### Dell Inc.

PowerEdge FC830 (Intel Xeon E5-4667 v3, 2.00 GHz)

<table>
<thead>
<tr>
<th>SPECint_rate2006</th>
<th>2260</th>
</tr>
</thead>
<tbody>
<tr>
<td>SPECint_rate_base2006</td>
<td>2170</td>
</tr>
</tbody>
</table>

**CPU2006 license:** 55  
**Test sponsor:** Dell Inc.  
**Tested by:** Dell Inc.  
**Test date:** Feb-2015  
**Hardware Availability:** Jun-2015  
**Software Availability:** Jun-2015

### Software

<table>
<thead>
<tr>
<th>Operating System</th>
<th>SUSE Linux Enterprise Server 12 3.12.28-4-default</th>
</tr>
</thead>
<tbody>
<tr>
<td>Compiler</td>
<td>C/C++: Version 15.0.0.0.090 of Intel C++ Studio XE for Linux</td>
</tr>
<tr>
<td>Auto Parallel</td>
<td>No</td>
</tr>
<tr>
<td>File System</td>
<td>ext4</td>
</tr>
<tr>
<td>System State</td>
<td>Run level 3 (multi-user)</td>
</tr>
<tr>
<td>Base Pointers</td>
<td>32-bit</td>
</tr>
<tr>
<td>Peak Pointers</td>
<td>32/64-bit</td>
</tr>
<tr>
<td>Other Software</td>
<td>Microquill SmartHeap V10.0</td>
</tr>
</tbody>
</table>

### Hardware

<table>
<thead>
<tr>
<th>CPU Name</th>
<th>Intel Xeon E5-4667 v3</th>
</tr>
</thead>
<tbody>
<tr>
<td>CPU Characteristics</td>
<td>Intel Turbo Boost Technology up to 2.90 GHz</td>
</tr>
<tr>
<td>CPU MHz</td>
<td>2000</td>
</tr>
<tr>
<td>FPU</td>
<td>Integrated</td>
</tr>
<tr>
<td>CPU(s) enabled</td>
<td>64 cores, 4 chips, 16 cores/chip, 2 threads/core</td>
</tr>
<tr>
<td>CPU(s) orderable</td>
<td>4 chip</td>
</tr>
<tr>
<td>Primary Cache</td>
<td>32 KB I + 32 KB D on chip per core</td>
</tr>
<tr>
<td>Secondary Cache</td>
<td>256 KB I+D on chip per core</td>
</tr>
<tr>
<td>L3 Cache</td>
<td>40 MB I+D on chip per chip</td>
</tr>
<tr>
<td>Other Cache</td>
<td>None</td>
</tr>
<tr>
<td>Memory</td>
<td>512 GB (32 x 16 GB 2Rx4 PC4-2133P-R)</td>
</tr>
<tr>
<td>Disk Subsystem</td>
<td>1 x 400 GB 7200 RPM SATA</td>
</tr>
<tr>
<td>Other Hardware</td>
<td>None</td>
</tr>
</tbody>
</table>

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Dell Inc.
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PowerEdge FC830 (Intel Xeon E5-4667 v3, 2.00 GHz)  

**SPEC CINT2006 Result**  

SPECint<sub>rate2006</sub> = 2260  
SPECint<sub>rate_base2006</sub> = 2170

**CPU2006 license:** 55  
**Test date:** Feb-2015  
**Test sponsor:** Dell Inc.  
**Hardware Availability:** Jun-2015  
**Tested by:** Dell Inc.  
**Software Availability:** Jun-2015

---

### 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>
<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>128</td>
<td>757</td>
<td>1650</td>
<td>841</td>
<td>1490</td>
<td>759</td>
<td>1650</td>
<td>128</td>
<td>683</td>
<td>1830</td>
<td>605</td>
<td>2070</td>
<td>605</td>
<td>2070</td>
</tr>
<tr>
<td>401.bzip2</td>
<td>128</td>
<td>123</td>
<td>1100</td>
<td>1247</td>
<td>991</td>
<td>1129</td>
<td>1090</td>
<td>128</td>
<td>1078</td>
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<td>1076</td>
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<tr>
<td>403.gcc</td>
<td>128</td>
<td>612</td>
<td>1680</td>
<td>737</td>
<td>1400</td>
<td>612</td>
<td>1680</td>
<td>128</td>
<td>611</td>
<td>1690</td>
<td>615</td>
<td>1680</td>
<td>616</td>
<td>1670</td>
</tr>
<tr>
<td>429.mcf</td>
<td>128</td>
<td>401</td>
<td>2910</td>
<td>510</td>
<td>2290</td>
<td>400</td>
<td>2920</td>
<td>128</td>
<td>401</td>
<td>2910</td>
<td>510</td>
<td>2290</td>
<td>400</td>
<td>2920</td>
</tr>
<tr>
<td>445.gobmk</td>
<td>128</td>
<td>878</td>
<td>1530</td>
<td>1029</td>
<td>1300</td>
<td>878</td>
<td>1530</td>
<td>128</td>
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<td>1540</td>
<td>871</td>
<td>1540</td>
<td>872</td>
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<tr>
<td>456.hmmer</td>
<td>128</td>
<td>387</td>
<td>3090</td>
<td>427</td>
<td>2800</td>
<td>383</td>
<td>3120</td>
<td>128</td>
<td>360</td>
<td>3320</td>
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<td>3310</td>
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<tr>
<td>458.sjeng</td>
<td>128</td>
<td>954</td>
<td>1620</td>
<td>954</td>
<td>1620</td>
<td>954</td>
<td>1620</td>
<td>128</td>
<td>914</td>
<td>1690</td>
<td>914</td>
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<td>914</td>
<td>1690</td>
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<tr>
<td>462.libquantum</td>
<td>128</td>
<td>126</td>
<td>21100</td>
<td>126</td>
<td>21000</td>
<td>126</td>
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<td>464.h264ref</td>
<td>128</td>
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<td>2500</td>
<td>1086</td>
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<tr>
<td>471.omnetpp</td>
<td>128</td>
<td>688</td>
<td>1160</td>
<td>687</td>
<td>1170</td>
<td>687</td>
<td>1160</td>
<td>128</td>
<td>665</td>
<td>1200</td>
<td>660</td>
<td>1210</td>
<td>663</td>
<td>1210</td>
</tr>
<tr>
<td>473.astar</td>
<td>128</td>
<td>759</td>
<td>1180</td>
<td>755</td>
<td>1190</td>
<td>753</td>
<td>1190</td>
<td>128</td>
<td>759</td>
<td>1180</td>
<td>755</td>
<td>1190</td>
<td>753</td>
<td>1190</td>
</tr>
<tr>
<td>483.xalancbmk</td>
<td>128</td>
<td>411</td>
<td>2150</td>
<td>392</td>
<td>2250</td>
<td>410</td>
<td>2150</td>
<td>128</td>
<td>411</td>
<td>2150</td>
<td>392</td>
<td>2250</td>
<td>410</td>
<td>2150</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 Performance

Sysinfo program /root/cpu2006-1.2/config/sysinfo.rev6914
$Rev: 6914 $ $Date:: 2014-06-25 #$ e3fbb8667b5a285932ceab81e28219e1
running on linux-3aq4 Wed Feb  4 02:08:09 2015

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 E5-4667 v3 @ 2.00GHz
- 4 "physical id"s (chips)
- 128 "processors"

Continued on next page
Platform Notes (Continued)

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 : 32
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
physical 2: cores 0 1 2 3 4 5 6 7 8 9 10 11 12 13 14 15
physical 3: 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: 529334376 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:/o:suse:sles:12"

uname -a:
Linux linux-3aq4 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 4 02:07 last=5

SPEC is set to: /root/cpu2006-1.2

Filesystem Type Size Used Avail Use% Mounted on
/dev/sda2 ext4 267G 97G 170G 37% /

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.

Continued on next page
SPEC CINT2006 Result

Dell Inc.
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CPU2006 license: 55
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Test date: Feb-2015
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Platform Notes (Continued)
BIOS Dell Inc. 0.4.0 01/08/2015
Memory:
32x 00CE00B300CE M393A2G40DB0-CPB 16 GB 2 rank 2133 MHz
16x 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 Core i5-4670K CPU + 16GB memory using RedHat EL 7.0
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/composer_xe_2015/lib/ia32
C++ benchmarks:
icpc -m32 -L/opt/intel/composer_xe_2015/lib/ia32

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
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Base Other Flags

C benchmarks:

403.gcc: -Dalloca=_alloca

Peak Compiler Invocation

C benchmarks (except as noted below):

icc -m32 -L/opt/intel/composer_xe_2015/lib/ia32

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

C++ benchmarks:

icpc -m32 -L/opt/intel/composer_xe_2015/lib/ia32

Peak Portability 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: -xCORE-AVX2 -ipo -O3 -no-prec-div

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Peak Optimization Flags (Continued)

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 -unroll2 -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

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)
-unroll2 -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.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-ic15.0-official-linux64.html

You can also download the XML flags sources by saving the following links:
http://www.spec.org/cpu2006/flags/Intel-ic15.0-official-linux64.xml
http://www.spec.org/cpu2006/flags/Dell-Platform-Settings-V1.2-revE.20150421.xml
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For other inquiries, please contact webmaster@spec.org.

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