



SPEC[®] CFP2006 Result

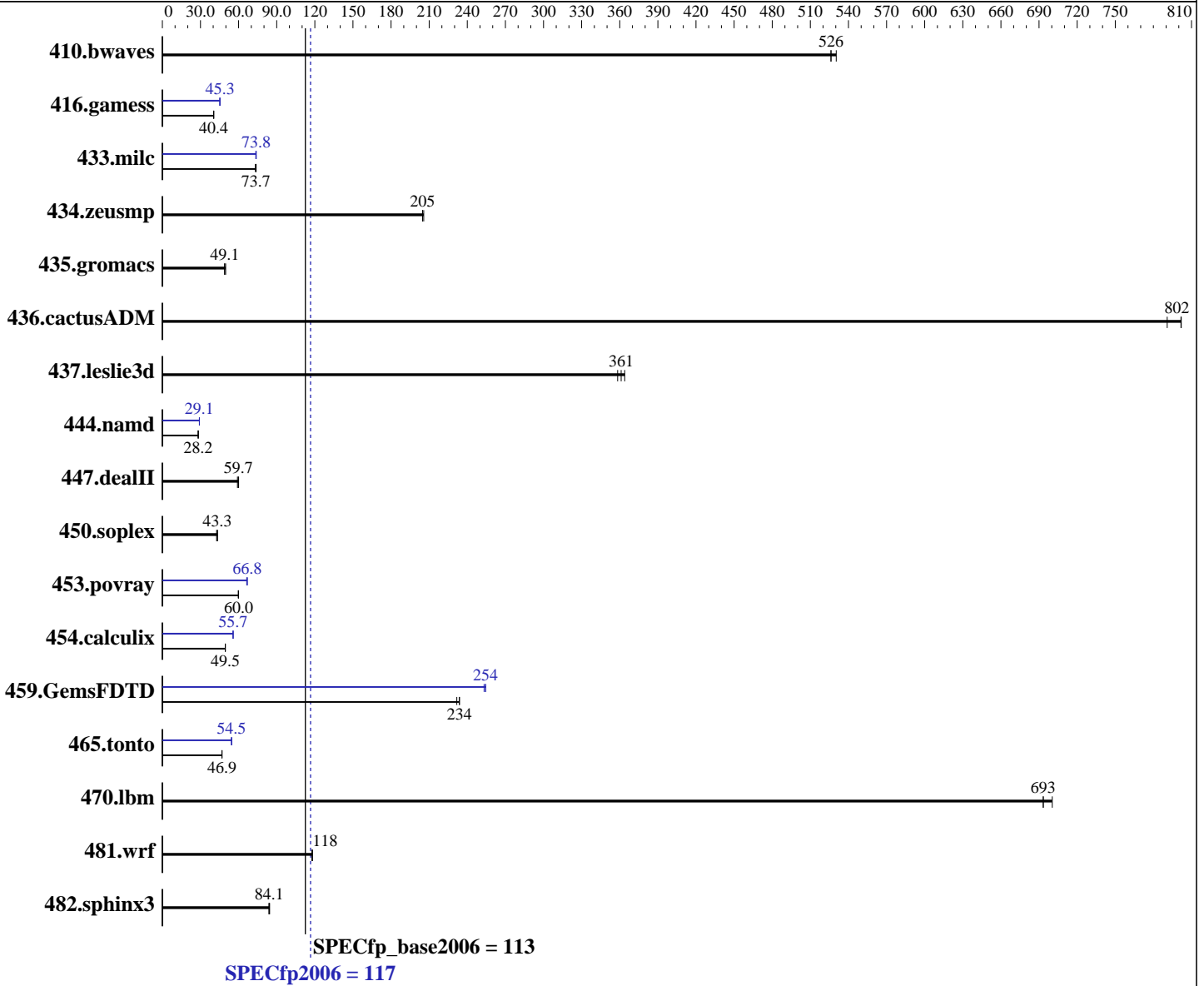
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IBM Corporation
IBM NeXtScale nx360 M5

SPECfp[®]2006 = 117
SPECfp_base2006 = 113

CPU2006 license: 11
Test sponsor: IBM Corporation
Tested by: IBM Corporation

Test date: Sep-2014
Hardware Availability: Nov-2014
Software Availability: Nov-2013



Hardware

CPU Name: Intel Xeon E5-2667 v3
 CPU Characteristics: Intel Turbo Boost Technology up to 3.60 GHz
 CPU MHz: 3200
 FPU: Integrated
 CPU(s) enabled: 16 cores, 2 chips, 8 cores/chip, 2 threads/core
 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: Red Hat Enterprise Linux Server release 6.5 (Santiago)
 2.6.32-431.el6.x86_64
 Compiler: C/C++: Version 14.0.0.080 of Intel C++ Studio XE for Linux;
 Fortran: Version 14.0.0.080 of Intel Fortran Studio XE for Linux
 Auto Parallel: Yes
 File System: ext4

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L3 Cache: 20 MB I+D on chip per chip
Other Cache: None
Memory: 256 GB (16 x 16 GB 2Rx4 PC4-2133P-R)
Disk Subsystem: 1 x 250 GB SATA, 7200 RPM
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	25.8	526	25.6	530	<u>25.8</u>	<u>526</u>	25.8	526	25.6	530	<u>25.8</u>	<u>526</u>
416.gamess	484	40.4	<u>485</u>	<u>40.4</u>	485	40.4	434	45.2	<u>432</u>	<u>45.3</u>	431	45.4
433.milc	124	73.8	<u>125</u>	<u>73.7</u>	125	73.2	125	73.5	<u>124</u>	<u>73.8</u>	124	73.8
434.zeusmp	<u>44.4</u>	<u>205</u>	44.4	205	44.2	206	<u>44.4</u>	<u>205</u>	44.4	205	44.2	206
435.gromacs	146	49.0	<u>146</u>	<u>49.1</u>	143	49.8	146	49.0	<u>146</u>	<u>49.1</u>	143	49.8
436.cactusADM	15.1	791	<u>14.9</u>	<u>802</u>	14.9	802	15.1	791	<u>14.9</u>	<u>802</u>	14.9	802
437.leslie3d	25.8	364	<u>26.0</u>	<u>361</u>	26.2	358	25.8	364	<u>26.0</u>	<u>361</u>	26.2	358
444.namd	<u>284</u>	<u>28.2</u>	284	28.2	284	28.2	275	29.1	<u>275</u>	<u>29.1</u>	275	29.2
447.dealII	191	60.0	<u>191</u>	<u>59.7</u>	194	59.1	191	60.0	<u>191</u>	<u>59.7</u>	194	59.1
450.soplex	195	42.7	<u>193</u>	<u>43.3</u>	192	43.4	195	42.7	<u>193</u>	<u>43.3</u>	192	43.4
453.povray	<u>88.7</u>	<u>60.0</u>	89.1	59.7	88.7	60.0	79.6	66.8	80.1	66.4	<u>79.6</u>	<u>66.8</u>
454.calculix	167	49.5	<u>167</u>	<u>49.5</u>	166	49.6	148	55.6	148	55.7	<u>148</u>	<u>55.7</u>
459.GemsFDTD	<u>45.4</u>	<u>234</u>	45.8	232	45.4	234	41.9	253	<u>41.7</u>	<u>254</u>	41.7	254
465.tonto	210	46.9	<u>210</u>	<u>46.9</u>	210	47.0	<u>181</u>	<u>54.5</u>	181	54.5	181	54.4
470.lbm	19.8	693	19.6	700	<u>19.8</u>	<u>693</u>	19.8	693	19.6	700	<u>19.8</u>	<u>693</u>
481.wrf	<u>94.6</u>	<u>118</u>	94.6	118	94.8	118	<u>94.6</u>	<u>118</u>	94.6	118	94.8	118
482.sphinx3	232	83.8	<u>232</u>	<u>84.1</u>	231	84.4	232	83.8	<u>232</u>	<u>84.1</u>	231	84.4

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

Sysinfo program /root/SPECCpu2013Oct17/config/sysinfo.rev6818
\$Rev: 6818 \$ \$Date:: 2012-07-17 #\$ e86d102572650a6e4d596a3cee98f191
running on wilykat2 Tue Sep 2 11:08:09 2014

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 E5-2667 v3 @ 3.20GHz
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Platform Notes (Continued)

```
2 "physical id"s (chips)
32 "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  : 16
physical 0: cores 0 1 2 3 4 5 6 7
physical 1: cores 0 1 2 3 4 5 6 7
cache size : 20480 KB
```

```
From /proc/meminfo
MemTotal:      264282968 kB
HugePages_Total: 0
Hugepagesize:  2048 kB
```

```
/usr/bin/lsc_release -d
Red Hat Enterprise Linux Server release 6.5 (Santiago)
```

```
From /etc/*release* /etc/*version*
redhat-release: Red Hat Enterprise Linux Server release 6.5 (Santiago)
system-release: Red Hat Enterprise Linux Server release 6.5 (Santiago)
system-release-cpe: cpe:/o:redhat:enterprise_linux:6server:ga:server
```

```
uname -a:
Linux wilykat2 2.6.32-431.el6.x86_64 #1 SMP Sun Nov 10 22:19:54 EST 2013
x86_64 x86_64 x86_64 GNU/Linux
```

```
run-level 3 Sep 2 10:57
```

```
SPEC is set to: /root/SPECCpu2013Oct17
Filesystem      Type      Size      Used Avail Use% Mounted on
/dev/mapper/vg_wilykat2-lv_root ext4      225G      20G  194G  10% /
```

```
Additional information from dmidecode:
BIOS IBM -[THE101W-1.00]- 08/27/2014
Memory:
1x 1 GB
14x 16 GB
14x Micron 36ASF2G72PZ-2G1A2 16 GB 2133 MHz 2 rank
1x Micron A.A.A.A.A.A.A.A 1 GB 8 rank
1x NO DIMM Unknown
```

(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 = "/root/SPECCpu2013Oct17/libs/32:/root/SPECCpu2013Oct17/libs/64:/root/SPECCpu2013Oct17/sh"
OMP_NUM_THREADS = "16"

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General Notes (Continued)

Binaries compiled on a system with 1x Core i7-860 CPU + 8GB memory using RedHat EL 6.4
Transparent Huge Pages enabled with:
echo always > /sys/kernel/mm/redhat_transparent_hugepage/enabled
runspec command invoked through numactl i.e.:
numactl --interleave=all runspec <etc>

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
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

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Base Optimization Flags (Continued)

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: -xCORE-AVX2(pass 2) -prof-gen(pass 1) -ipo(pass 2)
-O3(pass 2) -no-prec-div(pass 2) -prof-use(pass 2)
-auto-ilp32 -ansi-alias

470.lbm: basepeak = yes

482.sphinx3: basepeak = yes

C++ benchmarks:

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Peak Optimization Flags (Continued)

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

447.dealII: basepeak = yes

450.soplex: basepeak = yes

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

Fortran benchmarks:

410.bwaves: basepeak = yes

416.gamess: -xCORE-AVX2(pass 2) -prof-gen(pass 1) -ipo(pass 2)
-O3(pass 2) -no-prec-div(pass 2) -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(pass 1) -ipo(pass 2)
-O3(pass 2) -no-prec-div(pass 2) -prof-use(pass 2) -unroll2
-inline-level=0 -opt-prefetch -parallel

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

Benchmarks using both Fortran and C:

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 files that were used to format this result can be browsed at

<http://www.spec.org/cpu2006/flags/Intel-ic14.0-official-linux64.20140128.html>

<http://www.spec.org/cpu2006/flags/IBM-Platform-Flags-V1.2-HSW-B.html>

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

<http://www.spec.org/cpu2006/flags/Intel-ic14.0-official-linux64.20140128.xml>

<http://www.spec.org/cpu2006/flags/IBM-Platform-Flags-V1.2-HSW-B.xml>



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