Dell Inc. PowerEdge R520 (Intel Xeon E5-2430, 2.20 GHz) SPECint®2006 = 41.3
SPECint_base2006 = 39.0

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

Test date: Mar-2012
Hardware Availability: May-2012
Software Availability: Feb-2012

Hardware
CPU Name: Intel Xeon E5-2430
CPU Characteristics: Intel Turbo Boost Technology up to 2.70 GHz
CPU MHz: 2200
FPU: Integrated
CPU(s) enabled: 12 cores, 2 chips, 6 cores/chip, 2 threads/core
CPU(s) orderable: 1.2 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: 15 MB I+D on chip per chip
Other Cache: None
Memory: 48 GB (6 x 8 GB 2Rx4 PC3-12800R-11, ECC, running at 1333 MHz)
Disk Subsystem: 2 x 600 GB 15000 RPM SAS, RAID 1
Other Hardware: None

Software
Operating System: SUSE Linux Enterprise Server 11 SP2 (x86_64) 3.0.13-0.9-default
Compiler: C/C++: Version 12.1.0.225 of Intel C++ Studio XE for Linux
Auto Parallel: Yes
File System: ext3
System State: Run level 3 (add definition here)
Base Pointers: 32/64-bit
Peak Pointers: 32/64-bit
Other Software: Microquill SmartHeap V9.01
SPEC CINT2006 Result

Dell Inc.
PowerEdge R520 (Intel Xeon E5-2430, 2.20 GHz)

SPECint2006 = 41.3
SPECint_base2006 = 39.0

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

Test date: Mar-2012
Hardware Availability: May-2012
Software Availability: Feb-2012

Results Table

<table>
<thead>
<tr>
<th>Benchmark</th>
<th>Seconds</th>
<th>Ratio</th>
<th>Base</th>
<th>Seconds</th>
<th>Ratio</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>405</td>
<td>24.1</td>
<td>405</td>
<td>24.2</td>
<td></td>
<td>406</td>
<td>24.1</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>401.bzip2</td>
<td>540</td>
<td>17.9</td>
<td>540</td>
<td>17.9</td>
<td></td>
<td>541</td>
<td>17.8</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>403.mcf</td>
<td>333</td>
<td>24.2</td>
<td>333</td>
<td>24.2</td>
<td></td>
<td>332</td>
<td>24.2</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>429.gcc</td>
<td>176</td>
<td>51.9</td>
<td>176</td>
<td>51.8</td>
<td></td>
<td>175</td>
<td>52.1</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>445.gobmk</td>
<td>537</td>
<td>19.5</td>
<td>537</td>
<td>19.5</td>
<td></td>
<td>536</td>
<td>19.6</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>456.hmmer</td>
<td>228</td>
<td>40.9</td>
<td>228</td>
<td>40.9</td>
<td></td>
<td>228</td>
<td>40.9</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>458.sjeng</td>
<td>549</td>
<td>22.0</td>
<td>549</td>
<td>22.0</td>
<td></td>
<td>548</td>
<td>22.1</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>462.libquantum</td>
<td>11.1</td>
<td>1870</td>
<td>11.1</td>
<td>1870</td>
<td></td>
<td>10.3</td>
<td>2010</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>464.h264ref</td>
<td>613</td>
<td>36.1</td>
<td>613</td>
<td>36.2</td>
<td></td>
<td>614</td>
<td>36.1</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>471.omnetpp</td>
<td>318</td>
<td>19.7</td>
<td>318</td>
<td>19.7</td>
<td></td>
<td>317</td>
<td>19.6</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>473.astar</td>
<td>295</td>
<td>23.8</td>
<td>296</td>
<td>23.7</td>
<td></td>
<td>296</td>
<td>23.7</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>483.xalancbmk</td>
<td>167</td>
<td>41.3</td>
<td>168</td>
<td>41.1</td>
<td></td>
<td>175</td>
<td>39.3</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

Results appear in the order in which they were run. Bold underlined text indicates a median measurement.

Operating System Notes

Stack size set to unlimited using "ulimit -s unlimited"

Platform Notes

CPU Power Management set to Maximum Performance
Memory Frequency set to Maximum Performance
Turbo Boost set to Enabled
C States/C1E set to Enabled
Sysinfo program /root/CPU2006-1.2/config/sysinfo.rev6800
$Rev: 6800 $ $Date:: 2011-10-11 #$ 6f2ebdfff5032aaa42e583f96b07f99d3
running on Silk-2P Fri Mar  9 08:54:30 2012

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 E5-2430 0 @ 2.20GHz
  2 "physical id"s (chips)
  24 "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 : 6
siblings : 12
physical 0: cores 0 1 2 3 4 5
physical 1: cores 0 1 2 3 4 5

Continued on next page
# Dell Inc. PowerEdge R520 (Intel Xeon E5-2430, 2.20 GHz)

<table>
<thead>
<tr>
<th>SPECint2006</th>
<th>41.3</th>
</tr>
</thead>
<tbody>
<tr>
<td>SPECint_base2006</td>
<td>39.0</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>CPU2006 license:</th>
<th>55</th>
</tr>
</thead>
<tbody>
<tr>
<td>Test sponsor:</td>
<td>Dell Inc.</td>
</tr>
<tr>
<td>Tested by:</td>
<td>Dell Inc.</td>
</tr>
</tbody>
</table>

## Platform Notes (Continued)

- cache size : 15360 KB
- From /proc/meminfo
  - MemTotal: 49381468 kB
  - HugePages_Total: 0
  - Hugepagesize: 2048 kB
- /usr/bin/lsb_release -d
  - SUSE Linux Enterprise Server 11 (x86_64)
- From /etc/*release* /etc/*version*
  - SuSE-release:
    - SUSE Linux Enterprise Server 11 (x86_64)
    - VERSION = 11
    - PATCHLEVEL = 2

  - uname -a:
    - Linux Silk-2P 3.0.13-0.9-default #1 SMP Mon Jan 16 17:33:03 UTC 2012
      (54ddfaf) x86_64 x86_64 x86_64 GNU/Linux

  - run-level 3 Mar 9 08:51 last=S

  - SPEC is set to: /root/CPU2006-1.2
    - Filesystem Type Size Used Avail Use% Mounted on
      - /dev/sda1 ext3 266G 51G 202G 20% /

- Additional information from dmidecode:

## General Notes

- Environment variables set by runspec before the start of the run:
  - KMP_AFFINITY = "granularity=fine,scatter"
  - LD_LIBRARY_PATH = "/root/CPU2006-1.2/libs/32:/root/CPU2006-1.2/libs/64"
  - OMP_NUM_THREADS = "12"

- Binaries compiled on a system with 1x Core i7-860 CPU + 8GB memory using RHEL5.5
- 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
- The Dell PowerEdge R520 and the Bull NovaScale R450 F3 models are electronically equivalent.
- The results have been measured on a Dell PowerEdge R520 model
SPEC CINT2006 Result

Dell Inc.

PowerEdge R520 (Intel Xeon E5-2430, 2.20 GHz)

SPECint2006 = 41.3
SPECint_base2006 = 39.0

CPU2006 license: 55
Test date: Mar-2012
Test sponsor: Dell Inc.
Hardware Availability: May-2012
Tested by: Dell Inc.
Software Availability: Feb-2012

Base Compiler Invocation

C benchmarks:
icc -m64

C++ benchmarks:
icc -m64

Base Portability Flags

- 400.perlbench: -DSPEC_CPU_LP64 -DSPEC_CPU_LINUX_X64
- 401.bzip2: -DSPEC_CPU_LP64
- 402.gcc: -DSPEC_CPU_LP64
- 429.mcf: -DSPEC_CPU_LP64
- 456.hmmer: -DSPEC_CPU_LP64
- 458.sjeng: -DSPEC_CPU_LP64
- 462.libquantum: -DSPEC_CPU_LP64 -DSPEC_CPU_LINUX
- 464.h264ref: -DSPEC_CPU_LP64
- 471.omnetpp: -DSPEC_CPU_LP64
- 473.astar: -DSPEC_CPU_LP64
- 483.xalancbmk: -DSPEC_CPU_LP64 -DSPEC_CPU_LINUX

Base Optimization Flags

C benchmarks:
-xAVX -ipo -O3 -no-prec-div -parallel -opt-prefetch -auto-p32

C++ benchmarks:
-xAVX -ipo -O3 -no-prec-div -opt-prefetch -auto-p32 -Wl,-z,muldefs -L/smartheap -lsmartheap64

Base Other Flags

C benchmarks:
403.gcc: -Dalloca=_alloca

Peak Compiler Invocation

C benchmarks (except as noted below):
icc -m64

Continued on next page
Dell Inc.
PowerEdge R520 (Intel Xeon E5-2430, 2.20 GHz)

SPECint2006 = 41.3
SPECint_base2006 = 39.0

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

Test date: Mar-2012
Hardware Availability: May-2012
Software Availability: Feb-2012

Peak Compiler Invocation (Continued)

400.perlbench: icc -m32
445.gobmk: icc -m32
464.h264ref: icc -m32

C++ benchmarks (except as noted below):
icpc -m32

473.astar: icpc -m64

Peak Portability Flags

400.perlbench: -DSPEC_CPU_LINUX_IA32
401.bzip2: -DSPEC_CPU_LP64
403.gcc: -DSPEC_CPU_LP64
429.mcf: -DSPEC_CPU_LP64
456.hmmer: -DSPEC_CPU_LP64
458.sjeng: -DSPEC_CPU_LP64
462.libquantum: -DSPEC_CPU_LP64 -DSPEC_CPU_LINUX
473.astar: -DSPEC_CPU_LP64
483.xalancbmk: -DSPEC_CPU_LINUX

Peak Optimization Flags

C benchmarks:

400.perlbench: -xAVX(pass 2) -prof-gen(pass 1) -ipo(pass 2) -O3(pass 2)
-no-prec-div(pass 2) -prof-use(pass 2) -opt-prefetch
-ansi-alias

401.bzip2: -xAVX(pass 2) -prof-gen(pass 1) -ipo(pass 2) -O3(pass 2)
-no-prec-div -prof-use(pass 2) -auto-ilp32 -opt-prefetch
-ansi-alias

403.gcc: -xAVX -ipo -O3 -no-prec-div -inline-calloc
-opt-malloc-options=3 -auto-ilp32

429.mcf: basepeak = yes

445.gobmk: -xAVX(pass 2) -prof-gen(pass 1) -prof-use(pass 2)
-ansi-alias

456.hmmer: -xAVX -ipo -O3 -no-prec-div -unroll2 -auto-ilp32
-ansi-alias
Dell Inc.

PowerEdge R520 (Intel Xeon E5-2430, 2.20 GHz)  

SPECint2006 = 41.3  
SPECint_base2006 = 39.0

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

Test date: Mar-2012  
Hardware Availability: May-2012  
Software Availability: Feb-2012

Peak Optimization Flags (Continued)

458.sjeng: -xAVX(pass 2) -prof-gen(pass 1) -ipo(pass 2) -O3(pass 2)
  -no-prec-div(pass 2) -prof-use(pass 2) -unroll14

462.libquantum: basepeak = yes

464.h264ref: -xAVX(pass 2) -prof-gen(pass 1) -ipo(pass 2) -O3(pass 2)
  -no-prec-div(pass 2) -prof-use(pass 2) -unroll12
  -ansi-alias

C++ benchmarks:

471.omnetpp: -xAVX(pass 2) -prof-gen(pass 1) -ipo(pass 2) -O3(pass 2)
  -no-prec-div(pass 2) -prof-use(pass 2)
  -opt-ra-region-strategy=block
  -ansi-alias
  -Wl,-z,muldefs -L/smartheap -lsmartheap

473.astar: basepeak = yes

483.xalancbmk: -xAVX -ipo -O3 -no-prec-div -opt-prefetch -ansi-alias
  -Wl,-z,muldefs -L/smartheap -lsmartheap

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-ic12.1-official-linux64.20111122.html
http://www.spec.org/cpu2006/flags/Dell-Platform-Settings-V1.2-revA.20120410.00.html

You can also download the XML flags sources by saving the following links:
http://www.spec.org/cpu2006/flags/Intel-ic12.1-official-linux64.20111122.xml
http://www.spec.org/cpu2006/flags/Dell-Platform-Settings-V1.2-revA.20120410.00.xml

SPEC and SPECint are registered trademarks of the Standard Performance Evaluation Corporation. All other brand and product names appearing in this result are trademarks or registered trademarks of their respective holders.

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

Tested with SPEC CPU2006 v1.2.
Originally published on 5 June 2012.