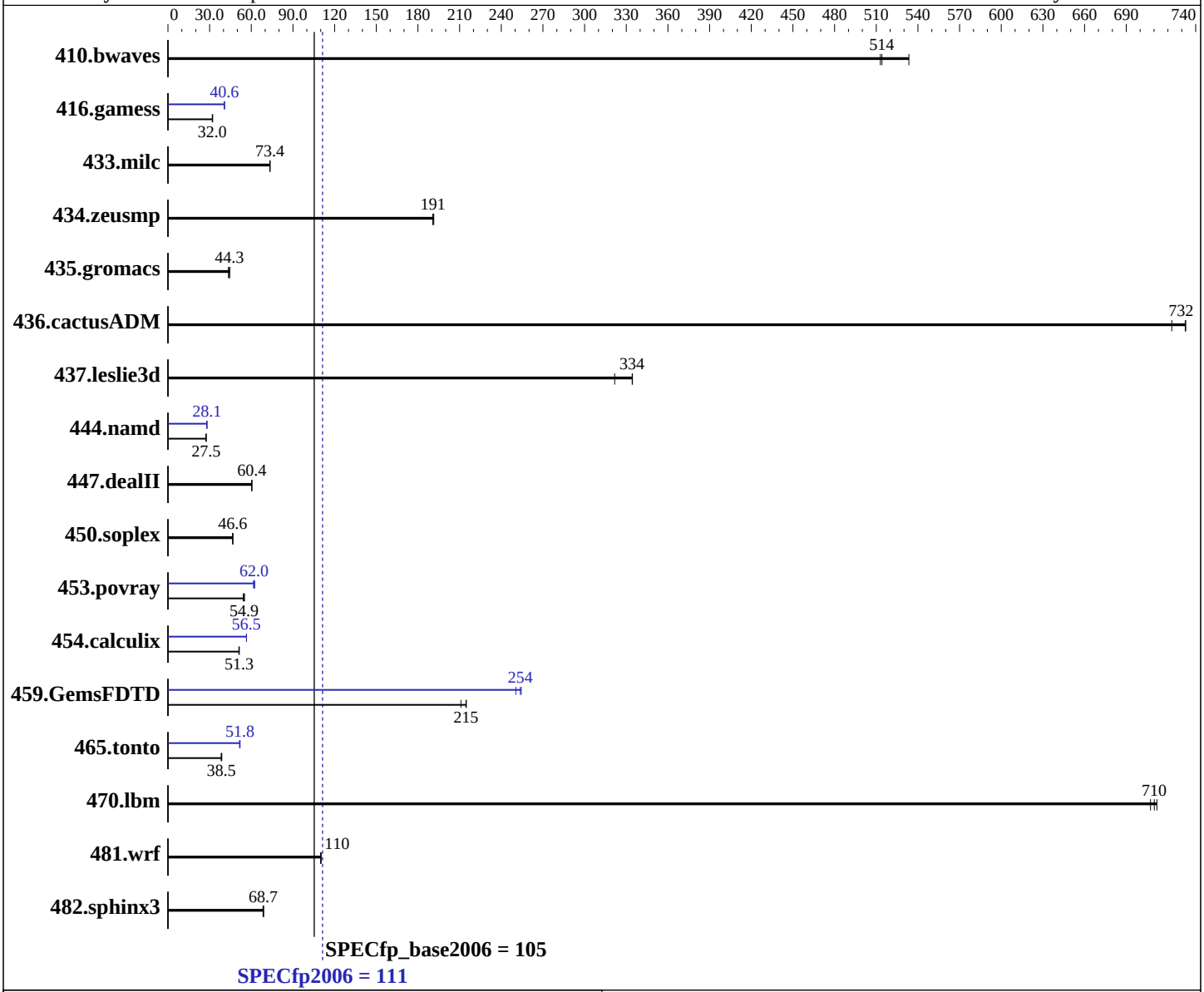
HPC HD S2600TPR (Intel Xeon E5-2630 v4, 2.2 GHz)

SPECfp®2006 = 111

SPECfp_base2006 = 105

CPU2006 license: 4204
Test sponsor: M Computers s.r.o.
Tested by: M Computers s.r.o.

Test date: Jun-2016
Hardware Availability: Mar-2016
Software Availability: Feb-2016



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	**26.4**	**514**	26.5	513	25.5	534	**26.4**	**514**
416.gamess	**612**	**32.0**	613	31.9	608	32.2	482	40.6	481	40.7	**482**	**40.6**
433.milc	125	73.6	125	73.4	**125**	**73.4**	125	73.6	125	73.4	**125**	**73.4**
434.zeusmp	**47.7**	**191**	47.5	191	47.7	191	**47.7**	**191**	47.5	191	47.7	191
435.gromacs	161	44.5	164	43.5	**161**	**44.3**	161	44.5	164	43.5	**161**	**44.3**
436.cactusADM	16.3	733	16.5	723	**16.3**	**732**	16.3	733	16.5	723	**16.3**	**732**
437.leslie3d	28.1	334	**28.1**	**334**	29.2	322	28.1	334	**28.1**	**334**	29.2	322
444.namd	292	27.5	**292**	**27.5**	292	27.5	**286**	**28.1**	286	28.0	286	28.1
447.dealII	190	60.3	189	60.4	**189**	**60.4**	190	60.3	189	60.4	**189**	**60.4**
450.soplex	179	46.7	**179**	**46.6**	179	46.6	179	46.7	**179**	**46.6**	179	46.6
453.povray	**96.8**	**54.9**	96.7	55.0	98.1	54.2	**85.8**	**62.0**	85.2	62.5	86.3	61.6
454.calculix	161	51.3	**161**	**51.3**	162	51.1	146	56.6	146	56.5	**146**	**56.5**
459.GemsFDTD	**49.4**	**215**	49.4	215	50.3	211	**41.8**	**254**	41.7	254	42.4	250
465.tonto	254	38.8	**256**	**38.5**	257	38.4	189	51.9	**190**	**51.8**	191	51.5
470.lbm	19.3	712	**19.3**	**710**	19.4	707	19.3	712	**19.3**	**710**	19.4	707
481.wrf	**101**	**110**	101	110	102	110	**101**	**110**	101	110	102	110
482.sphinx3	283	68.9	**284**	**68.7**	285	68.5	283	68.9	**284**	**68.7**	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/sda1      xfs   430G   52G  379G  12% /
Additional information from dmidecode:

   Warning: Use caution when you interpret this section. The 'dmidecode' program
```

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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

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:

Continued on next page

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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