SPEC® CINT2006 Result
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Supermicro

SuperServer 5019S-M
(X11SSH-F , Intel Xeon E3-1220 v5)

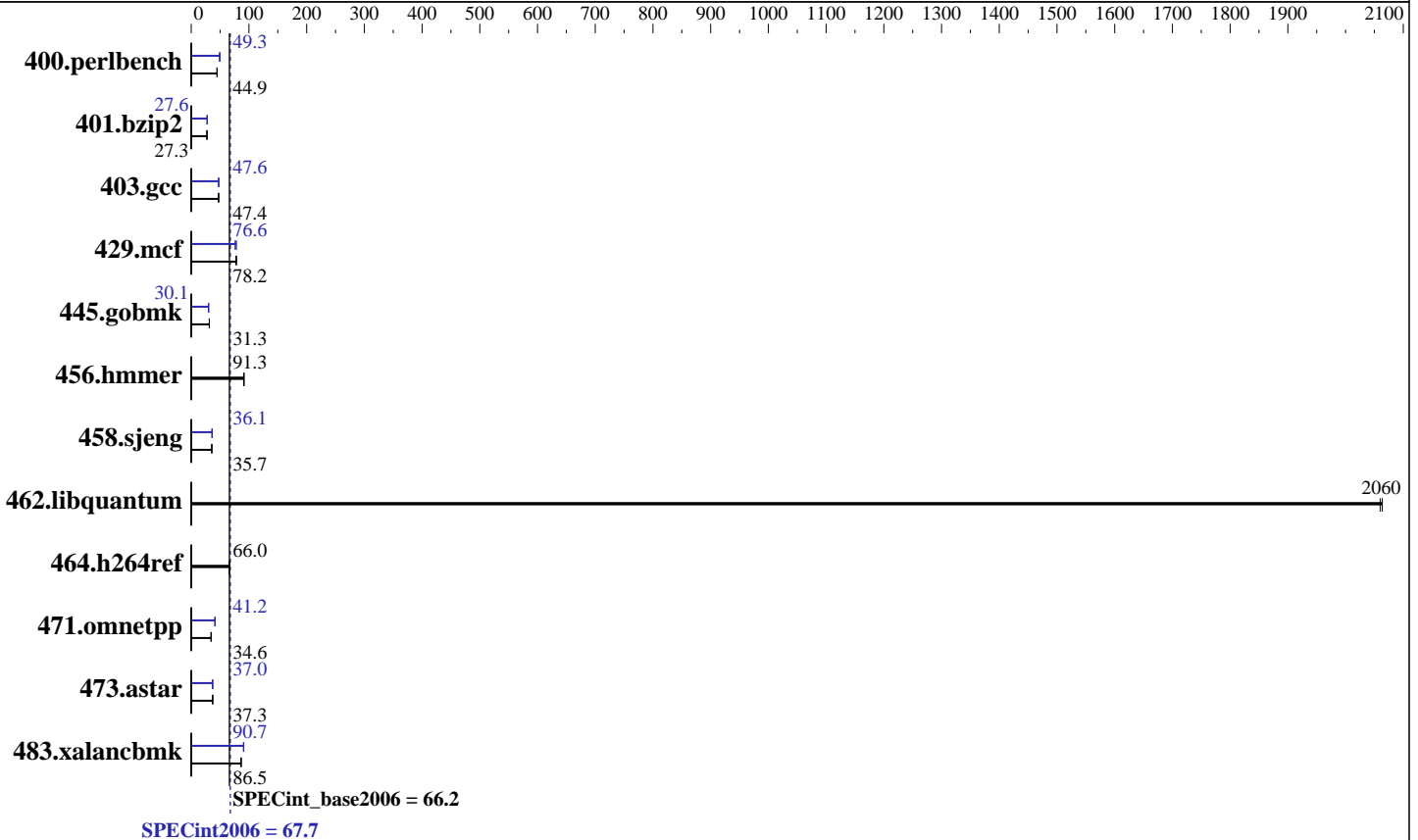$SPECint^{®}2006 = $ 67.7

$SPECint_base2006 = $ 66.2

CPU2006 license: 001176	**Test date:** Dec-2015
Test sponsor: Supermicro	**Hardware Availability:** Oct-2015
Tested by: Supermicro	**Software Availability:** Sep-2015

400.perlbench 49.3 / 44.9
401.bzip2 27.6 / 27.3
403.gcc 47.6 / 47.4
429.mcf 76.6 / 78.2
445.gobmk 30.1 / 31.3
456.hmmer 91.3
458.sjeng 36.1 / 35.7
462.libquantum 2060
464.h264ref 66.0
471.omnetpp 41.2 / 34.6
473.astar 37.0 / 37.3
483.xalancbmk 90.7 / 86.5

SPECint_base2006 = 66.2

SPECint2006 = 67.7

Hardware

CPU Name:	Intel Xeon E3-1220 v5
CPU Characteristics:	Intel Turbo Boost Technology up to 3.50 GHz
CPU MHz:	3000
FPU:	Integrated
CPU(s) enabled:	4 cores, 1 chip, 4 cores/chip
CPU(s) orderable:	1 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:	8 MB I+D on chip per chip
Other Cache:	None
Memory:	16 GB (2 x 8 GB 2Rx8 PC4-2133P-U)
Disk Subsystem:	1 x 400 GB SATA III SSD
Other Hardware:	None

Software

Operating System:	Red Hat Enterprise Linux Server release 7.2, Kernel 3.10.0-327.el7.x86_64
Compiler:	C/C++: Version 16.0.0.101 of Intel C++ Studio XE for Linux
Auto Parallel:	Yes
File System:	xfs
System State:	Run level 3 (multi-user)
Base Pointers:	32/64-bit
Peak Pointers:	32/64-bit
Other Software:	Microquill SmartHeap V10.2

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Results Table

Benchmark	Base						Peak					
	Seconds	**Ratio**	**Seconds**	**Ratio**	**Seconds**	**Ratio**	**Seconds**	**Ratio**	**Seconds**	**Ratio**	**Seconds**	**Ratio**
400.perlbench	219	44.6	217	45.0	**218**	**44.9**	197	49.5	**198**	**49.3**	199	49.2
401.bzip2	**354**	**27.3**	355	27.2	354	27.3	349	27.6	**349**	**27.6**	349	27.7
403.gcc	**170**	**47.4**	169	47.5	170	47.4	**169**	**47.6**	170	47.5	169	47.7
429.mcf	**117**	**78.2**	117	78.3	118	77.6	116	78.3	120	76.2	**119**	**76.6**
445.gobmk	**335**	**31.3**	335	31.3	334	31.4	349	30.1	**349**	**30.1**	349	30.1
456.hmmer	**102**	**91.3**	102	91.1	102	91.4	**102**	**91.3**	102	91.1	102	91.4
458.sjeng	**339**	**35.7**	339	35.7	339	35.7	334	36.2	**335**	**36.1**	335	36.1
462.libquantum	**10.0**	**2060**	10.1	2060	10.0	2060	**10.0**	**2060**	10.1	2060	10.0	2060
464.h264ref	335	66.1	336	65.8	**335**	**66.0**	335	66.1	336	65.8	**335**	**66.0**
471.omnetpp	180	34.7	183	34.2	**180**	**34.6**	151	41.3	**152**	**41.2**	152	41.1
473.astar	188	37.3	190	36.9	**188**	**37.3**	191	36.8	**190**	**37.0**	188	37.4
483.xalancbmk	79.7	86.6	80.1	86.2	**79.7**	**86.5**	76.2	90.5	**76.1**	**90.7**	75.8	91.0

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

```
Sysinfo program /home/cpu2006/config/sysinfo.rev6914
$Rev: 6914 $ $Date:: 2014-06-25 #$ e3fbb8667b5a285932ceab81e28219e1
running on localhost.localdomain Wed Dec  2 14:11:18 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 E3-1220 v5 @ 3.00GHz
      1 "physical id"s (chips)
      4 "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 : 4
      siblings  : 4
      physical 0: cores 0 1 2 3
   cache size : 8192 KB
```

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Platform Notes (Continued)

```
    From /proc/meminfo
       MemTotal:       16088724 kB
       HugePages_Total:        0
       Hugepagesize:        2048 kB

    From /etc/*release* /etc/*version*
       os-release:
          NAME="Red Hat Enterprise Linux Server"
          VERSION="7.2 (Maipo)"
          ID="rhel"
          ID_LIKE="fedora"
          VERSION_ID="7.2"
          PRETTY_NAME="Red Hat Enterprise Linux Server 7.2 (Maipo)"
          ANSI_COLOR="0;31"
          CPE_NAME="cpe:/o:redhat:enterprise_linux:7.2:GA:server"
       redhat-release: Red Hat Enterprise Linux Server release 7.2 (Maipo)
       system-release: Red Hat Enterprise Linux Server release 7.2 (Maipo)
       system-release-cpe: cpe:/o:redhat:enterprise_linux:7.2:ga:server

    uname -a:
       Linux localhost.localdomain 3.10.0-327.el7.x86_64 #1 SMP Thu Oct 29 17:29:29
       EDT 2015 x86_64 x86_64 x86_64 GNU/Linux

    run-level 3 Dec 2 08:40

    SPEC is set to: /home/cpu2006
       Filesystem             Type  Size  Used Avail Use% Mounted on
       /dev/mapper/rhel-root xfs   280G   25G  255G   9% /
    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. 1.0a 11/13/2015
      Memory:
      2x Micron 16ATF1G64AZ-2G1A2 8 GB 2 rank 2133 MHz
      2x 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 = "/home/cpu2006/libs/32:/home/cpu2006/libs/64:/home/cpu2006/sh"
    OMP_NUM_THREADS = "4"

      Binaries compiled on a system with 1x Intel Core i5-4670K CPU + 32GB
```

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General Notes (Continued)

```
memory using RedHat EL 7.1
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
```

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
```

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Peak Compiler Invocation

C benchmarks (except as noted below):
```
icc -m64
```

400.perlbench: `icc -m32 -L/opt/intel/compilers_and_libraries_2016/linux/compiler/lib/ia32_lin`

445.gobmk: `icc -m32 -L/opt/intel/compilers_and_libraries_2016/linux/compiler/lib/ia32_lin`

C++ benchmarks (except as noted below):
```
icpc -m32 -L/opt/intel/compilers_and_libraries_2016/linux/compiler/lib/ia32_lin
```

473.astar: `icpc -m64`

Peak Portability Flags

```
     400.perlbench: -D_FILE_OFFSET_BITS=64 -DSPEC_CPU_LINUX_IA32
         401.bzip2: -DSPEC_CPU_LP64
           403.gcc: -DSPEC_CPU_LP64
           429.mcf: -DSPEC_CPU_LP64
        445.gobmk: -D_FILE_OFFSET_BITS=64
        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: -D_FILE_OFFSET_BITS=64
         473.astar: -DSPEC_CPU_LP64
     483.xalancbmk: -D_FILE_OFFSET_BITS=64 -DSPEC_CPU_LINUX
```

Peak Optimization Flags

C benchmarks:

```
     400.perlbench: -xCORE-AVX2(pass 2) -prof-gen:threadsafe(pass 1)
                    -ipo(pass 2) -O3(pass 2) -no-prec-div(pass 2)
                    -par-num-threads=1(pass 1) -prof-use(pass 2) -opt-prefetch
                    -ansi-alias

         401.bzip2: -xCORE-AVX2(pass 2) -prof-gen:threadsafe(pass 1)
                    -ipo(pass 2) -O3(pass 2) -no-prec-div
                    -par-num-threads=1(pass 1) -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
```

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Peak Optimization Flags (Continued)

445.gobmk: -xCORE-AVX2(pass 2) -prof-gen:threadsafe(pass 1)
-prof-use(pass 2) -par-num-threads=1(pass 1) -ansi-alias

456.hmmer: basepeak = yes

458.sjeng: -xCORE-AVX2(pass 2) -prof-gen:threadsafe(pass 1)
-ipo(pass 2) -O3(pass 2) -no-prec-div(pass 2)
-par-num-threads=1(pass 1) -prof-use(pass 2) -unroll4

462.libquantum: basepeak = yes

464.h264ref: basepeak = yes

C++ benchmarks:

471.omnetpp: -xCORE-AVX2(pass 2) -prof-gen:threadsafe(pass 1)
-ipo(pass 2) -O3(pass 2) -no-prec-div(pass 2)
-par-num-threads=1(pass 1) -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-ic16.0-official-linux64.html
http://www.spec.org/cpu2006/flags/Supermicro-Platform-Settings-V1.2-revH.html

You can also download the XML flags sources by saving the following links:
http://www.spec.org/cpu2006/flags/Intel-ic16.0-official-linux64.xml
http://www.spec.org/cpu2006/flags/Supermicro-Platform-Settings-V1.2-revH.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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