```plaintext
Dell Inc.
PowerEdge R630 (Intel Xeon E5-2609 v4, 1.70 GHz)

**SPECint\_rate2006 = 433**

<table>
<thead>
<tr>
<th>Software</th>
<th>Hardware</th>
</tr>
</thead>
<tbody>
<tr>
<td>Operating System: Red Hat Enterprise Linux Server release 7.2 (Maipo) 3.10.0-327.el7.x86_64</td>
<td>CPU Name: Intel Xeon E5-2609 v4</td>
</tr>
<tr>
<td>Compiler: C/C++: Version 16.0.2.181 of Intel C++ Studio XE for Linux</td>
<td>CPU Characteristics:</td>
</tr>
<tr>
<td>Auto Parallel: No</td>
<td>CPU MHZ: 1700</td>
</tr>
<tr>
<td>File System: xfs</td>
<td>FPU: Integrated</td>
</tr>
<tr>
<td>System State: Run level 3 (multi-user)</td>
<td>CPU(s) enabled: 16 cores, 2 chips, 8 cores/chip</td>
</tr>
<tr>
<td>Base Pointers: 32-bit</td>
<td>CPU(s) orderable: 1.2 chips</td>
</tr>
<tr>
<td>Peak Pointers: 32/64-bit</td>
<td>Primary Cache: 32 KB I + 32 KB D on chip per core</td>
</tr>
<tr>
<td>Other Software: Microquill SmartHeap V10.2</td>
<td>Secondary Cache: 256 KB I+D on chip per core</td>
</tr>
<tr>
<td></td>
<td>L3 Cache: 20 MB I+D on chip per chip</td>
</tr>
<tr>
<td></td>
<td>Other Cache: None</td>
</tr>
<tr>
<td></td>
<td>Memory: 256 GB (16 x 16 GB 2Rx8 PC4-2400T-R, running at 1866 MHz)</td>
</tr>
<tr>
<td></td>
<td>Disk Subsystem: 1 x 400 GB SATA SSD</td>
</tr>
<tr>
<td></td>
<td>Other Hardware: None</td>
</tr>
</tbody>
</table>
```
SPEC CINT2006 Result

Dell Inc.

PowerEdge R630 (Intel Xeon E5-2609 v4, 1.70 GHz)

SPECint_rate2006 = 433
SPECint_rate_base2006 = 414

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

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

Results Table

<table>
<thead>
<tr>
<th>Benchmark</th>
<th>Copies</th>
<th>Seconds</th>
<th>Ratio</th>
<th>Seconds</th>
<th>Ratio</th>
<th>Seconds</th>
<th>Ratio</th>
</tr>
</thead>
<tbody>
<tr>
<td>400.perlbench</td>
<td>16</td>
<td>526</td>
<td>297</td>
<td>525</td>
<td>298</td>
<td>526</td>
<td>297</td>
</tr>
<tr>
<td>401.bzip2</td>
<td>16</td>
<td>846</td>
<td>183</td>
<td>846</td>
<td>182</td>
<td>846</td>
<td>182</td>
</tr>
<tr>
<td>403.gcc</td>
<td>16</td>
<td>404</td>
<td>319</td>
<td>404</td>
<td>319</td>
<td>404</td>
<td>319</td>
</tr>
<tr>
<td>429.mcf</td>
<td>16</td>
<td>229</td>
<td>637</td>
<td>229</td>
<td>638</td>
<td>229</td>
<td>638</td>
</tr>
<tr>
<td>445.gobmk</td>
<td>16</td>
<td>738</td>
<td>227</td>
<td>273</td>
<td>227</td>
<td>738</td>
<td>227</td>
</tr>
<tr>
<td>456.hmmer</td>
<td>16</td>
<td>249</td>
<td>599</td>
<td>250</td>
<td>597</td>
<td>252</td>
<td>593</td>
</tr>
<tr>
<td>458.sjeng</td>
<td>16</td>
<td>736</td>
<td>263</td>
<td>273</td>
<td>263</td>
<td>736</td>
<td>263</td>
</tr>
<tr>
<td>462.libquantum</td>
<td>16</td>
<td>87.9</td>
<td>3770</td>
<td>87.8</td>
<td>3780</td>
<td>87.7</td>
<td>3780</td>
</tr>
<tr>
<td>464.h264ref</td>
<td>16</td>
<td>717</td>
<td>494</td>
<td>719</td>
<td>493</td>
<td>718</td>
<td>493</td>
</tr>
<tr>
<td>471.omnetpp</td>
<td>16</td>
<td>409</td>
<td>245</td>
<td>407</td>
<td>245</td>
<td>409</td>
<td>245</td>
</tr>
<tr>
<td>473.astar</td>
<td>16</td>
<td>476</td>
<td>236</td>
<td>473</td>
<td>237</td>
<td>475</td>
<td>237</td>
</tr>
<tr>
<td>483.xalancbmk</td>
<td>16</td>
<td>186</td>
<td>592</td>
<td>187</td>
<td>590</td>
<td>186</td>
<td>592</td>
</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 Wed Jul 20 16:12:02 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
SPEC CINT2006 Result

Dell Inc.
PowerEdge R630 (Intel Xeon E5-2609 v4, 1.70 GHz)

SPECint_rate2006 = 433
SPECint_rate_base2006 = 414

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)

From /proc/cpuinfo
model name : Intel(R) Xeon(R) CPU E5-2609 v4@ 1.70GHz
  2 "physical id"s (chips)
  16 "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 : 8
siblings : 8
  physical 0: cores 0 1 2 3 4 5 6 7
  physical 1: cores 0 1 2 3 4 5 6 7
cache size : 20480 KB

From /proc/meminfo
MemTotal: 264040556 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 Jul 20 16:09

SPEC is set to: /root/cpu2006-1.2
Filesystem Type Size Used Avail Use% Mounted on
/dev/sda2 xfs 272G 8.4G 263G 4% /

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:

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spec

SPEC CINT2006 Result

Dell Inc.
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Platform Notes (Continued)

13x 00AD063200AD HMA82GR7MFR8N-UH 16 GB 2 rank 2400 MHz, configured at 1866 MHz
3x 00CE00B300CE M393A2K43BB1-CRC 16 GB 2 rank 2400 MHz, configured at 1866 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
runspec 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
Dell Inc.
PowerEdge R630 (Intel Xeon E5-2609 v4, 1.70 GHz)

SPECint_rate2006 = 433
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Test date: Jul-2016
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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: -Halloca=_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
429.mcf: -D_FILE_OFFSET_BITS=64
445.gobmk: -D_FILE_OFFSET_BITS=64
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_LINUX
464.h264ref: -D_FILE_OFFSET_BITS=64
471.omnetpp: -D_FILE_OFFSET_BITS=64
473.astar: -D_FILE_OFFSET_BITS=64
**SPEC CINT2006 Result**

**Dell Inc.**

PowerEdge R630 (Intel Xeon E5-2609 v4, 1.70 GHz)

| SPECint_rate2006 | 433 |
| SPECint_rate_base2006 | 414 |

CPU2006 license: 55  
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Tested by: Dell Inc.  
Test date: Jul-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-ilk32

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) -unroll4  
-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.

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Tested by: Dell Inc.
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Software Availability: Mar-2016

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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For other inquiries, please contact webmaster@spec.org.

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