# SPEC® CINT2006 Result

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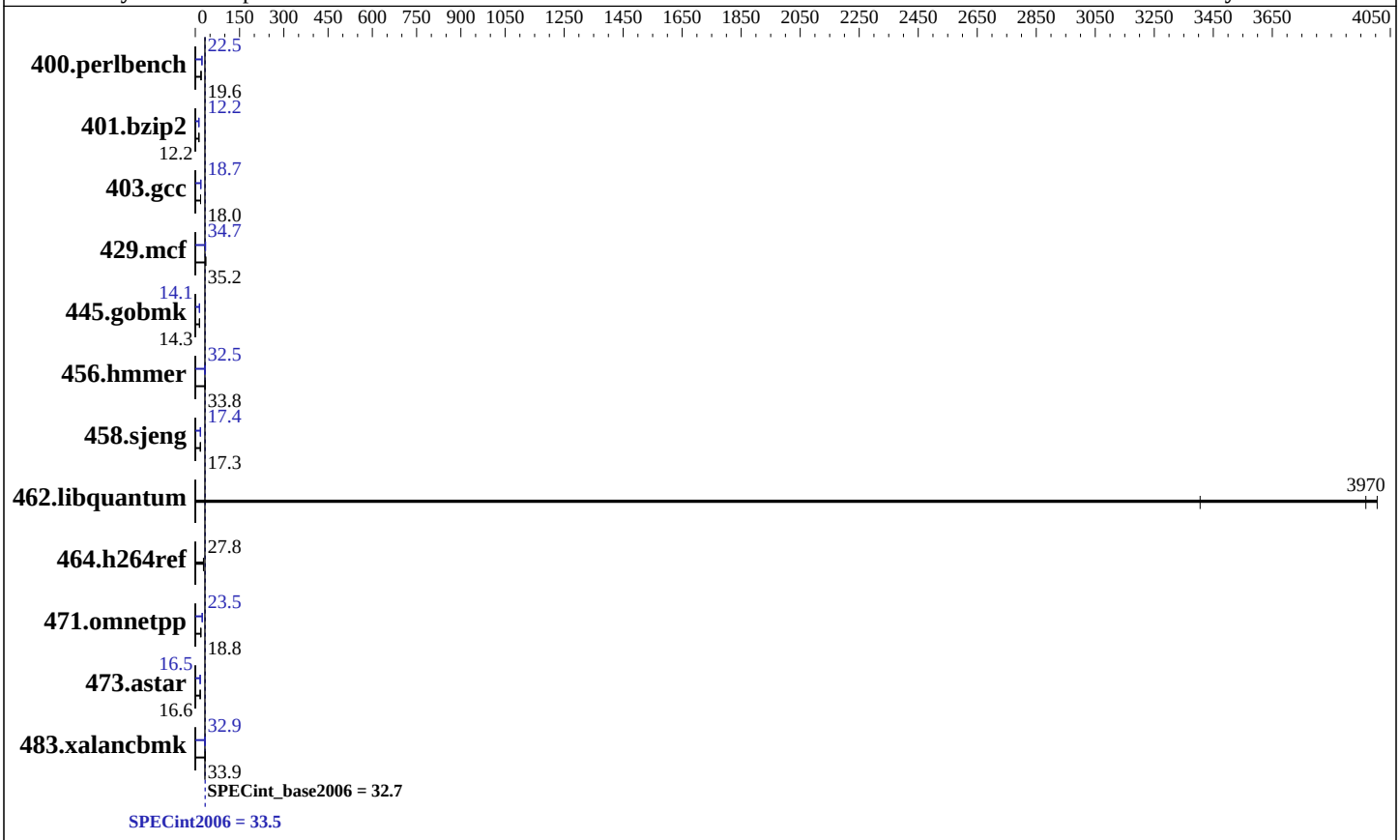
## Supermicro

SuperServer 2048U-RTR4
(X10QRH+ , Intel Xeon E5-4610 v3)

| | |
|---|---|
| SPECint®2006 = | 33.5 |
| SPECint_base2006 = | 32.7 |

**CPU2006 license:** 001176
**Test sponsor:** Supermicro
**Tested by:** Supermicro

**Test date:** Jun-2015
**Hardware Availability:** Jun-2015
**Software Availability:** Oct-2014




### Hardware

| | |
|---|---|
| CPU Name: | Intel Xeon E5-4610 v3 |
| CPU Characteristics: | |
| CPU MHz: | 1700 |
| FPU: | Integrated |
| CPU(s) enabled: | 40 cores, 4 chips, 10 cores/chip |
| CPU(s) orderable: | 1,2,4 chips |
| 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: | 512 GB (32 x 16 GB 2Rx4 PC4-2133P-R, runnning at 1600 MHz) |
| Disk Subsystem: | 1 x 512 GB SATA III, SSD |
| Other Hardware: | None |

### Software

| | |
|---|---|
| Operating System: | SUSE Linux Enterprise Server 12, Kernel 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 | 517 | 18.9 | **497** | **19.6** | 491 | 19.9 | 435 | 22.5 | **435** | **22.5** | 434 | 22.5 |
| 401.bzip2 | 789 | 12.2 | 793 | 12.2 | **792** | **12.2** | 793 | 12.2 | 793 | 12.2 | **793** | **12.2** |
| 403.gcc | 448 | 18.0 | **447** | **18.0** | 447 | 18.0 | **430** | **18.7** | 427 | 18.8 | 432 | 18.6 |
| 429.mcf | 259 | 35.2 | 259 | 35.3 | **259** | **35.2** | 262 | 34.8 | 265 | 34.4 | **262** | **34.7** |
| 445.gobmk | 734 | 14.3 | **735** | **14.3** | 735 | 14.3 | **743** | **14.1** | 742 | 14.1 | 743 | 14.1 |
| 456.hmmer | **276** | **33.8** | 276 | 33.7 | 276 | 33.8 | **287** | **32.5** | 289 | 32.3 | 287 | 32.5 |
| 458.sjeng | 699 | 17.3 | **699** | **17.3** | 699 | 17.3 | **697** | **17.4** | 698 | 17.3 | 697 | 17.4 |
| 462.libquantum | **5.22** | **3970** | 5.17 | 4010 | 6.08 | 3410 | **5.22** | **3970** | 5.17 | 4010 | 6.08 | 3410 |
| 464.h264ref | **796** | **27.8** | 801 | 27.6 | 794 | 27.9 | **796** | **27.8** | 801 | 27.6 | 794 | 27.9 |
| 471.omnetpp | **333** | **18.8** | 336 | 18.6 | 331 | 18.9 | 266 | 23.5 | **265** | **23.5** | 265 | 23.6 |
| 473.astar | **422** | **16.6** | 422 | 16.6 | 423 | 16.6 | 425 | 16.5 | 420 | 16.7 | **425** | **16.5** |
| 483.xalancbmk | 203 | 34.1 | **204** | **33.9** | 205 | 33.7 | 210 | 32.9 | 211 | 32.7 | **210** | **32.9** |

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:
Hyper-Threading (ALL) = Disable
COD Enable = Disable
Early Snoop = Disable
Enforce POR = Disabled
Sysinfo program /home/SPEC2K6/SPEC2006-V12/config/sysinfo.rev6914
$Rev: 6914 $ $Date:: 2014-06-25 #$ e3fbb8667b5a285932ceab81e28219e1
running on linux-rrui Thu Jun 11 08:38:52 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 E5-4610 v3 @ 1.70GHz
      4 "physical id"s (chips)
      40 "processors"
   cores, siblings (Caution: counting these is hw and system dependent.  The
   following excerpts from /proc/cpuinfo might not be reliable.  Use with
```

Continued on next page

## Platform Notes (Continued)

```
      caution.)
         cpu cores : 10
         siblings  : 10
         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
         physical 2: cores 0 1 2 3 4 8 9 10 11 12
         physical 3: cores 0 1 2 3 4 8 9 10 11 12
      cache size : 25600 KB

   From /proc/meminfo
      MemTotal:       529336776 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-rrui 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 5 Jun 11 08:34

   SPEC is set to: /home/SPEC2K6/SPEC2006-V12
      Filesystem     Type  Size  Used Avail Use% Mounted on
      /dev/sda3      ext4  458G  7.2G  450G   2% /home
   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 American Megatrends Inc. 1.00 06/01/2015
     Memory:
```

Continued on next page

## Platform Notes (Continued)

```
      16x NO DIMM NO DIMM
      1x Samsung(data:13/44) M393A2G40DB0-CPB 16 GB 2 rank 2133 MHz, configured at
      1600 MHz
      1x Samsung(data:13/48) M393A2G40DB0-CPB 16 GB 2 rank 2133 MHz, configured at
      1600 MHz
      3x Samsung(data:13/51) M393A2G40DB0-CPB 16 GB 2 rank 2133 MHz, configured at
      1600 MHz
      2x Samsung(data:14/13) M393A2G40DB0-CPB 16 GB 2 rank 2133 MHz, configured at
      1600 MHz
      1x Samsung(data:14/16) M393A2G40DB0-CPB 16 GB 2 rank 2133 MHz, configured at
      1600 MHz
      5x Samsung(data:14/17) M393A2G40DB0-CPB 16 GB 2 rank 2133 MHz, configured at
      1600 MHz
      1x Samsung(data:14/25) M393A2G40DB0-CPB 16 GB 2 rank 2133 MHz, configured at
      1600 MHz
      14x Samsung(data:14/26) M393A2G40DB0-CPB 16 GB 2 rank 2133 MHz, configured at
      1600 MHz
      4x Samsung(data:14/47) M393A2G40DB0-CPB 16 GB 2 rank 2133 MHz, configured at
      1600 MHz

   (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 = "/home/SPEC2K6/SPEC2006-V12/libs/32:/home/SPEC2K6/SPEC2006-V12/libs/64:/home/SPEC2K6/SPEC2006-V12/sh"
OMP_NUM_THREADS = "40"

 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`

Continued on next page

## Base Portability Flags (Continued)

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

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

445.gobmk: 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
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

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: -xCORE-AVX2 -ipo -O3 -no-prec-div -inline-calloc
-opt-malloc-options=3 -auto-ilp32

429.mcf: -xCORE-AVX2 -ipo -O3 -no-prec-div -parallel
-opt-prefetch -auto-p32

445.gobmk: -xCORE-AVX2(pass 2) -prof-gen(pass 1) -prof-use(pass 2)
-ansi-alias

456.hmmer: -xCORE-AVX2 -ipo -O3 -no-prec-div -unroll2 -auto-ilp32
-ansi-alias

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

Continued on next page

## Peak Optimization Flags (Continued)

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/Supermicro-Platform-Settings-V1.2-revG.20141230.00.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/Supermicro-Platform-Settings-V1.2-revG.20141230.00.xml


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