Dell Inc.  
PowerEdge R820 (Intel Xeon E5-4640, 2.40 GHz)  

SPECint®2006 = 44.8  
SPECint_base2006 = 41.7

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

Hardware

CPU Name: Intel Xeon E5-4640  
CPU Characteristics: Intel Turbo Boost Technology up to 2.80 GHz  
CPU MHz: 2400  
FPU: Integrated  
CPU(s) enabled: 32 cores, 4 chips, 8 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: 20 MB I+D on chip per core  
Other Cache: None  
Memory: 256 GB (32 x 8 GB 2Rx4 PC3-12800R-11, ECC)  
Disk Subsystem: 4 x 300 GB 10000 RPM SAS, RAID 0  
Other Hardware: None

Software

Operating System: SUSE Linux Enterprise Server 11 SP2 (x86_64)  
3.0.13-0.27-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 (multi-user)  
Base Pointers: 32/64-bit  
Peak Pointers: 32/64-bit  
Other Software: Microquill SmartHeap V9.01
SPEC CINT2006 Result

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Operating System Notes

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

Platform Notes

System Profile set to Custom
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
running on icon4p Thu Mar  8 22:17:30 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 E5-4640 0 @ 2.40GHz
4 "physical id"s (chips)
64 "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

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

Platform Notes (Continued)

    physical 1: cores 0 1 2 3 4 5 6 7  
    physical 2: cores 0 1 2 3 4 5 6 7  
    physical 3: cores 0 1 2 3 4 5 6 7

    cache size : 20480 KB

    From /proc/meminfo
      MemTotal:  264501512 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 icon4p 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 8 22:06 last=S

    SPEC is set to: /root/CPU2006-1.2

    Filesystem     Type  Size  Used Avail Use% Mounted on
    /dev/sda2      ext3  1.1T  123G  917G  12% /

    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 = "32"

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 R820 and the Bull NovaScale R470 F3 Models are electronically equivalent.
The results have been measured on a Dell PowerEdge R820 model.
SPEC CINT2006 Result

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Base Compiler Invocation

C benchmarks:
icc -m64

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

Continued on next page
## Dell Inc.

**PowerEdge R820** (Intel Xeon E5-4640, 2.40 GHZ)

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| SPECint_base2006 = 41.7 |

| CPU2006 license: 55 | Test date: Mar-2012 |
| Test sponsor: Dell Inc. | Hardware Availability: May-2012 |
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### Peak Compiler Invocation (Continued)

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<td>445.gobmk</td>
<td>icc -m32</td>
</tr>
<tr>
<td>464.h264ref</td>
<td>icc -m32</td>
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C++ benchmarks (except as noted below):

- icpc -m64

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<td>icpc -m32</td>
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</table>

### 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_LP64 -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

### Continued on next page
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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) -unroll4

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: 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.

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