# SPEC® CINT2006 Result

## Supermicro

SuperServer 2048U-RTR4
(X10QRH+ , Intel Xeon E5-4667 v3)

SPECint®2006 =          55.5

SPECint_base2006 =          54.0

| | | | |
|---|---|---|---|
| **CPU2006 license:** 001176 | | **Test date:** | Jun-2015 |
| **Test sponsor:** | Supermicro | **Hardware Availability:** | Jun-2015 |
| **Tested by:** | Supermicro | **Software Availability:** | Oct-2014 |



Results bar chart (scale 0 to 8400, marks at 300, 600, 900, 1200, 1600, 2000, 2400, 2800, 3200, 3600, 4000, 4400, 4800, 5200, 5600, 6000, 6400, 6800, 7200, 7600, 8400):

- 400.perlbench: 38.1 / 33.0
- 401.bzip2: 20.1 / 19.9
- 403.gcc: 29.3 / 28.5
- 429.mcf: 52.0 / 51.4
- 445.gobmk: 23.9 / 24.1
- 456.hmmer: 55.2 / 57.3
- 458.sjeng: 29.2 / 29.0
- 462.libquantum: 8300
- 464.h264ref: 37.4
- 471.omnetpp: 41.1 / 35.1
- 473.astar: 27.2 / 26.9
- 483.xalancbmk: 54.5 / 54.1

SPECint_base2006 = 54.0

SPECint2006 = 55.5

## 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 |
| 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: | 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 600 GB SATA II, 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
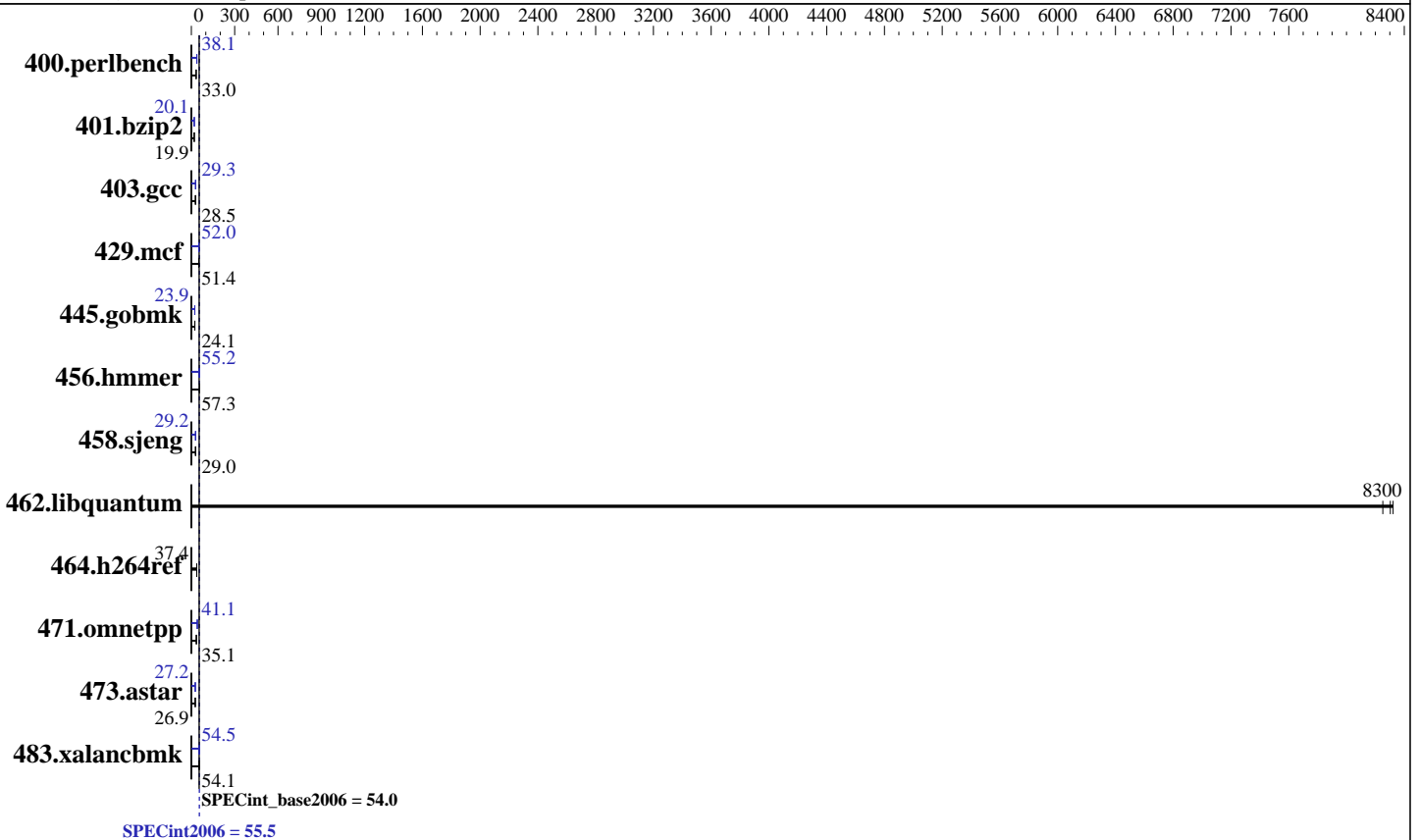
| Benchmark | Base | | | | | | Peak | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | **Seconds** | **Ratio** | **Seconds** | **Ratio** | **Seconds** | **Ratio** | **Seconds** | **Ratio** | **Seconds** | **Ratio** | **Seconds** | **Ratio** |
| 400.perlbench | **296** | **33.0** | 296 | 33.1 | 298 | 32.8 | 259 | 37.7 | 256 | 38.1 | **257** | **38.1** |
| 401.bzip2 | 485 | 19.9 | 486 | 19.8 | **486** | **19.9** | 480 | 20.1 | **481** | **20.1** | 481 | 20.1 |
| 403.gcc | 281 | 28.6 | 282 | 28.5 | **282** | **28.5** | 275 | 29.3 | 275 | 29.3 | **275** | **29.3** |
| 429.mcf | 176 | 51.9 | **177** | **51.4** | 181 | 50.5 | 176 | 51.8 | **175** | **52.0** | 175 | 52.2 |
| 445.gobmk | 437 | 24.0 | 435 | 24.1 | **436** | **24.1** | **439** | **23.9** | 439 | 23.9 | 439 | 23.9 |
| 456.hmmer | **163** | **57.3** | 163 | 57.3 | 163 | 57.3 | 169 | 55.2 | 169 | 55.2 | **169** | **55.2** |
| 458.sjeng | 417 | 29.0 | 417 | 29.0 | **417** | **29.0** | 415 | 29.2 | **415** | **29.2** | 415 | 29.2 |
| 462.libquantum | **2.50** | **8300** | 2.49 | 8320 | 2.51 | 8250 | **2.50** | **8300** | 2.49 | 8320 | 2.51 | 8250 |
| 464.h264ref | 590 | 37.5 | **592** | **37.4** | 595 | 37.2 | 590 | 37.5 | **592** | **37.4** | 595 | 37.2 |
| 471.omnetpp | 178 | 35.2 | **178** | **35.1** | 184 | 33.9 | 152 | 41.1 | 152 | 41.1 | **152** | **41.1** |
| 473.astar | 261 | 26.9 | **261** | **26.9** | 260 | 27.0 | 258 | 27.2 | 259 | 27.1 | **258** | **27.2** |
| 483.xalancbmk | 128 | 54.1 | 128 | 53.8 | **128** | **54.1** | **126** | **54.5** | 126 | 54.7 | 127 | 54.5 |

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 18-216 Thu Jun 18 10:37:26 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)
          64 "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

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$SPECint2006 = $ 55.5

$SPECint\_base2006 = $ 54.0

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

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

## Platform Notes (Continued)

```
     caution.)
        cpu cores : 16
        siblings  : 16
        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:       529334248 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 18-216 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 18 10:34

  SPEC is set to: /home/SPEC2K6/SPEC2006-V12
     Filesystem      Type  Size  Used Avail Use% Mounted on
     /dev/sda3       ext4  529G  7.5G  520G   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 05/28/2015
     Memory:
```

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## Platform Notes (Continued)

```
     16x NO DIMM NO DIMM
     7x Samsung(data:13/51) M393A2G40DB0-CPB 16 GB 2 rank 2133 MHz
     3x Samsung(data:14/16) M393A2G40DB0-CPB 16 GB 2 rank 2133 MHz
     8x Samsung(data:14/17) M393A2G40DB0-CPB 16 GB 2 rank 2133 MHz
     6x Samsung(data:14/25) M393A2G40DB0-CPB 16 GB 2 rank 2133 MHz
     8x Samsung(data:14/26) M393A2G40DB0-CPB 16 GB 2 rank 2133 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 = "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
```

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## 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`

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## 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`

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:

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# Peak Other Flags (Continued)

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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