Dell Inc.

PowerEdge R730 (Intel Xeon E5-2623 v4, 2.60 GHz)

**SPECfp®2006 =** 93.4

**SPECfp_base2006 =** 90.8

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**Hardware**

- **CPU Name:** Intel Xeon E5-2623 v4
- **CPU Characteristics:** Intel Turbo Boost Technology up to 3.20 GHz
- **CPU MHz:** 2600
- **FPU:** Integrated
- **CPU(s) enabled:** 8 cores, 2 chips, 4 cores/chip
- **CPU(s) orderable:** 1,2 chips
- **Primary Cache:** 32 KB I + 32 KB D on chip per core
- **Secondary Cache:** 256 KB I+D on chip per core

---

**Software**

- **Operating System:** SUSE Linux Enterprise Server 12 SP1
- **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
- **Auto Parallel:** Yes
- **File System:** xfs
- **System State:** Run level 3 (multi-user)

---

**Test Sponsor:** Dell Inc.

**Tested by:** Dell Inc.

**CPU2006 license:** 55

**Test date:** Feb-2017

**Tested by:** Dell Inc.

**Hardware Availability:** Mar-2016

**Software Availability:** Nov-2016

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**SPECfp2006 =** 93.4

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**SPECfp_base2006 =** 90.8

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

PowerEdge R730 (Intel Xeon E5-2623 v4, 2.60 GHz)

SPEC CFP2006 Result

SPECfp2006 = 93.4
SPECfp_base2006 = 90.8

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: 256 GB (16 x 16 GB 2Rx8 PC4-2400T-R, running at 2133 MHz)
Disk Subsystem: 1 x 120 GB SATA SSD
Other Hardware: None

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>
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<td>126</td>
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<td>265</td>
<td>73.7</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 Opportunistic Snoop Broadcast
Virtualization Technology disabled
System Profile set to Custom
CPU Performance set to Maximum Performance
C States set to Autonomous
C1E disabled
Energy Efficient Turbo disabled
Uncore Frequency set to Dynamic
Dell Inc.
PowerEdge R730 (Intel Xeon E5-2623 v4, 2.60 GHz)  

**SPECfp2006 =** 93.4  
**SPECfp_base2006 =** 90.8

**CPU2006 license:** 55  
**Test date:** Feb-2017  
**Test sponsor:** Dell Inc.  
**Hardware Availability:** Mar-2016  
**Tested by:** Dell Inc.  
**Software Availability:** Nov-2016

### Platform Notes (Continued)

Energy Efficiency Policy set to Performance  
Memory Patrol Scrub disabled  
Logical Processor disabled  
Sysinfo program /root/cpu2006-1.2/config/sysinfo.rev6993  
Revision 6993 of 2015-11-06 (b5e8d4b4eb51ed28d7f98696cbe290c1)  
running on linux-b0uv Tue Feb 7 03:58:58 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 E5-2623 v4 @ 2.60GHz  
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: 264568180 kB  
HugePages_Total: 0  
Hugepagesize: 2048 kB
```

From /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.
```

```
NAME="SLES"  
VERSION="12-SP1"  
VERSION_ID="12.1"  
PRETTY_NAME="SUSE Linux Enterprise Server 12 SP1"  
ID="sles"  
ANSI_COLOR="0;32"  
CPE_NAME="cpe:/o:suse:sles:12:sp1"
```

```
uname -a:  
Linux linux-b0uv 3.12.49-11-default #1 SMP Wed Nov 11 20:52:43 UTC 2015  
(8d714a0) x86_64 x86_64 x86_64 GNU/Linux
```

Continued on next page
Dell Inc.

PowerEdge R730 (Intel Xeon E5-2623 v4, 2.60 GHz)

SPECfp2006 = 93.4
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CPU2006 license: 55
Test sponsor: Dell Inc.
Tested by: Dell Inc.

Platform Notes (Continued)

run-level 3 Feb 6 22:35

SPEC is set to: /root/cpu2006-1.2
Filesystem Type Size Used Avail Use% Mounted on
/dev/sda2 xfs 110G 24G 87G 22% /

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. 2.2.5 09/06/2016
Memory:
  4x 00AD00B300AD HMA82GR7MFR8N-UH 16 GB 2 rank 2400 MHz, configured at 2133
  MHz
  1x 00AD063200AD HMA82GR7MFR8N-UH 16 GB 2 rank 2400 MHz, configured at 2133
  MHz
  1x 00CE00B300CE M393A2K43BB1-CRC 16 GB 2 rank 2400 MHz, configured at 2133
  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:
KMP_AFFINITY = "granularity=fine,compact"
LD_LIBRARY_PATH = "/root/cpu2006-1.2/libs/32:/root/cpu2006-1.2/libs/64:/root/cpu2006-1.2/sh10.2"
OMP_NUM_THREADS = "8"

Binaries compiled on a system with 1x Intel Core i7-4790K CPU + 32GB RAM
memory using Redhat Enterprise Linux 7.2
Transparent Huge Pages disabled with:
echo never > /sys/kernel/mm/transparent_hugepage/enabled

Base Compiler Invocation

C benchmarks:
  icc -m64

C++ benchmarks:
  icpc -m64

Fortran benchmarks:
  ifort -m64

Continued on next page
# SPEC CFP2006 Result

**Dell Inc.**

PowerEdge R730 (Intel Xeon E5-2623 v4, 2.60 GHz)  

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- **CPU2006 license:** 55
- **Test sponsor:** Dell Inc.
- **Tested by:** Dell Inc.
- **Test date:** Feb-2017
- **Hardware Availability:** Mar-2016
- **Software Availability:** Nov-2016

## Base Compiler Invocation (Continued)

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.mlmc: `-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`
Dell Inc. PowerEdge R730 (Intel Xeon E5-2623 v4, 2.60 GHz) SPECfp2006 = 93.4 SPECfp_base2006 = 90.8

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

Peak Compiler Invocation (Continued)

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: 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-ilp32
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

Continued on next page
## Dell Inc.

### PowerEdge R730 (Intel Xeon E5-2623 v4, 2.60 GHz)

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### Peak Optimization Flags (Continued)

- `459.GemsFDTD: basepeak = yes`
- `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-call -qopt-malloc-options=3 -auto -unroll14`

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.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)

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