Dell Inc.

PowerEdge R730xd (Intel Xeon E5-2630L v4, 1.80 GHz)

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

Hardware:
- CPU Name: Intel Xeon E5-2630L v4
- CPU Characteristics: Intel Turbo Boost Technology up to 2.90 GHz
- CPU MHz: 1800
- FPU: Integrated
- CPU(s) enabled: 20 cores, 2 chips, 10 cores/chip, 2 threads/core
- 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

Software:
- Operating System: Red Hat Enterprise Linux Server release 7.2 (Maipo) 3.10.0-327.el7.x86_64
- Compiler: C/C++: Version 16.0.2.181 of Intel C++ Studio XE for Linux; Fortran: Version 16.0.2.181 of Intel Fortran Studio XE for Linux
- Auto Parallel: No
- File System: xfs

SPECfp®_rate2006 = 617
SPECfp_rate_base2006 = 604

Test date: Jul-2016
Hardware Availability: Jun-2016
Software Availability: Mar-2016

Copies

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SPECfp_rate2006 = 604
SPECfp_rate_base2006 = 617

Continued on next page
Dell Inc.
PowerEdge R730xd (Intel Xeon E5-2630L v4, 1.80 GHz)

**SPEC CFP2006 Result**

**CPU2006 license:** 55  
**Test date:** Jul-2016  
**Hardware Availability:** Jun-2016  
**Test sponsor:** Dell Inc.  
**Software Availability:** Mar-2016  
**Tested by:** Dell Inc.

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</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

Continued on next page

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

PowerEdge R730xd (Intel Xeon E5-2630L v4, 1.80 GHz)

SPECfp_rate2006 = 617
SPECfp_rate_base2006 = 604

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

Test date: Jul-2016
Hardware Availability: Jun-2016
Software Availability: Mar-2016

Platform Notes (Continued)

System Profile set to custom
CPU Performance set to Hardware P States
C States set to Autonomous
C1E disabled
Energy Efficient Turbo disabled
Uncore Frequency set to Dynamic
Energy Efficiency Policy set to Balanced Performance
Memory Patrol Scrub disabled
Sysinfo program /root/cpu2006-1.2/config/sysinfo.rev6914
$Rev: 6914 $ $Date:: 2014-06-25 #$ e3fbb8667b5a285932ceab81e28219e1

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 E5-2630L v4 @ 1.80GHz
     2 "physical id"s (chips)
     40 "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 : 10
   siblings : 20
   physical 0: cores 0 1 2 3 4 8 9 10 11 12
   physical 1: cores 0 1 2 3 4 8 9 10 11 12
   cache size : 25600 KB

From /proc/meminfo

   MemTotal:       264040560 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

Continued on next page
**SPEC CFP2006 Result**

**Dell Inc.**

PowerEdge R730xd (Intel Xeon E5-2630L v4, 1.80 GHz)

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</table>

**SPECfp_rate2006 = 617**

**SPECfp_rate_base2006 = 604**

**Platform Notes (Continued)**

run-level 3 Jul 20 08:07

SPEC is set to: /root/cpu2006-1.2

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<th>Size</th>
<th>Used</th>
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<td>179G</td>
<td>8.1G</td>
<td>171G</td>
<td>5%</td>
<td>/</td>
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</tbody>
</table>

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. 2.1.7 06/16/2016

Memory:

15x 00AD063200AD HMA82GR7MF8N-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:

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

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 i7-4790K CPU + 32GB memory using RedHat EL 7.2 glibc 2.17

Transparent Huge Pages enabled with:

```
echo always > /sys/kernel/mm/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:

```
icc  -m64
```

C++ benchmarks:

```
icpc  -m64
```

Fortran benchmarks:

```
ifort -m64
```

Continued on next page
Base Compiler Invocation (Continued)

Benchmarks using both Fortran and C:

\texttt{icc -m64 ifort -m64}

Base Portability Flags

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<tr>
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<td>482.sphinx3</td>
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Base Optimization Flags

C benchmarks:

\texttt{-xCORE-AVX2 -ipo -O3 -no-prec-div -opt-prefetch -auto-p32 -ansi-alias -opt-mem-layout-trans=3}

C++ benchmarks:

\texttt{-xCORE-AVX2 -ipo -O3 -no-prec-div -opt-prefetch -auto-p32 -ansi-alias -opt-mem-layout-trans=3}

Fortran benchmarks:

\texttt{-xCORE-AVX2 -ipo -O3 -no-prec-div -opt-prefetch}

Benchmarks using both Fortran and C:

\texttt{-xCORE-AVX2 -ipo -O3 -no-prec-div -opt-prefetch -auto-p32 -ansi-alias -opt-mem-layout-trans=3}

Peak Compiler Invocation

C benchmarks:

\texttt{icc -m64}
Dell Inc.

PowerEdge R730xd (Intel Xeon E5-2630L v4, 1.80 GHz)

SPEC CFP2006 Result

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Dell Inc.

PowerEdge R730xd (Intel Xeon E5-2630L v4, 1.80 GHz)

SPECfp\_rate2006 = \(617\)

SPECfp\_rate\_base2006 = \(604\)

CPU2006 license: 55

Test sponsor: Dell Inc.

Tested by: Dell Inc.

Test date: Jul-2016

Hardware Availability: Jun-2016

Software Availability: Mar-2016

PeakCompilerInvocation(Continued)

C++ benchmarks (except as noted below):

\texttt{icpc \ -m64}

450.soplex: \texttt{icpc \ -m32 \ -L/opt/intel/compilers_and_libraries_2016/linux/compiler/lib/ia32_lin/}

Fortran benchmarks:

\texttt{ifort \ -m64}

Benchmarks using both Fortran and C:

\texttt{icc \ -m64 \ ifort \ -m64}

PeakPortabilityFlags

410.bwaves: \texttt{-DSPEC\_CPU\_LP64}

416.gamess: \texttt{-DSPEC\_CPU\_LP64}

433.milc: \texttt{-DSPEC\_CPU\_LP64}

434.zerompi: \texttt{-DSPEC\_CPU\_LP64}

435.gromacs: \texttt{-DSPEC\_CPU\_LP64\ -nofor\_main}

436.cactusADM: \texttt{-DSPEC\_CPU\_LP64\ -nofor\_main}

437.leslie3d: \texttt{-DSPEC\_CPU\_LP64}

444.namd: \texttt{-DSPEC\_CPU\_LP64\ -nofor\_main}

447.dealII: \texttt{-DSPEC\_CPU\_LP64}

450.soplex: \texttt{-D\_FILE\_OFFSET\_BITS=64}

453.povray: \texttt{-DSPEC\_CPU\_LP64}

454.calculix: \texttt{-DSPEC\_CPU\_LP64\ -nofor\_main}

459.GemsFDTD: \texttt{-DSPEC\_CPU\_LP64}

465.tonto: \texttt{-DSPEC\_CPU\_LP64}

470.lbm: \texttt{-DSPEC\_CPU\_LP64}

481.wrf: \texttt{-DSPEC\_CPU\_CASE\_FLAG\ -DSPEC\_CPU\_LINUX}

482.sphinx3: \texttt{-DSPEC\_CPU\_LP64}

PeakOptimizationFlags

C benchmarks:

433.milc: basepeak = yes

470.lbm: basepeak = yes

482.sphinx3: basepeak = yes

C++ benchmarks:

444.namd: \texttt{-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)\ -opt\-mem\-layout\-trans=3(pass 2)\ -prof\-use(pass 2)\ -fno-alias\ -auto-ilp32}

Continued on next page
Peak Optimization Flags (Continued)

447.dealII: basepeak = yes

450.soplex: -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) -opt-mem-layout-trans=3(pass 2)
-prof-use(pass 2) -opt-malloc-options=3

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) -opt-mem-layout-trans=3(pass 2)
-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: basepeak = yes

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) -unroll4 -auto
-inline-calloc -opt-malloc-options=3

Benchmarks using both Fortran and C:

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

436.cactusADM: basepeak = yes

454.calculix: basepeak = yes

481.wrf: basepeak = yes
## Dell Inc.

PowerEdge R730xd (Intel Xeon E5-2630L v4, 1.80 GHz)

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specfp_rate2006 = 617
specfp_rate_base2006 = 604

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 questions about this result, please contact the tester.
For other inquiries, please contact webmaster@spec.org.

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