**Dell Inc.**

**PowerEdge M520 (Intel Xeon E5-2430 v2, 2.50 GHz)**

<table>
<thead>
<tr>
<th>SPECint_rate2006 = 479</th>
<th>SPECint_rate_base2006 = 461</th>
</tr>
</thead>
<tbody>
<tr>
<td>CPU2006 license: 55</td>
<td>Test date: Nov-2013</td>
</tr>
<tr>
<td>Test sponsor: Dell Inc.</td>
<td>Hardware Availability: Jan-2014</td>
</tr>
<tr>
<td>Tested by: Dell Inc.</td>
<td>Software Availability: Sep-2013</td>
</tr>
</tbody>
</table>

### Hardware

<table>
<thead>
<tr>
<th>Specification</th>
<th>Value</th>
</tr>
</thead>
<tbody>
<tr>
<td>CPU Name</td>
<td>Intel Xeon E5-2430 v2</td>
</tr>
<tr>
<td>CPU Characteristics</td>
<td>Intel Turbo Boost Technology up to 3.00 GHz</td>
</tr>
<tr>
<td>CPU MHz</td>
<td>2500</td>
</tr>
<tr>
<td>FPU</td>
<td>Integrated</td>
</tr>
<tr>
<td>CPU(s) enabled</td>
<td>12 cores, 2 chips, 6 cores/chip, 2 threads/core</td>
</tr>
<tr>
<td>CPU(s) orderable</td>
<td>2 chip</td>
</tr>
<tr>
<td>Primary Cache</td>
<td>32 KB L1 + 32 KB D on chip per core</td>
</tr>
<tr>
<td>Secondary Cache</td>
<td>256 KB L1+D on chip per core</td>
</tr>
<tr>
<td>L3 Cache</td>
<td>15 MB L1+D on chip per chip</td>
</tr>
<tr>
<td>Other Cache</td>
<td>None</td>
</tr>
<tr>
<td>Memory</td>
<td>192 GB (12 x 16 GB 2Rx4 PC3L-12800R-11, ECC)</td>
</tr>
<tr>
<td>Disk Subsystem</td>
<td>1 x 1 TB 7200 RPM SATA</td>
</tr>
<tr>
<td>Other Hardware</td>
<td>None</td>
</tr>
</tbody>
</table>

### Software

<table>
<thead>
<tr>
<th>Specification</th>
<th>Value</th>
</tr>
</thead>
<tbody>
<tr>
<td>Operating System</td>
<td>SUSE Linux Enterprise Server 11 (x86_64)</td>
</tr>
<tr>
<td></td>
<td>3.0.76-0.11-default</td>
</tr>
<tr>
<td>Compiler</td>
<td>C/C++: Version 14.0.0.0.080 of Intel C++ Studio XE for Linux</td>
</tr>
<tr>
<td>Auto Parallel</td>
<td>No</td>
</tr>
<tr>
<td>File System</td>
<td>ext2</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>
Dell Inc.

PowerEdge M520 (Intel Xeon E5-2430 v2, 2.50 GHz)

SPECint_rate2006 = 479
SPECint_rate_base2006 = 461

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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>Seconds</th>
<th>Ratio</th>
<th>Seconds</th>
<th>Ratio</th>
</tr>
</thead>
<tbody>
<tr>
<td>400.perlbench</td>
<td>24</td>
<td>679</td>
<td>345</td>
<td>679</td>
<td>345</td>
<td>679</td>
<td>345</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>401.bzip2</td>
<td>24</td>
<td>941</td>
<td>246</td>
<td>950</td>
<td>244</td>
<td>940</td>
<td>246</td>
<td>918</td>
<td>252</td>
<td>921</td>
<td>251</td>
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<tr>
<td>403.gcc</td>
<td>24</td>
<td>524</td>
<td>368</td>
<td>521</td>
<td>371</td>
<td>520</td>
<td>371</td>
<td>524</td>
<td>368</td>
<td>521</td>
<td>371</td>
</tr>
<tr>
<td>445.gobmk</td>
<td>24</td>
<td>745</td>
<td>338</td>
<td>734</td>
<td>343</td>
<td>745</td>
<td>338</td>
<td>716</td>
<td>352</td>
<td>714</td>
<td>352</td>
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<tr>
<td>456.hmmer</td>
<td>24</td>
<td>359</td>
<td>623</td>
<td>360</td>
<td>622</td>
<td>364</td>
<td>616</td>
<td>327</td>
<td>685</td>
<td>324</td>
<td>692</td>
</tr>
<tr>
<td>458.sjeng</td>
<td>24</td>
<td>843</td>
<td>344</td>
<td>863</td>
<td>337</td>
<td>862</td>
<td>337</td>
<td>804</td>
<td>361</td>
<td>837</td>
<td>347</td>
</tr>
<tr>
<td>462.libquantum</td>
<td>24</td>
<td>163</td>
<td>3050</td>
<td>163</td>
<td>3040</td>
<td>164</td>
<td>3040</td>
<td>163</td>
<td>3050</td>
<td>163</td>
<td>3040</td>
</tr>
<tr>
<td>464.h264ref</td>
<td>24</td>
<td>930</td>
<td>571</td>
<td>932</td>
<td>570</td>
<td>932</td>
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<td>921</td>
<td>576</td>
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</tr>
<tr>
<td>471.omnetpp</td>
<td>24</td>
<td>591</td>
<td>254</td>
<td>590</td>
<td>254</td>
<td>592</td>
<td>253</td>
<td>556</td>
<td>270</td>
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<td>269</td>
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<tr>
<td>473.astar</td>
<td>24</td>
<td>640</td>
<td>263</td>
<td>638</td>
<td>264</td>
<td>640</td>
<td>263</td>
<td>640</td>
<td>263</td>
<td>640</td>
<td>263</td>
</tr>
<tr>
<td>483.xalancbmk</td>
<td>24</td>
<td>329</td>
<td>504</td>
<td>330</td>
<td>503</td>
<td>329</td>
<td>504</td>
<td>329</td>
<td>504</td>
<td>329</td>
<td>504</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
Execute Disable disabled
Logical Processor enabled
System Profile set to Performance
Sysinfo program /root/cpu2006-1.2/config/sysinfo.rev6818
$Rev: 6818 $ $Date:: 2012-07-17 $$ e86d102572650a6e4d596a3cee98f191
running on Linux Fri Nov 8 17:22:28 2013

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 v2 @ 2.50GHz
 2 "physical id"s (chips)
 24 "processors"

Standard Performance Evaluation Corporation
info@spec.org
http://www.spec.org/
Dell Inc.
PowerEdge M520 (Intel Xeon E5-2430 v2, 2.50 GHz)  

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---

**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 : 6  
siblings : 12  
physical 0: cores 0 1 2 3 4 5  
physical 1: cores 0 1 2 3 4 5  
cache size : 15360 KB
```

From /proc/meminfo

```
MemTotal:       198443260 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 = 3
```

```
uname -a:  
    Linux linux 3.0.76-0.11-default #1 SMP Fri Jun 14 08:21:43 UTC 2013 (ccab990)  
    x86_64 x86_64 x86_64 GNU/Linux
```

```
run-level 3 Nov 8 17:06 last=S  
```

SPEC is set to: /root/cpu2006-1.2

```
Filesystem     Type  Size  Used Avail Use% Mounted on  
/dev/sda2      ext2  910G  7.8G  901G   1% /
```

Additional information from dmidecode:

```
BIOS Dell Inc. 2.0.22 09/23/2013  
Memory:  
12x 00AD04B300AD HMT42GR7AFR4A-PB 16 GB 1600 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/libs/32:/root/cpu2006-1.2/libs/64:/root/cpu2006-1.2/sh"
```

Binaries compiled on a system with 1x Core i7-860 CPU + 8GB memory using RedHat EL 6.4

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
```

Continued on next page
General Notes (Continued)
runspec command invoked through numactl i.e.:
numactl --interleave=all runspec <etc>

Base Compiler Invocation
C benchmarks:
icc -m32
C++ benchmarks:
icpc -m32

Base Portability Flags
400.perlbench: -DSPEC_CPU_LINUX_IA32
462.libquantum: -DSPEC_CPU_LINUX
483.xalancbmk: -DSPEC_CPU_LINUX

Base Optimization Flags
C benchmarks:
-xSSE4.2 -ipo -O3 -no-prec-div -opt-prefetch -opt-mem-layout-trans=3
C++ benchmarks:
-xSSE4.2 -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
400.perlbench: icc -m64
401.bzip2: icc -m64

continued on next page
### Peak Compiler Invocation (Continued)

- `456.hmmer`: `icc -m64`
- `458.sjeng`: `icc -m64`

### C++ benchmarks:
- `icpc -m32`

### 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`: `-xSSE4.2(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`: `-xSSE4.2(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`: `basepeak = yes`
- `429.mcf`: `basepeak = yes`
- `445.gobmk`: `-xSSE4.2(pass 2) -prof-gen(pass 1) -prof-use(pass 2) -ansi-alias -opt-mem-layout-trans=3`
- `456.hmmer`: `-xSSE4.2 -ipo -O3 -no-prec-div -unroll2 -auto-ilp32`
- `458.sjeng`: `-xSSE4.2(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`: `-xSSE4.2(pass 2) -prof-gen(pass 1) -ipo(pass 2) -O3(pass 2) -no-prec-div(pass 2) -prof-use(pass 2) -unroll2 -ansi-alias`
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Peak Optimization Flags (Continued)

C++ benchmarks:

471.omnetpp: -xSSE4.2(pass 2) -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

The flags files that were used to format this result can be browsed at
http://www.spec.org/cpu2006/flags/Intel-ic14.0-official-linux64.20140128.html
http://www.spec.org/cpu2006/flags/Dell-Platform-Settings-V1.2-revB.html

You can also download the XML flags sources by saving the following links:
http://www.spec.org/cpu2006/flags/Intel-ic14.0-official-linux64.20140128.xml
http://www.spec.org/cpu2006/flags/Dell-Platform-Settings-V1.2-revB.xml

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Tested with SPEC CPU2006 v1.2.
Originally published on 28 January 2014.