## SPEC® CFP2006 Result

**Dell Inc.**

PowerEdge M420 (Intel Xeon E5-2450L, 1.80 GHz)

<table>
<thead>
<tr>
<th>Test sponsor:</th>
<th>Dell Inc.</th>
<th>Tested by:</th>
<th>Dell Inc.</th>
</tr>
</thead>
<tbody>
<tr>
<td>CPU2006 license:</td>
<td>55</td>
<td>Test date:</td>
<td>Nov-2013</td>
</tr>
<tr>
<td>Hardware Availability:</td>
<td>Sep-2013</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

### SPECfp®2006 = 61.6

### SPECfp_base2006 = 59.1

<table>
<thead>
<tr>
<th>Benchmark</th>
<th>Specification</th>
<th>Result</th>
</tr>
</thead>
<tbody>
<tr>
<td>410.bwaves</td>
<td>SPECfp2006</td>
<td>23.4</td>
</tr>
<tr>
<td>416.gamess</td>
<td>SPECfp2006</td>
<td>20.8</td>
</tr>
<tr>
<td>433.milc</td>
<td>SPECfp2006</td>
<td>44.9</td>
</tr>
<tr>
<td>434.zeusmp</td>
<td>SPECfp2006</td>
<td>44.4</td>
</tr>
<tr>
<td>435.gromacs</td>
<td>SPECfp2006</td>
<td>26.9</td>
</tr>
<tr>
<td>436.cactusADM</td>
<td>SPECfp2006</td>
<td>113</td>
</tr>
<tr>
<td>437.leslie3d</td>
<td>SPECfp2006</td>
<td>144</td>
</tr>
<tr>
<td>444.namd</td>
<td>SPECfp2006</td>
<td>15.9</td>
</tr>
<tr>
<td>447.dealII</td>
<td>SPECfp2006</td>
<td>35.8</td>
</tr>
<tr>
<td>450.soplex</td>
<td>SPECfp2006</td>
<td>28.7</td>
</tr>
<tr>
<td>453.povray</td>
<td>SPECfp2006</td>
<td>35.7</td>
</tr>
<tr>
<td>454.calculix</td>
<td>SPECfp2006</td>
<td>32.9</td>
</tr>
<tr>
<td>459.GemsFDTD</td>
<td>SPECfp2006</td>
<td>139</td>
</tr>
<tr>
<td>465.tonto</td>
<td>SPECfp2006</td>
<td>29.4</td>
</tr>
<tr>
<td>470.lbm</td>
<td>SPECfp2006</td>
<td>23.2</td>
</tr>
<tr>
<td>481.wrf</td>
<td>SPECfp2006</td>
<td>55.6</td>
</tr>
<tr>
<td>482.sphinx3</td>
<td>SPECfp2006</td>
<td>46.9</td>
</tr>
</tbody>
</table>

### Hardware

| CPU Name: | Intel Xeon E5-2450L |
| CPU Characteristics: | Intel Turbo Boost Technology up to 2.30 GHz |
| CPU MHz: | 1800 |
| FPU: | Integrated |
| CPU(s) enabled: | 16 cores, 2 chips, 8 cores/chip |
| 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 |

### Software

| Operating System: | Red Hat Enterprise Linux server release 6.4 (Santiago) |
| Compiler: | C/C++: Version 14.0.0.080 of Intel C++ Studio XE for Linux; Fortran: Version 14.0.0.080 of Intel Fortran Studio XE for Linux |
| Auto Parallel: | Yes |
| File System: | ext4 |

Continued on next page
Dell Inc. PowerEdge M420 (Intel Xeon E5-2450L, 1.80 GHz)

SPECfp2006 = 61.6
SPECfp_base2006 = 59.1

CPU2006 license: 55
Test sponsor: Dell Inc.
Tested by: Dell Inc.

L3 Cache: 20 MB I+D on chip per chip
Other Cache: None
Memory: 96 GB (6 x 16 GB 2Rx4 PC3-12800R-11, ECC)
Disk Subsystem: 2 x 50 GB SATA SSD, RAID 0
Other Hardware: None

System State: Run level 3 (multi-user)
Base Pointers: 64-bit
Peak Pointers: 32/64-bit
Other Software: None

Operating System Notes
Stack size set to unlimited using "ulimit -s unlimited"

Platform Notes
BIOS settings:
Virtualization Technology disabled
Execute Disable disabled
Logical Processor disabled
System Profile set to Performance
Sysinfo program /root/cpu2006-1.2/config/sysinfo.rev6818
$Rev: 6818 $ $Date:: 2012-07-17 #$ e86d102572650a6e4d596a3cee98f191
running on localhost.localdomain Thu Nov 21 12:15:41 2013

This section contains SUT (System Under Test) info as seen by
Continued on next page
Platform Notes (Continued)

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 E5-2450L 0 @ 1.80GHz
  2 "physical id"s (chips)
  16 "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 : 8
  siblings : 8
  physical 0: cores 0 1 2 3 4 5 6 7
  physical 1: cores 0 1 2 3 4 5 6 7
  cache size : 20480 KB

From /proc/meminfo
  MemTotal:       98983728 kB
  HugePages_Total:       0
  Hugepagesize:       2048 kB

/usr/bin/lsb_release -d
  Red Hat Enterprise Linux Server release 6.4 (Santiago)

From /etc/*release* /etc/*version*
  redhat-release: Red Hat Enterprise Linux Server release 6.4 (Santiago)
  system-release: Red Hat Enterprise Linux Server release 6.4 (Santiago)

uname -a:
  Linux localhost.localdomain 2.6.32-358.el6.x86_64 #1 SMP Tue Jan 29 11:47:41
  EST 2013 x86_64 x86_64 x86_64 GNU/Linux

run-level 3 Nov 21 03:48

SPEC is set to: /root/cpu2006-1.2
  Filesystem Type Size Used Avail Use% Mounted on
  /dev/sda3 ext4 90G 8.1G 78G 10% /

Additional information from dmidecode:
  BIOS Dell Inc. 2.0.22 09/23/2013
  Memory:
    6x 00AD00B300AD HMT42GR7AFR4A-PB 16 GB 1600 MHz 2 rank

(End of data from sysinfo program)

General Notes

Environment variables set by runspec before the start of the run:
LD_LIBRARY_PATH = "/root/cpu2006-1.2/libs/32:/root/cpu2006-1.2/libs/64:/root/cpu2006-1.2/sh"
OMP_NUM_THREADS = "16"

Continued on next page
Dell Inc.
PowerEdge M420 (Intel Xeon E5-2450L, 1.80 GHz) SPECfp2006 = 61.6
SPECfp_base2006 = 59.1

CPU2006 license: 55
Test sponsor: Dell Inc.
Tested by: Dell Inc.

Test date: Nov-2013
Hardware Availability: Sep-2013
Software Availability: Sep-2013

General Notes (Continued)

Binaries compiled on a system with 1x Core i7-860 CPU + 8GB memory using RedHat EL 6.4
Transparent Huge Pages disabled with:
echo never > /sys/kernel/mm/redhat_transparent_hugepage/enabled
Filesystem page cache cleared with:
echo 1> /proc/sys/vm/drop_caches

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

Base Optimization Flags

C benchmarks:

-xAVX -ipo -03 -no-prec-div -parallel -opt-prefetch -ansi-alias

Continued on next page
SPEC CFP2006 Result

Dell Inc.
PowerEdge M420 (Intel Xeon E5-2450L, 1.80 GHz)

SPECfp2006 = 61.6
SPECfp_base2006 = 59.1

CPU2006 license: 55
Test sponsor: Dell Inc.
Tested by: Dell Inc.

Test date: Nov-2013
Hardware Availability: Sep-2013
Software Availability: Sep-2013

Base Optimization Flags (Continued)

C++ benchmarks:
- xAVX -ipo -O3 -no-prec-div -opt-prefetch -ansi-alias

Fortran benchmarks:
- xAVX -ipo -O3 -no-prec-div -parallel -opt-prefetch

Benchmarks using both Fortran and C:
- xAVX -ipo -O3 -no-prec-div -parallel -opt-prefetch -ansi-alias

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: -xAVX(pass 2) -prof-gen(pass 1) -ipo(pass 2) -O3(pass 2)
           -no-prec-div(pass 2) -prof-use(pass 2) -auto-ilp32
           -ansi-alias

470.lbm: basepeak = yes

482.sphinx3: basepeak = yes

C++ benchmarks:
444.namd: -xAVX(pass 2) -prof-gen(pass 1) -ipo(pass 2) -O3(pass 2)
           -no-prec-div(pass 2) -prof-use(pass 2) -fno-alias
           -auto-ilp32

Continued on next page
Dell Inc.                  SPECfp2006 = 61.6
PowerEdge M420 (Intel Xeon E5-2450L, 1.80 GHz) SPECfp_base2006 = 59.1

CPU2006 license: 55
Test sponsor: Dell Inc.
Tested by: Dell Inc.

CPU2006 license: 55
Test date: Nov-2013
Hardware Availability: Sep-2013
Software Availability: Sep-2013

Peak Optimization Flags (Continued)

447.dealII: basepeak = yes
450.soplex: basepeak = yes
453.povray: -xAVX(pass 2) -prof-gen(pass 1) -ipo(pass 2) -O3(pass 2)
            -no-prec-div(pass 2) -prof-use(pass 2) -unroll4 -ansi-alias

Fortran benchmarks:

410.bwaves: basepeak = yes
416.gamess: -xAVX(pass 2) -prof-gen(pass 1) -ipo(pass 2) -O3(pass 2)
            -no-prec-div(pass 2) -prof-use(pass 2) -unroll2
            -inline-level=0 -scalar-rep-
434.zeusmp: basepeak = yes
437.leslie3d: basepeak = yes
459.GemsFDTD: -xAVX(pass 2) -prof-gen(pass 1) -ipo(pass 2) -O3(pass 2)
            -no-prec-div(pass 2) -prof-use(pass 2) -unroll2
            -inline-level=0 -opt-prefetch -parallel
465.tonto: -xAVX(pass 2) -prof-gen(pass 1) -ipo(pass 2) -O3(pass 2)
            -no-prec-div(pass 2) -prof-use(pass 2) -inline-calloc
            -opt-malloc-options=3 -auto -unroll4

Benchmarks using both Fortran and C:

435.gromacs: basepeak = yes
436.cactusADM: basepeak = yes
454.calculix: -xAVX -ipo -O3 -no-prec-div -auto-ilp32 -ansi-alias
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-ic14.0-official-linux64.20140128.html
http://www.spec.org/cpu2006/flags/Dell-Platform-Settings-V1.2-revB.html

You can also download the XML flags sources by saving the following links:
http://www.spec.org/cpu2006/flags/Intel-ic14.0-official-linux64.20140128.xml
http://www.spec.org/cpu2006/flags/Dell-Platform-Settings-V1.2-revB.xml
Dell Inc.  
PowerEdge M420 (Intel Xeon E5-2450L, 1.80 GHz)  

SPECfp2006 = 61.6  
SPECfp_base2006 = 59.1  

CPU2006 license: 55  
Test sponsor: Dell Inc.  
Tested by: Dell Inc.  

Test date: Nov-2013  
Hardware Availability: Sep-2013  
Software Availability: Sep-2013  

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.
Originally published on 7 January 2014.