Dell Inc.

PowerEdge R730xd (Intel Xeon E5-2683 v4, 2.10 GHz)

SPECint®2006 = 63.7
SPECint_base2006 = 61.8

Hardware
- CPU Name: Intel Xeon E5-2683 v4
- CPU Characteristics: Intel Turbo Boost Technology up to 3.00 GHz
- CPU MHz: 2100
- FPU: Integrated
- CPU(s) enabled: 32 cores, 2 chips, 16 cores/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: 40 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 3.12.28-4-default
- 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

Dell Inc.

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

Test date: Mar-2017
Hardware Availability: Oct-2016
Software Availability: Sep-2016
Dell Inc.

PowerEdge R730xd (Intel Xeon E5-2683 v4, 2.10 GHz)

SPECint2006 = 63.7
SPECint_base2006 = 61.8

Results Table

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<tr>
<th>Benchmark</th>
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<th>Ratio</th>
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<td>401.bzip2</td>
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<td>462.libquantum</td>
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<td>94.8</td>
<td>72.8</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)
running on linux-0171 Wed Mar  1 13:44:44 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
SPEC CINT2006 Result

Dell Inc.
PowerEdge R730xd (Intel Xeon E5-2683 v4, 2.10 GHz)

SPECint2006 = 63.7
SPECint_base2006 = 61.8

CPU2006 license: 55
Test sponsor: Dell Inc.
Tested by: Dell Inc.
Software Availability: Sep-2016

Platform Notes (Continued)

From /proc/cpuinfo
- model name : Intel(R) Xeon(R) CPU E5-2683 v4 @ 2.10GHz
- 2 "physical id"s (chips)
- 32 "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
- cache size : 40960 KB

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

From /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:/o: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 Mar 1 11:00

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
Dell Inc.

PowerEdge R730xd (Intel Xeon E5-2683 v4, 2.10 GHz)

**SPECint2006 =** 63.7
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**CPU2006 license:** 55
**Test sponsor:** Dell Inc.
**Tested by:** Dell Inc.

---

### Platform Notes (Continued)

"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:
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 = "32"
```

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:**
```
icc -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 E5-2683 v4, 2.10 GHz)

SPECint2006 = 63.7
SPECint_base2006 = 61.8

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

Base Optimization Flags

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

C++ benchmarks:
-xCORE-AVX2 -ipo -O3 -no-prec-div -qopt-prefetch -auto-p32
-W1,-z,muldefs -L/sh10.2 -lsmartheap64

Base Other Flags

C benchmarks:
403.gcc: -Dalloca=_alloca

Peak Compiler Invocation

C benchmarks (except as noted below):
icc -m64

400.perlbench: icc -m32 -L/opt/intel/compilers_and_libraries_2017/linux/lib/ia32
445.gobmk: icc -m32 -L/opt/intel/compilers_and_libraries_2017/linux/lib/ia32

C++ benchmarks (except as noted below):
icc -m32 -L/opt/intel/compilers_and_libraries_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 E5-2683 v4, 2.10 GHz)  

**SPECint2006 =** 63.7  
**SPECint_base2006 =** 61.8

---

**CPU2006 license:** 55  
**Test sponsor:** Dell Inc.  
**Tested by:** Dell Inc.  
**Test date:** Mar-2017  
**Hardware Availability:** Oct-2016  
**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-alloc
  -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)`

- 456.hmmer: `basepeak = yes`

- 458.sjeng: `-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`

- 462.libquantum: `basepeak = yes`

- 464.h264ref: `basepeak = yes`

**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`

---

### Peak Other Flags

**C benchmarks:**

Continued on next page
Dell Inc.
PowerEdge R730xd (Intel Xeon E5-2683 v4, 2.10 GHz)

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**CPU2006 license:** 55
**Test sponsor:** Dell Inc.
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### 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 other inquiries, please contact webmaster@spec.org.

Tested with SPEC CPU2006 v1.2.