Dell Inc.
PowerEdge R730xd (Intel Xeon E5-2643 v4, 3.40 GHz)

CPU2006 license: 55
Test sponsor: Dell Inc.

SPECint®2006 = 72.2
SPECint_base2006 = 68.3

Test date: Feb-2017
Hardware Availability: Oct-2016

Dell Inc.
GHz)
PowerEdge R730xd (Intel Xeon E5-2643 v4, 3.40

400.perlbench
401.bzip2
403.gcc
429.mcf
445.gobmk
456.hmmer
458.sjeng
462.libquantum
464.h264ref
471.omnetpp
473.astar
483.xalancbmk

SPECint®2006 = 72.2
SPECint_base2006 = 68.3

Hardware
CPU Name: Intel Xeon E5-2643 v4
CPU Characteristics: Intel Turbo Boost Technology up to 3.70 GHz
CPU MHz: 3400
FPU: Integrated
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
L3 Cache: 20 MB I+D on chip per chip
Other Cache: None
Memory: 256 GB (16 x 16 GB 2Rx8 PC4-2400T-R)
Disk Subsystem: 2 x 2000 GB 7200 RPM SAS RAID 0
Other Hardware: None

Software
Operating System: SUSE Linux Enterprise Server 12
Compiler: C/C++: Version 17.0.0.098 of Intel C/C++ Compiler for Linux
Auto Parallel: Yes
File System: ext4
System State: Run level 3 (multi user)
Base Pointers: 32/64-bit
Peak Pointers: 32/64-bit
Other Software: Microquill SmartHeap V10.2
SPEC CINT2006 Result

Dell Inc.
PowerEdge R730xd (Intel Xeon E5-2643 v4, 3.40 GHz)

SPECint2006 = 72.2
SPECint_base2006 = 68.3

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>
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<tbody>
<tr>
<td>400.perlbench</td>
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<td>42.8</td>
<td>228</td>
<td>42.8</td>
<td>229</td>
<td>42.7</td>
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<td>401.bzip2</td>
<td>353</td>
<td>27.4</td>
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<td>27.4</td>
<td>354</td>
<td>27.2</td>
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<tr>
<td>403.gcc</td>
<td>205</td>
<td>39.2</td>
<td>205</td>
<td>39.2</td>
<td>205</td>
<td>39.2</td>
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<tr>
<td>429.mcf</td>
<td>124</td>
<td>73.8</td>
<td>124</td>
<td>73.8</td>
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<td>73.6</td>
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<td>32.0</td>
<td>327</td>
<td>32.0</td>
<td>327</td>
<td>32.0</td>
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<tr>
<td>456.hmmer</td>
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<td>90.9</td>
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<td>91.1</td>
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<td>458.sjeng</td>
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<td>36.1</td>
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<td>36.2</td>
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<td>36.1</td>
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<tr>
<td>462.libquantum</td>
<td>4.22</td>
<td>4910</td>
<td>4.25</td>
<td>4880</td>
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<tr>
<td>464.h264ref</td>
<td>341</td>
<td>65.0</td>
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<td>65.0</td>
<td>342</td>
<td>64.6</td>
</tr>
<tr>
<td>471.omnetpp</td>
<td>198</td>
<td>31.6</td>
<td>205</td>
<td>30.5</td>
<td>199</td>
<td>31.5</td>
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<tr>
<td>473.astar</td>
<td>188</td>
<td>37.4</td>
<td>187</td>
<td>37.6</td>
<td>187</td>
<td>37.6</td>
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<tr>
<td>483.xalancbmk</td>
<td>87.5</td>
<td>78.9</td>
<td>93.0</td>
<td>74.2</td>
<td>90.5</td>
<td>76.2</td>
</tr>
</tbody>
</table>

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

Submit Notes

The config file option 'submit' was used.

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
- Energy Efficiency Policy set to Performance
- Memory Patrol Scrub disabled
- Logical Processor disabled
- Sysinfo program /root/previous-cpu2006-1.2/config/sysinfo.rev6993

Revision 6993 of 2015-11-06 (b5e8d4b4eb51ed28d7f98696cbe290c1)
routing on linux-0171 Wed Feb 22 15:06:34 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

Continued on next page
Dell Inc.
PowerEdge R730xd (Intel Xeon E5-2643 v4, 3.40 GHz)

SPECint2006 = 72.2
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CPU2006 license: 55
Test sponsor: Dell Inc.
Tested by: Dell Inc.

Platform Notes (Continued)

From /proc/cpuinfo
   model name : Intel(R) Xeon(R) CPU E5-2643 v4 @ 3.40GHz
   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 6 7
   physical 1: cores 0 1 2 3 6 7
   cache size : 20480 KB

From /proc/meminfo
   MemTotal: 264567484 kB
   HugePages_Total: 0
   Hugepagesize: 2048 kB

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

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

uname -a:
   Linux linux-0171 3.12.28-4-default #1 SMP Thu Sep 25 17:02:34 UTC 2014
   (9879bd4) x86_64 x86_64 x86_64 GNU/Linux

run-level 3 Feb 22 14:48

SPEC is set to: /root/previous-cpu2006-1.2
      Filesystem   Type      Size  Used Avail Use% Mounted on
      /dev/sda2    ext4 246G   19G  226G   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
Continued on next page
Dell Inc.
PowerEdge R730xd (Intel Xeon E5-2643 v4, 3.40 GHz)

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Platform Notes (Continued)

determined", but the intent may not be met, as there are frequent changes to hardware, firmware, and the "DMTF SM BIOS" standard.

BIOS Dell Inc. 2.3.4 11/08/2016
Memory:
7x 00AD063200AD HMA82GR7MFR8N-UH 16 GB 2 rank 2400 MHz
9x 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:
KMP_AFFINITY = "granularity=fine,scatter"
LD_LIBRARY_PATH = "/root/previous-cpu2006-1.2/libs/32:/root/previous-cpu2006-1.2/libs/64:/root/previous-cpu2006-1.2/sh10.2"
OMP_NUM_THREADS = "12"
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 with:
echo always > /sys/kernel/mm/transparent_hugepage/enabled

Base Compiler Invocation

C benchmarks:
iccc -m64

C++ benchmarks:
icpc -m64

Base Portability Flags

400.perlbench: -DSPEC_CPU_LP64 -DSPEC_CPU_LINUX_X64
401.bzip2: -DSPEC_CPU_LP64
403.gcc: -DSPEC_CPU_LP64
429.mcf: -DSPEC_CPU_LP64
445.gobmk: -DSPEC_CPU_LP64
456.hmmer: -DSPEC_CPU_LP64
458.sjeng: -DSPEC_CPU_LP64
462.libquantum: -DSPEC_CPU_LP64 -DSPEC_CPU_LINUX
464.h264ref: -DSPEC_CPU_LP64
471.omnetpp: -DSPEC_CPU_LP64
473.astar: -DSPEC_CPU_LP64
483.xalancbmk: -DSPEC_CPU_LP64 -DSPEC_CPU_LINUX
### Dell Inc.

PowerEdge R730xd (Intel Xeon E5-2643 v4, 3.40 GHz)

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

#### Base Optimization Flags

- for C benchmarks:
  -xCORE-AVX2  
  -ipo  
  -O3  
  -no-prec-div  
  -parallel  
  -qopt-prefetch  
  -auto-p32

- for C++ benchmarks:
  -xCORE-AVX2  
  -ipo  
  -O3  
  -no-prec-div  
  -qopt-prefetch  
  -auto-p32  
  -Wl,-z,muldefs  
  -L/sh10.2  
  -lsmartheap64

#### Base Other Flags

- for C benchmarks:
  403.gcc: -Dalloca=_alloca

#### Peak Compiler Invocation

- for C benchmarks (except as noted below):
  icc -m64
  400.perlbench: icc -m32 -L/opt/intel/compilers_andLibraries_2017/linux/lib/ia32

- for C++ benchmarks (except as noted below):
  icc -m32 -L/opt/intel/compilers_andLibraries_2017/linux/lib/ia32
  473.astar: icpc -m64

#### Peak Portability Flags

- 400.perlbench: -D_FILE_OFFSET_BITS=64 -DSPEC_CPU_LINUX_IA32
  401.bzip2: -DSPEC_CPU_LP64
  403.gcc: -DSPEC_CPU_LP64
  429.mcf: -DSPEC_CPU_LP64
  445.gobmk: -D_FILE_OFFSET_BITS=64
  456.hmmer: -DSPEC_CPU_LP64
  458.sjeng: -DSPEC_CPU_LP64
  462.libquantum: -DSPEC_CPU_LP64 -DSPEC_CPU_LINUX
  464.h264ref: -DSPEC_CPU_LP64
  471.omnetpp: -D_FILE_OFFSET_BITS=64
  473.astar: -DSPEC_CPU_LP64
  483.xalancbmk: -D_FILE_OFFSET_BITS=64 -DSPEC_CPU_LINUX
Dell Inc.
PowerEdge R730xd (Intel Xeon E5-2643 v4, 3.40 GHz)

SPECint2006 = 72.2
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CPU2006 license: 55
Test sponsor: Dell Inc.
Test date: Feb-2017
Hardware Availability: Oct-2016
Tested by: Dell Inc.
Software Availability: Sep-2016

Peak Optimization Flags

C benchmarks:

400.perlbench: -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) -qopt-prefetch

401.bzip2: -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 -auto-ilp32 -qopt-prefetch

403.gcc: -xCORE-AVX2 -ipo -O3 -no-prec-div -inline-cALLOC
-qopt-malloc-options=3 -auto-ilp32

429.mcf: -xCORE-AVX2 -ipo -O3 -no-prec-div -parallel
-qopt-prefetch -auto-p32

445.gobmk: -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)

462.libquantum: basepeak = yes

Peak Other Flags

C++ benchmarks:

471.omnetpp: -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) -qopt-ra-region-strategy=block
-Wl,-z,muldefs -L/sh10.2 -lsmartheap

473.astar: -xCORE-AVX2 -ipo -O3 -no-prec-div -qopt-prefetch
-auto-p32 -Wl,-z,muldefs -L/sh10.2 -lsmartheap64

483.xalancbmk: -xCORE-AVX2 -ipo -O3 -no-prec-div -qopt-prefetch
-Wl,-z,muldefs -L/sh10.2 -lsmartheap
# SPEC CINT2006 Result

**Dell Inc.**  
PowerEdge R730xd (Intel Xeon E5-2643 v4, 3.40 GHz)  

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</tbody>
</table>

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

## Peak Other Flags (Continued)

403.gcc: `-Dalloca=_alloca`

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


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


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

Tested with SPEC CPU2006 v1.2.  