SPEC® CINT2006 Result
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Huawei

Huawei RH8100 V3 (Intel Xeon E7-8894 v4)

SPECint®_rate2006 = 7650

SPECint_rate_base2006 = 7350

CPU2006 license: 3175	**Test date:** Jan-2017
Test sponsor: Huawei	**Hardware Availability:** Feb-2017
Tested by: Huawei	**Software Availability:** Dec-2015

		Copies	
400.perlbench	384 / 384		7570 / 6270
401.bzip2	384 / 384		3760 / 3680
403.gcc	384 / 384		4920 / 4900
429.mcf	384		8530
445.gobmk	384 / 384		5650 / 5350
456.hmmer	384 / 384		12100 / 11000
458.sjeng	384 / 384		6390 / 6010
462.libquantum	384		83900
464.h264ref	384 / 384		9920 / 9770
471.omnetpp	384 / 384		3100 / 2990
473.astar	384		4070
483.xalancbmk	384		7360

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Hardware

CPU Name:	Intel Xeon E7-8894 v4
CPU Characteristics:	Intel Turbo Boost Technology up to 3.40 GHz
CPU MHz:	2400
FPU:	Integrated
CPU(s) enabled:	192 cores, 8 chips, 24 cores/chip, 2 threads/core
CPU(s) orderable:	2,4,6,8 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:	60 MB I+D on chip per chip
Other Cache:	None
Memory:	1 TB (64 x 16 GB 2Rx8 PC4-2400T-R, running at 1600 MHz)
Disk Subsystem:	2 x 600 GB SAS, 10K RPM
Other Hardware:	None

Software

Operating System:	SUSE Linux Enterprise Server 12 (x86_64) SP1 Kernel 3.12.49-11-default
Compiler:	C/C++: Version 16.0.0.101 of Intel C++ Studio XE for Linux
Auto Parallel:	No
File System:	xfs
System State:	Run level 5 (multi-user)
Base Pointers:	32-bit
Peak Pointers:	32/64-bit
Other Software:	Microquill SmartHeap V10.2

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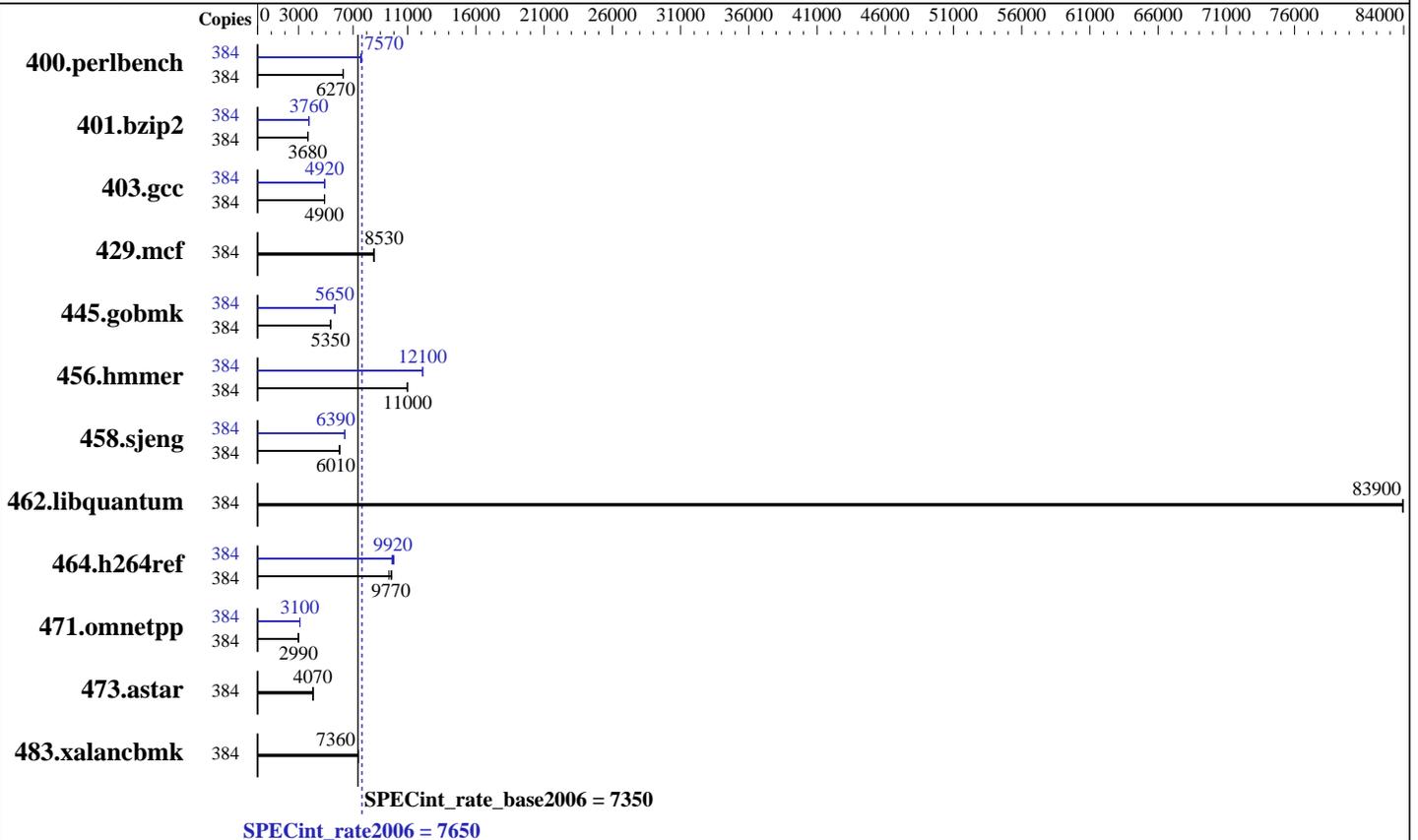
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Results Table

Benchmark	Base							Peak						
	Copies	Seconds	Ratio	Seconds	Ratio	Seconds	Ratio	Copies	Seconds	Ratio	Seconds	Ratio	Seconds	Ratio
400.perlbench	384	600	6250	598	6280	**599**	**6270**	384	493	7600	**496**	**7570**	496	7560
401.bzip2	384	1008	3670	1002	3700	**1007**	**3680**	384	**986**	**3760**	988	3750	985	3760
403.gcc	384	630	4910	631	4900	**631**	**4900**	384	628	4920	632	4890	**629**	**4920**
429.mcf	384	411	8520	**410**	**8530**	410	8540	384	411	8520	**410**	**8530**	410	8540
445.gobmk	384	756	5330	**754**	**5350**	751	5360	384	**713**	**5650**	711	5670	713	5650
456.hmmer	384	326	11000	327	11000	**326**	**11000**	384	296	12100	296	12100	**296**	**12100**
458.sjeng	384	773	6010	**773**	**6010**	773	6010	384	727	6390	**728**	**6390**	728	6380
462.libquantum	384	94.8	83900	**94.8**	**83900**	94.8	84000	384	94.8	83900	**94.8**	**83900**	94.8	84000
464.h264ref	384	**870**	**9770**	865	9830	884	9620	384	851	9990	**856**	**9920**	863	9850
471.omnetpp	384	803	2990	801	3000	**802**	**2990**	384	775	3100	773	3110	**774**	**3100**
473.astar	384	**663**	**4070**	663	4070	664	4060	384	**663**	**4070**	663	4070	664	4060
483.xalancbmk	384	359	7370	360	7350	**360**	**7360**	384	359	7370	360	7350	**360**	**7360**

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"
   Turbo mode set with:
   cpupower -c all frequency-set -g performance

Platform Notes

   BIOS configuration:
   Set Power Efficiency Mode to Performance
   Set Lock_step to disabled
   Baseboard Management Controller used to adjust the fan speed to 100%
   Set C-State to C0/C1
   Sysinfo program /home/spec/config/sysinfo.rev6914
   $Rev: 6914 $ $Date:: 2014-06-25 #$ e3fbb8667b5a285932ceab81e28219e1
   running on linux-sr55 Sun Jan 22 02:12:38 2017

   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 E7-8894 v4 @ 2.40GHz

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Platform Notes (Continued)

```
     8 "physical id"s (chips)
     384 "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 : 24
     siblings  : 48
     physical 0: cores 0 1 2 3 4 5 8 9 10 11 12 13 16 17 18 19 20 21 24 25 26
     27 28 29
     physical 1: cores 0 1 2 3 4 5 8 9 10 11 12 13 16 17 18 19 20 21 24 25 26
     27 28 29
     physical 2: cores 0 1 2 3 4 5 8 9 10 11 12 13 16 17 18 19 20 21 24 25 26
     27 28 29
     physical 3: cores 0 1 2 3 4 5 8 9 10 11 12 13 16 17 18 19 20 21 24 25 26
     27 28 29
     physical 4: cores 0 1 2 3 4 5 8 9 10 11 12 13 16 17 18 19 20 21 24 25 26
     27 28 29
     physical 5: cores 0 1 2 3 4 5 8 9 10 11 12 13 16 17 18 19 20 21 24 25 26
     27 28 29
     physical 6: cores 0 1 2 3 4 5 8 9 10 11 12 13 16 17 18 19 20 21 24 25 26
     27 28 29
     physical 7: cores 0 1 2 3 4 5 8 9 10 11 12 13 16 17 18 19 20 21 24 25 26
     27 28 29
  cache size : 61440 KB

From /proc/meminfo
   MemTotal:       1058806180 kB
   HugePages_Total:        0
   Hugepagesize:        2048 kB

/usr/bin/lsb_release -d
   SUSE Linux Enterprise Server 12 SP1

From /etc/*release* /etc/*version*
   SuSE-release:
      SUSE Linux Enterprise Server 12 (x86_64)
      VERSION = 12
      PATCHLEVEL = 1
      # 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-SP1"
      VERSION_ID="12.1"
      PRETTY_NAME="SUSE Linux Enterprise Server 12 SP1"
      ID="sles"
      ANSI_COLOR="0;32"
      CPE_NAME="cpe:/o:suse:sles:12:sp1"

uname -a:
   Linux linux-sr55 3.12.49-11-default #1 SMP Wed Nov 11 20:52:43 UTC 2015
```
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Platform Notes (Continued)

```
   (8d714a0) x86_64 x86_64 x86_64 GNU/Linux

 run-level 5 Jan 22 01:38

 SPEC is set to: /home/spec
    Filesystem      Type   Size   Used Avail Use% Mounted on
    /dev/sda2       xfs    1.6T   8.7G  1.6T   1% /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. BLISY102 11/07/2016
  Memory:
  64x Micron 18ASF2G72PDZ-2G3B1 16 GB 2 rank 2400 MHz, configured at 1600 MHz
  128x NO DIMM NO DIMM

 (End of data from sysinfo program)
```

General Notes

```
 Environment variables set by runspec before the start of the run:
 LD_LIBRARY_PATH = "/home/spec/libs/32:/home/spec/libs/64:/home/spec/sh"

  Binaries compiled on a system with 1x Intel Core i5-4670K CPU + 32GB
  memory using RedHat EL 7.1
  Transparent Huge Pages enabled with:
  echo always > /sys/kernel/mm/transparent_hugepage/enabled
  Filesystem page cache cleared with:
  echo 1>        /proc/sys/vm/drop_caches
  runspec command invoked through numactl i.e.:
  numactl --interleave=all runspec <etc>
```

Base Compiler Invocation

C benchmarks:
    icc -m32 -L/opt/intel/compilers_and_libraries_2016/linux/compiler/lib/ia32_lin

C++ benchmarks:
    icpc -m32 -L/opt/intel/compilers_and_libraries_2016/linux/compiler/lib/ia32_lin

Base Portability Flags

    400.perlbench: -D_FILE_OFFSET_BITS=64 -DSPEC_CPU_LINUX_IA32

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Base Portability Flags (Continued)

```
401.bzip2: -D_FILE_OFFSET_BITS=64
403.gcc: -D_FILE_OFFSET_BITS=64
429.mcf: -D_FILE_OFFSET_BITS=64
445.gobmk: -D_FILE_OFFSET_BITS=64
456.hmmer: -D_FILE_OFFSET_BITS=64
458.sjeng: -D_FILE_OFFSET_BITS=64
462.libquantum: -D_FILE_OFFSET_BITS=64  -DSPEC_CPU_LINUX
464.h264ref: -D_FILE_OFFSET_BITS=64
471.omnetpp: -D_FILE_OFFSET_BITS=64
473.astar: -D_FILE_OFFSET_BITS=64
483.xalancbmk: -D_FILE_OFFSET_BITS=64  -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 -Wl,-z,muldefs -L/sh -lsmartheap
```

Base Other Flags

C benchmarks:

```
403.gcc: -Dalloca=_alloca
```

Peak Compiler Invocation

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

```
400.perlbench: icc -m64
```

```
401.bzip2: icc -m64
```

```
456.hmmer: icc -m64
```

```
458.sjeng: icc -m64
```

C++ benchmarks:
```
icpc -m32 -L/opt/intel/compilers_and_libraries_2016/linux/compiler/lib/ia32_lin
```

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Peak Portability Flags

```
     400.perlbench: -D_FILE_OFFSET_BITS=64 -DSPEC_CPU_LP64 -DSPEC_CPU_LINUX_X64
        401.bzip2: -D_FILE_OFFSET_BITS=64 -DSPEC_CPU_LP64
          403.gcc: -D_FILE_OFFSET_BITS=64
          429.mcf: -D_FILE_OFFSET_BITS=64
        445.gobmk: -D_FILE_OFFSET_BITS=64
        456.hmmer: -D_FILE_OFFSET_BITS=64 -DSPEC_CPU_LP64
        458.sjeng: -D_FILE_OFFSET_BITS=64 -DSPEC_CPU_LP64
     462.libquantum: -D_FILE_OFFSET_BITS=64 -DSPEC_CPU_LINUX
       464.h264ref: -D_FILE_OFFSET_BITS=64
       471.omnetpp: -D_FILE_OFFSET_BITS=64
        473.astar: -D_FILE_OFFSET_BITS=64
     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) -auto-ilp32

        401.bzip2: -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
                    -auto-ilp32 -ansi-alias

          403.gcc: -xCORE-AVX2 -ipo -O3 -no-prec-div

          429.mcf: basepeak = yes

        445.gobmk: -xCORE-AVX2(pass 2) -prof-gen:threadsafe(pass 1)
                    -prof-use(pass 2) -par-num-threads=1(pass 1) -ansi-alias
                    -opt-mem-layout-trans=3

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

        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
                    -auto-ilp32

     462.libquantum: basepeak = yes

       464.h264ref: -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) -unroll2
                    -ansi-alias
```

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Peak Optimization Flags (Continued)

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

> 473.astar: basepeak = yes

> 483.xalancbmk: 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/Intel-ic16.0-official-linux64.html
http://www.spec.org/cpu2006/flags/Huawei-Platform-Settings-V1.2-BDW-RevG.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/Huawei-Platform-Settings-V1.2-BDW-RevG.xml

For questions about this result, please contact the tester.
For other inquiries, please contact webmaster@spec.org.

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