Dell Inc.
PowerEdge FC430 (Intel Xeon E5-2603 v4, 1.70 GHz)

SPECfp®2006 = 66.9
SPECfp_base2006 = 65.3

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

Test date: Jun-2016
Hardware Availability: Jun-2016
Software Availability: Nov-2015

CPU Name: Intel Xeon E5-2603 v4
CPU Characteristics: Integrated CPU
CPU(s) enabled: 12 cores, 2 chips, 6 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

Operating System: Red Hat Enterprise Linux Server release 7.2 (Maipo)  
Compiler: C/C++: Version 16.0.0.101 of Intel C++ Studio XE for Linux; Fortran: Version 16.0.0.101 of Intel Fortran Studio XE for Linux
Auto Parallel: Yes
File System: xfs

Continued on next page
## SPEC CFP2006 Result

### Dell Inc.

PowerEdge FC430 (Intel Xeon E5-2603 v4, 1.70 GHz)

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**CPU2006 license:** 55  
**Test date:** Jun-2016

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**Hardware Availability:** Jun-2016

**Tested by:** Dell Inc.  
**Software Availability:** Nov-2015

- **L3 Cache:** 15 MB I+D on chip per chip
- **Other Cache:** None
- **Memory:** 256 GB (8 x 32 GB 2Rx4 PC4-2400T-R, running at 1866 MHz)
- **Disk Subsystem:** 1 x 240 GB SATA SSD
- **Other Hardware:** None
- **System State:** Run level 3 (multi-user)
- **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>
<th>Seconds</th>
<th>Ratio</th>
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<tbody>
<tr>
<td>410.bwaves</td>
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<td>337</td>
<td>38.1</td>
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<td><strong>39.4</strong></td>
<td><strong>345</strong></td>
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<tr>
<td>416.gamess</td>
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<td>923</td>
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<td><strong>21.3</strong></td>
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<td>433.milc</td>
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<td>30.7</td>
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<td>414</td>
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<td>60.9</td>
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<td>61.3</td>
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<td>447.dealII</td>
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<td>459.GemsFDTD</td>
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<td><strong>147</strong></td>
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<tr>
<td>465.tonto</td>
<td>364</td>
<td>27.0</td>
<td><strong>363</strong></td>
<td><strong>27.1</strong></td>
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<td>27.1</td>
<td><strong>331</strong></td>
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<td>32.6</td>
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<td>61.6</td>
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<tr>
<td>482.sphinx3</td>
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<td>49.6</td>
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<td><strong>49.6</strong></td>
<td>393</td>
<td>49.5</td>
<td>393</td>
<td>49.6</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

- **BIOS settings:**
  - Snoop Mode set to Home Snoop
  - Virtualization Technology disabled
  - System Profile set to custom
  - CPU Power Management set to Maximum Performance
  - C States set to Autonomous
  - C1E disabled
  - Energy Efficient Turbo disabled
  - Uncore Frequency set to Dynamic

Continued on next page

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

PowerEdge FC430 (Intel Xeon E5-2603 v4, 1.70 GHz)  

**SPEC CFP2006 Result**

<table>
<thead>
<tr>
<th>SPECfp2006</th>
<th>66.9</th>
</tr>
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<tbody>
<tr>
<td>SPECfp_base2006</td>
<td>65.3</td>
</tr>
</tbody>
</table>

**CPU2006 license:** Dell Inc.  
**Test date:** Jun-2016  
**Test sponsor:** Dell Inc.  
**Hardware Availability:** Jun-2016  
**Tested by:** Dell Inc.  
**Software Availability:** Nov-2015

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### Platform Notes (Continued)

Energy Efficiency Policy set to Performance  
Memory Patrol Scrub disabled  
Sysinfo program /root/cpu2006-1.2/config/sysinfo.rev6914  
$Rev: 6914 $ $Date:: 2014-06-25 #$ e3fbb8667b5a285932ceab81e28219e1  
running on localhost.localdomain Fri Jun 24 03:35:14 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 E5-2603 v4@ 1.70GHz  
- 2 "physical id"s (chips)  
- 12 "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 : 6  
  - 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:** 264039400 kB  
- **HugePages_Total:** 0  
- **Hugepagesize:** 2048 kB

From /etc/*release* /etc/*version*

**os-release:**

- NAME="Red Hat Enterprise Linux Server"  
- VERSION="7.2 (Maipo)"  
- ID="rhel"  
- ID_LIKE="fedora"  
- VERSION_ID="7.2"  
- PRETTY_NAME="Red Hat Enterprise Linux Server 7.2 (Maipo)"  
- ANSI_COLOR="0;31"  
- CPE_NAME="cpe:/o:redhat:enterprise_linux:7.2:GA:server"  
- redhat-release: Red Hat Enterprise Linux Server release 7.2 (Maipo)  
- system-release: Red Hat Enterprise Linux Server release 7.2 (Maipo)  

**uname -a:**  
Linux localhost.localdomain 3.10.0-327.el7.x86_64 #1 SMP Thu Oct 29 17:29:29 EDT 2015 x86_64 x86_64 x86_64 GNU/Linux  
run-level 3 Jun 23 18:07

**SPEC is set to:** /root/cpu2006-1.2  
Files syndator Type Size Used Avail Use% Mounted on  
/dev/sda2 xfs 234G 9.8G 225G 5% /

---

Additional information from dmidecode:

Continued on next page
SPEC CFP2006 Result

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Platform Notes (Continued)

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 Dell Inc. 2.2.1 06/07/2016
Memory:
8x 00CE00B300CE M393A4K40BB1-CRC 32 GB 2 rank 2400 MHz, configured at 1866 MHz

(End of data from sysinfo program)

General Notes

Environment variables set by runspec before the start of the run:
KMP_AFFINITY = "granularity=fine,compact,1,0"
LD_LIBRARY_PATH = "/root/cpu2006-1.2/libs/32:/root/cpu2006-1.2/libs/64:/root/cpu2006-1.2/sh"
OMP_NUM_THREADS = "12"

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/transarent_hugepage/enabled

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

Continued on next page
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Base Portability Flags (Continued)

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
459.GemsFDTD: -DSPEC_CPU_LP64 -nofor_main
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 -parallel -opt-prefetch
-ansi-alias

C++ benchmarks: -xCORE-AVX2 -ipo -O3 -no-prec-div -opt-prefetch -ansi-alias

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

Benchmarks using both Fortran and C: -xCORE-AVX2 -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
Dell Inc.  
PowerEdge FC430 (Intel Xeon E5-2603 v4, 1.70 GHz)

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SPECfp_base2006 = 65.3

CPU2006 license: 55  
Test date:  
Test sponsor:  
Tested by:  
Hardware Availability:  
Software Availability:  

Peak Portability Flags
Same as Base Portability Flags

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:threadsafe(pass 1)
            -ipo(pass 2) -O3(pass 2) -no-prec-div(pass 2)
            -par-num-threads=1(pass 1) -prof-use(pass 2) -fno-alias
            -auto-ilp32
447.dealII: basepeak = yes
450.soplex: basepeak = yes
453.povray: -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
            -ansi-alias

Fortran benchmarks:
410.bwaves: basepeak = yes
416.gamess: -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) -unroll2
            -inline-level=0 -scalar-rep-
434.zeusmp: basepeak = yes
437.leslie3d: basepeak = yes
459.GemsFDTD: -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) -unroll2
              -inline-level=0 -opt-prefetch -parallel
465.tonto: -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) -inline-calloc

Continued on next page
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Peak Optimization Flags (Continued)

465.tonto (continued):
   -opt-malloc-options=3 -auto -unroll4

Benchmarks using both Fortran and C:

435.gromacs: basepeak = yes
436.cactusADM: basepeak = yes
454.calculix: -xCORE-AVX2 -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-ic16.0-official-linux64.html

You can also download the XML flags sources by saving the following links:
http://www.spec.org/cpu2006/flags/Intel-ic16.0-official-linux64.xml
http://www.spec.org/cpu2006/flags/Dell-Platform-Settings-V1.2-revD.20151006.xml

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For other inquiries, please contact webmaster@spec.org.

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