### SPEC® CFP2006 Result

**Dell Inc.**

**PowerEdge R940**  
(Intel Xeon Gold 6142, 2.60 GHz)

<table>
<thead>
<tr>
<th>SPECfp®2006</th>
<th>SPECfp_base2006</th>
</tr>
</thead>
<tbody>
<tr>
<td>153</td>
<td>146</td>
</tr>
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</table>

**Hardware**

- **CPU Name:** Intel Xeon Gold 6142  
- **CPU Characteristics:** Intel Turbo Boost Technology up to 3.70 GHz  
- **CPU MHz:** 2600  
- **FPU:** Integrated  
- **CPU(s) enabled:** 64 cores, 4 chips, 16 cores/chip  
- **CPU(s) orderable:** 2.4 chip  
- **Primary Cache:** 32 KB I + 32 KB D on chip per core  
- **Secondary Cache:** 1 MB I+D on chip per core

**Software**

- **Operating System:** SUSE Linux Enterprise Server 12 (x86_64) SP2  
  4.4.21-69-default  
- **Compiler:** C/C++: Version 17.0.3.191 of Intel C/C++ Compiler for Linux;  
  Fortran: Version 17.0.3.191 of Intel Fortran Compiler for Linux  
- **Auto Parallel:** Yes  
- **File System:** xfs  
- **System State:** Run level 3 (multi-user)

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<table>
<thead>
<tr>
<th>Benchmark</th>
<th>Score</th>
</tr>
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<tbody>
<tr>
<td>410.bwaves</td>
<td>51.7</td>
</tr>
<tr>
<td>416.gamess</td>
<td>48.5</td>
</tr>
<tr>
<td>433.milc</td>
<td>72.4</td>
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<tr>
<td>434.zeusmp</td>
<td>204</td>
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<tr>
<td>435.gromacs</td>
<td>53.3</td>
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<tr>
<td>436.cactusADM</td>
<td>1370</td>
</tr>
<tr>
<td>437.leslie3d</td>
<td>370</td>
</tr>
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<td>444.namd</td>
<td>36.5</td>
</tr>
<tr>
<td>447.dealII</td>
<td>55.6</td>
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<tr>
<td>450.soplex</td>
<td>71.5</td>
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<td>453.povray</td>
<td>50.1</td>
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<td>454.calculix</td>
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<tr>
<td>459.GemsFDTD</td>
<td>69.6</td>
</tr>
<tr>
<td>465.tonto</td>
<td>76.9</td>
</tr>
<tr>
<td>470.lbm</td>
<td>73.3</td>
</tr>
<tr>
<td>481.wrf</td>
<td>202</td>
</tr>
<tr>
<td>482.sphinx3</td>
<td>169</td>
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**SPECfp_base2006 = 146**  
**SPECfp2006 = 153**  
**Test date:** Oct-2017  
**Hardware Availability:** Sep-2017  
**Software Availability:** Apr-2017  
**CPU2006 license:** 55  
**Test sponsor:** Dell Inc.  
**Tested by:** Dell Inc.
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**Operating System Notes**

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

**Platform Notes**

- BIOS settings:
  - Logical Processor Disabled
  - Virtualization Technology Disabled
  - Sub NUMA Cluster Disabled
  - System Profile set to Custom
  - CPU Performance set to Maximum Performance
  - C1E Disabled
  - C States set to Autonomous
  - Uncore Frequency set to Dynamic
  - Memory Patrol Scrub Disabled

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

Continued on next page
## Dell Inc.

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### Platform Notes (Continued)

Energy Efficiency Policy set to Performance

CPU Interconnect Bus Link Power Management Disabled

PCI ASPM L1 Link Power Management Disabled

Sysinfo program /home/cpu2006/config/sysinfo.rev6993

Revision 6993 of 2015-11-06 (b5e8d4b4eb51ed28d7f98696cbe290c1)

running on linux-2h8y Fri Oct 6 14:34:42 2017

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) Gold 6142 CPU @ 2.60GHz
4 "physical id"s (chips)
64 "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 : 16
siblings : 16
physical 0: cores 0 1 2 3 4 5 6 7 8 9 10 11 12 13 14 15
physical 1: cores 0 1 2 3 4 5 6 7 8 9 10 11 12 13 14 15
physical 2: cores 0 1 2 3 4 5 6 7 8 9 10 11 12 13 14 15
physical 3: cores 0 1 2 3 4 5 6 7 8 9 10 11 12 13 14 15
cache size : 22528 KB
```

From /proc/meminfo

```
MemTotal:       791225344 kB
HugePages_Total:       0
Hugepagesize:       2048 kB
```

From /usr/bin/lsb_release -d

```
SUSE Linux Enterprise Server 12 SP2
```

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

```
SuSE-release:

SUSE Linux Enterprise Server 12 (x86_64)
VERSION = 12
PATCHLEVEL = 2
# This file is deprecated and will be removed in a future service pack or release.
# Please check /etc/os-release for details about this release.

os-release:

NAME="SLES"
VERSION="12-SP2"
VERSION_ID=12.2
PRETTY_NAME="SUSE Linux Enterprise Server 12 SP2"
ID="sles"
ANSI_COLOR="0;32"
CPE_NAME="cpe:/o:suse:sles:12:sp2"
```

uname -a: Continued on next page
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Platform Notes (Continued)

Linux linux-2h8y 4.4.21-69-default #1 SMP Tue Oct 25 10:58:20 UTC 2016
(9464f67) x86_64 x86_64 x86_64 GNU/Linux

run-level 3 Oct 6 10:07

SPEC is set to: /home/cpu2006
Filesystem Type Size Used Avail Use% Mounted on
/dev/sda4 xfs 796G 17G 780G 3% /home

Additional information from dmidecode:

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. 1.1.7 08/10/2017
Memory:
48x 00CE063200CE M393A2K43BB1-CTD 16 GB 2 rank 2666 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"
LD_LIBRARY_PATH = ""/home/cpu2006/lib/ia32:/home/cpu2006/lib/intel64:/home/cpu2006/sh10.2"
OMP_NUM_THREADS = "64"

Binaries compiled on a system with 1x Intel Core i7-4790 CPU + 32GB RAM
memory using Redhat Enterprise Linux 7.2
Transparent Huge Pages disabled with:
echo never > /sys/kernel/mm/transparent_hugepage/enabled
Filesystem page cache cleared with:
shell invocation of 'sync; echo 3 > /proc/sys/vm/drop_caches' prior to run

Base Compiler Invocation

C benchmarks:
  icc -m64

C++ benchmarks:
  icp -m64

Fortran benchmarks:
  ifort -m64

Benchmarks using both Fortran and C:
  icc -m64 ifort -m64
Dell Inc.  PowerEdge R940  (Intel Xeon Gold 6142, 2.60 GHz)  SPECfp2006 = 153  SPECfp_base2006 = 146

CPU2006 license: 55  Test date:  Oct-2017  
Test sponsor:  Dell Inc.  Hardware Availability:  Sep-2017  
Tested by:  Dell Inc.  Software Availability:  Apr-2017

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:  
-xCORE-AVX2  -ipo  -O3  -no-prec-div  -parallel  -qopt-prefetch

C++ benchmarks:
-xCORE-AVX2  -ipo  -O3  -no-prec-div  -qopt-prefetch

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

Benchmarks using both Fortran and C:  
-xCORE-AVX2  -ipo  -O3  -no-prec-div  -parallel  -qopt-prefetch

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
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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: -prof-gen(pass 1) -prof-use(pass 2) -xCORE-AVX2(pass 2)  
-par-num-threads=1(pass 1) -ipo(pass 2) -O3(pass 2)  
-no-prec-div(pass 2) -fno-alias -auto-iipt32

447.dealII: basepeak = yes

450.soplex: basepeak = yes

453.povray: -prof-gen(pass 1) -prof-use(pass 2) -xCORE-AVX2(pass 2)  
-par-num-threads=1(pass 1) -ipo(pass 2) -O3(pass 2)  
-no-prec-div(pass 2) -unroll4 -ansi-alias

Fortran benchmarks:

410.bwaves: basepeak = yes

416.gamess: -prof-gen(pass 1) -prof-use(pass 2) -xCORE-AVX2(pass 2)  
-par-num-threads=1(pass 1) -ipo(pass 2) -O3(pass 2)  
-no-prec-div(pass 2) -unroll2 -inline-level=0 -scalar-rep-

434.zeusmp: basepeak = yes

437.leslie3d: basepeak = yes

459.GemsFDTD: -prof-gen(pass 1) -prof-use(pass 2) -xCORE-AVX2(pass 2)  
-par-num-threads=1(pass 1) -ipo(pass 2) -O3(pass 2)  
-no-prec-div(pass 2) -unroll2 -inline-level=0  
-gopt-prefetch -parallel

465.tonto: -prof-gen(pass 1) -prof-use(pass 2) -xCORE-AVX2(pass 2)  
-par-num-threads=1(pass 1) -ipo(pass 2) -O3(pass 2)  
-no-prec-div(pass 2) -inline-calloc -gopt-malloc-options=3  
-auto -unroll4

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Peak Optimization Flags (Continued)

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
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-ic17.0-official-linux64-revF.html

You can also download the XML flags sources by saving the following links:
http://www.spec.org/cpu2006/flags/Intel-ic17.0-official-linux64-revF.xml

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

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