SPEC® CINT2006 Result

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Dell Inc.

PowerEdge FC830 (Intel Xeon E5-4667 v3, 2.00 GHz)

SPECint®2006 = 53.8

SPECint_base2006 = 52.3

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

Test date: Jan-2015
Hardware Availability: Jun-2015
Software Availability: Jun-2015

Hardware

CPU Name:	Intel Xeon E5-4667 v3
CPU Characteristics:	Intel Turbo Boost Technology up to 2.90 GHz
CPU MHz:	2000
FPU:	Integrated
CPU(s) enabled:	64 cores, 4 chips, 16 cores/chip, 2 threads/core
CPU(s) orderable:	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:	40 MB I+D on chip per chip
Other Cache:	None
Memory:	512 GB (32 x 16 GB 2Rx4 PC4-2133P-R)
Disk Subsystem:	1 x 400 GB 7200 RPM SATA
Other Hardware:	None

Software

Operating System:	SUSE Linux Enterprise Server 12 3.12.28-4-default
Compiler:	C/C++: Version 15.0.0.090 of Intel C++ Studio XE for Linux
Auto Parallel:	Yes
File System:	ext4
System State:	Run level 3 (multi-user)
Base Pointers:	32/64-bit
Peak Pointers:	32/64-bit
Other Software:	Microquill SmartHeap V10.0

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Results Table

Benchmark	Base						Peak					
	Seconds	Ratio	Seconds	Ratio	Seconds	Ratio	Seconds	Ratio	Seconds	Ratio	Seconds	Ratio
400.perlbench	**297**	**32.9**	295	33.1	298	32.8	**257**	**38.0**	258	37.9	257	38.0
401.bzip2	501	19.3	**501**	**19.3**	501	19.2	499	19.3	498	19.4	**499**	**19.4**
403.gcc	296	27.2	297	27.1	**296**	**27.2**	296	27.2	297	27.1	**296**	**27.2**
429.mcf	192	47.5	**194**	**47.1**	196	46.5	192	47.5	**194**	**47.1**	196	46.5
445.gobmk	436	24.0	437	24.0	**437**	**24.0**	436	24.0	437	24.0	**437**	**24.0**
456.hmmer	165	56.7	**164**	**56.8**	164	56.8	165	56.7	**164**	**56.8**	164	56.8
458.sjeng	418	29.0	418	28.9	**418**	**28.9**	417	29.0	416	29.1	**416**	**29.1**
462.libquantum	**2.69**	**7700**	2.70	7660	2.68	7740	**2.69**	**7700**	2.70	7660	2.68	7740
464.h264ref	607	36.5	**602**	**36.7**	601	36.8	607	36.5	**602**	**36.7**	601	36.8
471.omnetpp	195	32.1	185	33.7	**188**	**33.3**	**159**	**39.3**	155	40.3	160	39.1
473.astar	267	26.3	**266**	**26.4**	263	26.7	267	26.3	263	26.7	**266**	**26.4**
483.xalancbmk	**131**	**52.7**	131	52.8	132	52.1	**130**	**53.3**	128	53.8	130	53.2

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

Submit Notes

```
The config file option 'submit' was used.
```

Operating System Notes

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

Platform Notes

```
BIOS settings:
Snoop Mode set to Home Snoop
Virtualization Technology disabled
System Profile set to Performance
Sysinfo program /root/cpu2006-1.2/config/sysinfo.rev6914
$Rev: 6914 $ $Date:: 2014-06-25 #$ e3fbb8667b5a285932ceab81e28219e1
running on linux-3aq4 Thu Jan 29 22:28:54 2015

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 E5-4667 v3 @ 2.00GHz
      4 "physical id"s (chips)
      128 "processors"
   cores, siblings (Caution: counting these is hw and system dependent.  The
   following excerpts from /proc/cpuinfo might not be reliable.  Use with
   caution.)
```

Continued on next page

Platform Notes (Continued)

```
        cpu cores : 16
        siblings  : 32
        physical 0: cores 0 1 2 3 4 5 6 7 8 9 10 11 12 13 14 15
        physical 1: cores 0 1 2 3 4 5 6 7 8 9 10 11 12 13 14 15
        physical 2: cores 0 1 2 3 4 5 6 7 8 9 10 11 12 13 14 15
        physical 3: cores 0 1 2 3 4 5 6 7 8 9 10 11 12 13 14 15
     cache size : 40960 KB

  From /proc/meminfo
     MemTotal:       529334376 kB
     HugePages_Total:       0
     Hugepagesize:       2048 kB

  /usr/bin/lsb_release -d
     SUSE Linux Enterprise Server 12

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

  uname -a:
     Linux linux-3aq4 3.12.28-4-default #1 SMP Thu Sep 25 17:02:34 UTC 2014
     (9879bd4) x86_64 x86_64 x86_64 GNU/Linux

  run-level 3 Jan 29 22:28 last=5

  SPEC is set to: /root/cpu2006-1.2
     Filesystem     Type  Size  Used Avail Use% Mounted on
     /dev/sda2      ext4  267G   12G  254G   5% /
  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. 0.4.0 01/08/2015
    Memory:
     3x 00AD063200AD HMA42GR7MFR4N-TF 16 GB 2 rank 2133 MHz
```

Continued on next page

Platform Notes (Continued)

```
      29x 00CE00B300CE M393A2G40DB0-CPB 16 GB 2 rank 2133 MHz
      16x Not Specified Not Specified

   (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:/root/cpu2006-1.2/sh"
OMP_NUM_THREADS = "64"

 Binaries compiled on a system with 1x Core i5-4670K CPU + 16GB
 memory using RedHat EL 7.0
 Transparent Huge Pages enabled with:
 echo always > /sys/kernel/mm/transparent_hugepage/enabled
```

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:
```
-xCORE-AVX2 -ipo -O3 -no-prec-div -parallel -opt-prefetch -auto-p32
```

Continued on next page

Base Optimization Flags (Continued)

C++ benchmarks:
`-xCORE-AVX2 -ipo -O3 -no-prec-div -opt-prefetch -auto-p32 -Wl,-z,muldefs -L/sh -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 -L/opt/intel/composer_xe_2015/lib/ia32`

C++ benchmarks (except as noted below):
`icpc -m32 -L/opt/intel/composer_xe_2015/lib/ia32`

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`
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`
473.astar: `-DSPEC_CPU_LP64`
483.xalancbmk: `-DSPEC_CPU_LINUX`

Peak Optimization Flags

C benchmarks:

400.perlbench: `-xCORE-AVX2`(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`

Continued on next page

Peak Optimization Flags (Continued)

401.bzip2: -xCORE-AVX2(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: basepeak = yes

458.sjeng: -xCORE-AVX2(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: basepeak = yes

C++ benchmarks:

471.omnetpp: -xCORE-AVX2(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/sh -lsmartheap

473.astar: -xCORE-AVX2 -ipo -O3 -no-prec-div -opt-prefetch -auto-p32 -Wl,-z,muldefs -L/sh -lsmartheap64

483.xalancbmk: -xCORE-AVX2 -ipo -O3 -no-prec-div -opt-prefetch -ansi-alias -Wl,-z,muldefs -L/sh -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-ic15.0-official-linux64.html
http://www.spec.org/cpu2006/flags/Dell-Platform-Settings-V1.2-revE.20150421.html

You can also download the XML flags sources by saving the following links:
http://www.spec.org/cpu2006/flags/Intel-ic15.0-official-linux64.xml
http://www.spec.org/cpu2006/flags/Dell-Platform-Settings-V1.2-revE.20150421.xml

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