Dell Inc. PowerEdge R930 (Intel Xeon E7-8867 v3, 2.50 GHz)

SPECint\_rate2006 = 2570
SPECint\_rate_base2006 = 2470

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

Test date: Apr-2015
Hardware Availability: Jun-2015
Software Availability: Oct-2014

<table>
<thead>
<tr>
<th>CPU Name</th>
<th>Hardware</th>
<th>Software</th>
</tr>
</thead>
<tbody>
<tr>
<td>CPU Name</td>
<td>Intel Xeon E7-8867 v3</td>
<td>Operating System: SUSE Linux Enterprise Server 12 3.12.28-4-default</td>
</tr>
<tr>
<td>CPU Characteristics</td>
<td>Intel Turbo Boost Technology up to 3.30 GHz</td>
<td>Compiler: C/C++: Version 15.0.0.090 of Intel C++ Studio XE for Linux</td>
</tr>
<tr>
<td>CPU MHZ</td>
<td>2500</td>
<td>Auto Parallel: No</td>
</tr>
<tr>
<td>FPU</td>
<td>Integrated</td>
<td>File System: ext4</td>
</tr>
<tr>
<td>CPU(s) enabled</td>
<td>64 cores, 4 chips, 16 cores/chip, 2 threads/core</td>
<td>System State: Run level 3 (multi-user)</td>
</tr>
<tr>
<td>CPU(s) orderable</td>
<td>2,4 chip</td>
<td>Base Pointers: 32-bit</td>
</tr>
<tr>
<td>Primary Cache</td>
<td>32 KB I + 32 KB D on chip per core</td>
<td>Peak Pointers: 32/64-bit</td>
</tr>
<tr>
<td>Secondary Cache</td>
<td>256 KB I+D on chip per core</td>
<td>Other Software: Microquill SmartHeap V10.0</td>
</tr>
<tr>
<td>L3 Cache</td>
<td>45 MB 1+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>512 GB (32 x 16 GB 2Rx4 PC4-2133P-R, running at 1600 MHz)</td>
<td></td>
</tr>
<tr>
<td>Disk Subsystem</td>
<td>2 x 200 GB SAS6 SSD, RAID0</td>
<td></td>
</tr>
<tr>
<td>Other Hardware</td>
<td>None</td>
<td></td>
</tr>
</tbody>
</table>

- Hardware Evaluation:
  - 400.perlbench
  - 401.bzip2
  - 403.gcc
  - 429.mcf
  - 445.gobmk
  - 456.hmmer
  - 458.sjeng
  - 462.libquantum
  - 464.h264ref
  - 471.omnetpp
  - 473.astar
  - 483.xalancbmk

- Software Evaluation:
  - Operating System: SUSE Linux Enterprise Server 12 3.12.28-4-default
  - Compiler: C/C++: Version 15.0.0.090 of Intel C++ Studio XE for Linux
  - Auto Parallel: No
  - File System: ext4
  - System State: Run level 3 (multi-user)
  - Base Pointers: 32-bit
  - Peak Pointers: 32/64-bit
  - Other Software: Microquill SmartHeap V10.0
SPEC CINT2006 Result

Dell Inc.

PowerEdge R930 (Intel Xeon E7-8867 v3, 2.50 GHz)  

SPECint_rate2006 = 2570  
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Dell Inc.

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Test date: Apr-2015
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Results Table

<table>
<thead>
<tr>
<th>Benchmark</th>
<th>Copies</th>
<th>Seconds Base</th>
<th>Ratio Base</th>
<th>Seconds Peak</th>
<th>Ratio Peak</th>
</tr>
</thead>
<tbody>
<tr>
<td>400.perlbench</td>
<td>128</td>
<td>659</td>
<td>1900</td>
<td>658</td>
<td>1900</td>
</tr>
<tr>
<td>401.bzip2</td>
<td>128</td>
<td>1011</td>
<td>1220</td>
<td>1013</td>
<td>1220</td>
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<tr>
<td>403.gcc</td>
<td>128</td>
<td>549</td>
<td>1880</td>
<td>553</td>
<td>1860</td>
</tr>
<tr>
<td>429.mcf</td>
<td>128</td>
<td>382</td>
<td>3060</td>
<td>383</td>
<td>3050</td>
</tr>
<tr>
<td>445.gobmk</td>
<td>128</td>
<td>755</td>
<td>1780</td>
<td>756</td>
<td>1780</td>
</tr>
<tr>
<td>456.hmmer</td>
<td>128</td>
<td>314</td>
<td>3800</td>
<td>315</td>
<td>3790</td>
</tr>
<tr>
<td>458.sjeng</td>
<td>128</td>
<td>831</td>
<td>1860</td>
<td>831</td>
<td>1860</td>
</tr>
<tr>
<td>462.libquantum</td>
<td>128</td>
<td>107</td>
<td>24700</td>
<td>107</td>
<td>24700</td>
</tr>
<tr>
<td>464.h264ref</td>
<td>128</td>
<td>904</td>
<td>3130</td>
<td>911</td>
<td>3110</td>
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<tr>
<td>471.omnetpp</td>
<td>128</td>
<td>698</td>
<td>1150</td>
<td>698</td>
<td>1150</td>
</tr>
<tr>
<td>473.astar</td>
<td>128</td>
<td>665</td>
<td>1350</td>
<td>665</td>
<td>1350</td>
</tr>
<tr>
<td>483.xalancbmk</td>
<td>128</td>
<td>334</td>
<td>2650</td>
<td>334</td>
<td>2650</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:
Virtualization Technology disabled
System Profile set to Custom
CPU Power Management set to Maximum Performance
Memory Frequency set to Maximum Performance
Turbo Boost enabled
Energy Efficient Turbo disabled
C1E disabled
C States disabled
Collaborative CPU Performance Control disabled
Memory Patrol Scrub disabled
Memory Refresh Rate set to 1x
Uncore Frequency set to Maximum
Energy Efficient Policy set to Performance
Monitor/MWait enabled

Sysinfo program

Continued on next page
### SPEC CINT2006 Result

**Dell Inc.**

PowerEdge R930 (Intel Xeon E7-8867 v3, 2.50 GHz)

<table>
<thead>
<tr>
<th>SPECint_rate2006</th>
<th>2570</th>
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<tr>
<td>SPECint_rate_base2006</td>
<td>2470</td>
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</table>

#### Platform Notes (Continued)

/root/Desktop/Performance/ic15.0_Aug29_2014/config/sysinfo.rev6914
$Rev: 6914 $ $Date:: 2014-06-25 #$ e3fbb8667b5a285932ceab81e28219e1
running on linux-tc0m Tue Apr 7 15:30:44 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 E7-8867 v3 @ 2.50GHz
- 4 "physical id"s (chips)
- 128 "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: 32
  - physical 0: cores 0 1 2 3 4 8 9 10 11 16 17 18 20 24 25 27
  - physical 1: cores 0 1 2 3 4 8 9 10 11 16 17 18 20 24 25 27
  - physical 2: cores 0 1 2 3 4 8 9 10 11 16 17 18 20 24 25 27
  - physical 3: cores 0 1 2 3 4 8 9 10 11 16 17 18 20 24 25 27
- cache size: 46080 KB

From `/proc/meminfo`
- MemTotal: 529204240 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-tc0m 3.12.28-4-default #1 SMP Thu Sep 25 17:02:34 UTC 2014
(9879bd4) x86_64 x86_64 x86_64 GNU/Linux

Continued on next page
SPEC CINT2006 Result

Dell Inc.

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Platform Notes (Continued)

run-level 3 Apr 7 15:30 last=5

SPEC is set to: /root/Desktop/Performance/ic15.0_Aug29_2014
Filesystem Type Size Used Avail Use% Mounted on
/dev/sda2 ext4 365G 9.6G 354G 3% /

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. 1.0.1 [MRC_096] 03/27/2015
Memory:
32x 00AD00B300AD Not Specified 16 GB 2 rank 2133 MHz, configured at 1600 MHz
64x 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/Desktop/Performance/ic15.0_Aug29_2014/libs/32:/root/Desktop/Performance/ic15.0_Aug29_2014/libs/64:/root/Desktop/Performance/ic15.0_Aug29_2014/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
SPEC CINT2006 Result

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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:
403gcc: -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
Dell Inc.

PowerEdge R930 (Intel Xeon E7-8867 v3, 2.50 GHz)

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Peak Optimization Flags

C benchmarks:

400.perlbench: -xCORE-AVX2 -prof-gen(pass 2) -ipo(pass 2)
-03(pass 2) -no-prec-div(pass 2) -prof-use(pass 2)
-auto-ilp32

401.bzip2: -xCORE-AVX2 -prof-gen(pass 1) -ipo(pass 2)
-03(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

429.mcf: basepeak = yes

445.gobmk: -xCORE-AVX2 -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 -prof-gen(pass 1) -ipo(pass 2)
-03(pass 2) -no-prec-div(pass 2) -prof-use(pass 2)
-unroll2 -auto-ilp32

462.libquantum: basepeak = yes

464.h264ref: -xCORE-AVX2 -prof-gen(pass 1) -ipo(pass 2)
-03(pass 2) -no-prec-div(pass 2) -prof-use(pass 2)
-unroll2 -ansi-alias

C++ benchmarks:

471.omnetpp: -xCORE-AVX2 -prof-gen(pass 1) -ipo(pass 2)
-03(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
Dell Inc.

PowerEdge R930 (Intel Xeon E7-8867 v3, 2.50 GHz)

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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

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

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