Dell Inc.

PowerEdge R330 (Intel Xeon E3-1240 v6, 3.70 GHz)

<table>
<thead>
<tr>
<th>SPECint&lt;sub&gt;rate2006&lt;/sub&gt;</th>
<th>264</th>
</tr>
</thead>
<tbody>
<tr>
<td>SPECint&lt;sub&gt;rate_base2006&lt;/sub&gt;</td>
<td>256</td>
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</tbody>
</table>

CPU2006 license: 55
Test sponsor: Dell Inc.
Tested by: Dell Inc.
Software Availability: Sep-2016

Test date: Apr-2017
Hardware Availability: Apr-2017

### Hardware

<table>
<thead>
<tr>
<th>Name</th>
<th>Specification</th>
</tr>
</thead>
<tbody>
<tr>
<td>CPU Name</td>
<td>Intel Xeon E3-1240 v6</td>
</tr>
<tr>
<td>CPU Characteristics</td>
<td>Intel Turbo Boost Technology up to 4.10 GHz</td>
</tr>
<tr>
<td>CPU MHz</td>
<td>3700</td>
</tr>
<tr>
<td>FPU</td>
<td>Integrated</td>
</tr>
<tr>
<td>CPU(s) enabled</td>
<td>4 cores, 1 chip, 4 cores/chip, 2 threads/core</td>
</tr>
<tr>
<td>CPU(s) orderable</td>
<td>1 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>8 MB I+D on chip per chip</td>
</tr>
<tr>
<td>Other Cache</td>
<td>None</td>
</tr>
<tr>
<td>Memory</td>
<td>64 GB (4 x 16 GB 2Rx8 PC4-2400T-U)</td>
</tr>
<tr>
<td>Disk Subsystem</td>
<td>500 GB SATA 7200 RPM</td>
</tr>
<tr>
<td>Other Hardware</td>
<td>None</td>
</tr>
</tbody>
</table>

### Software

<table>
<thead>
<tr>
<th>Name</th>
<th>Version</th>
</tr>
</thead>
<tbody>
<tr>
<td>Operating System</td>
<td>SUSE Linux Enterprise Server 12 SP2 4.10.8-4.geb4ae7d-default</td>
</tr>
<tr>
<td>Compiler</td>
<td>C/C++: Version 17.0.0.098 of Intel C/C++ Compiler for Linux</td>
</tr>
<tr>
<td>Auto Parallel</td>
<td>No</td>
</tr>
<tr>
<td>File System</td>
<td>xfs</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 V10.2</td>
</tr>
</tbody>
</table>
SPEC CINT2006 Result

Dell Inc.
PowerEdge R330 (Intel Xeon E3-1240 v6, 3.70 GHz)

SPECint_rate2006 = 264
SPECint_rate_base2006 = 256

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>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>
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<td></td>
<td></td>
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<tr>
<td>400.perlbench</td>
<td>8</td>
<td>379</td>
<td>206</td>
<td>379</td>
<td>206</td>
<td>379</td>
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<td>8</td>
<td>327</td>
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<td>327</td>
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<td>326</td>
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<td>401.bzip2</td>
<td>8</td>
<td>673</td>
<td>115</td>
<td>672</td>
<td>115</td>
<td>671</td>
<td>115</td>
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<td>119</td>
<td>652</td>
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<td>403.mcf</td>
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<td>320</td>
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<td>322</td>
<td>200</td>
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<td>200</td>
<td>8</td>
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<td>202</td>
<td>322</td>
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<td>429.gobmk</td>
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<td>478</td>
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<td>172</td>
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<tr>
<td>456.hmmer</td>
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<td>187</td>
<td>399</td>
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<td>458.sjeng</td>
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<tr>
<td>462.libquantum</td>
<td>8</td>
<td>59.2</td>
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<tr>
<td>464.h264ref</td>
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<td>549</td>
<td>323</td>
<td>537</td>
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<td>539</td>
<td>329</td>
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<td>342</td>
<td>529</td>
<td>334</td>
<td>535</td>
<td>331</td>
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<td>471.omnetpp</td>
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<td>438</td>
<td>114</td>
<td>437</td>
<td>115</td>
<td>437</td>
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<td>118</td>
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<td>424</td>
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<tr>
<td>473.astar</td>
<td>8</td>
<td>419</td>
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<td>418</td>
<td>134</td>
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<td>134</td>
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<td>418</td>
<td>134</td>
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<tr>
<td>483.xalancbmk</td>
<td>8</td>
<td>184</td>
<td>300</td>
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<td>299</td>
<td>185</td>
<td>299</td>
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<td>300</td>
<td>185</td>
<td>299</td>
<td>185</td>
<td>299</td>
</tr>
</tbody>
</table>

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 Performance
Sysinfo program /root/cpu2006-1.2/config/sysinfo.rev6993
Revision 6993 of 2015-11-06 (b5e8d4b4eb51ed28d7f98696cbe290c1)
running on linux-r1zd Thu Apr 13 05:15:39 2017

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 E3-1240 v6 @ 3.70GHz
  1 "physical id"s (chips)
  8 "processors"
cores, siblings (Caution: counting these is hw and system dependent. The following excerpts from /proc/cpuinfo might not be reliable. Use with Continued on next page
Dell Inc.
PowerEdge R330 (Intel Xeon E3-1240 v6, 3.70 GHz)

SPECint_rate2006 = 264
SPECint_rate_base2006 = 256

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

Test date: Apr-2017
Hardware Availability: Apr-2017
Software Availability: Sep-2016

Platform Notes (Continued)

caution.)
cpu cores : 4
siblings : 8
physical 0: cores 0 1 2 3

From /proc/meminfo
MemTotal: 65934740 kB
HugePages_Total: 0
Hugepagesize: 2048 kB
/usr/bin/lsb_release -d
SUSE Linux Enterprise Server 12 SP2

From /etc/*release* /etc/*version*
SuSE-release:
  SUSE Linux Enterprise Server 12 (x86_64)
  VERSION = 12
  PATCHLEVEL = 2
  # 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-SP2"
  VERSION_ID="12.2"
  PRETTY_NAME="SUSE Linux Enterprise Server 12 SP2"
  ID="sles"
  ANSI_COLOR="0;32"
  CPE_NAME="cpe:/o:suse:sles:12:sp2"

uname -a:
  Linux linux-r1zd 4.10.8-4.gbe4ae7d-default #1 SMP PREEMPT Tue Apr 4 10:46:31 UTC 2017 (gbe4ae7d) x86_64 x86_64 x86_64 GNU/Linux

run-level 3 Apr 13 05:00
SPEC is set to: /root/cpu2006-1.2
  Filesystem     Type  Size  Used Avail Use% Mounted on
  /dev/sda2      xfs   458G  13G  446G  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. 2.1.3 04/07/2017
Memory:
  4x 002C0000002C 18ASF2G72AZ-2G3B1 16 GB 2 rank 2400 MHz

(End of data from sysinfo program)
General Notes

Environment variables set by runspec before the start of the run:
LD_LIBRARY_PATH = "/root/cpu2006-1.2/1ibs/32:/root/cpu2006-1.2/1ibs/64:/root/cpu2006-1.2/sh10.2"

Binaries compiled on a system with 1x Intel Core i7-4790 CPU + 32GB RAM
memory using Redhat Enterprise Linux 7.2
Transparent Huge Pages enabled by default
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_2017/linux/lib/ia32

C++ benchmarks:
  icpc -m32 -L/opt/intel/compilers_and_libraries_2017/linux/lib/ia32

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

Base Optimization Flags

C benchmarks:
  -xCORE-AVX2 -ipo -O3 -no-prec-div -qopt-prefetch
  -qopt-mem-layout-trans=3

C++ benchmarks:
  -xCORE-AVX2 -ipo -O3 -no-prec-div -qopt-prefetch
  -qopt-mem-layout-trans=3 -Wl,-z,muldefs -L/sh10.2 -lsmartheap
Dell Inc.

PowerEdge R330 (Intel Xeon E3-1240 v6, 3.70 GHz)

SPEC CINT2006 Result

SPECint_rate2006 = 264
SPECint_rate_base2006 = 256

CPU2006 license: 55
Test date: Apr-2017
Test sponsor: Dell Inc.
Hardware Availability: Apr-2017
Tested by: Dell Inc.
Software Availability: Sep-2016

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_2017/linux/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/compilers_and_libraries_2017/linux/lib/ia32

Peak Portability Flags

400.perlbench: -DSPEC_CPU_LP64 -DSPEC_CPU_LINUX_X64
401.bzip2: -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: -DSPEC_CPU_LP64
458.sjeng: -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: -prof-gen(pass 1) -prof-use(pass 2) -xCORE-AVX2(pass 2)
-par-num-threads=1(pass 1) -ipo(pass 2) -O3(pass 2)
-no-prec-div(pass 2) -auto-ilp32 -qopt-mem-layout-trans=3

Continued on next page
Dell Inc.
PowerEdge R330 (Intel Xeon E3-1240 v6, 3.70 GHz)

SPECint\textsubscript{rate2006} = 264
SPECint\textsubscript{rate\_base2006} = 256

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

Peak Optimization Flags (Continued)

401.bzip2: \texttt{-prof-gen(pass 1)} \texttt{-prof-use(pass 2)} \texttt{-xCORE-AVX2(pass 2)}
\texttt{-par-num-threads=1(pass 1)} \texttt{-ipo(pass 2)} \texttt{-O3(pass 2)}
\texttt{-no-prec-div(pass 2)} \texttt{-qopt-prefetch -auto-ilp32}
\texttt{-qopt-mem-layout-trans=3}

403.gcc: \texttt{-xCORE-AVX2 -ipo -O3 -no-prec-div}
\texttt{-qopt-mem-layout-trans=3}

429.mcf: \texttt{basepeak = yes}

445.gobmk: \texttt{-prof-gen(pass 1)} \texttt{-prof-use(pass 2)} \texttt{-xCORE-AVX2(pass 2)}
\texttt{-par-num-threads=1(pass 1)} \texttt{-ipo(pass 2)} \texttt{-O3(pass 2)}
\texttt{-no-prec-div(pass 2)} \texttt{-qopt-mem-layout-trans=3}

456.hmmer: \texttt{-xCORE-AVX2 -ipo -O3 -no-prec-div -unroll2 -auto-ilp32}
\texttt{-qopt-mem-layout-trans=3}

458.sjeng: \texttt{-prof-gen(pass 1)} \texttt{-prof-use(pass 2)} \texttt{-xCORE-AVX2(pass 2)}
\texttt{-par-num-threads=1(pass 1)} \texttt{-ipo(pass 2)} \texttt{-O3(pass 2)}
\texttt{-no-prec-div(pass 2)} \texttt{-unroll4 -auto-ilp32}
\texttt{-qopt-mem-layout-trans=3}

462.libquantum: \texttt{basepeak = yes}

464.h264ref: \texttt{-prof-gen(pass 1)} \texttt{-prof-use(pass 2)} \texttt{-xCORE-AVX2(pass 2)}
\texttt{-par-num-threads=1(pass 1)} \texttt{-ipo(pass 2)} \texttt{-O3(pass 2)}
\texttt{-no-prec-div(pass 2)} \texttt{-unroll2 -qopt-mem-layout-trans=3}

C++ benchmarks:

471.omnetpp: \texttt{-prof-gen(pass 1)} \texttt{-prof-use(pass 2)} \texttt{-xCORE-AVX2(pass 2)}
\texttt{-par-num-threads=1(pass 1)} \texttt{-ipo(pass 2)} \texttt{-O3(pass 2)}
\texttt{-no-prec-div(pass 2)}
\texttt{-qopt-ra-region-strategy=block}
\texttt{-qopt-mem-layout-trans=3 \texttt{-Wl,-z,muldefs}}
\texttt{-L/sh10.2 -lsmartheap}

473.astar: \texttt{basepeak = yes}

483.xalancbmk: \texttt{basepeak = yes}

Peak Other Flags

C benchmarks:

403.gcc: \texttt{-Dalloca=_alloca}
Dell Inc. PowerEdge R330 (Intel Xeon E3-1240 v6, 3.70 GHz)  

| SPECint_rate2006 | 264 |
| SPECint_rate_base2006 | 256 |

CPU2006 license: 55  
Test sponsor: Dell Inc.  
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Test date: Apr-2017  
Hardware Availability: Apr-2017  
Software Availability: Sep-2016

The flags files that were used to format this result can be browsed at:
http://www.spec.org/cpu2006/flags/Intel-ic17.0-official-linux64.html

You can also download the XML flags sources by saving the following links:
http://www.spec.org/cpu2006/flags/Intel-ic17.0-official-linux64.xml

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For questions about this result, please contact the tester.
For other inquiries, please contact webmaster@spec.org.

Tested with SPEC CPU2006 v1.2.  
Report generated on Tue May 2 14:04:55 2017 by SPEC CPU2006 PS/PDF formatter v6932.  
Originally published on 2 May 2017.