## Dell Inc.

PowerEdge R630 (Intel Xeon E5-2660 v3, 2.60 GHz)

<table>
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**CPU2006 license:** 55  
**Test sponsor:** Dell Inc.  
**Tested by:** Dell Inc.  
**Test date:** Jun-2014  
**Hardware Availability:** Sep-2014  
**Software Availability:** Sep-2014  

### Software

- **Operating System:** SUSE Linux Enterprise Server 11 (x86_64) 3.0.76-0.11-default  
- **Compiler:** C/C++: Version 14.0.0.0.80 of Intel C++ Studio XE for Linux  
- **Auto Parallel:** No  
- **File System:** ext2  
- **System State:** Run level 3 (multi-user)  
- **Base Pointers:** 32-bit  
- **Peak Pointers:** 32/64-bit  
- **Other Software:** Microquill SmartHeap V10.0

### Hardware

- **CPU Name:** Intel Xeon E5-2660 v3  
- **CPU Characteristics:** Intel Turbo Boost Technology up to 3.30 GHz  
- **CPU MHz:** 2600  
- **FPU:** Integrated  
- **CPU(s) enabled:** 20 cores, 2 chips, 10 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:** 25 MB I+D on chip per chip  
- **Other Cache:** None  
- **Memory:** 256 GB (16 x 16 GB 2Rx4 PC4-2133P-R)  
- **Disk Subsystem:** 1 x 1000 GB 7200 RPM SATA  
- **Other Hardware:** None

### Diagram

![Diagram showing SPECint rates for various benchmarks](image-url)
SPEC CINT2006 Result

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SPECint_rate2006 = 907
SPECint_rate_base2006 = 878

CPU2006 license: 55
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Results Table

<table>
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</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:
Snoop Mode set to Cluster on Die
Virtualization Technology disabled
Execute Disable disabled
System Profile set to Performance
Sysinfo program /root/cpu2006-1.2/config/sysinfo.rev6818
$Rev: 6818 $ $Date:: 2012-07-17 #$ e86d102572650a6e4d596a3cee98f191 running on linux Mon Jun 16 13:20:26 2014

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 E5-2660 v3 @ 2.60GHz
 2 "physical id"s (chips)
 40 "processors"

Continued on next page
**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 : 10
- siblings : 20
- physical 0: cores 0 1 2 3 4 8 9 10 11 12
- physical 1: cores 0 1 2 3 4 8 9 10 11 12
- cache size : 12800 KB

From /proc/meminfo

- MemTotal: 264440512 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:

- 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 Jun 16 13:20 last=S

SPEC is set to: /root/cpu2006-1.2

Additional information from dmidecode:

- BIOS Dell Inc. 0.3.23 06/006/2014
- Memory:
  - 16x 002C00B3002C 36ASF2G72PZ-2G1A1 16 GB 2133 MHz
  - 8x Not Specified Not Specified

(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:
**SPEC CINT2006 Result**

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**Software Availability:** Sep-2014

### General Notes (Continued)

```bash
echo 1>/proc/sys/vm/drop_caches
runspec command invoked through numactl i.e.:
  numactl --interleave=all runspec <etc>
```

### Base Compiler Invocation

**C benchmarks:**

```bash
icc -m32
```

**C++ benchmarks:**

```bash
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:**

- `~xCORE-AVX2 -ipo -O3 -no-prec-div -opt-prefetch
  -opt-mem-layout-trans=3`

**C++ benchmarks:**

- `~xCORE-AVX2 -ipo -O3 -no-prec-div -opt-prefetch
  -opt-mem-layout-trans=3 -W1,-z,muldefs -L/sh -lsmartheap`

### Base Other Flags

**C benchmarks:**

- 403.gcc: -Dalloca=_alloca

### Peak Compiler Invocation

**C benchmarks (except as noted below):**

```bash
icc -m32
```

400.perlbench: `icc -m64`

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## Peak Compiler Invocation (Continued)

- 401.bzip2: `icc -m64`
- 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: `-xCORE-AVX2(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: `-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 -auto-ilp32 -ansi-alias`
- 403.gcc: `basepeak = yes`
- 429.mcf: `basepeak = yes`
- 445.gobmk: `-xCORE-AVX2(pass 2) -prof-gen(pass 1) -prof-use(pass 2) -ansi-alias -opt-mem-layout-trans=3`
- 456.hmmer: `-xCORE-AVX2 -ipo -O3 -no-prec-div -unroll12 -auto-ilp32`
- 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 -auto-ilp32`
- 462.libquantum: `basepeak = yes`

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Peak Optimization Flags (Continued)

464.h264ref:
   -xCORE-AVX2 (pass 2)
   -prof-gen (pass 1)
   -ipo (pass 2)
   -O3 (pass 2)
   -no-prec-div (pass 2)
   -prof-use (pass 2)
   -unroll2
   -ansi-alias

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)
   -ansi-alias
   -opt-ra-region-strategy=block
   -Wl,-z,muldefs
   -L/sh
   -lsmartheap

473.astar:
   basepeak = yes

483.xalanchbmk:
   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/Dell-Platform-Settings-V1.2-revD.html

You can also download the XML flags sources by saving the following links:
http://www.spec.org/cpu2006/flags/Dell-Platform-Settings-V1.2-revD.xml

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