



SPEC[®] CFP2006 Result

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Quanta Cloud Technology

(Test Sponsor: Quanta Computer Inc.)

SPECfp[®]2006 = 142

QuantaPlex T42D-2U (Intel Xeon Platinum 8180)

SPECfp_base2006 = 135

CPU2006 license: 9050

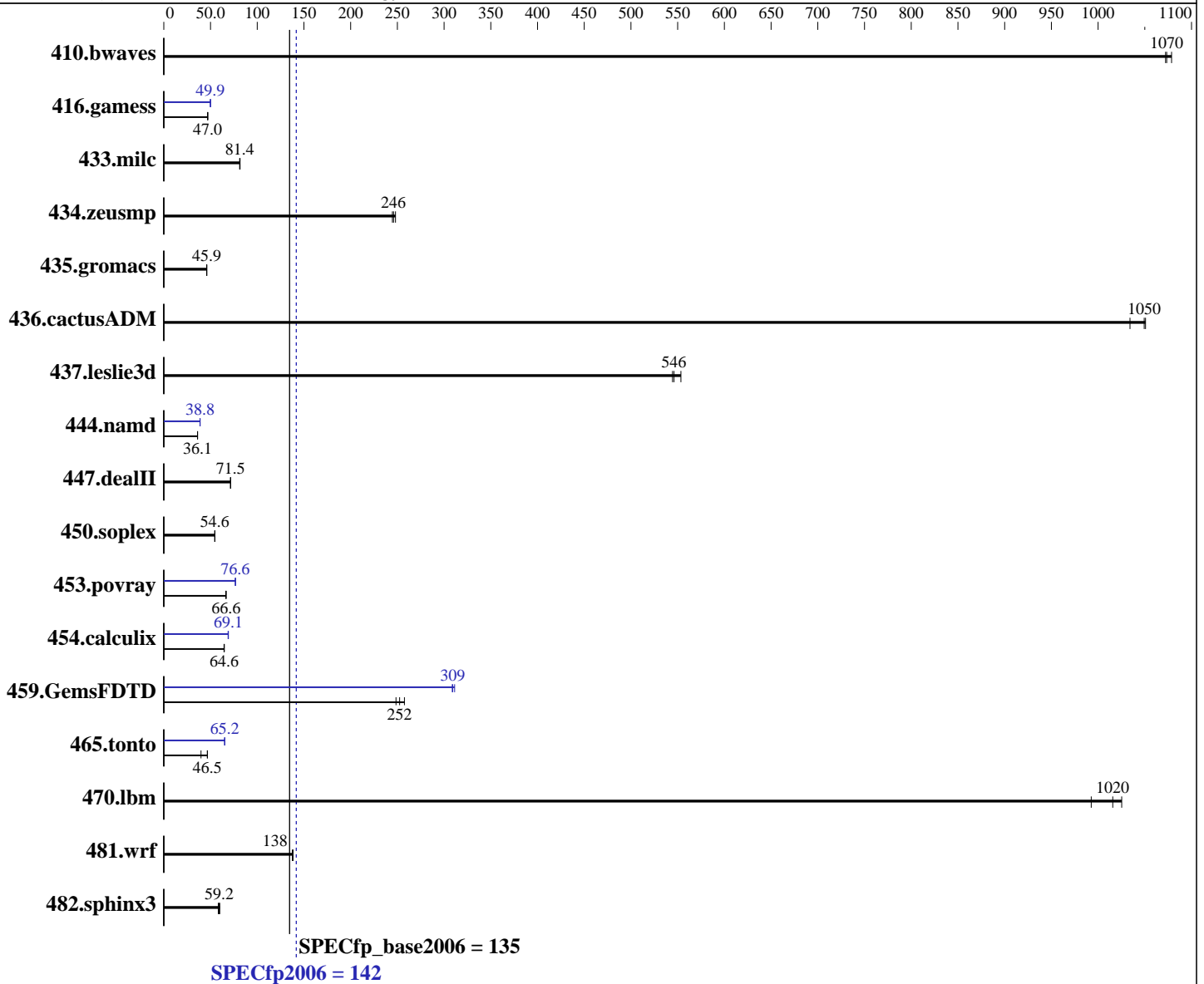
Test sponsor: Quanta Computer Inc.

Tested by: Quanta Cloud Technology

Test date: Jun-2017

Hardware Availability: Jul-2017

Software Availability: Nov-2016



Hardware

CPU Name: Intel Xeon Platinum 8180
 CPU Characteristics: Intel Turbo Boost Technology up to 3.80 GHz
 CPU MHz: 2500
 FPU: Integrated
 CPU(s) enabled: 56 cores, 2 chips, 28 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: Red Hat Enterprise Linux Server release 7.3 (Maipo)
 3.10.0-514.el7.x86_64
 Compiler: C/C++: Version 17.0.1.132 of Intel C/C++ Compiler for Linux;
 Fortran: Version 17.0.1.132 of Intel Fortran Compiler for Linux
 Auto Parallel: Yes
 File System: xfs

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L3 Cache: 38.5 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

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>12.7</u> | <u>1070</u> | 12.6 | 1080 | 12.7 | 1070 | <u>12.7</u> | <u>1070</u> | 12.6 | 1080 | 12.7 | 1070 |
| 416.gamess | 417 | 46.9 | 417 | 47.0 | <u>417</u> | <u>47.0</u> | 391 | 50.0 | <u>392</u> | <u>49.9</u> | 393 | 49.8 |
| 433.milc | 112 | 81.6 | 113 | 81.2 | <u>113</u> | <u>81.4</u> | 112 | 81.6 | 113 | 81.2 | <u>113</u> | <u>81.4</u> |
| 434.zeusmp | 36.7 | 248 | 37.2 | 245 | <u>37.0</u> | <u>246</u> | 36.7 | 248 | 37.2 | 245 | <u>37.0</u> | <u>246</u> |
| 435.gromacs | 156 | 45.9 | 155 | 46.0 | <u>155</u> | <u>45.9</u> | 156 | 45.9 | 155 | 46.0 | <u>155</u> | <u>45.9</u> |
| 436.cactusADM | <u>11.4</u> | <u>1050</u> | 11.6 | 1030 | 11.4 | 1050 | <u>11.4</u> | <u>1050</u> | 11.6 | 1030 | 11.4 | 1050 |
| 437.leslie3d | 17.0 | 553 | 17.3 | 544 | <u>17.2</u> | <u>546</u> | 17.0 | 553 | 17.3 | 544 | <u>17.2</u> | <u>546</u> |
| 444.namd | 222 | 36.1 | 222 | 36.1 | <u>222</u> | <u>36.1</u> | <u>207</u> | <u>38.8</u> | 207 | 38.8 | 207 | 38.8 |
| 447.dealII | 160 | 71.5 | <u>160</u> | <u>71.5</u> | 160 | 71.4 | 160 | 71.5 | <u>160</u> | <u>71.5</u> | 160 | 71.4 |
| 450.soplex | 152 | 54.8 | 153 | 54.6 | <u>153</u> | <u>54.6</u> | 152 | 54.8 | 153 | 54.6 | <u>153</u> | <u>54.6</u> |
| 453.povray | <u>79.8</u> | <u>66.6</u> | 79.8 | 66.7 | 80.1 | 66.4 | <u>69.5</u> | <u>76.6</u> | 69.3 | 76.8 | 69.5 | 76.6 |
| 454.calculix | 127 | 64.8 | 128 | 64.5 | <u>128</u> | <u>64.6</u> | 119 | 69.1 | <u>119</u> | <u>69.1</u> | 120 | 68.8 |
| 459.GemsFDTD | <u>42.0</u> | <u>252</u> | 41.2 | 258 | 42.7 | 249 | 34.1 | 311 | <u>34.3</u> | <u>309</u> | 34.4 | 309 |
| 465.tonto | <u>211</u> | <u>46.5</u> | 210 | 46.8 | 247 | 39.8 | 151 | 65.2 | 151 | 65.2 | <u>151</u> | <u>65.2</u> |
| 470.lbm | 13.8 | 993 | <u>13.5</u> | <u>1020</u> | 13.4 | 1030 | 13.8 | 993 | <u>13.5</u> | <u>1020</u> | 13.4 | 1030 |
| 481.wrf | <u>80.8</u> | <u>138</u> | 81.2 | 138 | 80.8 | 138 | <u>80.8</u> | <u>138</u> | 81.2 | 138 | 80.8 | 138 |
| 482.sphinx3 | 325 | 59.9 | 334 | 58.3 | <u>329</u> | <u>59.2</u> | 325 | 59.9 | 334 | 58.3 | <u>329</u> | <u>59.2</u> |

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/Desktop/speccpu-auto-install/config/sysinfo.rev6993
Revision 6993 of 2015-11-06 (b5e8d4b4eb51ed28d7f98696cbe290c1)
running on localhost.localdomain Fri Jun 23 18:34:18 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 8180 CPU @ 2.50GHz
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Platform Notes (Continued)

```

2 "physical id"s (chips)
112 "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 : 28
siblings : 56
physical 0: cores 0 1 2 3 4 5 6 8 9 10 11 12 13 14 16 17 18 19 20 21 22 24
25 26 27 28 29 30
physical 1: cores 0 1 2 3 4 5 6 8 9 10 11 12 13 14 16 17 18 19 20 21 22 24
25 26 27 28 29 30
cache size : 39424 KB

```

From /proc/meminfo

```

MemTotal:      790982688 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.el7.x86_64 #1 SMP Wed Oct 19 11:24:13
EDT 2016 x86_64 x86_64 x86_64 GNU/Linux

```

run-level 3 Jun 23 05:40

SPEC is set to: /root/Desktop/speccpu-auto-install

```

Filesystem      Type  Size  Used Avail Use% Mounted on
/dev/nvme0n1p2  xfs   373G   22G  351G   6% /

```

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. 3A03.D01 05/04/2017

Memory:

24x Micron 36ASF4G72PZ-2G6D1 32 GB 2 rank 2666 MHz

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Platform Notes (Continued)

(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/Desktop/speccpu-auto-install/lib/ia32:/root/Desktop/speccpu-auto-install/lib/intel64:/root/Desktop/speccpu-auto-install/sh10.2"

OMP_NUM_THREADS = "56"

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.

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



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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:

`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`

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Peak Optimization Flags (Continued)

447.dealII: 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

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-revD.html>

<http://www.spec.org/cpu2006/flags/Quanta-Computer-Inc-Platform-Settings-V1.0.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-revD.xml>

<http://www.spec.org/cpu2006/flags/Quanta-Computer-Inc-Platform-Settings-V1.0.xml>



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