Huawei XH622 V3 (Intel Xeon E5-2603 v4)

**SPECint®2006 = 35.8**
**SPECint_base2006 = 34.5**

**CPU2006 license:** Huawei
**Test sponsor:** Huawei
**Tested by:** Huawei

**Hardware**
- **CPU Name:** Intel Xeon E5-2603 v4
- **CPU Characteristics:**
  - **CPU MHz:** 1700
  - **FPU:** Integrated
  - **CPU(s) enabled:** 12 cores, 2 chips, 6 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
  - **L2 Cache:** 1 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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SPEC CINT2006 Result

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SPECint2006 = 35.8
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CPU2006 license: 3175
Test sponsor: Huawei
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Test date: Oct-2016
Hardware Availability: Mar-2016
Software Availability: Mar-2016

Results Table

Benchmark | Seconds | Ratio | Base | Seconds | Ratio | Peak | Seconds | Ratio | Seconds | Ratio | Seconds | Ratio
--- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | ---
400.perlbench | 479 | 20.4 | 479 | 20.4 | 480 | 20.4 | 442 | 22.1 | 442 | 22.1 | 442 | 22.1
401.bzip2 | 744 | 13.0 | 740 | 13.0 | 742 | 13.0 | 731 | 13.2 | 730 | 13.2 | 730 | 13.2
403.gcc | 386 | 20.9 | 387 | 20.8 | 386 | 20.8 | 384 | 20.9 | 384 | 20.9 | 384 | 20.9
429.mcf | 226 | 41.4 | 726 | 14.4 | 726 | 14.4 | 223 | 40.9 | 223 | 40.9 | 223 | 40.9
445.gobmk | 726 | 14.4 | 726 | 14.4 | 725 | 14.5 | 719 | 14.6 | 718 | 14.6 | 717 | 14.6
456.hmmer | 223 | 42.0 | 693 | 17.5 | 694 | 17.4 | 693 | 17.5 | 685 | 17.7 | 685 | 17.7
458.sjeng | 693 | 17.5 | 694 | 17.4 | 693 | 17.5 | 685 | 17.7 | 685 | 17.7 | 685 | 17.7
462.libquantum | 7.47 | 2780 | 7.46 | 2780 | 7.46 | 2780 | 7.47 | 2780 | 7.46 | 2780 | 7.46 | 2780
464.h264ref | 738 | 30.0 | 734 | 30.1 | 737 | 30.0 | 738 | 30.0 | 734 | 30.1 | 737 | 30.0
471.omnetpp | 325 | 19.2 | 326 | 19.2 | 327 | 19.1 | 257 | 24.3 | 257 | 24.3 | 257 | 24.3
473.astar | 375 | 18.7 | 376 | 18.7 | 377 | 18.6 | 374 | 18.7 | 375 | 18.7 | 375 | 18.7
483.xalancbmk | 170 | 40.5 | 171 | 40.5 | 171 | 40.3 | 162 | 42.7 | 162 | 42.8 | 163 | 42.4

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

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 E5-2603 v4 @ 1.70GHz
    2 "physical id"s (chips)
    12 "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 : 6
siblings : 6
  physical 0: cores 0 1 2 3 4 5
  physical 1: cores 0 1 2 3 4 5

cache size : 15360 KB

From /proc/meminfo
MemTotal: 263570484 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)

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 14:49

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 Samsung M393A2G40DB0-CPB 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 = "12"

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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Software Availability: Mar-2016

### 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

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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: 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

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

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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For other inquiries, please contact webmaster@spec.org.

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