SPEC® CINT2006 Result
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Huawei

Huawei XH628 V3(Intel Xeon E5-2609 v4)

$SPECint^®2006 =$ 37.0

$SPECint\_base2006 =$ 35.6

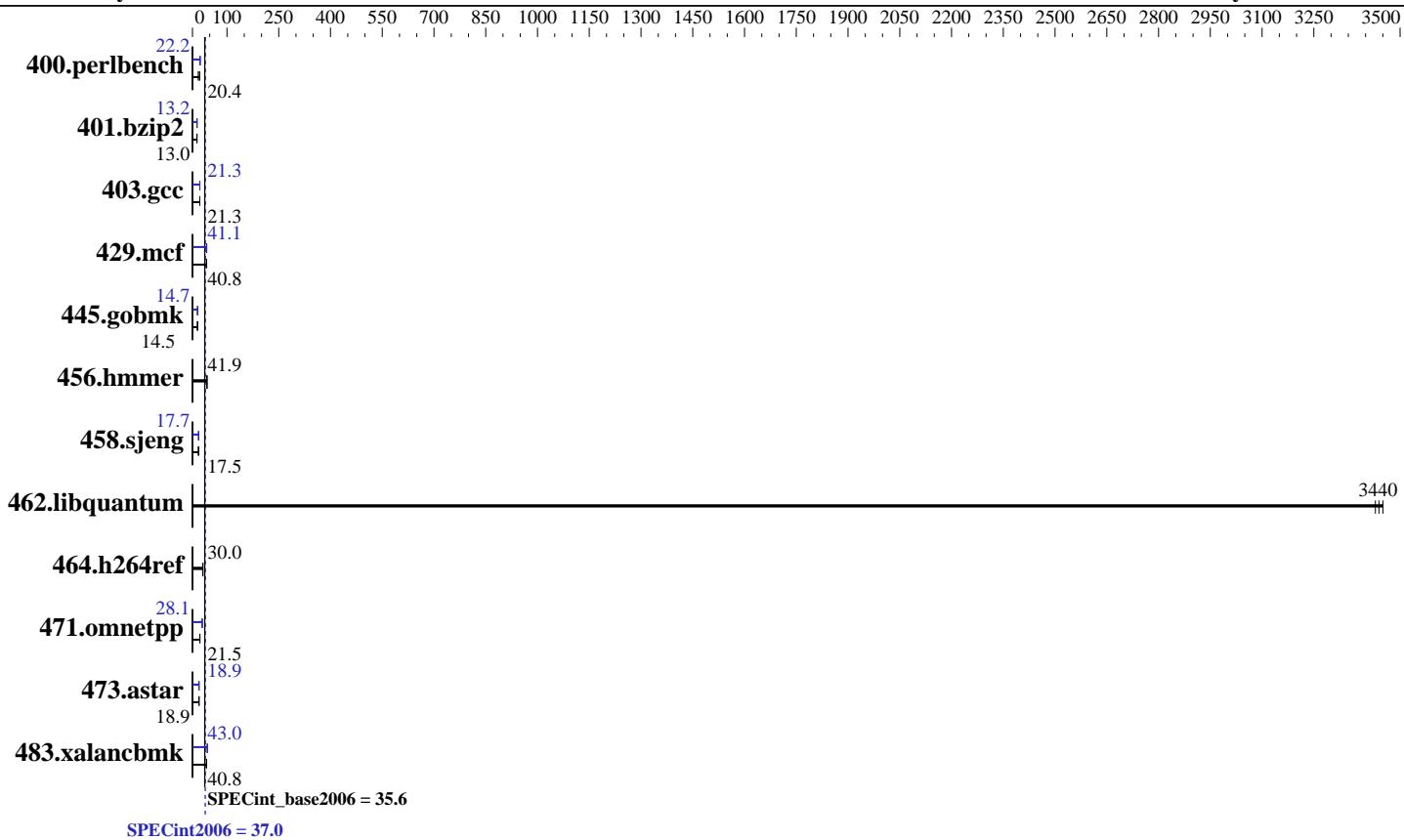|			
CPU2006 license:	3175	**Test date:**	Oct-2016
Test sponsor:	Huawei	**Hardware Availability:**	Mar-2016
Tested by:	Huawei	**Software Availability:**	Mar-2016

Graph scale: 0 100 250 400 550 700 850 1000 1150 1300 1450 1600 1750 1900 2050 2200 2350 2500 2650 2800 2950 3100 3250 3500

- 400.perlbench: 22.2 / 20.4
- 401.bzip2: 13.2 / 13.0
- 403.gcc: 21.3 / 21.3
- 429.mcf: 41.1 / 40.8
- 445.gobmk: 14.7 / 14.5
- 456.hmmer: 41.9
- 458.sjeng: 17.7 / 17.5
- 462.libquantum: 3440
- 464.h264ref: 30.0
- 471.omnetpp: 28.1 / 21.5
- 473.astar: 18.9 / 18.9
- 483.xalancbmk: 43.0 / 40.8

SPECint_base2006 = 35.6

SPECint2006 = 37.0

Hardware

CPU Name:	Intel Xeon E5-2609 v4
CPU Characteristics:	
CPU MHz:	1700
FPU:	Integrated
CPU(s) enabled:	16 cores, 2 chips, 8 cores/chip
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:	20 MB I+D on chip per chip
Other Cache:	None
Memory:	256 GB (16 x 16 GB 2Rx4 PC4-2133T-R, running at 1866 MHz)
Disk Subsystem:	1 x 500 GB SATA,7200 RPM
Other Hardware:	None

Software

Operating System:	Red Hat Enterprise Linux Server release 7.2 (Maipo) 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	588	16.6	478	20.5	**479**	**20.4**	441	22.2	441	22.2	**441**	**22.2**
401.bzip2	741	13.0	744	13.0	**744**	**13.0**	**730**	**13.2**	731	13.2	730	13.2
403.gcc	378	21.3	379	21.2	**379**	**21.3**	**377**	**21.3**	377	21.3	378	21.3
429.mcf	222	41.2	227	40.1	**223**	**40.8**	220	41.5	**222**	**41.1**	223	40.9
445.gobmk	721	14.5	723	14.5	**722**	**14.5**	715	14.7	**715**	**14.7**	716	14.7
456.hmmer	**223**	**41.9**	223	41.9	222	42.0	**223**	**41.9**	223	41.9	222	42.0
458.sjeng	**692**	**17.5**	692	17.5	692	17.5	684	17.7	**684**	**17.7**	684	17.7
462.libquantum	6.04	3430	**6.03**	**3440**	6.01	3450	6.04	3430	**6.03**	**3440**	6.01	3450
464.h264ref	736	30.1	737	30.0	**736**	**30.0**	736	30.1	737	30.0	**736**	**30.0**
471.omnetpp	292	21.4	291	21.5	**291**	**21.5**	222	28.2	**222**	**28.1**	223	28.0
473.astar	**372**	**18.9**	371	18.9	372	18.9	372	18.9	**372**	**18.9**	372	18.9
483.xalancbmk	**169**	**40.8**	171	40.4	169	40.8	160	43.1	160	43.0	**160**	**43.0**

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

        BIOS configuration:
        Set Power Efficiency Mode to Custom
        Set Snoop Mode to ES mode
        Set Patrol Scrub to Disable
        Sysinfo program /spec16/config/sysinfo.rev6914
        $Rev: 6914 $ $Date:: 2014-06-25 #$ e3fbb8667b5a285932ceab81e28219e1
        running on localhost.localdomain Wed Oct 19 14:16:12 2016

        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 E5-2609 v4 @ 1.70GHz
                2 "physical id"s (chips)
                16 "processors"
            cores, siblings (Caution: counting these is hw and system dependent. The
            following excerpts from /proc/cpuinfo might not be reliable. Use with
            caution.)

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Platform Notes (Continued)

```
      cpu cores : 8
      siblings  : 8
      physical 0: cores 0 1 2 3 4 5 6 7
      physical 1: cores 0 1 2 3 4 5 6 7
    cache size : 20480 KB

  From /proc/meminfo
    MemTotal:       263569988 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 Oct 19 14:15

  SPEC is set to: /spec16
    Filesystem     Type  Size  Used Avail Use% Mounted on
    /dev/sda2      xfs   391G   12G  380G   3% /
  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 Insyde Corp. 3.33 09/26/2016
    Memory:
    16x Micron 36ASF2G72PZ-2G1A2 16 GB 2 rank 2133 MHz, configured at 1867 MHz

  (End of data from sysinfo program)
```

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General Notes

```
Environment variables set by runspec before the start of the run:
KMP_AFFINITY = "granularity=fine,compact,1,0"
LD_LIBRARY_PATH = "/spec16/libs/32:/spec16/libs/64:/spec16/sh"
OMP_NUM_THREADS = "16"

 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
 runspec command invoked through numactl i.e.:
 numactl --interleave=all runspec <etc>
 The Huawei XH622 V3 and Huawei XH628 V3 and Huawei XH620 V3
 are electronically equivalent.
 The results have been measured on a Huawei XH620 V3 model.
```

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

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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/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`

Continued on next page

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Peak Optimization Flags (Continued)

```
      401.bzip2 (continued):
                -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: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/Huawei-Platform-Settings-BDW-V1.0.html

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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-BDW-V1.0.xml

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Tested with SPEC CPU2006 v1.2.
Report generated on Tue Nov 15 16:05:58 2016 by SPEC CPU2006 PS/PDF formatter v6932.
Originally published on 15 November 2016.