Dell Inc.

PowerEdge M420 (Intel Xeon E5-2450L, 1.80 GHz)

**SPECint®2006 =** 24.3

**SPECint_base2006 =** 23.1

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

### Hardware

<table>
<thead>
<tr>
<th>Item</th>
<th>Specification</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>CPU Name:</strong></td>
<td>Intel Xeon E5-2450L</td>
</tr>
<tr>
<td><strong>CPU Characteristics:</strong></td>
<td>Intel Turbo Boost Technology up to 2.30 GHz</td>
</tr>
<tr>
<td><strong>CPU MHz:</strong></td>
<td>1800</td>
</tr>
<tr>
<td><strong>FPU:</strong></td>
<td>Integrated</td>
</tr>
<tr>
<td><strong>CPU(s) enabled:</strong></td>
<td>16 cores, 2 chips, 8 cores/chip, 2 threads/core</td>
</tr>
<tr>
<td><strong>CPU(s) orderable:</strong></td>
<td>1.2 chip</td>
</tr>
<tr>
<td><strong>Primary Cache:</strong></td>
<td>32 KB I + 32 KB D on chip per core</td>
</tr>
<tr>
<td><strong>Secondary Cache:</strong></td>
<td>256 KB I+D on chip per core</td>
</tr>
<tr>
<td><strong>L3 Cache:</strong></td>
<td>20 MB I+D on chip per chip</td>
</tr>
<tr>
<td><strong>Other Cache:</strong></td>
<td>None</td>
</tr>
<tr>
<td><strong>Memory:</strong></td>
<td>48 GB (6 x 8 GB 2Rx4 PC3-12800R-11, ECC)</td>
</tr>
<tr>
<td><strong>Disk Subsystem:</strong></td>
<td>2 x 50 GB SATA SSD, RAID 0</td>
</tr>
<tr>
<td><strong>Other Hardware:</strong></td>
<td>None</td>
</tr>
</tbody>
</table>

### Software

<table>
<thead>
<tr>
<th>Item</th>
<th>Specification</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Operating System:</strong></td>
<td>SUSE Linux Enterprise Server 11 SP2 (x86_64)</td>
</tr>
<tr>
<td></td>
<td>3.0.13-0.27-default</td>
</tr>
<tr>
<td><strong>Compiler:</strong></td>
<td>C++: Version 12.1.0.225 of Intel C++ Studio XE</td>
</tr>
<tr>
<td></td>
<td>for Linux</td>
</tr>
<tr>
<td><strong>Auto Parallel:</strong></td>
<td>Yes</td>
</tr>
<tr>
<td><strong>File System:</strong></td>
<td>ext3</td>
</tr>
<tr>
<td><strong>System State:</strong></td>
<td>Run level 3 (add definition here)</td>
</tr>
<tr>
<td><strong>Base Pointers:</strong></td>
<td>32/64-bit</td>
</tr>
<tr>
<td><strong>Peak Pointers:</strong></td>
<td>32/64-bit</td>
</tr>
<tr>
<td><strong>Other Software:</strong></td>
<td>Microquill SmartHeap V9.01</td>
</tr>
</tbody>
</table>
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PowerEdge M420 (Intel Xeon E5-2450L, 1.80 GHz)

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SPECint_base2006 = 23.1

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Results Table

<table>
<thead>
<tr>
<th>Benchmark</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>852</td>
<td>11.5</td>
<td>854</td>
<td>11.4</td>
<td>711</td>
<td>13.7</td>
<td>711</td>
<td>13.7</td>
<td>552</td>
<td>17.7</td>
</tr>
<tr>
<td>403.gcc</td>
<td>463</td>
<td>17.4</td>
<td>463</td>
<td>17.4</td>
<td>463</td>
<td>17.4</td>
<td>463</td>
<td>17.4</td>
<td>464</td>
<td>17.4</td>
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<tr>
<td>429.mcf</td>
<td>385</td>
<td>25.5</td>
<td>385</td>
<td>25.5</td>
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<td>25.5</td>
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<td>25.5</td>
<td>385</td>
<td>25.5</td>
</tr>
<tr>
<td>445.gobmk</td>
<td>761</td>
<td>13.8</td>
<td>761</td>
<td>13.8</td>
<td>761</td>
<td>13.8</td>
<td>761</td>
<td>13.8</td>
<td>761</td>
<td>13.8</td>
</tr>
<tr>
<td>456.hmmer</td>
<td>462</td>
<td>20.2</td>
<td>463</td>
<td>20.2</td>
<td>463</td>
<td>20.2</td>
<td>463</td>
<td>20.2</td>
<td>461</td>
<td>20.3</td>
</tr>
<tr>
<td>458.sjeng</td>
<td>802</td>
<td>15.1</td>
<td>802</td>
<td>15.1</td>
<td>802</td>
<td>15.1</td>
<td>802</td>
<td>15.1</td>
<td>809</td>
<td>14.9</td>
</tr>
<tr>
<td>462.libquantum</td>
<td>15.8</td>
<td>1320</td>
<td>15.8</td>
<td>1320</td>
<td>15.8</td>
<td>1320</td>
<td>15.8</td>
<td>1320</td>
<td>15.8</td>
<td>1320</td>
</tr>
<tr>
<td>464.h264ref</td>
<td>851</td>
<td>26.0</td>
<td>851</td>
<td>26.0</td>
<td>851</td>
<td>26.0</td>
<td>851</td>
<td>26.0</td>
<td>855</td>
<td>25.9</td>
</tr>
<tr>
<td>471.omnetpp</td>
<td>493</td>
<td>12.7</td>
<td>494</td>
<td>12.6</td>
<td>492</td>
<td>12.7</td>
<td>388</td>
<td>16.1</td>
<td>387</td>
<td>16.1</td>
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<tr>
<td>473.astar</td>
<td>505</td>
<td>13.9</td>
<td>507</td>
<td>13.9</td>
<td>508</td>
<td>13.8</td>
<td>505</td>
<td>13.9</td>
<td>507</td>
<td>13.9</td>
</tr>
<tr>
<td>483.xalancbmk</td>
<td>357</td>
<td>19.3</td>
<td>356</td>
<td>19.4</td>
<td>356</td>
<td>19.4</td>
<td>356</td>
<td>19.4</td>
<td>356</td>
<td>19.4</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 $# 6f2ebdff5032aaa42e583f96b07f99d3

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 E5-2450L 0 @ 1.80GHz
   2 "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 : 8
   siblings : 16
   physical 0: cores 0 1 2 3 4 5 6 7
   physical 1: cores 0 1 2 3 4 5 6 7

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Platform Notes (Continued)  

    cache size : 20480 KB  
From /proc/meminfo  
    MemTotal: 49348648 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 HIFI-SPA-2P 3.0.13-0.27-default #1 SMP Wed Feb 15 13:33:49 UTC 2012  
    (d73692b) x86_64 x86_64 x86_64 GNU/Linux  

    run-level 3 Mar 27 15:37 last=S  

SPEC is set to: /root/CPU2006-1.2  

    Filesystem Type Size Used Avail Use% Mounted on  
    /dev/sda1 ext3 87G 7.5G 75G 10% /  

Additional information from dmidecode:  

    (End of data from sysinfo program)  

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 = "16"  

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  

Base Compiler Invocation  

C benchmarks:  
    icc -m64  

Continued on next page
SPEC CINT2006 Result

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Base Compiler Invocation (Continued)

C++ benchmarks:
icpc -m64

Base Portability Flags

400.perlbench: -DSPEC_CPU_LP64 -DSPEC_CPU_LINUX_X64
401.bzip2: -DSPEC_CPU_LP64
403.gcc: -DSPEC_CPU_LP64
429.mcf: -DSPEC_CPU_LP64
445.gobmk: -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
400.perlbench: icc -m32
C++ benchmarks (except as noted below):
icpc -m64
SPEC CINT2006 Result

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Peak Compiler Invocation (Continued)

471.omnetpp: icpc -m32

Peak Portability Flags

400.perlbench: -DSPEC_CPU_LINUX_IA32
401.bzip2: -DSPEC_CPU_LP64
403.gcc: -DSPEC_CPU_LP64
429.mcf: -DSPEC_CPU_LP64
445.gobmk: -DSPEC_CPU_LP64
456.hmmer: -DSPEC_CPU_LP64
458.sjeng: -DSPEC_CPU_LP64
462.libquantum: -DSPEC_CPU_LP64
464.h264ref: -DSPEC_CPU_LP64
473.astar: -DSPEC_CPU_LP64
483.xalancbmk: -DSPEC_CPU_LP64

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: basepeak = yes
429.mcf: basepeak = yes
445.gobmk: basepeak = yes
456.hmmer: -xAVX -ipo -O3 -no-prec-div -unroll2 -auto-ilp32
-ansi-alias

458.sjeng: basepeak = yes
462.libquantum: basepeak = yes
464.h264ref: basepeak = yes

C++ benchmarks:

Continued on next page
**SPEC CINT2006 Result**

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### Peak Optimization Flags (Continued)

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: 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-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

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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.


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