**SPEC® CFP2006 Result**

**Dell Inc.**

PowerEdge M420 (Intel Xeon E5-2403, 1.80 GHz)

| Test date: | Apr-2012 |
| Test sponsor: | Dell Inc. |
| Tested by: | Dell Inc. |
| Hardware Availability: | May-2012 |
| Software Availability: | Feb-2012 |

**CPU2006 license:** 55

**SPECfp®2006 = 39.6**

**SPECfp_base2006 = 38.5**

| Tested by: | Dell Inc. |
| Tested by: | Dell Inc. |
| **Hardware** | | **Software** |
| **CPU Name:** Intel Xeon E5-2403 | **Operating System:** SUSE Linux Enterprise Server 11 SP2 (x86_64) 3.0.13-0.27-default |
| **CPU Characteristics:** | **Compiler:** 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 |
| **CPU MHz:** 1800 | **Auto Parallel:** Yes |
| **FPU:** Integrated | **File System:** ext3 |
| **CPU(s) enabled:** 8 cores, 2 chips, 4 cores/chip | **System State:** Run level 3 (add definition here) |
| **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 | |

**SPECfp2006 = 39.6**

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| **410.bwaves** | **SPECfp2006 = 39.6** |
| **416.gamess** | **SPECfp_base2006 = 38.5** |
| **433.milc** | |
| **434.zeusmp** | |
| **435.gromacs** | |
| **436.cactusADM** | |
| **437.leslie3d** | |
| **444.namd** | |
| **447.dealII** | |
| **450.soplex** | |
| **453.povray** | |
| **454.calculix** | |
| **459.GemsFDTD** | 59.7 |
| **465.tonto** | 55.5 |
| **470.lbm** | |
| **481.wrf** | 45.0 |
| **482.sphinx3** | 38.7 |

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**Standard Performance Evaluation Corporation**  
info@spec.org  
http://www.spec.org/
Dell Inc.

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CPU2006 license: 55
Test sponsor: Dell Inc.
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L3 Cache: 10 MB I+D on chip per chip
Other Cache: None
Memory: 48 GB (6 x 8 GB 2Rx4 PC3-12800R-11, ECC, running at 1066 MHz)
Disk Subsystem: 2 x 50 GB SATA SSD, RAID 0
Other Hardware: None
L3 Cache: 10 MB I+D on chip per chip
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Disk Subsystem: 2 x 50 GB SATA SSD, RAID 0
Other Hardware: None

Results Table

<table>
<thead>
<tr>
<th>Benchmark</th>
<th>Seconds</th>
<th>Ratio</th>
<th>Seconds</th>
<th>Ratio</th>
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<td>38.7</td>
<td>507</td>
<td>38.5</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 $ $Date:: 2011-10-11 #$ 6f2ebdff5032aaa42e583f96b07f99d3
running on linux-n2l2 Thu Apr 12 04:52:47 2012

This section contains SUT (System Under Test) info as seen by
Continued on next page
**Dell Inc.**

**PowerEdge M420 (Intel Xeon E5-2403, 1.80 GHz)**  

<table>
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<tr>
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**CPU2006 license:** 55  
**Test sponsor:** Dell Inc.  
**Tested by:** Dell Inc.  
**Test date:** Apr-2012  
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**Software Availability:** Feb-2012

### 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 E5-2403 0 @ 1.80GHz  
- `2 "physical id"s (chips)`  
- 8 "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: 4  
  - siblings: 4  
  - physical 0: cores 0 1 2 3  
  - physical 1: cores 0 1 2 3  
- cache size: 10240 KB

From `/proc/meminfo`  
- MemTotal: 49348648 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 linux-n2l2 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 Apr 11 18:03 last=S
```

SPEC is set to: `/root/CPU2006-1.2`  
- Filesystem Type Size Used Avail Use% Mounted on  
  - /dev/sda1 ext3 87G 9.6G 73G 12% /

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 = "4"`
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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:
```bash
icc -m64
```

C++ benchmarks:
```bash
icpc -m64
```

Fortran benchmarks:
```bash
ifort -m64
```

Benchmarks using both Fortran and C:
```bash
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 -nofor_main  
450.soplex: -DSPEC_CPU_LP64  
453.povray: -DSPEC_CPU_LP64 -DSPEC_CPU_CASE_FLAG  
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:
```bash
-xAVX -ipo -O3 -no-prec-div -static -parallel -opt-prefetch -ansi-alias
```

Continued on next page
SPEC CFP2006 Result

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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) -O3(pass 2)
- no-prec-div(pass 2) -prof-use(pass 2) -static -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
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### 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:  
- `xAVX`  
- `ipo`  
- `O3`  
- `no-prec-div`  
- `opt-prefetch`  
- `parallel`  
- `static`

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`

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`  
- `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-ic12.1-official-linux64.20111122.html

http://www.spec.org/cpu2006/flags/Dell-Platform-Settings-V1.2-revA.20120410.00.html

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

http://www.spec.org/cpu2006/flags/Intel-ic12.1-official-linux64.20111122.xml

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For questions about this result, please contact the tester. For other inquiries, please contact webmaster@spec.org.

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