## SPEC® CFP2006 Result

### Dell Inc.

PowerEdge R530 (Intel Xeon E5-2680 v3, 2.5 GHz)

<table>
<thead>
<tr>
<th>SPECfp®_rate2006 = 788</th>
<th>SPECfp_rate_base2006 = 766</th>
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<tbody>
<tr>
<td>CPU2006 license: 55</td>
<td>Test date: Nov-2014</td>
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<tr>
<td>Test sponsor: Dell Inc.</td>
<td>Hardware Availability: Dec-2014</td>
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<td>Tested by: Dell Inc.</td>
<td>Software Availability: Jan-2014</td>
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<tr>
<th>Benchmark</th>
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<tr>
<td>410.bwaves</td>
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</table>

**Copies**

**SPECfp®_rate2006** = 788

**SPECfp_rate_base2006** = 766

### Hardware

<table>
<thead>
<tr>
<th>CPU Name:</th>
<th>Intel Xeon E5-2680 v3</th>
</tr>
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<tbody>
<tr>
<td>CPU:</td>
<td>Intel Turbo Boost Technology up to 3.30 GHz</td>
</tr>
<tr>
<td>CPU MHz:</td>
<td>2500</td>
</tr>
<tr>
<td>FPU:</td>
<td>Integrated</td>
</tr>
<tr>
<td>CPU(s):</td>
<td>24 cores, 2 chips, 12 cores/chip, 2 threads/core</td>
</tr>
<tr>
<td>CPU(s):</td>
<td>1,2 chip</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>
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</tbody>
</table>

### Software

<table>
<thead>
<tr>
<th>Operating System:</th>
<th>Red Hat Enterprise Linux Server release 6.5 (Santiago)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Compiler:</td>
<td>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</td>
</tr>
<tr>
<td>Auto Parallel:</td>
<td>No</td>
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<tr>
<td>File System:</td>
<td>ext4</td>
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</tbody>
</table>

Continued on next page

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

PowerEdge R530 (Intel Xeon E5-2680 v3, 2.5 GHz)

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

L3 Cache: 30 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 300 GB 10000 RPM SAS
Other Hardware: None

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

Results Table

<table>
<thead>
<tr>
<th>Benchmark</th>
<th>Base Copies</th>
<th>Seconds</th>
<th>Ratio</th>
<th>Seconds</th>
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</tr>
</tbody>
</table>

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

Submit Notes

The numactl mechanism was used to bind copies to processors. The config file option 'submit' was used to generate numactl commands to bind each copy to a specific processor. For details, please see the config file.

Operating System Notes

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

Platform Notes

BIOS settings:
Snoop Mode set to Cluster on Die
Virtualization Technology disabled

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Dell Inc. PowerEdge R530 (Intel Xeon E5-2680 v3, 2.5 GHz)

**SPECfp_rate2006** = 788
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CPU2006 license: 55
Test sponsor: Dell Inc.
Tested by: Dell Inc.

**Platform Notes (Continued)**

- Execute Disable disabled
- System Profile set to Custom
- Memory Patrol Scrub set to Disabled
- Sysinfo program /root/cpu2006-1.2/config/sysinfo.rev6818
- $Rev: 6818 $ $Date:: 2012-07-17 #$ e86d102572650a6e4d596a3cee98f191
- running on localhost.localdomain Sat Nov  8 20:21:00 2014

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 E5-2680 v3 @ 2.50GHz
- 2 "physical id"s (chips)
- 48 "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 : 12
  - siblings : 24
  - physical 0: cores 0 1 2 3 4 5 8 9 10 11 12 13
  - physical 1: cores 0 1 2 3 4 5 8 9 10 11 12 13
- cache size : 15360 KB

From /proc/meminfo
- MemTotal: 132054288 kB
- HugePages_Total: 0
- Hugepagesize: 2048 kB

```
/usr/bin/lsb_release -d
Red Hat Enterprise Linux Server release 6.5 (Santiago)
```

From /etc/*release* /etc/*version*
- redhat-release: Red Hat Enterprise Linux Server release 6.5 (Santiago)
- system-release: Red Hat Enterprise Linux Server release 6.5 (Santiago)

```
uname -a:
Linux localhost.localdomain 2.6.32-431.el6.x86_64 #1 SMP Sun Nov 10 22:19:54 EST 2013 x86_64 x86_64 x86_64 GNU/Linux
```

run-level 3 Nov 8 09:12

```
SPEC is set to: /root/cpu2006-1.2
Filesystem Type Size Used Avail Use% Mounted on
/dev/sda2 ext4 292G 9.7G 268G 4% /
```

Additional information from dmidecode:
- BIOS Dell Inc. 1.0.0 10/15/2014
- Memory: 4x 000000000000 Not Specified 2133 MHz 1 rank
  8x 002C00B3002C 36ASF2G72PZ-2G1A2 16 GB 2133 MHz 2 rank

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### Dell Inc.

PowerEdge R530 (Intel Xeon E5-2680 v3, 2.5 GHz)

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#### SPEC CFP2006 Result

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#### Platform Notes (Continued)

(End of data from sysinfo program)

#### General Notes

Environment variables set by runspec before the start of the run:

```plaintext
LD_LIBRARY_PATH = "/root/cpu2006-1.2/libs/32:/root/cpu2006-1.2/libs/64:/root/cpu2006-1.2/sh"
```

Binaries compiled on a system with 1x Core i7-860 CPU + 8GB memory using RedHat EL 6.4

Transparent Huge Pages enabled with:
```
echo always > /sys/kernel/mm/redhat_transparent_hugepage/enabled
```

Filesystem page cache cleared with:
```
echo 1> /proc/sys/vm/drop_caches
```

runspec command invoked through numactl i.e.:
```
numactl --interleave=all runspec <etc>
```

#### Base Compiler Invocation

- **C benchmarks**:
  ```plaintext
  icc   -m64
  ```

- **C++ benchmarks**:
  ```plaintext
  icpc  -m64
  ```

- **Fortran benchmarks**:
  ```plaintext
  ifort -m64
  ```

- **Benchmarks using both Fortran and C**:
  ```plaintext
  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
- 447.dealII: -DSPEC_CPU_LP64
- 450.soplex: -DSPEC_CPU_LP64
- 453.povray: -DSPEC_CPU_LP64 -nofor_main
- 454.calculix: -DSPEC_CPU_LP64 -nofor_main
- 459.GemsFDTD: -DSPEC_CPU_LP64

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Dell Inc.

PowerEdge R530 (Intel Xeon E5-2680 v3, 2.5 GHz)

SPECfp_rate2006 = 788
SPECfp_rate_base2006 = 766

CPU2006 license: 55  
Test sponsor: Dell Inc.  
Tested by: Dell Inc.  
Test date: Nov-2014  
Hardware Availability: Dec-2014  
Software Availability: Jan-2014

Base Portability Flags (Continued)

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 -opt-prefetch -auto-p32
-ansi-alias -opt-mem-layout-trans=3

C++ benchmarks:
-xCORE-AVX2 -ipo -O3 -no-prec-div -opt-prefetch -auto-p32
-ansi-alias -opt-mem-layout-trans=3

Fortran benchmarks:
-xCORE-AVX2 -ipo -O3 -no-prec-div -opt-prefetch

Benchmarks using both Fortran and C:
-xCORE-AVX2 -ipo -O3 -no-prec-div -opt-prefetch -auto-p32
-ansi-alias -opt-mem-layout-trans=3

Peak Compiler Invocation

C benchmarks:
icc -m64

C++ benchmarks (except as noted below):
icpc -m64

450.soplex: icpc -m32

Fortran benchmarks:
ifort -m64

Benchmarks using both Fortran and C:
icc -m64 ifort -m64

Peak Portability Flags

410.bwaves: -DSPEC_CPU_LP64
416.gameess: -DSPEC_CPU_LP64
433.milc: -DSPEC_CPU_LP64

Continued on next page
Peak Portability Flags (Continued)

- 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
- 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

Peak Optimization Flags

C benchmarks:

- 433.milc: basepeak = yes
- 470.lbm: basepeak = yes
- 482.sphinx3: basepeak = yes

C++ benchmarks:

- 444.namd: -xCORE-AVX2(pass 2) -prof-gen(pass 1) -ipo(pass 2)
  -O3(pass 2) -no-prec-div(pass 2)
  -opt-mem-layout-trans=3(pass 2) -prof-use(pass 2) -fno-alias
  -auto-ilp32
- 447.dealII: basepeak = yes

- 450.soplex: -xCORE-AVX2(pass 2) -prof-gen(pass 1) -ipo(pass 2)
  -O3(pass 2) -no-prec-div(pass 2)
  -opt-mem-layout-trans=3(pass 2) -opt-malloc-options=3

- 453.povray: -xCORE-AVX2(pass 2) -prof-gen(pass 1) -ipo(pass 2)
  -O3(pass 2) -no-prec-div(pass 2)
  -opt-mem-layout-trans=3(pass 2) -prof-use(pass 2) -unroll4
  -ansi-alias

Fortran benchmarks:

- 410.bwaves: basepeak = yes
Dell Inc.

PowerEdge R530 (Intel Xeon E5-2680 v3, 2.5 GHz)

**SPEC CFP2006 Result**

| SPECfp_rate2006 | 788 |
| SPECfp_rate_base2006 | 766 |

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

**Peak Optimization Flags (Continued)**

416.gamess: -xCORE-AVX2(pass 2)  -prof-gen(pass 1)  -ipo(pass 2)
            -prof-use(pass 2)  -unroll2
            -inline-level=0  -scalar-rep-

434.zeusmp: basepeak = yes

437.leslie3d: -xCORE-AVX2  -ipo  -O3  -no-prec-div  -opt-prefetch

459.GemsFDTD: basepeak = yes

465.tonto: -xCORE-AVX2(pass 2)  -prof-gen(pass 1)  -ipo(pass 2)
            -prof-use(pass 2)  -unroll4
            -auto  -inline-calloc  -opt-malloc-options=3

Benchmarks using both Fortran and C:

435.gromacs: -xCORE-AVX2(pass 2)  -prof-gen(pass 1)  -ipo(pass 2)
            -prof-use(pass 2)  -opt-mem-layout-trans=3(pass 2)
            -opt-prefetch  -auto-ilp32

436.cactusADM: basepeak = yes

454.calculix: basepeak = yes

481.wrf: -xCORE-AVX2  -ipo  -O3  -no-prec-div  -auto-ilp32

The flags files that were used to format this result can be browsed at
http://www.spec.org/cpu2006/flags/Dell-Platform-Settings-V1.2-revE.html

You can also download the XML flags sources by saving the following links:
http://www.spec.org/cpu2006/flags/Dell-Platform-Settings-V1.2-revE.xml