## SPEC® CFP2006 Result

### Dell Inc.

PowerEdge R730xd (Intel Xeon E5-2690 v4, 2.60 GHz)

**SPECfp®_rate2006 = Not Run**  
**SPECfp_rate_base2006 = 941**

<table>
<thead>
<tr>
<th>Software</th>
<th>Hardware</th>
</tr>
</thead>
<tbody>
<tr>
<td>Operating System: SUSE Linux Enterprise Server 12 SP1 3.12.48-1-default</td>
<td>CPU Name: Intel Xeon E5-2690 v4</td>
</tr>
<tr>
<td>Compiler: C/C++: Version 17.0.0.098 of Intel C/C++ Compiler for Linux; Fortran: Version 17.0.0.098 of Intel Fortran Compiler for Linux</td>
<td>CPU Characteristics: Intel Turbo Boost Technology up to 3.50 GHz</td>
</tr>
<tr>
<td>Auto Parallel: No</td>
<td>CPU MHz: 2600</td>
</tr>
<tr>
<td>File System: xfs</td>
<td>FPU: Integrated</td>
</tr>
<tr>
<td>System State: Run level 3 (multi-user)</td>
<td>CPU(s) enabled: 28 cores, 2 chips, 14 cores/chip, 2 threads/core</td>
</tr>
<tr>
<td></td>
<td>CPU(s) orderable: 1.2 chip</td>
</tr>
<tr>
<td></td>
<td>Primary Cache: 32 KB I + 32 KB D on chip per core</td>
</tr>
<tr>
<td></td>
<td>Secondary Cache: 256 KB I+D on chip per core</td>
</tr>
</tbody>
</table>

### Test Details

- **CPU2006 license:** 55
- **Test sponsor:** Dell Inc.
- **Tested by:** Dell Inc.
- **Test date:** Jan-2017
- **Hardware Availability:** Jun-2016
- **Software Availability:** Sep-2016

### Copy Table

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<thead>
<tr>
<th>Program</th>
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<tr>
<td>410.bwaves</td>
<td>56</td>
<td>683</td>
</tr>
<tr>
<td>416.gamess</td>
<td>56</td>
<td>1150</td>
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<td>433.milc</td>
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<tr>
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<td>459.GemsFDTD</td>
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<td>481.wrf</td>
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<tr>
<td>482.sphinx3</td>
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Dell Inc. PowerEdge R730xd (Intel Xeon E5-2690 v4, 2.60 GHz)

**SPECfp_rate2006 = Not Run**  
**SPECfp_rate_base2006 = 941**

<table>
<thead>
<tr>
<th>Benchmark</th>
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<th>Ratio</th>
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<td>872</td>
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<td>882</td>
<td>1239</td>
<td>881</td>
</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
SPEC CFP2006 Result

Dell Inc.
PowerEdge R730xd (Intel Xeon E5-2690 v4, 2.60 GHz)

SPECfp_rate2006 =     Not Run
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CPU2006 license: 55
Test sponsor: Dell Inc.
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SPEC CFP2006 Result

Platform Notes (Continued)

System Profile set to Custom
CPU Performance set to Maximum Performance
C States set to Autonomous
C1E disabled
Energy Efficient Turbo enabled
Uncore Frequency set to Dynamic
Energy Efficiency Policy set to Balanced Performance
Memory Patrol Scrub disabled
Sysinfo program /root/cpu2006-1.2/config/sysinfo.rev6993
Revision 6993 of 2015-11-06 (b5e8d4b4eb51ed28d7f98696cbe290c1)
routing on linux Fri Jan 13 16:40:31 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) CPU E5-2690 v4@ 2.60GHz
   2 "physical id"s (chips)
   56 "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 : 14
siblings : 28
physical 0: cores 0 1 2 3 4 5 6 8 9 10 11 12 13 14
physical 1: cores 0 1 2 3 4 5 6 8 9 10 11 12 13 14
cache size : 17920 KB

From /proc/meminfo
MemTotal:       264567680 kB
HugePages_Total:       0
Hugepagesize:       2048 kB

/usr/bin/lsb_release -d
SUSE Linux Enterprise Server 12 SP1

From /etc/*release* /etc/*version*
SuSE-release:
SUSE Linux Enterprise Server 12 (x86_64)
VERSION = 12
PATCHLEVEL = 1
# 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-SP1"
VERSION_ID="12.1"
PRETTY_NAME="SUSE Linux Enterprise Server 12 SP1"
ID="sles"
ANSI_COLOR="0;32"

Continued on next page

Standard Performance Evaluation Corporation
info@spec.org
http://www.spec.org/
Dell Inc. PowerEdge R730xd (Intel Xeon E5-2690 v4, 2.60 GHz)

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CPU2006 license: 55
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Hardware Availability: Jun-2016
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Platform Notes (Continued)

CPE_NAME="cpe:/o:suse:sles:12:sp1"

uname -a:
    Linux linux 3.12.48-1-default #1 SMP Fri Sep 18 13:49:47 UTC 2015 (a83966d)
x86_64 x86_64 x86_64 GNU/Linux

run-level 3 Jan 13 11:27

SPEC is set to: /root/cpu2006-1.2
Files        Type  Size  Used Avail Use% Mounted on
/dev/sda2    xfs   182G   14G  168G   8% /

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. 2.3.4 11/08/2016
Memory:
    13x 00AD063200AD HMA82GR7MFR8N-UH 16 GB 2 rank 2400 MHz
    3x 00CE00B300CE M393A2K43BB1-CRC 16 GB 2 rank 2400 MHz
    8x Not Specified Not Specified

(End of data from sysinfo program)

General Notes

Environment variables set by runspec before the start of the run:
LD_LIBRARY_PATH = "/root/cpu2006-1.2/libs/32:/root/cpu2006-1.2/libs/64:/root/cpu2006-1.2/sh10.2"
The Dell PowerEdge R730 and the PowerEdge R730xd models are electronically equivalent.
The results have been measured on a Dell PowerEdge R730xd model.
Binaries compiled on a system with 1x Intel Core i7-4790 CPU + 32GB RAM
memory using Redhat Enterprise Linux 7.2
Transparent Huge Pages enabled by default
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:
    icc -m64

C++ benchmarks:
    icpc -m64

Continued on next page
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### Base Compiler Invocation (Continued)

Fortran benchmarks:

```
ifort -m64
```

Benchmarks using both Fortran and C:

```
icc -m64 ifort -m64
```

### Base Portability Flags

- `410.bwaves`: `-DSPEC_CPU_LP64`
- `416.gamepp`: `-DSPEC_CPU_LP64`
- `433.milc`: `-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 -qopt-prefetch -auto-p32
-qopt-mem-layout-trans=3
```

**C++ benchmarks:**

```
-xCORE-AVX2 -ipo -O3 -no-prec-div -qopt-prefetch -auto-p32
-qopt-mem-layout-trans=3
```

**Fortran benchmarks:**

```
-xCORE-AVX2 -ipo -O3 -no-prec-div -qopt-prefetch
```

**Benchmarks using both Fortran and C:**

```
-xCORE-AVX2 -ipo -O3 -no-prec-div -qopt-prefetch -auto-p32
-qopt-mem-layout-trans=3
```
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**PowerEdge R730xd (Intel Xeon E5-2690 v4, 2.60 GHz)**

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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.html](http://www.spec.org/cpu2006/flags/Intel-ic17.0-official-linux64.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.xml](http://www.spec.org/cpu2006/flags/Intel-ic17.0-official-linux64.xml)