### Dell Inc.

**PowerEdge FC630 (Intel Xeon E5-2670 v3, 2.30 GHz)**

| Test date: | Oct-2014 |
| Test sponsor: | Dell Inc. |
| Tested by: | Dell Inc. |
| Hardware Availability: | Dec-2014 |
| Software Availability: | Jan-2014 |

<table>
<thead>
<tr>
<th>Test</th>
<th>SPECint_rate2006 = 996</th>
<th>SPECint_rate_base2006 = 967</th>
</tr>
</thead>
<tbody>
<tr>
<td>CPU2006 license:</td>
<td>55</td>
<td></td>
</tr>
<tr>
<td>CPU Name:</td>
<td>Intel Xeon E5-2670 v3</td>
<td></td>
</tr>
<tr>
<td>CPU Characteristics:</td>
<td>Intel Turbo Boost Technology up to 3.10 GHz</td>
<td></td>
</tr>
<tr>
<td>CPU(s) enabled:</td>
<td>24 cores, 2 chips, 12 cores/chip, 2 threads/core</td>
<td></td>
</tr>
<tr>
<td>CPU(s) orderable:</td>
<td>1.2 chip</td>
<td></td>
</tr>
<tr>
<td>Primary Cache:</td>
<td>32 KB I + 32 KB D on chip per core</td>
<td></td>
</tr>
<tr>
<td>Secondary Cache:</td>
<td>256 KB I+D on chip per core</td>
<td></td>
</tr>
<tr>
<td>L3 Cache:</td>
<td>30 MB I+D on chip per chip</td>
<td></td>
</tr>
<tr>
<td>Other Cache:</td>
<td>None</td>
<td></td>
</tr>
<tr>
<td>Memory:</td>
<td>256 GB (16 x 16 GB 2Rx4 PC4-2133P-R)</td>
<td></td>
</tr>
<tr>
<td>Disk Subsystem:</td>
<td>1 x 300 GB 15000 RPM SAS</td>
<td></td>
</tr>
<tr>
<td>Operating System:</td>
<td>Red Hat Enterprise Linux Server release 6.5 (Santiago)</td>
<td></td>
</tr>
<tr>
<td>Compiler:</td>
<td>C/C++: Version 14.0.0.080 of Intel C++ Studio XE for Linux</td>
<td></td>
</tr>
<tr>
<td>Auto Parallel:</td>
<td>No</td>
<td></td>
</tr>
<tr>
<td>File System:</td>
<td>ext4</td>
<td></td>
</tr>
<tr>
<td>System State:</td>
<td>Run level 3 (multi-user)</td>
<td></td>
</tr>
<tr>
<td>Base Pointers:</td>
<td>32-bit</td>
<td></td>
</tr>
<tr>
<td>Peak Pointers:</td>
<td>32/64-bit</td>
<td></td>
</tr>
<tr>
<td>Other Software:</td>
<td>Microquill SmartHeap V10.0</td>
<td></td>
</tr>
</tbody>
</table>
Dell Inc.

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SPECint_rate2006 = 996
SPECint_rate_base2006 = 967

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

Results Table

<table>
<thead>
<tr>
<th>Benchmark</th>
<th>Copies</th>
<th>Seconds</th>
<th>Ratio</th>
<th>Base</th>
<th>Seconds</th>
<th>Ratio</th>
<th>Peak</th>
<th>Seconds</th>
<th>Ratio</th>
<th>Peak</th>
<th>Seconds</th>
<th>Ratio</th>
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</thead>
<tbody>
<tr>
<td>400.perlbench</td>
<td>48</td>
<td>633</td>
<td>741</td>
<td>628</td>
<td>746</td>
<td>629</td>
<td>745</td>
<td>520</td>
<td>902</td>
<td>517</td>
<td>907</td>
<td>516</td>
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<tr>
<td>401.bzip2</td>
<td>48</td>
<td>965</td>
<td>480</td>
<td>961</td>
<td>482</td>
<td>960</td>
<td>483</td>
<td>920</td>
<td>503</td>
<td>921</td>
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<td>919</td>
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<tr>
<td>403.cint</td>
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<td>525</td>
<td>736</td>
<td>522</td>
<td>740</td>
<td>523</td>
<td>739</td>
<td>525</td>
<td>736</td>
<td>522</td>
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<td>429.mcf</td>
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<td>328</td>
<td>1330</td>
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<td>1330</td>
<td>328</td>
<td>1340</td>
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<td>1330</td>
<td>328</td>
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<tr>
<td>445.gobmk</td>
<td>48</td>
<td>774</td>
<td>650</td>
<td>776</td>
<td>649</td>
<td>772</td>
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<td>757</td>
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<td>758</td>
<td>664</td>
<td>755</td>
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<td>456.hmmer</td>
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<td>326</td>
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<td>329</td>
<td>1360</td>
<td>325</td>
<td>1380</td>
<td>324</td>
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<td>458.sjeng</td>
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<td>690</td>
<td>843</td>
<td>689</td>
<td>842</td>
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<td>816</td>
<td>711</td>
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<td>712</td>
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<td>462.libquantum</td>
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<td>108</td>
<td>9210</td>
<td>107</td>
<td>9260</td>
<td>107</td>
<td>9320</td>
<td>108</td>
<td>9210</td>
<td>107</td>
<td>9260</td>
<td>107</td>
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<td>464.h264ref</td>
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<td>941</td>
<td>1130</td>
<td>932</td>
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<td>941</td>
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<td>928</td>
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<td>924</td>
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<tr>
<td>471.omnetpp</td>
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<td>561</td>
<td>535</td>
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<td>540</td>
<td>556</td>
<td>543</td>
<td>552</td>
<td>543</td>
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<tr>
<td>473.astar</td>
<td>48</td>
<td>648</td>
<td>520</td>
<td>641</td>
<td>526</td>
<td>642</td>
<td>525</td>
<td>648</td>
<td>520</td>
<td>641</td>
<td>526</td>
<td>642</td>
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<tr>
<td>483.xalancbmk</td>
<td>48</td>
<td>316</td>
<td>1050</td>
<td>317</td>
<td>1040</td>
<td>316</td>
<td>1050</td>
<td>316</td>
<td>1050</td>
<td>317</td>
<td>1040</td>
<td>317</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
Execute Disable disabled
System Profile set to Custom
Memory Patrol Scrub set to Disabled
Sysinfo program /root/cpu2006-1.2/config/sysinfo.rev6818
$Rev: 6818 $ $Date:: 2012-07-17 #$ e86d10257265a6e4d596a3cee98f191

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 E5-2670 v3 @ 2.30GHz
2 "physical id"s (chips)
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Platform Notes (Continued)

48 "processors"
cores, siblings (Caution: counting these is hw and system dependent. The
following excerpts from /proc/cpuinfo might not be reliable. Use with
cautions.)
cpu cores : 12
siblings : 24
physical 0: cores 0 1 2 3 4 5 8 9 10 11 12 13
physical 1: cores 0 1 2 3 4 5 8 9 10 11 12 13
cache size : 15360 KB

From /proc/meminfo
MemTotal: 264436912 kB
HugePages_Total: 0
Hugepagesize: 2048 kB
/usr/bin/lsb_release -d
Red Hat Enterprise Linux Server release 6.5 (Santiago)
From /etc/*release* /etc/*version*
redhat-release: Red Hat Enterprise Linux Server release 6.5 (Santiago)
system-release: Red Hat Enterprise Linux Server release 6.5 (Santiago)
uname -a:
Linux localhost.localdomain 2.6.32-431.el6.x86_64 #1 SMP Sun Nov 10 22:19:54
EST 2013 x86_64 x86_64 x86_64 GNU/Linux
run-level 3 Oct 19 15:27
SPEC is set to: /root/cpu2006-1.2
Filesystem Type Size Used Avail Use% Mounted on
/dev/sda2 ext4 272G 9.7G 248G 4% /

Additional information from dmidecode:
BIOS Dell Inc. 1.0.1 10/15/2014
Memory:
8x 000000000000 Not Specified 2133 MHz 1 rank
8x 002C00B3002C 36ASF2G72PZ-2G1A1 16 GB 2133 MHz 2 rank
8x 00CE00B300CE M393A2G40DB0-CPB 16 GB 2133 MHz 2 rank

(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 Core i7-860 CPU + 8GB memory using RedHat EL 6.4
Transparent Huge Pages enabled with:
echo always > /sys/kernel/mm/redhat_transparent_hugepage/enabled
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General Notes (Continued)

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

C++ benchmarks:
  icpc -m32

Base Portability Flags

400.perlbench: -DSPEC_CPU_LINUX_IA32
462.libquantum: -DSPEC_CPU_LINUX
483.xalancbmk: -DSPEC_CPU_LINUX

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

400.perlbench: icc -m64

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Peak Compiler Invocation (Continued)

401.bzip2: icc -m64
456.hmmer: icc -m64
458.sjeng: icc -m64

C++ benchmarks:
icpc -m32

Peak Portatility Flags

400.perlbench: -DSPEC_CPU_LP64 -DSPEC_CPU_LINUX_X64
401.bzip2: -DSPEC_CPU_LP64
456.hmmer: -DSPEC_CPU_LP64
458.sjeng: -DSPEC_CPU_LP64
462.libquantum: -DSPEC_CPU_LINUX
483.xalancbmk: -DSPEC_CPU_LINUX

Peak Optimization Flags

C benchmarks:

400.perlbench: -xCORE-AVX2(pass 2) -prof-gen(pass 1) -ipo(pass 2) -O3(pass 2) -no-prec-div(pass 2) -prof-use(pass 2) -auto-ilp32
401.bzip2: -xCORE-AVX2(pass 2) -prof-gen(pass 1) -ipo(pass 2) -O3(pass 2) -no-prec-div(pass 2) -prof-use(pass 2) -opt-prefetch -auto-ilp32 -ansi-alias
403.gcc: basepeak = yes
429.mcf: basepeak = yes
445.gobmk: -xCORE-AVX2(pass 2) -prof-gen(pass 1) -prof-use(pass 2) -ansi-alias -opt-mem-layout-trans=3
456.hmmer: -xCORE-AVX2 -ipo -O3 -no-prec-div -unroll12 -auto-ilp32
458.sjeng: -xCORE-AVX2(pass 2) -prof-gen(pass 1) -ipo(pass 2) -O3(pass 2) -no-prec-div(pass 2) -prof-use(pass 2) -unroll4 -auto-ilp32
462.libquantum: basepeak = yes

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SPEC CINT2006 Result

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Peak Optimization Flags (Continued)

464.h264ref: -xCORE-AVX2(pass 2) -prof-gen(pass 1) -ipo(pass 2)
-o3(pass 2) -no-prec-div(pass 2) -prof-use(pass 2)
-ansi-alias

C++ benchmarks:

471.omnetpp: -xCORE-AVX2(pass 2) -prof-gen(pass 1) -ipo(pass 2)
-o3(pass 2) -no-prec-div(pass 2) -prof-use(pass 2)
-ansi-alias -opt-ra-region-strategy=block -Wl,-z,muldefs
-L/sh -lsmartheap

473.astar: basepeak = yes

483.xalanchbmk: 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/Dell-Platform-Settings-V1.2-revE.html

You can also download the XML flags sources by saving the following links:

http://www.spec.org/cpu2006/flags/Dell-Platform-Settings-V1.2-revE.xml

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

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