SPEC® CINT2006 Result
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Huawei

Huawei RH8100 V3 (Intel Xeon E7-8890 v2)

SPECint®_rate2006 = 4740

SPECint_rate_base2006 = 4600

CPU2006 license: 3175	**Test date:** Mar-2015
Test sponsor: Huawei	**Hardware Availability:** Feb-2014
Tested by: Huawei	**Software Availability:** Sep-2014

Copies

Benchmark	Copies	Peak	Base
400.perlbench	240	4420	3750
401.bzip2	240	2470	2430
403.gcc	240	3410	3410
429.mcf	240		6060
445.gobmk	240	3730	3660
456.hmmer	240	7040	6640
458.sjeng	240	3810	3640
462.libquantum	240		32500
464.h264ref	240	6500	6450
471.omnetpp	240	2180	2080
473.astar	240		2590
483.xalancbmk	240		4730

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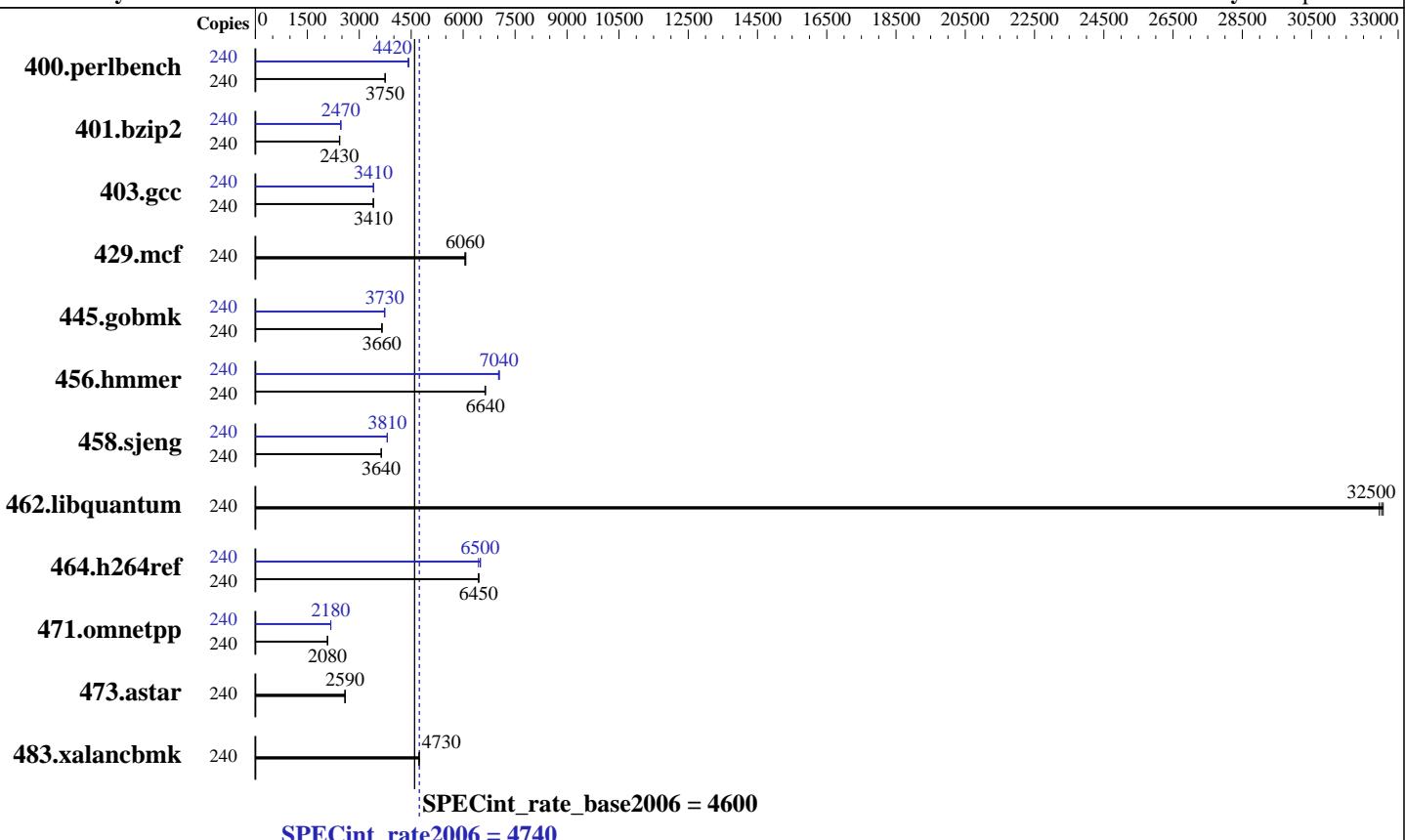
Hardware

CPU Name:	Intel Xeon E7-8890 v2
CPU Characteristics:	Intel Turbo Boost Technology up to 3.40 GHz
CPU MHz:	2800
FPU:	Integrated
CPU(s) enabled:	120 cores, 8 chips, 15 cores/chip, 2 threads/core
CPU(s) orderable:	4,8 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:	37.5 MB I+D on chip per chip
Other Cache:	None
Memory:	2 TB (128 x 16 GB 2Rx4 PC3-12800R-11, ECC, running at 1333 MHz)
Disk Subsystem:	3 x 300 GB SAS, 10K RPM
Other Hardware:	None

Software

Operating System:	Red Hat Enterprise Linux Server release 7.0 (Maipo) 3.10.0-123.el7.x86_64
Compiler:	C/C++: Version 14.0.0.080 of Intel C++ Studio XE for Linux
Auto Parallel:	No
File System:	tmpfs
System State:	Run level 3 (multi-user)
Base Pointers:	32-bit
Peak Pointers:	32/64-bit
Other Software:	Microquill SmartHeap V10.0

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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	240	625	3750	**626**	**3750**	627	3740	240	**531**	**4420**	531	4410	529	4430
401.bzip2	240	954	2430	**951**	**2430**	951	2430	240	938	2470	941	2460	**939**	**2470**
403.gcc	240	**566**	**3410**	566	3410	568	3400	240	566	3420	567	3410	**566**	**3410**
429.mcf	240	360	6080	362	6050	**361**	**6060**	240	360	6080	362	6050	**361**	**6060**
445.gobmk	240	688	3660	690	3650	**689**	**3660**	240	674	3740	676	3730	**674**	**3730**
456.hmmer	240	337	6640	**337**	**6640**	338	6630	240	319	7020	318	7050	**318**	**7040**
458.sjeng	240	798	3640	800	3630	**798**	**3640**	240	762	3810	763	3810	**762**	**3810**
462.libquantum	240	**153**	**32500**	153	32600	153	32500	240	**153**	**32500**	153	32600	153	32500
464.h264ref	240	**824**	**6450**	825	6440	823	6450	240	**818**	**6500**	817	6500	824	6440
471.omnetpp	240	720	2080	720	2080	**720**	**2080**	240	689	2180	689	2180	**689**	**2180**
473.astar	240	**651**	**2590**	650	2590	651	2590	240	**651**	**2590**	650	2590	651	2590
483.xalancbmk	240	**350**	**4730**	351	4720	350	4730	240	**350**	**4730**	351	4720	350	4730

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"
    Tmpfs filesystem can be set with:
     mkdir -p /mnt/shm
     mount -t tmpfs -o size=1024g,rw tmpfs /mnt/shm
    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 DRAM Maintenace to Manual
    Set DRAM Maintenace Mode to pTRR
    Set Patrol Scrub to Enabled
    Set Memory Power Saving to disabled
    Sysinfo program /mnt/shm/spec-1.2/config/sysinfo.rev6818
    $Rev: 6818 $ $Date:: 2012-07-17 #$ e86d102572650a6e4d596a3cee98f191
    running on rh8100v3 Wed Mar 25 13:27:32 2015

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Platform Notes (Continued)

```
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 E7-8890 v2 @ 2.80GHz
      8 "physical id"s (chips)
      240 "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 : 15
      siblings  : 30
      physical 0: cores 0 1 2 3 4 5 6 7 8 9 10 11 12 13 14
      physical 1: cores 0 1 2 3 4 5 6 7 8 9 10 11 12 13 14
      physical 2: cores 0 1 2 3 4 5 6 7 8 9 10 11 12 13 14
      physical 3: cores 0 1 2 3 4 5 6 7 8 9 10 11 12 13 14
      physical 4: cores 0 1 2 3 4 5 6 7 8 9 10 11 12 13 14
      physical 5: cores 0 1 2 3 4 5 6 7 8 9 10 11 12 13 14
      physical 6: cores 0 1 2 3 4 5 6 7 8 9 10 11 12 13 14
      physical 7: cores 0 1 2 3 4 5 6 7 8 9 10 11 12 13 14
   cache size : 38400 KB

From /proc/meminfo
   MemTotal:       2113350428 kB
   HugePages_Total:         0
   Hugepagesize:       2048 kB

From /etc/*release* /etc/*version*
   os-release:
      NAME="Red Hat Enterprise Linux Server"
      VERSION="7.0 (Maipo)"
      ID="rhel"
      ID_LIKE="fedora"
      VERSION_ID="7.0"
      PRETTY_NAME="Red Hat Enterprise Linux Server 7.0 (Maipo)"
      ANSI_COLOR="0;31"
      CPE_NAME="cpe:/o:redhat:enterprise_linux:7.0:GA:server"
   redhat-release: Red Hat Enterprise Linux Server release 7.0 (Maipo)
   system-release: Red Hat Enterprise Linux Server release 7.0 (Maipo)
   system-release-cpe: cpe:/o:redhat:enterprise_linux:7.0:ga:server

uname -a:
   Linux rh8100v3 3.10.0-123.el7.x86_64 #1 SMP Mon May 5 11:16:57 EDT 2014
   x86_64 x86_64 x86_64 GNU/Linux

run-level 3 Mar 25 05:16

SPEC is set to: /mnt/shm/spec-1.2
   Filesystem      Type   Size  Used Avail Use% Mounted on
   tmpfs           tmpfs  1.0T   15G 1010G   2% /mnt/shm
```

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Platform Notes (Continued)

```
Additional information from dmidecode:
  BIOS American Megatrends Inc. BLHSV027 02/15/2015
  Memory:
    128x   16 GB
    120x Hynix HMT42GR7AFR4C-PB 16 GB 1333 MHz 2 rank
    7x Hynix HMT42GR7MFR4C-PB 16 GB 1333 MHz 2 rank
    64x NO DIMM NO DIMM
    1x Samsung M393B2G70BH0-CK0 16 GB 1333 MHz 2 rank

(End of data from sysinfo program)
Regarding the sysinfo display about the memory installed, the correct amount of
memory is 2 TB and the dmidecode description should have three lines reading as:
    120x Hynix HMT42GR7AFR4C-PB 16 GB 1333 MHz 2 rank
    7x Hynix HMT42GR7MFR4C-PB 16 GB 1333 MHz 2 rank
    1x Samsung M393B2G70BH0-CK0 16 GB 1333 MHz 2 rank
```

General Notes

```
Environment variables set by runspec before the start of the run:
LD_LIBRARY_PATH = "/mnt/shm/spec-1.2/libs/32:/mnt/shm/spec-1.2/libs/64:/mnt/shm/spec-1.2/sh"

Binaries compiled on a system with 1x Core i7-860 CPU + 8GB
memory using RedHat EL 6.4
Transparent Huge Pages enabled with:
echo always > /sys/kernel/mm/redhat_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

C++ benchmarks:
    icpc -m32

Base Portability Flags

    400.perlbench: -DSPEC_CPU_LINUX_IA32
    462.libquantum: -DSPEC_CPU_LINUX
    483.xalancbmk: -DSPEC_CPU_LINUX

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Base Optimization Flags

C benchmarks:
```
-xSSE4.2 -ipo -O3 -no-prec-div -opt-prefetch -opt-mem-layout-trans=3
```

C++ benchmarks:
```
-xSSE4.2 -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
```

400.perlbench: `icc -m64`

401.bzip2: `icc -m64`

456.hmmer: `icc -m64`

458.sjeng: `icc -m64`

C++ benchmarks:
```
icpc -m32
```

Peak Portability Flags

400.perlbench: `-DSPEC_CPU_LP64 -DSPEC_CPU_LINUX_X64`
401.bzip2: `-DSPEC_CPU_LP64`
456.hmmer: `-DSPEC_CPU_LP64`
458.sjeng: `-DSPEC_CPU_LP64`
462.libquantum: `-DSPEC_CPU_LINUX`
483.xalancbmk: `-DSPEC_CPU_LINUX`

Peak Optimization Flags

C benchmarks:

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Peak Optimization Flags (Continued)

400.perlbench: `-xSSE4.2`(pass 2) `-prof-gen`(pass 1) `-ipo`(pass 2)
`-O3`(pass 2) `-no-prec-div`(pass 2) `-prof-use`(pass 2)
`-auto-ilp32`

401.bzip2: `-xSSE4.2`(pass 2) `-prof-gen`(pass 1) `-ipo`(pass 2)
`-O3`(pass 2) `-no-prec-div`(pass 2) `-prof-use`(pass 2)
`-opt-prefetch -auto-ilp32 -ansi-alias`

403.gcc: `-xSSE4.2 -ipo -O3 -no-prec-div`

429.mcf: basepeak = yes

445.gobmk: `-xSSE4.2`(pass 2) `-prof-gen`(pass 1) `-prof-use`(pass 2)
`-ansi-alias -opt-mem-layout-trans=3`

456.hmmer: `-xSSE4.2 -ipo -O3 -no-prec-div -unroll2 -auto-ilp32`

458.sjeng: `-xSSE4.2`(pass 2) `-prof-gen`(pass 1) `-ipo`(pass 2)
`-O3`(pass 2) `-no-prec-div`(pass 2) `-prof-use`(pass 2)
`-unroll4 -auto-ilp32`

462.libquantum: basepeak = yes

464.h264ref: `-xSSE4.2`(pass 2) `-prof-gen`(pass 1) `-ipo`(pass 2)
`-O3`(pass 2) `-no-prec-div`(pass 2) `-prof-use`(pass 2)
`-unroll2 -ansi-alias`

C++ benchmarks:

471.omnetpp: `-xSSE4.2`(pass 2) `-prof-gen`(pass 1) `-ipo`(pass 2)
`-O3`(pass 2) `-no-prec-div`(pass 2) `-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-ic14.0-official-linux64-revC.html
http://www.spec.org/cpu2006/flags/Huawei-Platform-Settings-V1.1-IVB-RevG.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-ic14.0-official-linux64-revC.xml
http://www.spec.org/cpu2006/flags/Huawei-Platform-Settings-V1.1-IVB-RevG.xml

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