# SPEC® CFP2006 Result

## Dell Inc.

### PowerEdge M520 (Intel Xeon E5-2420, 1.90 GHz)

| SPECfp®2006 | 57.8 |
| SPECfp_base2006 | 55.1 |

**CPU2006 license:** 55  
**Test sponsor:** Dell Inc.  
**Tested by:** Dell Inc.  
**Test date:** Mar-2012  
**Hardware Availability:** May-2012  
**Software Availability:** Feb-2012

### Hardware

<table>
<thead>
<tr>
<th>Component</th>
<th>Specification</th>
</tr>
</thead>
<tbody>
<tr>
<td>CPU Name</td>
<td>Intel Xeon E5-2420</td>
</tr>
<tr>
<td>CPU Characteristics</td>
<td>Intel Turbo Boost Technology up to 2.40 GHz</td>
</tr>
<tr>
<td>CPU MHz</td>
<td>1900</td>
</tr>
<tr>
<td>FPU</td>
<td>Integrated</td>
</tr>
<tr>
<td>CPU(s) enabled</td>
<td>12 cores, 2 chips, 6 cores/chip, 2 threads/core</td>
</tr>
<tr>
<td>Primary Cache</td>
<td>32 KB I + 32 KB D on chip per core</td>
</tr>
<tr>
<td>Secondary Cache</td>
<td>256 KB I+D on chip per core</td>
</tr>
</tbody>
</table>

### Software

<table>
<thead>
<tr>
<th>Component</th>
<th>Specification</th>
</tr>
</thead>
<tbody>
<tr>
<td>Operating System</td>
<td>SUSE Linux Enterprise Server 11 SP2 (x86_64) 3.0.13-0.27-default</td>
</tr>
<tr>
<td>Compiler</td>
<td>C/C++: Version 12.1.0.225 of Intel C++ Studio XE for Linux; Fortran: Version 12.1.0.225 of Intel Fortran Studio XE for Linux</td>
</tr>
<tr>
<td>Auto Parallel</td>
<td>Yes</td>
</tr>
<tr>
<td>File System</td>
<td>ext3</td>
</tr>
<tr>
<td>System State</td>
<td>Run level 3 (add definition here)</td>
</tr>
</tbody>
</table>
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**L3 Cache:** 15 MB I+D on chip per chip  
**Other Cache:** None  
**Memory:** 96 GB (12 x 8 GB 2Rx4 PC3-12800R-11, ECC, running at 1333 MHz)  
**Disk Subsystem:** 1 x 900 GB 10000 RPM SAS  
**Other Hardware:** None  
**Base Pointers:** 64-bit  
**Peak Pointers:** 32/64-bit  
**Other Software:** None

### 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>
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</thead>
<tbody>
<tr>
<td>410.bwaves</td>
<td>61.9</td>
<td>220</td>
<td>61.9</td>
<td>220</td>
<td>61.9</td>
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<tr>
<td>416.gamess</td>
<td>932</td>
<td>21.0</td>
<td>935</td>
<td>20.9</td>
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<td>433.milc</td>
<td>207</td>
<td>44.4</td>
<td>207</td>
<td>44.3</td>
<td>207</td>
<td>44.4</td>
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<tr>
<td>434.zeusmp</td>
<td>88.5</td>
<td>103</td>
<td>88.3</td>
<td>103</td>
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<td>103</td>
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<td>435.gromacs</td>
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<td>23.1</td>
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<td>436.cactusADM</td>
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<td>266</td>
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<tr>
<td>437.leslie3d</td>
<td>95.7</td>
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<td>95.7</td>
<td>98.2</td>
<td>95.7</td>
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<tr>
<td>444.namd</td>
<td>490</td>
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<td>489</td>
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<td>489</td>
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<td>447.dealII</td>
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<td>36.7</td>
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<td>36.7</td>
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<tr>
<td>450.soplex</td>
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<td>29.8</td>
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<td>453.povray</td>
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<td>454.calculix</td>
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<td>27.3</td>
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<tr>
<td>459.GemsFDTD</td>
<td>107</td>
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<td>99.4</td>
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<tr>
<td>465.tonto</td>
<td>401</td>
<td>24.5</td>
<td>399</td>
<td>24.6</td>
<td>363</td>
<td>27.1</td>
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<tr>
<td>470.lbm</td>
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<td>352</td>
<td>39.0</td>
<td>352</td>
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<tr>
<td>481.wrf</td>
<td>221</td>
<td>50.5</td>
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<td>51.2</td>
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<tr>
<td>482.sphinx3</td>
<td>395</td>
<td>49.4</td>
<td>400</td>
<td>48.8</td>
<td>397</td>
<td>49.1</td>
</tr>
</tbody>
</table>

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

- CPU Power Management set to Maximum Performance  
- Memory Frequency set to Maximum Performance  
- Turbo Boost set to Enabled  
- C States/C1E set to Enabled  
- Sysinfo program /root/CPU2006-1.2/config/sysinfo.rev6800  
  $Rev: 6800 $ $Date:: 2011-10-11 #$ 6f2ebdf5032aa42e583f96b07f99d3  
  running on Blur-2P Thu Mar 29 08:03:16 2012

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 E5-2420 0 @ 1.90GHz
   2 "physical id"s (chips)
   24 "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 : 6
   siblings : 12
   physical 0: cores 0 1 2 3 4 5
   physical 1: cores 0 1 2 3 4 5
   cache size : 15360 KB

From /proc/meminfo
   MemTotal:       99059724 kB
   HugePages_Total:       0
   Hugepagesize:       2048 kB

/usr/bin/lsb_release -d
   SUSE Linux Enterprise Server 11 (x86_64)

From /etc/*release* /etc/*version*
   SuSE-release:
      SUSE Linux Enterprise Server 11 (x86_64)
      VERSION = 11
      PATCHLEVEL = 2

uname -a:
   Linux Blur-2P 3.0.13-0.27-default #1 SMP Wed Feb 15 13:33:49 UTC 2012
      (d73692b) x86_64 x86_64 x86_64 GNU/Linux

run-level 3 Mar 28 23:45 last=S

SPEC is set to: /root/CPU2006-1.2
   Filesystem     Type  Size  Used Avail Use% Mounted on
   /dev/sda1      ext3  821G   11G  769G   2% /

Additional information from dmidecode:
(End of data from sysinfo program)

General Notes

Environment variables set by runspec before the start of the run:
   KMP_AFFINITY = "granularity=fine,scatter"
   LD_LIBRARY_PATH = "/root/CPU2006-1.2/libs/32:/root/CPU2006-1.2/libs/64"
   OMP_NUM_THREADS = "12"

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SPECfp2006 = 57.8
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CPU2006 license: 55
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General Notes (Continued)

Binaries compiled on a system with 1x Core i7-860 CPU + 8GB memory using RHEL5.5
Transparent Huge Pages disabled with:
echo never > /sys/kernel/mm/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.game5: -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 -O3 -no-prec-div -static -parallel -opt-prefetch
-ansi-alias

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Base Optimization Flags (Continued)

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

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

Benchmarks using both Fortran and C:
- -xAVX -ipo -O3 -no-prec-div -static -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) -03(pass 2)
    -no-prec-div(pass 2) -prof-use(pass 2) -static -auto-ilp32
    -ansi-alias

  470.lbm: basepeak = yes

  482.sphinx3: -xAVX -ipo -03 -no-prec-div -unroll2 -ansi-alias
    -parallel

C++ benchmarks:

Continued on next page
## Dell Inc. PowerEdge M520 (Intel Xeon E5-2420, 1.90 GHz)

| CPU2006 license: 55 | Test date: Mar-2012 |
| Test sponsor: Dell Inc. | Hardware Availability: May-2012 |
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### SPEC CFP2006 Result

| SPECfp2006 = | 57.8 |
| SPECfp_base2006 = | 55.1 |

### Peak Optimization Flags (Continued)

- **fortran benchmarks**:
  - 444.namd: basepeak = yes
  - -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

- **fortran benchmarks**:
  - 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 -static

- **fortran benchmarks**:
  - 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

- **fortran benchmarks**:
  - 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

- **Benchmarks using both Fortran and C**:
  - 481.wrf: basepeak = yes

---

The flags files that were used to format this result can be browsed at:


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

- [http://www.spec.org/cpu2006/flags/Dell-Platform-Settings-V1.2-revA.20120410.00.xml](http://www.spec.org/cpu2006/flags/Dell-Platform-Settings-V1.2-revA.20120410.00.xml)
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<td><strong>SPECfp_base2006</strong></td>
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For other inquiries, please contact webmaster@spec.org.

Tested with SPEC CPU2006 v1.2.


Originally published on 5 June 2012.