**Dell Inc.**

**PowerEdge R630 (Intel Xeon E5-2680 v4, 2.40 GHz)**

<table>
<thead>
<tr>
<th>SPECint rate2006</th>
<th>1290</th>
</tr>
</thead>
<tbody>
<tr>
<td>SPECint rate base2006</td>
<td>1240</td>
</tr>
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**CPU2006 license:** 55

**Test sponsor:** Dell Inc.

**Tested by:** Dell Inc.

**Test date:** Aug-2016

**Hardware Availability:** Jun-2016

**Software Availability:** Mar-2016

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<td>445.gobmk</td>
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<tr>
<td>462.libquantum</td>
<td>933</td>
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<td>471.omnetpp</td>
<td>1730</td>
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<td>473.astar</td>
<td>1940</td>
</tr>
<tr>
<td>483.xalancbmk</td>
<td>12700</td>
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</table>

**SPECint rate base2006 = 1240**

**Hardware**

- **CPU Name:** Intel Xeon E5-2680 v4
- **CPU Characteristics:** Intel Turbo Boost Technology up to 3.30 GHz
- **CPU MHz:** 2400
- **FPU:** Integrated
- **CPU(s) enabled:** 28 cores, 2 chips, 14 cores/chip, 2 threads/core
- **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
- **L3 Cache:** 35 MB I+D on chip per chip
- **Other Cache:** None
- **Memory:** 256 GB (16 x 16 GB 2Rx8 PC4-2400T-R)
- **Disk Subsystem:** 1 x 400 GB SATA SSD
- **Other Hardware:** None

**Software**

- **Operating System:** Red Hat Enterprise Linux Server release 7.2 (Maipo) 3.10.0-327.el7.x86_64
- **Compiler:** C++: Version 16.0.2.181 of Intel C++ Studio XE for Linux
- **Auto Parallel:** No
- **File System:** xfs
- **System State:** Run level 3 (multi-user)
- **Base Pointers:** 32-bit
- **Peak Pointers:** 32/64-bit
- **Other Software:** Microquill SmartHeap V10.2
Dell Inc.

PowerEdge R630 (Intel Xeon E5-2680 v4, 2.40 GHz)

SPECint_rate2006 = 1290

SPECint_rate_base2006 = 1240

Results Table

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</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
- 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
running on localhost.localdomain Fri Aug  5 16:14:26 2016

This section contains SUT (System Under Test) info as seen by some common utilities. To remove or add to this section, see: Continued on next page
Dell Inc.

PowerEdge R630 (Intel Xeon E5-2680 v4, 2.40 GHz)

**SPEC CINT2006 Result**

<table>
<thead>
<tr>
<th>CPU2006 license:</th>
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<td>Dell Inc.</td>
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<td>SPECint_rate2006</td>
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<td>SPECint_rate_base2006</td>
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<tr>
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<tr>
<td>Software Availability:</td>
<td>Mar-2016</td>
</tr>
</tbody>
</table>

**Platform Notes (Continued)**

http://www.spec.org/cpu2006/Docs/config.html#sysinfo

From /proc/cpuinfo

- model name : Intel(R) Xeon(R) CPU E5-2680 v4@ 2.40GHz
- 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: 264040056 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

run-level 3 Aug 5 16:13

SPEC is set to: /root/cpu2006-1.2

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. 2.0.1 02/12/2016

Memory:

Continued on next page
Dell Inc.
PowerEdge R630 (Intel Xeon E5-2680 v4, 2.40 GHz)

**SPECint_rate2006 = 1290**
**SPECint_rate_base2006 = 1240**

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

Platform Notes (Continued)

13x 00AD063200AD HMA82GR7MF8N-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/sh"

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  
runcspec command invoked through numactl i.e.:  
numactl --interleave=all runspec <etc>

Base Compiler Invocation

C benchmarks:  
icc -m32 -L/opt/intel/compilers_and_libraries_2016/linux/compiler/lib/ia32_lin

C++ benchmarks:  
icpc -m32 -L/opt/intel/compilers_and_libraries_2016/linux/compiler/lib/ia32_lin

Base Portability Flags

400.perlbench: -D_FILE_OFFSET_BITS=64 -DSPEC_CPU_LINUX_IA32  
401.bzip2: -D_FILE_OFFSET_BITS=64  
403.gcc: -D_FILE_OFFSET_BITS=64  
429.mcf: -D_FILE_OFFSET_BITS=64  
445.gobmk: -D_FILE_OFFSET_BITS=64  
456.hmmer: -D_FILE_OFFSET_BITS=64  
458.sjeng: -D_FILE_OFFSET_BITS=64  
462.libquantum: -D_FILE_OFFSET_BITS=64 -DSPEC_CPU_LINUX  
464.h264ref: -D_FILE_OFFSET_BITS=64  
471.omnetpp: -D_FILE_OFFSET_BITS=64  
473.astar: -D_FILE_OFFSET_BITS=64  
483.xalancbmk: -D_FILE_OFFSET_BITS=64 -DSPEC_CPU_LINUX
**SPEC CINT2006 Result**

**Dell Inc.**

PowerEdge R630 (Intel Xeon E5-2680 v4, 2.40 GHz)

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

**Test date**: Aug-2016
**Hardware Availability**: Jun-2016
**Software Availability**: Mar-2016

### Base Optimization Flags

C benchmarks:
- `-xCORE-AVX2` `-ipo` `-O3` `-no-prec-div` `-opt-prefetch`
- `-opt-mem-layout-trans=3`

C++ benchmarks:
- `-xCORE-AVX2` `-ipo` `-O3` `-no-prec-div` `-opt-prefetch`
- `-opt-mem-layout-trans=3` `-Wl,-z,muldefs` `-L/sh` `-lsmartheap`

### Base Other Flags

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

### Peak Compiler Invocation

C benchmarks (except as noted below):
- `icc -m32 -L/opt/intel/compilers_and_libraries_2016/linux/compiler/lib/ia32_lin`
  - `400.perlbench`: `icc -m64`
  - `401.bzip2`: `icc -m64`
  - `456.hmmer`: `icc -m64`
  - `458.sjeng`: `icc -m64`

C++ benchmarks:
- `icpc -m32 -L/opt/intel/compilers_and_libraries_2016/linux/compiler/lib/ia32_lin`

### Peak Portability Flags

- `400.perlbench`: `-D_FILE_OFFSET_BITS=64` `-DSPEC_CPU_LP64` `-DSPEC_CPU_LINUX_X64`
- `401.bzip2`: `-D_FILE_OFFSET_BITS=64` `-DSPEC_CPU_LP64`
- `403.gcc`: `-D_FILE_OFFSET_BITS=64` `-DSPEC_CPU_LP64`
- `429.mcf`: `-D_FILE_OFFSET_BITS=64` `-DSPEC_CPU_LP64`
- `445.gobmk`: `-D_FILE_OFFSET_BITS=64` `-DSPEC_CPU_LP64`
- `456.hmmer`: `-D_FILE_OFFSET_BITS=64` `-DSPEC_CPU_LP64`
- `458.sjeng`: `-D_FILE_OFFSET_BITS=64` `-DSPEC_CPU_LP64`
- `462.libquantum`: `-D_FILE_OFFSET_BITS=64` `-DSPEC_CPU_LP64`
- `464.h264ref`: `-D_FILE_OFFSET_BITS=64` `-DSPEC_CPU_LINUX`
- `471.omnetpp`: `-D_FILE_OFFSET_BITS=64` `-DSPEC_CPU_LP64`
- `473.astar`: `-D_FILE_OFFSET_BITS=64` `-DSPEC_CPU_LINUX`
Dell Inc.

PowerEdge R630 (Intel Xeon E5-2680 v4, 2.40 GHz)

SPECint_rate2006 = 1290
SPECint_rate_base2006 = 1240

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

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

Peak Portability Flags (Continued)

483.xalancbmk: -D_FILE_OFFSET_BITS=64 -DSPEC_CPU_LINUX

Peak Optimization Flags

C benchmarks:

400.perlbench: -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) -auto-ilp32

401.bzip2: -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) -opt-prefetch
-auto-ilp32 -ansi-alias

403.gcc: -xCORE-AVX2 -ipo -O3 -no-prec-div

429.mcf: basepeak = yes

445.gobmk: -xCORE-AVX2(pass 2) -prof-gen:threadsafe(pass 1)
-prof-use(pass 2) -par-num-threads=1(pass 1) -ansi-alias
-opt-mem-layout-trans=3

456.hmmer: -xCORE-AVX2 -ipo -O3 -no-prec-div -unroll2 -auto-ilp32

458.sjeng: -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
-auto-ilp32

462.libquantum: basepeak = yes

464.h264ref: -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
-ansi-alias

C++ benchmarks:

471.omnetpp: -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) -ansi-alias
-opt-ra-region-strategy=block -Wl,-z,muldefs
-L/sh -lsmartheap

473.astar: basepeak = yes

Continued on next page
Dell Inc.

PowerEdge R630 (Intel Xeon E5-2680 v4, 2.40 GHz)

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Peak Optimization Flags (Continued)

483.xalancbmk: basepeak = yes

Peak Other Flags

C benchmarks:

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-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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