Dell Inc.

PowerEdge R930 (Intel Xeon E7-8893 v4, 3.20 GHz)

SPECint\_rate2006 = 1010
SPECint\_rate\_base2006 = 952

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

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

CPU Name: Intel Xeon E7-8893 v4
CPU Characteristics: Intel Turbo Boost Technology up to 3.50 GHz
CPU MHz: 3200
FPU: Integrated
CPU(s) enabled: 16 cores, 4 chips, 4 cores/chip, 2 threads/core
CPU(s) orderable: 2,4 chip
Primary Cache: 32 KB I + 32 KB D on chip per core
Secondary Cache: 256 KB I+D on chip per core
L3 Cache: 60 MB I+D on chip per chip
Other Cache: None
Memory: 512 GB (32 x 16 GB 2Rx4 PC4-2133P-R, running at 1600 MHz)
Disk Subsystem: 1 x 480 GB SATA SSD
Other Hardware: None

Operating System: SUSE Linux Enterprise Server 12 SP1 3.12.49-11-default
Compiler: C/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
### Results Table

<table>
<thead>
<tr>
<th>Benchmark</th>
<th>Copies</th>
<th>Seconds</th>
<th>Ratio</th>
<th>Seconds</th>
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<td>471.omnetpp</td>
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<tr>
<td>483.xalancbmk</td>
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<td>1390</td>
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<td>1390</td>
<td>32</td>
<td>159</td>
<td>1390</td>
<td>1390</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 Home Snoop
- 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/ic16.0_Sept12_2015/config/sysinfo.rev6914
  
  $Rev: 6914 $ $Date:: 2014-06-25 $$ e3fbb8667b5a285932ceab81e28219e1
  running on bdx-perf04 Thu Apr 28 23:02:05 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 R930 (Intel Xeon E7-8893 v4, 3.20 GHz)  

SPEC CINT2006 Result

SPECint_rate2006 = 1010  
SPECint_rate_base2006 = 952

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

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

Platform Notes (Continued)

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

From /proc/cpuinfo
   model name : Intel(R) Xeon(R) CPU E7-8893 v4 @ 3.20GHz
   4 "physical id"s (chips)
   32 "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 : 4
   siblings : 8
   physical 0: cores 12 13 25 26
   physical 1: cores 12 13 25 26
   physical 2: cores 12 13 25 26
   physical 3: cores 12 13 25 26
   cache size : 30720 KB

From /proc/meminfo
   MemTotal:       529321536 kB
   HugePages_Total:       0
   Hugepagesize:       2048 kB

/usr/bin/lsb_release -d
   SUSE Linux Enterprise Server 12 SP1

From /etc/*release* /etc/*version*
   SuSE-release:
      SUSE Linux Enterprise Server 12 (x86_64)
      VERSION = 12
      PATCHLEVEL = 1
      # 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-SP1"
      VERSION_ID="12.1"
      PRETTY_NAME="SUSE Linux Enterprise Server 12 SP1"
      ID="sles"
      ANSI_COLOR="0;32"
      CPE_NAME="cpe:/o:suse:sles:12:sp1"

uname -a:
      (8d714a0) x86_64 x86_64 x86_64 GNU/Linux

run-level 3 Apr 28 23:00

SPEC is set to: /root/ic16.0_Sept12_2015
   Filesystem Type Size Used Avail Use% Mounted on
   /dev/sda2 xfs 369G 8.9G 360G 3% /

Additional information from dmidecode:

Continued on next page
Dell Inc.  
PowerEdge R930 (Intel Xeon E7-8893 v4, 3.20 GHz)  

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---

**Platform Notes (Continued)**

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 04/20/2016  
Memory:  
32x 00AD00B300AD HMA42GR7MFR4N-TF 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:  

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.:  
umactl --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

Continued on next page
### Dell Inc.

**PowerEdge R930 (Intel Xeon E7-8893 v4, 3.20 GHz)**

| SPECint_rate2006 = | 1010 |
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**CPU2006 license:** 55  
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**Hardware Availability:** Jun-2016  
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#### Base Portability Flags (Continued)

<table>
<thead>
<tr>
<th>Base Portability Flags</th>
</tr>
</thead>
<tbody>
<tr>
<td>464.h264ref: <code>-D_FILE_OFFSET_BITS=64</code></td>
</tr>
<tr>
<td>471.omnetpp: <code>-D_FILE_OFFSET_BITS=64</code></td>
</tr>
<tr>
<td>473.astar: <code>-D_FILE_OFFSET_BITS=64</code></td>
</tr>
<tr>
<td>483.xalancbmk: <code>-D_FILE_OFFSET_BITS=64</code> <code>-DSPEC_CPU_LINUX</code></td>
</tr>
</tbody>
</table>

#### 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`  
  400.perlbench: `--D_FILE_OFFSET_BITS=64 -DSPEC_CPU_LP64 -DSPEC_CPU_LINUX_X64`  
  401.bzip2: `--D_FILE_OFFSET_BITS=64 -DSPEC_CPU_LP64`
Peak Portability Flags (Continued)

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
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) -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:

Continued on next page
SPEC CINT2006 Result

Dell Inc.
PowerEdge R930 (Intel Xeon E7-8893 v4, 3.20 GHz)

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Peak Optimization Flags (Continued)

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

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

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