



SPEC[®] CFP2006 Result

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H3C

SPECfp[®]2006 = 147

H3C UniServer R4900 G3 (Intel Xeon Gold 6140)

SPECfp_base2006 = 140

CPU2006 license: 9066

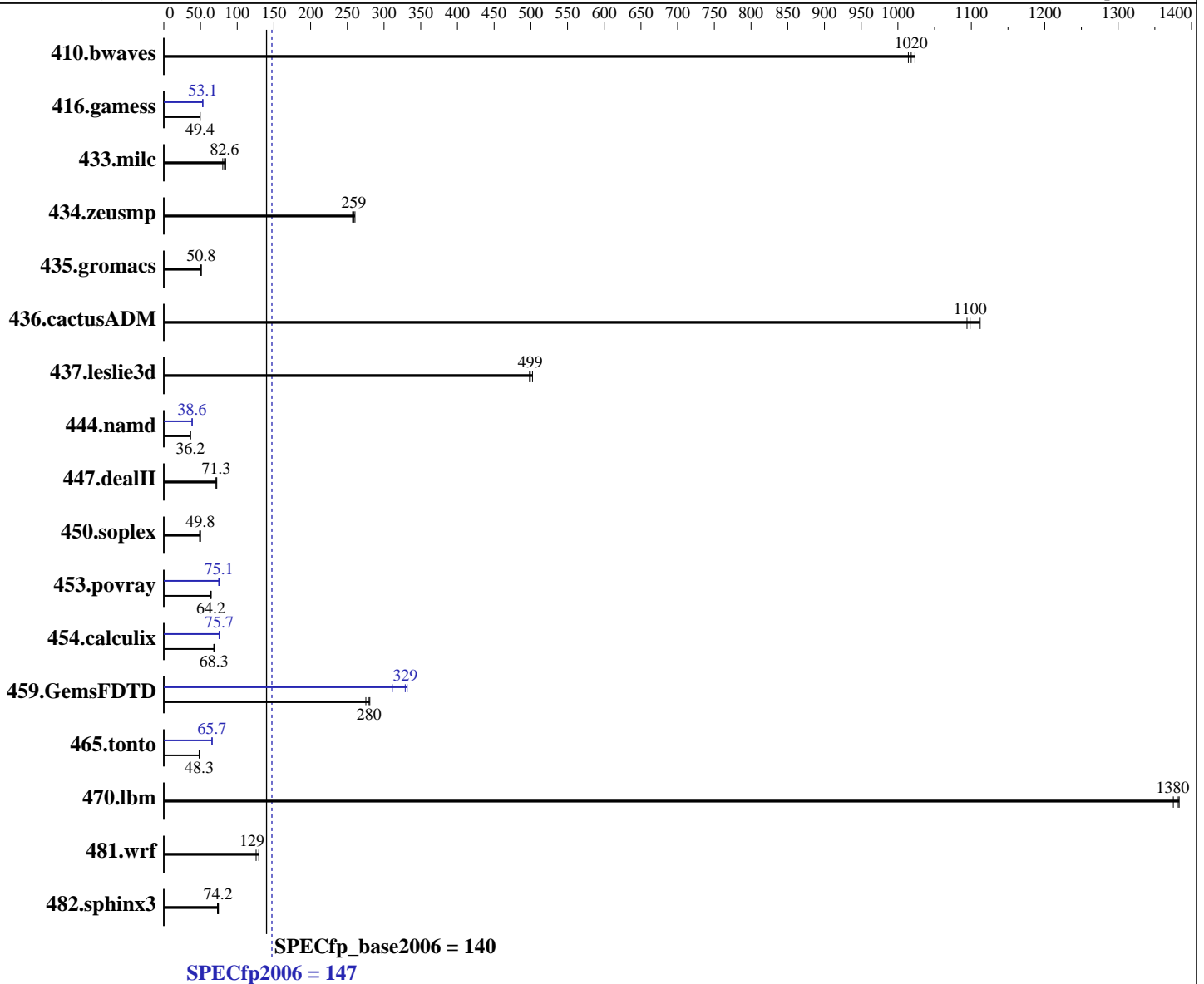
Test date: Aug-2017

Test sponsor: H3C

Hardware Availability: Jul-2017

Tested by: H3C

Software Availability: Apr-2017



Hardware

CPU Name: Intel Xeon Gold 6140
 CPU Characteristics: Intel Turbo Boost Technology up to 3.70 GHz
 CPU MHz: 2300
 FPU: Integrated
 CPU(s) enabled: 36 cores, 2 chips, 18 cores/chip
 CPU(s) orderable: 1,2 chip
 Primary Cache: 32 KB I + 32 KB D on chip per core
 Secondary Cache: 1 MB I+D on chip per core

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Software

Operating System: Red Hat Enterprise Linux Server release 7.3 (Maipo)
 3.10.0-514.26.2.el7.x86_64
 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: xfs

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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 480 GB SATA SSD
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	<u>13.3</u>	<u>1020</u>	13.3	1020	13.4	1010	<u>13.3</u>	<u>1020</u>	13.3	1020	13.4	1010
416.gamess	<u>396</u>	<u>49.4</u>	397	49.3	396	49.4	369	53.0	369	53.1	<u>369</u>	<u>53.1</u>
433.milc	114	80.3	<u>111</u>	<u>82.6</u>	109	84.2	114	80.3	<u>111</u>	<u>82.6</u>	109	84.2
434.zeusmp	<u>35.1</u>	<u>259</u>	35.4	257	34.9	260	<u>35.1</u>	<u>259</u>	35.4	257	34.9	260
435.gromacs	<u>140</u>	<u>50.8</u>	141	50.8	140	50.8	<u>140</u>	<u>50.8</u>	141	50.8	140	50.8
436.cactusADM	<u>10.9</u>	<u>1100</u>	10.7	1110	10.9	1090	<u>10.9</u>	<u>1100</u>	10.7	1110	10.9	1090
437.leslie3d	18.9	498	18.7	502	<u>18.8</u>	<u>499</u>	18.9	498	18.7	502	<u>18.8</u>	<u>499</u>
444.namd	222	36.1	<u>222</u>	<u>36.2</u>	221	36.2	208	38.6	<u>208</u>	<u>38.6</u>	208	38.6
447.dealII	161	71.2	159	72.2	<u>160</u>	<u>71.3</u>	161	71.2	159	72.2	<u>160</u>	<u>71.3</u>
450.soplex	168	49.8	<u>168</u>	<u>49.8</u>	171	48.8	168	49.8	<u>168</u>	<u>49.8</u>	171	48.8
453.povray	83.0	64.1	<u>82.8</u>	<u>64.2</u>	82.6	64.4	70.8	75.2	71.0	74.9	<u>70.8</u>	<u>75.1</u>
454.calculix	<u>121</u>	<u>68.3</u>	120	68.6	121	68.2	109	75.9	<u>109</u>	<u>75.7</u>	110	75.2
459.GemsFDTD	38.5	275	37.8	281	<u>38.0</u>	<u>280</u>	32.0	332	<u>32.3</u>	<u>329</u>	34.1	311
465.tonto	<u>204</u>	<u>48.3</u>	201	48.8	205	48.1	<u>150</u>	<u>65.7</u>	150	65.7	150	65.7
470.lbm	9.99	1380	9.93	1380	<u>9.94</u>	<u>1380</u>	9.99	1380	9.93	1380	<u>9.94</u>	<u>1380</u>
481.wrf	88.8	126	<u>86.3</u>	<u>129</u>	86.2	130	88.8	126	<u>86.3</u>	<u>129</u>	86.2	130
482.sphinx3	262	74.4	<u>263</u>	<u>74.2</u>	267	73.1	262	74.4	<u>263</u>	<u>74.2</u>	267	73.1

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:
Set SNC to Disabled
Set Hyper-Threading to disabled
Set ENERGY_PERF_BIAS_CFG Mode to Performance
Sysinfo program /home/spec/config/sysinfo.rev6993
Revision 6993 of 2015-11-06 (b5e8d4b4eb51ed28d7f98696cbe290c1)
running on localhost.localdomain Wed Aug 16 22:30:38 2017

This section contains SUT (System Under Test) info as seen by some common utilities. To remove or add to this section, see:

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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 6140 CPU @ 2.30GHz
    2 "physical id"s (chips)
    36 "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 : 18
    siblings  : 18
    physical 0: cores 0 1 2 3 4 8 9 10 11 16 17 18 19 20 24 25 26 27
    physical 1: cores 0 1 2 3 4 8 9 10 11 16 17 18 19 20 24 25 26 27
  cache size : 25344 KB

```

```

From /proc/meminfo
MemTotal:      394654768 kB
HugePages_Total:      0
Hugepagesize:    2048 kB

```

```

From /etc/*release* /etc/*version*
os-release:
NAME="Red Hat Enterprise Linux Server"
VERSION="7.3 (Maipo)"
ID="rhel"
ID_LIKE="fedora"
VERSION_ID="7.3"
PRETTY_NAME="Red Hat Enterprise Linux Server 7.3 (Maipo)"
ANSI_COLOR="0;31"
CPE_NAME="cpe:/o:redhat:enterprise_linux:7.3:GA:server"
redhat-release: Red Hat Enterprise Linux Server release 7.3 (Maipo)
system-release: Red Hat Enterprise Linux Server release 7.3 (Maipo)
system-release-cpe: cpe:/o:redhat:enterprise_linux:7.3:ga:server

```

```

uname -a:
Linux localhost.localdomain 3.10.0-514.26.2.el7.x86_64 #1 SMP Tue Jul 4
15:04:05 UTC 2017 x86_64 x86_64 x86_64 GNU/Linux

```

run-level 3 Aug 16 18:04

```

SPEC is set to: /home/spec
Filesystem      Type  Size  Used Avail Use% Mounted on
/dev/sda3       xfs   439G  44G  396G  10% /

```

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.

BIOS American Megatrends Inc. 1.00.17 08/01/2017

Memory:

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Platform Notes (Continued)

24x Micron 18ASF2G72PDZ-2G6D1 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/spec/lib/ia32:/home/spec/lib/intel64:/home/spec/sh10.2"

OMP_NUM_THREADS = "36"

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

Transparent Huge Pages enabled by default.

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
 450.soplex: -DSPEC_CPU_LP64
 453.povray: -DSPEC_CPU_LP64
 454.calculix: -DSPEC_CPU_LP64 -nofor_main
 459.GemsFDTD: -DSPEC_CPU_LP64

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Base Portability Flags (Continued)

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-AVX512 -ipo -O3 -no-prec-div -parallel -qopt-prefetch
C++ benchmarks:
-xCORE-AVX512 -ipo -O3 -no-prec-div -qopt-prefetch
Fortran benchmarks:
-xCORE-AVX512 -ipo -O3 -no-prec-div -parallel -qopt-prefetch
Benchmarks using both Fortran and C:
-xCORE-AVX512 -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

Peak Optimization Flags

C benchmarks:

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Peak Optimization Flags (Continued)

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-AVX512(pass 2)
-par-num-threads=1(pass 1) -ipo(pass 2) -O3(pass 2)
-no-prec-div(pass 2) -fno-alias -auto-ilp32

447.dealIII: basepeak = yes

450.soplex: basepeak = yes

453.povray: -prof-gen(pass 1) -prof-use(pass 2) -xCORE-AVX512(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-AVX512(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-AVX512(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-AVX512(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

454.calculix: -xCORE-AVX512 -ipo -O3 -no-prec-div -auto-ilp32

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Peak Optimization Flags (Continued)

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/H3C-Platform-Settings-SKL-V1.1.20170906.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/H3C-Platform-Settings-SKL-V1.1.20170906.xml>

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