



SPEC® CFP2006 Result

Copyright 2006-2017 Standard Performance Evaluation Corporation

H3C

SPECfp®_rate2006 = 1660

H3C UniServer R4900 G3 (Intel Xeon Platinum 8164)

SPECfp_rate_base2006 = 1610

CPU2006 license: 9066

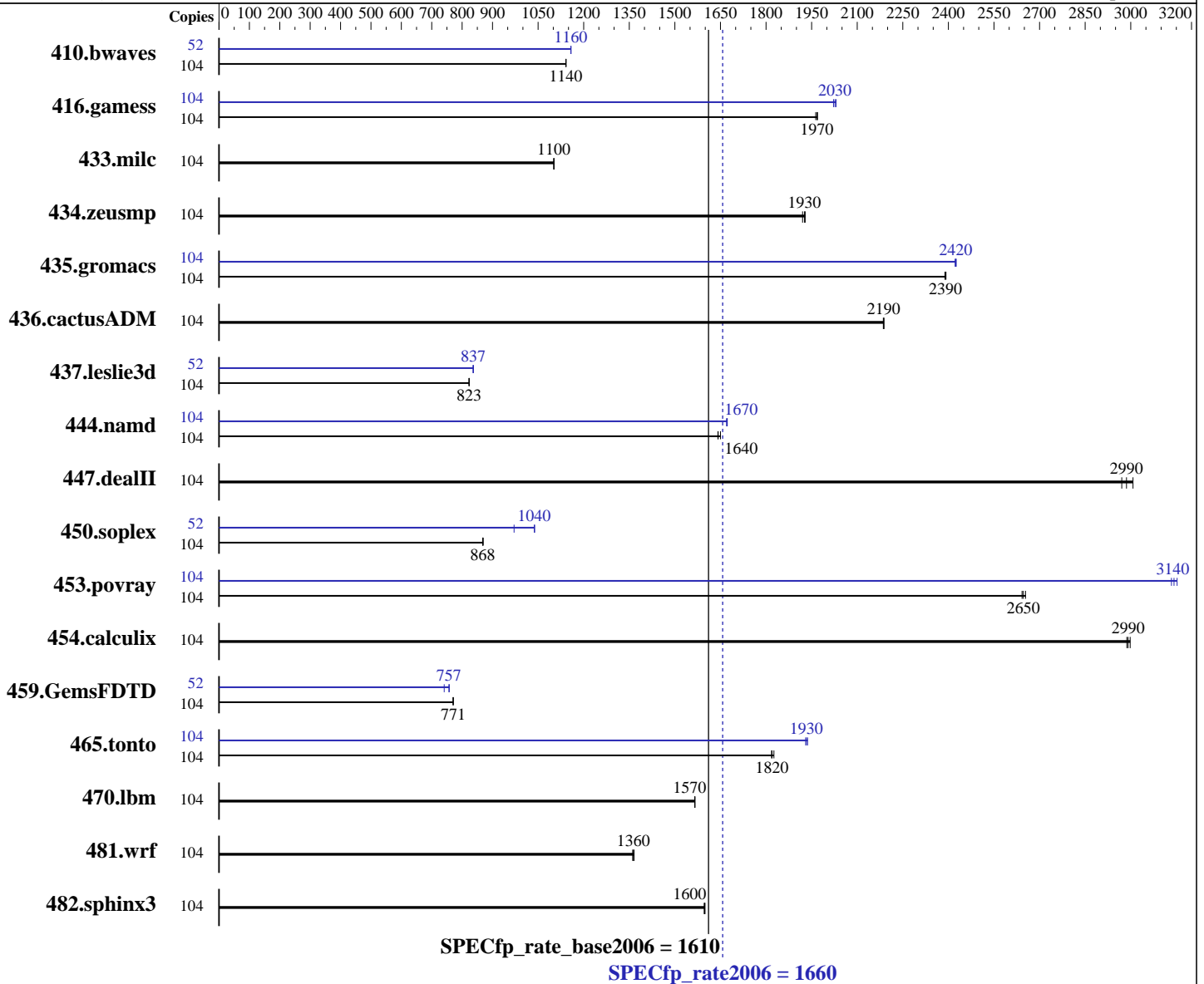
Test date: Aug-2017

Test sponsor: H3C

Hardware Availability: Jul-2017

Tested by: H3C

Software Availability: Sep-2016



Hardware

CPU Name: Intel Xeon Platinum 8164
 CPU Characteristics: Intel Turbo Boost Technology up to 3.70 GHz
 CPU MHz: 2000
 FPU: Integrated
 CPU(s) enabled: 52 cores, 2 chips, 26 cores/chip, 2 threads/core
 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

Continued on next page

Software

Operating System: SUSE Linux Enterprise Server 12 SP2
 4.4.21-69-default
 Compiler: C/C++: Version 17.0.0.098 of Intel C/C++
 Compiler for Linux;
 Fortran: Version 17.0.0.098 of Intel Fortran
 Compiler for Linux
 Auto Parallel: Yes
 File System: xfs
 System State: Run level 3 (multi-user)

Continued on next page



SPEC CFP2006 Result

Copyright 2006-2017 Standard Performance Evaluation Corporation

H3C

SPECfp_rate2006 = 1660

H3C UniServer R4900 G3 (Intel Xeon Platinum 8164)

SPECfp_rate_base2006 = 1610

CPU2006 license: 9066
Test sponsor: H3C
Tested by: H3C

Test date: Aug-2017
Hardware Availability: Jul-2017
Software Availability: Sep-2016

L3 Cache: 35.75 MB I+D on chip per chip
Other Cache: None
Memory: 768 GB (24 x 32 GB 2Rx4 PC4-2666V-R)
Disk Subsystem: 1 x 480 GB SATA SSD
Other Hardware: None

Base Pointers: 32/64-bit
Peak Pointers: 32/64-bit
Other Software: None

Results Table

Benchmark	Base							Peak						
	Copies	Seconds	Ratio	Seconds	Ratio	Seconds	Ratio	Copies	Seconds	Ratio	Seconds	Ratio	Seconds	Ratio
410.bwaves	104	1238	1140	1238	1140	<u>1238</u>	<u>1140</u>	52	610	1160	610	1160	<u>610</u>	<u>1160</u>
416.gamess	104	<u>1035</u>	<u>1970</u>	1034	1970	1037	1960	104	1003	2030	1007	2020	<u>1005</u>	<u>2030</u>
433.milc	104	866	1100	867	1100	<u>866</u>	<u>1100</u>	104	866	1100	867	1100	<u>866</u>	<u>1100</u>
434.zeusmp	104	493	1920	491	1930	<u>491</u>	<u>1930</u>	104	493	1920	491	1930	<u>491</u>	<u>1930</u>
435.gromacs	104	310	2390	311	2390	<u>311</u>	<u>2390</u>	104	307	2420	306	2430	<u>306</u>	<u>2420</u>
436.cactusADM	104	<u>568</u>	<u>2190</u>	568	2190	569	2190	104	<u>568</u>	<u>2190</u>	568	2190	569	2190
437.leslie3d	104	1187	823	1188	823	<u>1188</u>	<u>823</u>	52	<u>584</u>	<u>837</u>	584	837	585	836
444.namd	104	505	1650	508	1640	<u>508</u>	<u>1640</u>	104	<u>499</u>	<u>1670</u>	499	1670	499	1670
447.dealII	104	396	3010	401	2970	<u>398</u>	<u>2990</u>	104	396	3010	401	2970	<u>398</u>	<u>2990</u>
450.soplex	104	998	869	1000	867	<u>999</u>	<u>868</u>	52	<u>418</u>	<u>1040</u>	418	1040	447	971
453.povray	104	208	2650	<u>209</u>	<u>2650</u>	209	2640	104	177	3130	176	3150	<u>176</u>	<u>3140</u>
454.calculix	104	287	2990	<u>287</u>	<u>2990</u>	286	3000	104	287	2990	<u>287</u>	<u>2990</u>	286	3000
459.GemsFDTD	104	1432	771	1432	770	<u>1432</u>	<u>771</u>	52	<u>729</u>	<u>757</u>	745	741	728	758
465.tonto	104	563	1820	<u>562</u>	<u>1820</u>	560	1830	104	530	1930	528	1940	<u>529</u>	<u>1930</u>
470.lbm	104	912	1570	<u>913</u>	<u>1570</u>	913	1570	104	912	1570	<u>913</u>	<u>1570</u>	913	1570
481.wrf	104	854	1360	851	1370	<u>852</u>	<u>1360</u>	104	854	1360	851	1370	<u>852</u>	<u>1360</u>
482.sphinx3	104	<u>1268</u>	<u>1600</u>	1270	1600	1267	1600	104	<u>1268</u>	<u>1600</u>	1270	1600	1267	1600

Results appear in the order in which they were run. Bold underlined text indicates a median measurement.

Submit Notes

The numactl mechanism was used to bind copies to processors. The config file option 'submit' was used to generate numactl commands to bind each copy to a specific processor. For details, please see the config file.

Operating System Notes

Stack size set to unlimited using "ulimit -s unlimited"

Platform Notes

BIOS configuration:
Set C1E to Disable
Set SNC to Enable

Continued on next page



SPEC CFP2006 Result

Copyright 2006-2017 Standard Performance Evaluation Corporation

H3C

SPECfp_rate2006 = 1660

H3C UniServer R4900 G3 (Intel Xeon Platinum 8164)

SPECfp_rate_base2006 = 1610

CPU2006 license: 9066

Test sponsor: H3C

Tested by: H3C

Test date: Aug-2017

Hardware Availability: Jul-2017

Software Availability: Sep-2016

Platform Notes (Continued)

```

Set IMC Interleaving to 1 way
Set Patrol Scrub to Disable
Set Local/remote Threshold to High
Sysinfo program /home/spec/config/sysinfo.rev6993
Revision 6993 of 2015-11-06 (b5e8d4b4eb51ed28d7f98696cbe290c1)
running on linux-57hj Sat Aug 26 06:43:44 2017

```

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) Platinum 8164 CPU @ 2.00GHz
 2 "physical id"s (chips)
 104 "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    : 26
  siblings    : 52
  physical 0: cores 0 1 2 3 4 5 6 8 9 10 11 12 13 16 17 18 19 20 21 22 24 25
                26 27 28 29
  physical 1: cores 0 1 2 3 4 5 6 8 9 10 11 12 13 16 17 18 19 20 21 22 24 25
                26 27 28 29
 cache size   : 36608 KB

```

From /proc/meminfo

```

MemTotal:      790985228 kB
HugePages_Total:      0
Hugepagesize:    2048 kB

```

/usr/bin/lsb_release -d

SUSE Linux Enterprise Server 12 SP2

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

```

SuSE-release:
 SUSE Linux Enterprise Server 12 (x86_64)
 VERSION = 12
 PATCHLEVEL = 2
 # This file is deprecated and will be removed in a future service pack or
 release.
 # Please check /etc/os-release for details about this release.
os-release:
 NAME="SLES"
 VERSION="12-SP2"
 VERSION_ID="12.2"
 PRETTY_NAME="SUSE Linux Enterprise Server 12 SP2"
 ID="sles"
 ANSI_COLOR="0;32"
 CPE_NAME="cpe:/o:suse:sles:12:sp2"

```

uname -a:

Continued on next page



SPEC CFP2006 Result

Copyright 2006-2017 Standard Performance Evaluation Corporation

H3C

SPECfp_rate2006 = 1660

H3C UniServer R4900 G3 (Intel Xeon Platinum 8164)

SPECfp_rate_base2006 = 1610

CPU2006 license: 9066

Test sponsor: H3C

Tested by: H3C

Test date: Aug-2017

Hardware Availability: Jul-2017

Software Availability: Sep-2016

Platform Notes (Continued)

```
Linux linux-57hj 4.4.21-69-default #1 SMP Tue Oct 25 10:58:20 UTC 2016
(9464f67) x86_64 x86_64 x86_64 GNU/Linux
```

```
run-level 3 Aug 24 11:50
```

```
SPEC is set to: /home/spec
```

```
Filesystem      Type  Size  Used Avail Use% Mounted on
/dev/sda3       xfs   401G  101G  301G  26% /
```

```
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. 1.00.16 07/24/2017
```

```
Memory:
```

```
24x Samsung M393A4K40BB2-CTD 32 GB 2 rank 2666 MHz
```

```
(End of data from sysinfo program)
```

General Notes

Environment variables set by runspec before the start of the run:

```
LD_LIBRARY_PATH = "/home/spec/libs/32:/home/spec/libs/64:/home/spec/sh10.2"
```

```
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:
```

```
echo 1> /proc/sys/vm/drop_caches
```

```
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
```



SPEC CFP2006 Result

Copyright 2006-2017 Standard Performance Evaluation Corporation

H3C

SPECfp_rate2006 = 1660

H3C UniServer R4900 G3 (Intel Xeon Platinum 8164)

SPECfp_rate_base2006 = 1610

CPU2006 license: 9066

Test sponsor: H3C

Tested by: H3C

Test date: Aug-2017

Hardware Availability: Jul-2017

Software Availability: Sep-2016

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 -qopt-prefetch -auto-p32
-qopt-mem-layout-trans=3

```

C++ benchmarks:

```

-xCORE-AVX2 -ipo -O3 -no-prec-div -qopt-prefetch -auto-p32
-qopt-mem-layout-trans=3

```

Fortran benchmarks:

```

-xCORE-AVX2 -ipo -O3 -no-prec-div -qopt-prefetch

```

Benchmarks using both Fortran and C:

```

-xCORE-AVX2 -ipo -O3 -no-prec-div -qopt-prefetch -auto-p32
-qopt-mem-layout-trans=3

```

Peak Compiler Invocation

C benchmarks:

```
icc -m64
```

C++ benchmarks (except as noted below):

```
icpc -m64
```

```
450.soplex: icpc -m32 -L/opt/intel/compilers_and_libraries_2017/linux/lib/ia32
```

Continued on next page



SPEC CFP2006 Result

Copyright 2006-2017 Standard Performance Evaluation Corporation

H3C

SPECfp_rate2006 = 1660

H3C UniServer R4900 G3 (Intel Xeon Platinum 8164)

SPECfp_rate_base2006 = 1610

CPU2006 license: 9066

Test date: Aug-2017

Test sponsor: H3C

Hardware Availability: Jul-2017

Tested by: H3C

Software Availability: Sep-2016

Peak Compiler Invocation (Continued)

Fortran benchmarks:

ifort -m64

Benchmarks using both Fortran and C:

icc -m64 ifort -m64

Peak 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: -D_FILE_OFFSET_BITS=64
 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

Peak Optimization Flags

C benchmarks:

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-AVX2(pass 2)
 -par-num-threads=1(pass 1) -ipo(pass 2) -O3(pass 2)
 -no-prec-div(pass 2) -fno-alias -auto-ilp32
 -qopt-mem-layout-trans=3

447.dealII: basepeak = yes

Continued on next page



SPEC CFP2006 Result

Copyright 2006-2017 Standard Performance Evaluation Corporation

H3C

SPECfp_rate2006 = 1660

H3C UniServer R4900 G3 (Intel Xeon Platinum 8164)

SPECfp_rate_base2006 = 1610

CPU2006 license: 9066

Test sponsor: H3C

Tested by: H3C

Test date: Aug-2017

Hardware Availability: Jul-2017

Software Availability: Sep-2016

Peak Optimization Flags (Continued)

450.soplex: -prof-gen(pass 1) -prof-use(pass 2) -xCORE-AVX2(pass 2)
-par-num-threads=1(pass 1) -ipo(pass 2) -O3(pass 2)
-no-prec-div(pass 2) -qopt-malloc-options=3
-qopt-mem-layout-trans=3

453.povray: -prof-gen(pass 1) -prof-use(pass 2) -xCORE-AVX2(pass 2)
-par-num-threads=1(pass 1) -ipo(pass 2) -O3(pass 2)
-no-prec-div(pass 2) -unroll4 -qopt-mem-layout-trans=3

Fortran benchmarks:

410.bwaves: -xCORE-AVX2 -ipo -O3 -no-prec-div -qopt-prefetch

416.gamess: -prof-gen(pass 1) -prof-use(pass 2) -xCORE-AVX2(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: Same as 410.bwaves

459.GemsFDTD: Same as 410.bwaves

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

Benchmarks using both Fortran and C:

435.gromacs: -prof-gen(pass 1) -prof-use(pass 2) -xCORE-AVX2(pass 2)
-par-num-threads=1(pass 1) -qopt-prefetch -auto-ilp32
-qopt-mem-layout-trans=3

436.cactusADM: basepeak = yes

454.calculix: basepeak = yes

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.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.xml>



SPEC CFP2006 Result

Copyright 2006-2017 Standard Performance Evaluation Corporation

H3C

SPECfp_rate2006 = 1660

H3C UniServer R4900 G3 (Intel Xeon Platinum 8164)

SPECfp_rate_base2006 = 1610

CPU2006 license: 9066

Test sponsor: H3C

Tested by: H3C

Test date: Aug-2017

Hardware Availability: Jul-2017

Software Availability: Sep-2016

SPEC and SPECfp are registered trademarks of the Standard Performance Evaluation Corporation. All other brand and product names appearing in this result are trademarks or registered trademarks of their respective holders.

For questions about this result, please contact the tester.
For other inquiries, please contact webmaster@spec.org.

Tested with SPEC CPU2006 v1.2.
Report generated on Wed Sep 20 11:01:38 2017 by SPEC CPU2006 PS/PDF formatter v6932.
Originally published on 19 September 2017.