Quanta Computer Inc.

QuantaGrid D51PH-1ULH (Intel Xeon E5-2698 v3)

SPECint®2006 = 69.4
SPECint_base2006 = 66.6

CPU2006 license: 9050
Test sponsor: Quanta Computer Inc.
Tested by: Quanta Computer Inc.

Quanta Computer Inc.

QuantaGrid D51PH-1ULH (Intel Xeon E5-2698 v3)

SPECint®20006 = 69.4
SPECint_base2006 = 66.6

CPU2006 license: 9050
Test sponsor: Quanta Computer Inc.
Tested by: Quanta Computer Inc.

CPU Name: Intel Xeon E5-2698 v3
CPU Characteristics: Intel Turbo Boost Technology up to 3.60 GHz
CPU MHZ: 2300
FPU: Integrated
CPU(s) enabled: 32 cores, 2 chips, 16 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: 256 KB I+D on chip per core
L3 Cache: 40 MB I+D on chip per chip
Other Cache: None
Memory: 128 GB (8 x 16 GB 2Rx4 PC4-2133P-R)
Disk Subsystem: 1 x 440 GB SATA SSD
Other Hardware: None

Hardware

Operating System: Red Hat Enterprise Linux Server release 7.1 (Maipo) 3.10.0-229.el7.x86_64
Compiler: C/C++ Version 16.0.0.101 of Intel C++ Studio XE for Linux
Auto Parallel: Yes
File System: xfs
System State: Run level 5 (multi-user)
Base Pointers: 32/64-bit
Peak Pointers: 32/64-bit
Other Software: Microquill SmartHeap V10.2

Software
Quanta Computer Inc.

QuantaGrid D51PH-1ULH (Intel Xeon E5-2698 v3)

**SPECint2006 =** 69.4

**SPECint_base2006 =** 66.6

**CPU2006 license:** 9050  
**Test sponsor:** Quanta Computer Inc.  
**Tested by:** Quanta Computer Inc.

---

### Results Table

<table>
<thead>
<tr>
<th>Benchmark</th>
<th>Seconds</th>
<th>Ratio</th>
<th>Seconds</th>
<th>Ratio</th>
<th>Seconds</th>
<th>Ratio</th>
</tr>
</thead>
<tbody>
<tr>
<td>Base</td>
<td>Peak</td>
<td></td>
<td>Base</td>
<td>Peak</td>
<td></td>
<td></td>
</tr>
<tr>
<td>400.perlbench</td>
<td>242</td>
<td>40.4</td>
<td>240</td>
<td>40.7</td>
<td>222</td>
<td>44.1</td>
</tr>
<tr>
<td>401.bzip2</td>
<td>396</td>
<td>24.4</td>
<td>398</td>
<td>24.3</td>
<td>387</td>
<td>24.9</td>
</tr>
<tr>
<td>403.mcf</td>
<td>218</td>
<td>36.9</td>
<td>218</td>
<td>36.9</td>
<td>221</td>
<td>36.5</td>
</tr>
<tr>
<td>429.gcc</td>
<td>153</td>
<td>59.5</td>
<td>153</td>
<td>59.8</td>
<td>151</td>
<td>60.2</td>
</tr>
<tr>
<td>445.gobmk</td>
<td>348</td>
<td>30.1</td>
<td>348</td>
<td>30.1</td>
<td>352</td>
<td>29.8</td>
</tr>
<tr>
<td>456.hmmer</td>
<td>132</td>
<td>70.6</td>
<td>132</td>
<td>70.5</td>
<td>132</td>
<td>70.6</td>
</tr>
<tr>
<td>458.sjeng</td>
<td>350</td>
<td>34.6</td>
<td>349</td>
<td>34.6</td>
<td>343</td>
<td>35.3</td>
</tr>
<tr>
<td>462.libquantum</td>
<td>2.57</td>
<td>8060</td>
<td>2.58</td>
<td>8040</td>
<td>2.57</td>
<td>8060</td>
</tr>
<tr>
<td>464.h264ref</td>
<td>408</td>
<td>54.3</td>
<td>409</td>
<td>54.1</td>
<td>408</td>
<td>54.3</td>
</tr>
<tr>
<td>471.omnetpp</td>
<td>140</td>
<td>44.7</td>
<td>140</td>
<td>44.5</td>
<td>112</td>
<td>55.6</td>
</tr>
<tr>
<td>473.astar</td>
<td>205</td>
<td>34.2</td>
<td>206</td>
<td>34.0</td>
<td>204</td>
<td>34.4</td>
</tr>
<tr>
<td>483.xalancbmk</td>
<td>95.4</td>
<td>72.3</td>
<td>95.8</td>
<td>72.2</td>
<td>95.5</td>
<td>72.2</td>
</tr>
</tbody>
</table>

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

---

### Submit Notes

The config file option 'submit' was used.

---

### Operating System Notes

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

---

### Platform Notes

- BIOS Settings:
  - Snoop Mode: COD
  - BMC Settings:
    - Fan Mode: Full Speed
- Sysinfo program /home/speccpu/Desktop/cpu2006-1.2/config/sysinfo.rev6914
  - $Rev: 6914 $ $Date:: 2014-06-25 #$ e3fbb8667b5a285932ceab81e28219e1
  - running on localhost.localdomain Fri Mar 18 16:58:22 2016

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 E5-2698 v3 @ 2.30GHz
  - 2 "physical id"s (chips)
  - 64 "processors"
- cores, siblings (Caution: counting these is hw and system dependent. The following excerpts from /proc/cpuinfo might not be reliable. Use with caution.)

Continued on next page
Quanta Computer Inc.
QuantaGrid D51PH-1ULH (Intel Xeon E5-2698 v3)
SPECint2006 = 69.4
SPECint_base2006 = 66.6

CPU2006 license: 9050
Test sponsor: Quanta Computer Inc.
Tested by: Quanta Computer Inc.
Test date: Mar-2016
Hardware Availability: Oct-2015
Software Availability: Oct-2015

Platform Notes (Continued)

- CPU cores: 16
- Siblings: 32
- Physical cores: 0 1 2 3 4 5 6 7 8 9 10 11 12 13 14 15
- Physical level: 0 1 2 3 4 5 6 7 8 9 10 11 12 13 14 15
- Cache size: 40960 KB

From /proc/meminfo
  MemTotal: 131752248 KB
  HugePages_Total: 0
  Hugepagesize: 2048 KB

From /etc/*release* /etc/*version*
  os-release:
    NAME="Red Hat Enterprise Linux Server"
    VERSION="7.1 (Maipo)"
    ID="rhel"
    ID_LIKE="fedora"
    VERSION_ID="7.1"
    PRETTY_NAME="Red Hat Enterprise Linux Server 7.1 (Maipo)"
    ANSI_COLOR="0;31"
    CPE_NAME="cpe:/o:redhat:enterprise_linux:7.1:GA:server"
  redhat-release: Red Hat Enterprise Linux Server release 7.1 (Maipo)
  system-release: Red Hat Enterprise Linux Server release 7.1 (Maipo)

uname -a:
  Linux localhost.localdomain 3.10.0-229.el7.x86_64 #1 SMP Thu Jan 29 18:37:38 EST 2015 x86_64 x86_64 x86_64 GNU/Linux
  run-level 5 Mar 18 14:43

SPEC is set to: /home/speccpu/Desktop/cpu2006-1.2
  Filesystem Type Size Used Avail Use% Mounted on
  /dev/sda2 xfs 440G 278G 163G 64% /

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. S2P_3A03 12/26/2014
Memory:
  8x NO DIMM NO DIMM
  8x Samsung M393A2G40DB0-CPB 16 GB 2 rank 2133 MHz

(End of data from sysinfo program)
Quanta Computer Inc.  
QuantaGrid D51PH-1ULH (Intel Xeon E5-2698 v3)  

| SPECint2006 | 69.4 |
| SPECint_base2006 | 66.6 |

CPU2006 license: 9050  
Test sponsor: Quanta Computer Inc.  
Tested by: Quanta Computer Inc.  

Test date: Mar-2016  
Hardware Availability: Oct-2015  
Software Availability: Oct-2015

General Notes
Environment variables set by runspec before the start of the run:
KMP_AFFINITY = "granularity=fine,scatter"
LD_LIBRARY_PATH = "/home/speccpu/Desktop/cpu2006-1.2/liba/32:/home/speccpu/Desktop/cpu2006-1.2/libb/64:/home/speccpu/Desktop/cpu2006-1.2/sh"
OMP_NUM_THREADS = "32"

Binaries compiled on a system with 1x Intel Core i5-4670K CPU + 32GB memory using RedHat EL 7.1
Transparent Huge Pages enabled with:
echo always > /sys/kernel/mm/transparent_hugepage/enabled

Base Compiler Invocation
C benchmarks:  
\texttt{icc} -m64  
C++ benchmarks:  
\texttt{icpc} -m64

Base Portability Flags
400.perlbench: -DSPEC_CPU_LP64 -DSPEC_CPU_LINUX_X64  
401.bzip2: -DSPEC_CPU_LP64  
403.gcc: -DSPEC_CPU_LP64  
429.mcf: -DSPEC_CPU_LP64  
445.gobmk: -DSPEC_CPU_LP64  
456.hmmer: -DSPEC_CPU_LP64  
458.sjeng: -DSPEC_CPU_LP64  
462.libquantum: -DSPEC_CPU_LP64 -DSPEC_CPU_LINUX  
464.h264ref: -DSPEC_CPU_LP64  
471.omnetpp: -DSPEC_CPU_LP64  
473.astar: -DSPEC_CPU_LP64  
483.xalancbmk: -DSPEC_CPU_LP64 -DSPEC_CPU_LINUX

Base Optimization Flags
C benchmarks:  
-xCORE-AVX2 -ipo -O3 -no-prec-div -parallel -opt-prefetch -auto-p32  
C++ benchmarks:  
-xCORE-AVX2 -ipo -O3 -no-prec-div -opt-prefetch -auto-p32  
-W1,-z,muldefs -L/sh -lsmartheap64
Quanta Computer Inc.  SPECint2006 = 69.4
QuantaGrid D51PH-1ULH (Intel Xeon E5-2698 v3)  SPECint_base2006 = 66.6

CPU2006 license: 9050
Test sponsor: Quanta Computer Inc.
Test date: Mar-2016
Tested by: Quanta Computer Inc.
Hardware Availability: Oct-2015
Software Availability: Oct-2015

Base Other Flags

C benchmarks:
403.gcc: -Dalloca=_alloca

Peak Compiler Invocation

C benchmarks (except as noted below):
icc -m64
400.perlbench: icc -m32 -L/opt/intel/compilers_and_libraries_2016/linux/compiler/lib/ia32_lin
445.gobmk: icc -m32 -L/opt/intel/compilers_and_libraries_2016/linux/compiler/lib/ia32_lin
C++ benchmarks (except as noted below):
icpc -m32 -L/opt/intel/compilers_and_libraries_2016/linux/compiler/lib/ia32_lin
473.astar: icpc -m64

Peak Portability Flags

400.perlbench: -D_FILE_OFFSET_BITS=64 -DSPEC_CPU_LINUX_IA32
401.bzip2: -DSPEC_CPU_LP64
403.gcc: -DSPEC_CPU_LP64
429.mcf: -DSPEC_CPU_LP64
445.gobmk: -D_FILE_OFFSET_BITS=64
456.hmmer: -DSPEC_CPU_LP64
458.sjeng: -DSPEC_CPU_LP64
462.libquantum: -DSPEC_CPU_LP64 -DSPEC_CPU_LINUX
464.h264ref: -DSPEC_CPU_LP64
471.omnetpp: -D_FILE_OFFSET_BITS=64
473.astar: -DSPEC_CPU_LP64
483.xalancbmk: -D_FILE_OFFSET_BITS=64 -DSPEC_CPU_LINUX

Peak Optimization Flags

C benchmarks:
400.perlbench: -xCORE-AVX2(pass 2) -prof-gen:threadsafe(pass 1)
-ipo(pass 2) -O3(pass 2) -no-prec-div(pass 2)
-par-num-threads=1(pass 1) -prof-use(pass 2) -opt-prefetch
-ansi-alias

401.bzip2: -xCORE-AVX2(pass 2) -prof-gen:threadsafe(pass 1)
-ipo(pass 2) -O3(pass 2) -no-prec-div
-par-num-threads=1(pass 1) -prof-use(pass 2) -auto-ilk32

Continued on next page
Quanta Computer Inc.

QuantaGrid D51PH-1ULH (Intel Xeon E5-2698 v3)  

SPECint2006 = 69.4  
SPECint_base2006 = 66.6

Peak Optimization Flags (Continued)

401.bzip2 (continued):
   -opt-prefetch -ansi-alias
403.gcc: -xCORE-AVX2 -ipo -O3 -no-prec-div -inline-calloc
   -opt-malloc-options=3 -auto-ilp32
429.mcf: -xCORE-AVX2 -ipo -O3 -no-prec-div -parallel
   -opt-prefetch -auto-p32
445.gobmk: -xCORE-AVX2(pass 2) -prof-gen:threadsafe(pass 1)
   -prof-use(pass 2) -par-num-threads=1(pass 1) -ansi-alias
456.hmmer: basepeak = yes
458.sjeng: -xCORE-AVX2(pass 2) -prof-gen:threadsafe(pass 1)
   -ipo(pass 2) -O3(pass 2) -no-prec-div(pass 2)
   -par-num-threads=1(pass 1) -prof-use(pass 2) -unroll4
462.libquantum: basepeak = yes
464.h264ref: basepeak = yes

C++ benchmarks:

471.omnetpp: -xCORE-AVX2(pass 2) -prof-gen:threadsafe(pass 1)
   -ipo(pass 2) -O3(pass 2) -no-prec-div(pass 2)
   -par-num-threads=1(pass 1) -prof-use(pass 2)
   -opt-ra-region-strategy=block -ansi-alias
   -Wl,-z,muldefs -L/sh -lsmartheap
473.astar: -xCORE-AVX2 -ipo -O3 -no-prec-div -opt-prefetch
   -auto-p32 -Wl,-z,muldefs -L/sh -lsmartheap64
483.xalancbmk: -xCORE-AVX2 -ipo -O3 -no-prec-div -opt-prefetch
   -ansi-alias -Wl,-z,muldefs -L/sh -lsmartheap

Peak Other Flags

C benchmarks:

403.gcc: -Dalloca=_alloca

The flags files that were used to format this result can be browsed at
http://www.spec.org/cpu2006/flags/Intel-ic16.0-official-linux64.html
Quanta Computer Inc.  
QuantaGrid D51PH-1ULH (Intel Xeon E5-2698 v3) 

<table>
<thead>
<tr>
<th>SPECint2006</th>
<th>69.4</th>
</tr>
</thead>
<tbody>
<tr>
<td>SPECint_base2006</td>
<td>66.6</td>
</tr>
</tbody>
</table>

**CPU2006 license:** 9050  
**Test sponsor:** Quanta Computer Inc.  
**Tested by:** Quanta Computer Inc.  
**Test date:** Mar-2016  
**Hardware Availability:** Oct-2015  
**Software Availability:** Oct-2015

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

---

**SPEC and SPECint 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.  
Originally published on 9 May 2016.