



SPEC® CFP2006 Result

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Quanta Cloud Technology

(Test Sponsor: Quanta Computer Inc.)

QuantaPlex T42D-2U (Intel Xeon Platinum 8180 2.50 GHz)

SPECfp®2006 = 150

SPECfp_base2006 = 144

CPU2006 license: 9050

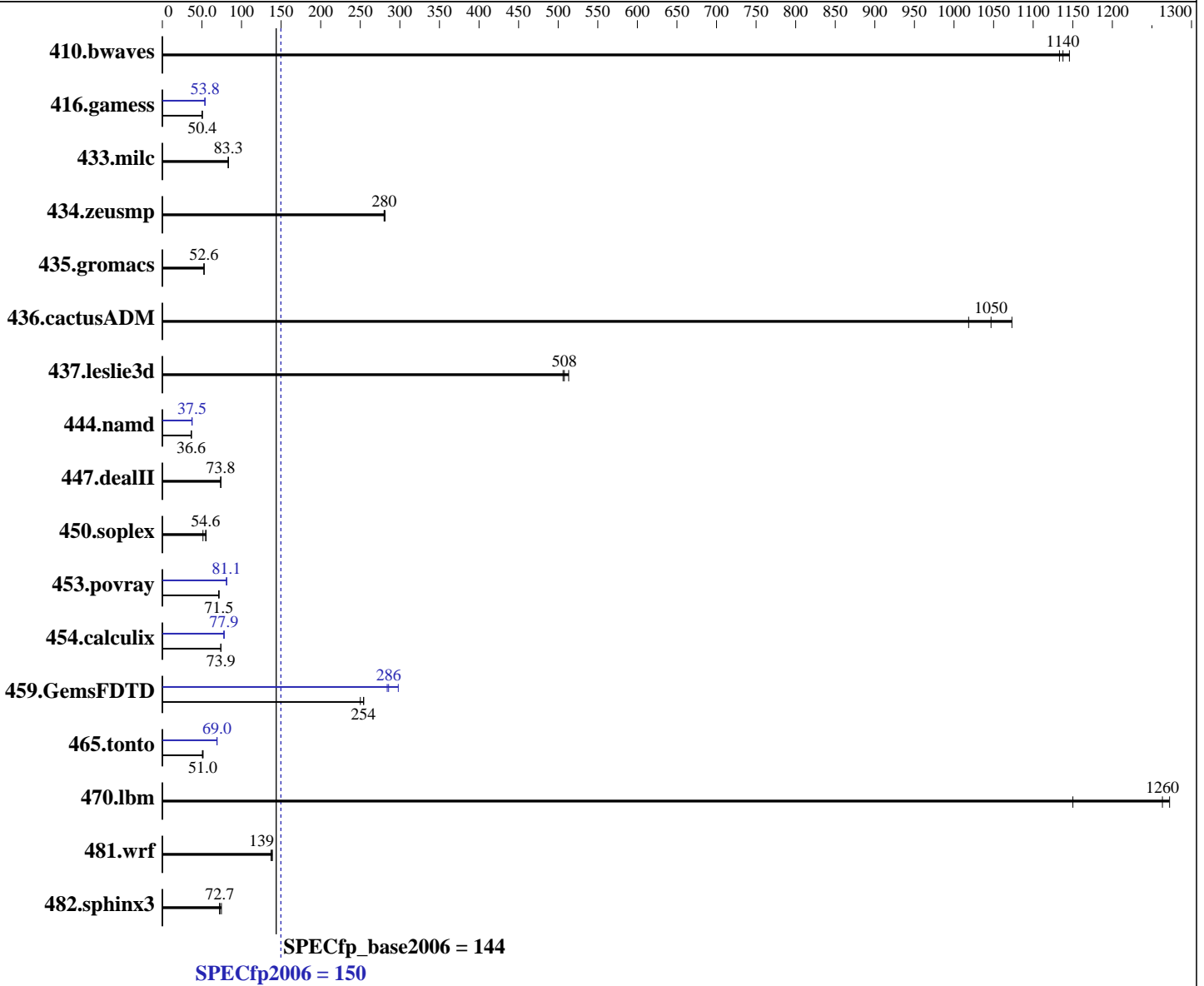
Test sponsor: Quanta Computer Inc.

Tested by: Quanta Cloud Technology

Test date: Jul-2017

Hardware Availability: Jul-2017

Software Availability: Apr-2017



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
 CPU(s) orderable: 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.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: 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: 1000 GB SATA SSD
Other Hardware: None

System State: Run level 3 (multi-user mode)
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	11.9	1150	12.0	1130	<u>11.9</u>	<u>1140</u>	11.9	1150	12.0	1130	<u>11.9</u>	<u>1140</u>
416.gamess	389	50.4	388	50.4	<u>389</u>	<u>50.4</u>	364	53.8	<u>364</u>	<u>53.8</u>	364	53.8
433.milc	<u>110</u>	<u>83.3</u>	110	83.4	110	83.3	<u>110</u>	<u>83.3</u>	110	83.4	110	83.3
434.zeusmp	32.3	281	32.5	280	<u>32.5</u>	<u>280</u>	32.3	281	32.5	280	<u>32.5</u>	<u>280</u>
435.gromacs	<u>136</u>	<u>52.6</u>	136	52.7	136	52.6	<u>136</u>	<u>52.6</u>	136	52.7	136	52.6
436.cactusADM	11.1	1070	<u>11.4</u>	<u>1050</u>	11.7	1020	11.1	1070	<u>11.4</u>	<u>1050</u>	11.7	1020
437.leslie3d	<u>18.5</u>	<u>508</u>	18.6	506	18.3	513	<u>18.5</u>	<u>508</u>	18.6	506	18.3	513
444.namd	220	36.5	<u>219</u>	<u>36.6</u>	219	36.6	214	37.5	<u>214</u>	<u>37.5</u>	214	37.5
447.dealII	155	73.9	155	73.7	<u>155</u>	<u>73.8</u>	155	73.9	155	73.7	<u>155</u>	<u>73.8</u>
450.soplex	<u>153</u>	<u>54.6</u>	151	55.4	163	51.3	<u>153</u>	<u>54.6</u>	151	55.4	163	51.3
453.povray	74.4	71.5	74.7	71.3	<u>74.4</u>	<u>71.5</u>	<u>65.6</u>	<u>81.1</u>	65.6	81.1	65.5	81.3
454.calculix	111	74.0	<u>112</u>	<u>73.9</u>	112	73.9	106	78.1	<u>106</u>	<u>77.9</u>	106	77.7
459.GemsFDTD	<u>41.8</u>	<u>254</u>	41.7	254	42.4	250	<u>37.1</u>	<u>286</u>	37.4	284	35.6	298
465.tonto	<u>193</u>	<u>51.0</u>	195	50.5	191	51.5	142	69.1	143	69.0	<u>143</u>	<u>69.0</u>
470.lbm	11.9	1150	<u>10.9</u>	<u>1260</u>	10.8	1270	11.9	1150	<u>10.9</u>	<u>1260</u>	10.8	1270
481.wrf	81.4	137	<u>80.5</u>	<u>139</u>	80.5	139	81.4	137	<u>80.5</u>	<u>139</u>	80.5	139
482.sphinx3	261	74.6	270	72.2	<u>268</u>	<u>72.7</u>	261	74.6	270	72.2	<u>268</u>	<u>72.7</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

BIOS settings:
Hyper Threading disabled
Sub NUMA Cluster disabled
Memory Patrol Scrub disabled
Virtualization Technology disabled
Energy Efficiency Policy set to Performance
Sysinfo program /root/Desktop/speccpu-auto-install/config/sysinfo.rev6993
Revision 6993 of 2015-11-06 (b5e8d4b4eb51ed28d7f98696cbe290c1)
running on localhost.localdomain Thu Jul 13 20:55:58 2017

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Platform Notes (Continued)

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
 2 "physical id"s (chips)
 56 "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       : 28
  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:       791196824 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 Jul 13 20:52

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

```
Filesystem      Type  Size  Used Avail Use% Mounted on
/dev/sda2        xfs  1000G   50G  951G   5% /
```

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

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Platform Notes (Continued)

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

(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 = "/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.

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

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Base Portability Flags (Continued)

```

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 -qopt-prefetch
```

C++ benchmarks:

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

Fortran benchmarks:

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

Benchmarks using both Fortran and C:

```
-xCORE-AVX2 -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



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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

447.dealII: basepeak = yes

450.soplex: basepeak = yes

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 -ansi-alias

Fortran benchmarks:

410.bwaves: basepeak = yes

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: basepeak = yes

459.GemsFDTD: -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
-qopt-prefetch -parallel

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) -inline-calloc -qopt-malloc-options=3
-auto -unroll4

Benchmarks using both Fortran and C:

435.gromacs: basepeak = yes

436.cactusADM: basepeak = yes

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Peak Optimization Flags (Continued)

454.calculix: -xCORE-AVX2 -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-revF.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-revF.xml>

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

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