SPEC® CINT2006 Result
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Dell Inc.

PowerEdge R940
(Intel Xeon Gold 6152, 2.10 GHz)

SPECint®2006 =   79.5
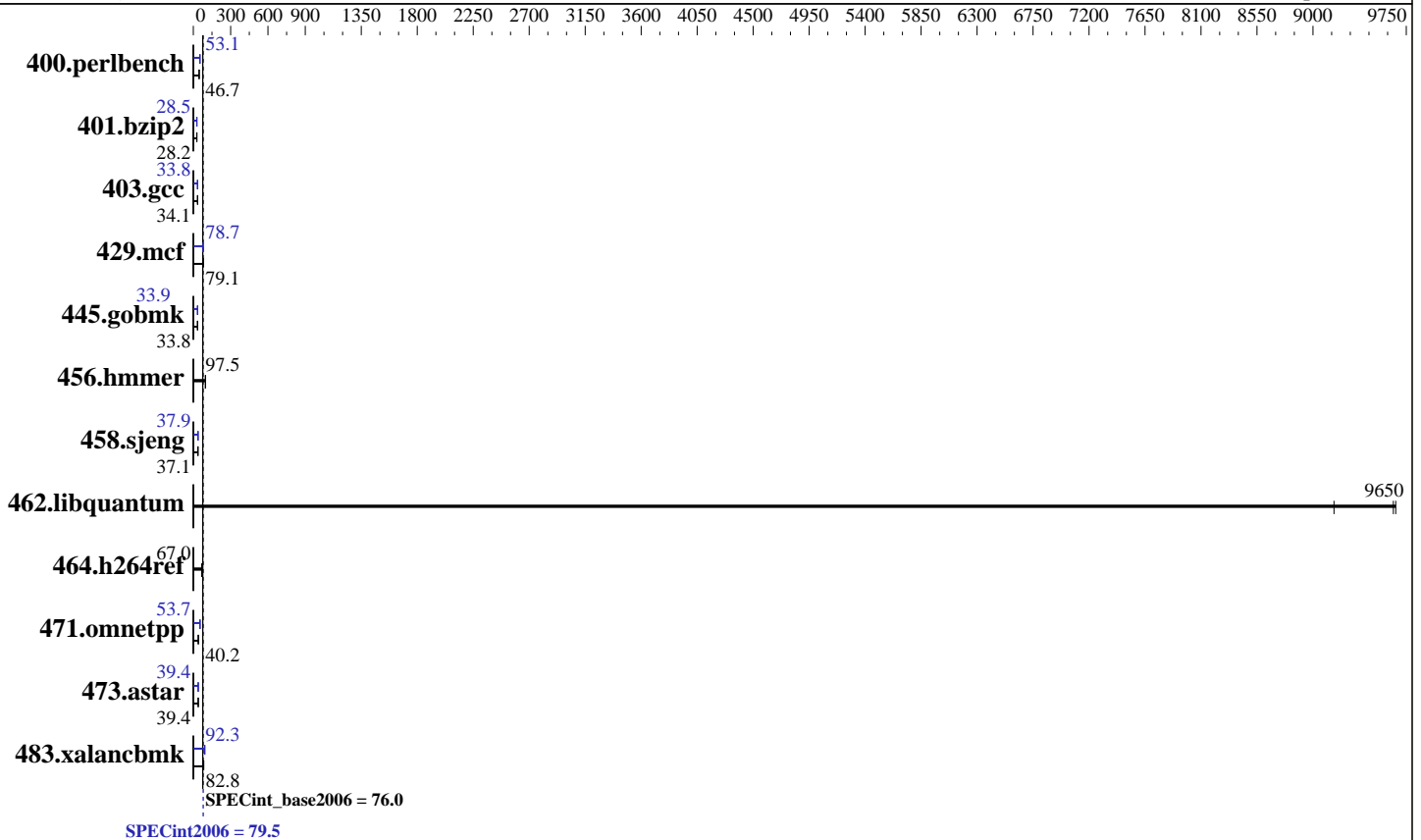
SPECint_base2006 =   76.0

CPU2006 license: 55

Test sponsor: Dell Inc.

Tested by: Dell Inc.

Test date: Oct-2017

Hardware Availability: Sep-2017

Software Availability: Apr-2017

400.perlbench: 53.1 / 46.7
401.bzip2: 28.5 / 28.2
403.gcc: 33.8 / 34.1
429.mcf: 78.7 / 79.1
445.gobmk: 33.9 / 33.8
456.hmmer: 97.5
458.sjeng: 37.9 / 37.1
462.libquantum: 9650
464.h264ref: 67.0
471.omnetpp: 53.7 / 40.2
473.astar: 39.4 / 39.4
483.xalancbmk: 92.3 / 82.8

SPECint_base2006 = 76.0

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Hardware

CPU Name: Intel Xeon Gold 6152

CPU Characteristics: Intel Turbo Boost Technology up to 3.70 GHz

CPU MHz: 2100

FPU: Integrated

CPU(s) enabled: 88 cores, 4 chips, 22 cores/chip

CPU(s) orderable: 2,4 chip

Primary Cache: 32 KB I + 32 KB D on chip per core

Secondary Cache: 1 MB I+D on chip per core

L3 Cache: 30.25 MB I+D on chip per chip

Other Cache: None

Memory: 768 GB (48 x 16 GB 2Rx8 PC4-2666V-R)

Disk Subsystem: 1 x 900 GB 15K RPM SAS12

Other Hardware: None

Software

Operating System: SUSE Linux Enterprise Server 12 (x86_64) SP2 4.4.21-69-default

Compiler: C/C++: Version 17.0.3.191 of Intel C/C++ Compiler 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	209	46.7	**209**	**46.7**	209	46.7	**184**	**53.1**	184	53.0	184	53.2
401.bzip2	**342**	**28.2**	341	28.3	342	28.2	**339**	**28.5**	338	28.5	339	28.5
403.gcc	236	34.2	236	34.1	**236**	**34.1**	240	33.6	**238**	**33.8**	238	33.8
429.mcf	**115**	**79.1**	117	77.9	114	79.7	116	78.9	**116**	**78.7**	118	77.4
445.gobmk	310	33.8	311	33.8	**311**	**33.8**	309	33.9	**310**	**33.9**	310	33.9
456.hmmer	**95.6**	**97.5**	95.7	97.5	95.6	97.6	**95.6**	**97.5**	95.7	97.5	95.6	97.6
458.sjeng	**326**	**37.1**	325	37.2	326	37.1	**320**	**37.9**	320	37.8	319	37.9
462.libquantum	2.26	9170	**2.15**	**9650**	2.14	9670	2.26	9170	**2.15**	**9650**	2.14	9670
464.h264ref	331	66.8	**330**	**67.0**	327	67.7	331	66.8	**330**	**67.0**	327	67.7
471.omnetpp	152	41.1	**156**	**40.2**	161	38.9	117	53.3	116	54.1	**116**	**53.7**
473.astar	178	39.5	**178**	**39.4**	179	39.1	**178**	**39.4**	178	39.4	180	39.0
483.xalancbmk	**83.3**	**82.8**	81.9	84.2	83.9	82.2	74.6	92.5	**74.7**	**92.3**	76.0	90.8

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 settings:
    Logical Processor Disabled
    Virtualization Technology Disabled
    Sub NUMA Cluster Disabled
    System Profile set to Custom
    CPU Performance set to Maximum Performance
    C1E Disabled
    C States set to Autonomous
    Uncore Frequency set to Dynamic
    Memory Patrol Scrub Disabled
    Energy Efficiency Policy set to Performance
    CPU Interconnect Bus Link Power Management Disabled
    PCI ASPM L1 Link Power Management Disabled
    Sysinfo program /home/cpu2006/config/sysinfo.rev6993
    Revision 6993 of 2015-11-06 (b5e8d4b4eb51ed28d7f98696cbe290c1)
    running on linux-apb2 Wed Oct 18 04:46:33 2017

    This section contains SUT (System Under Test) info as seen by
    some common utilities.  To remove or add to this section, see:
```

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Platform Notes (Continued)

```
   http://www.spec.org/cpu2006/Docs/config.html#sysinfo

 From /proc/cpuinfo
    model name : Intel(R) Xeon(R) Gold 6152 CPU @ 2.10GHz
       4 "physical id"s (chips)
       88 "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 : 22
       siblings  : 22
       physical 0: cores 0 1 2 3 4 5 8 9 10 11 12 16 17 18 19 20 21 24 25 26 27
       28
       physical 1: cores 0 1 2 3 4 5 8 9 10 11 12 16 17 18 19 20 21 24 25 26 27
       28
       physical 2: cores 0 1 2 3 4 5 8 9 10 11 12 16 17 18 19 20 21 24 25 26 27
       28
       physical 3: cores 0 1 2 3 4 5 8 9 10 11 12 16 17 18 19 20 21 24 25 26 27
       28
    cache size : 30976 KB

 From /proc/meminfo
    MemTotal:       791225344 kB
    HugePages_Total:        0
    Hugepagesize:        2048 kB

 /usr/bin/lsb_release -d
    SUSE Linux Enterprise Server 12 SP2

 From /etc/*release* /etc/*version*
    SuSE-release:
       SUSE Linux Enterprise Server 12 (x86_64)
       VERSION = 12
       PATCHLEVEL = 2
       # 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-SP2"
       VERSION_ID="12.2"
       PRETTY_NAME="SUSE Linux Enterprise Server 12 SP2"
       ID="sles"
       ANSI_COLOR="0;32"
       CPE_NAME="cpe:/o:suse:sles:12:sp2"

 uname -a:
    Linux linux-apb2 4.4.21-69-default #1 SMP Tue Oct 25 10:58:20 UTC 2016
    (9464f67) x86_64 x86_64 x86_64 GNU/Linux

 run-level 3 Oct 18 04:46
```

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Platform Notes (Continued)

```
  SPEC is set to: /home/cpu2006
    Filesystem      Type  Size  Used Avail Use% Mounted on
    /dev/sda4       xfs   796G   17G  779G   3% /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 Dell Inc. 1.1.7 08/10/2017
    Memory:
     12x 002C00B3002C 18ASF2G72PDZ-2G6D1 16 GB 2 rank 2666 MHz
     12x 00AD00B300AD HMA82GR7AFR8N-VK 16 GB 2 rank 2666 MHz
     24x 00CE063200CE M393A2K43BB1-CTD 16 GB 2 rank 2666 MHz

  (End of data from sysinfo program)
```

General Notes

```
  Environment variables set by runspec before the start of the run:
  KMP_AFFINITY = "granularity=fine,compact"
  LD_LIBRARY_PATH = "/home/cpu2006/lib/ia32:/home/cpu2006/lib/intel64:/home/cpu2006/sh10.2"
  OMP_NUM_THREADS = "88"

   Binaries compiled on a system with 1x Intel Core i7-4790 CPU + 32GB RAM
   memory using Redhat Enterprise Linux 7.2
   Transparent Huge Pages enabled by default.
   Filesystem page cache cleared with:
   shell invocation of 'sync; echo 3 > /proc/sys/vm/drop_caches' prior to run
```

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

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Base Portability Flags (Continued)

```
   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 -qopt-prefetch
-auto-p32
```

C++ benchmarks:
```
-xCORE-AVX2 -ipo -O3 -no-prec-div -qopt-prefetch -auto-p32
-Wl,-z,muldefs -L/sh10.2 -lsmartheap64
```

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_2017/linux/lib/ia32
```

```
445.gobmk: icc -m32 -L/opt/intel/compilers_and_libraries_2017/linux/lib/ia32
```

C++ benchmarks (except as noted below):
```
icc -m32 -L/opt/intel/compilers_and_libraries_2017/linux/lib/ia32
```

```
473.astar: icpc -m64
```

Peak Portability Flags

```
400.perlbench: -D_FILE_OFFSET_BITS=64 -DSPEC_CPU_LINUX_IA32
```

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Peak Portability Flags (Continued)

```
     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: -prof-gen(pass 1) -prof-use(pass 2) -xCORE-AVX2(pass 2)
                -par-num-threads=1(pass 1) -ipo(pass 2) -O3(pass 2)
                -no-prec-div(pass 2) -qopt-prefetch

     401.bzip2: -prof-gen(pass 1) -prof-use(pass 2) -xCORE-AVX2(pass 2)
                -par-num-threads=1(pass 1) -ipo(pass 2) -O3(pass 2)
                -no-prec-div -auto-ilp32 -qopt-prefetch

       403.gcc: -xCORE-AVX2 -ipo -O3 -no-prec-div -inline-calloc
                -qopt-malloc-options=3 -auto-ilp32

       429.mcf: -xCORE-AVX2 -ipo -O3 -no-prec-div -parallel
                -qopt-prefetch -auto-p32

     445.gobmk: -prof-gen(pass 1) -prof-use(pass 2) -xCORE-AVX2(pass 2)
                -par-num-threads=1(pass 1) -ipo(pass 2) -O3(pass 2)
                -no-prec-div(pass 2)

    456.hmmer: basepeak = yes

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

 462.libquantum: basepeak = yes

    464.h264ref: basepeak = yes
```

C++ benchmarks:

```
    471.omnetpp: -prof-gen(pass 1) -prof-use(pass 2) -xCORE-AVX2(pass 2)
                -par-num-threads=1(pass 1) -ipo(pass 2) -O3(pass 2)
                -no-prec-div(pass 2) -qopt-ra-region-strategy=block
```

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Peak Optimization Flags (Continued)

471.omnetpp (continued):
```
-Wl,-z,muldefs -L/sh10.2 -lsmartheap
```

473.astar: `-xCORE-AVX2 -ipo -O3 -no-prec-div -qopt-prefetch`
`-auto-p32 -Wl,-z,muldefs -L/sh10.2 -lsmartheap64`

483.xalancbmk: `-xCORE-AVX2 -ipo -O3 -no-prec-div -qopt-prefetch`
`-Wl,-z,muldefs -L/sh10.2 -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-ic17.0-official-linux64-revF.html
http://www.spec.org/cpu2006/flags/Dell-Platform-Flags-PowerEdge14G-revD.20171221.html

You can also download the XML flags sources by saving the following links:
http://www.spec.org/cpu2006/flags/Intel-ic17.0-official-linux64-revF.xml
http://www.spec.org/cpu2006/flags/Dell-Platform-Flags-PowerEdge14G-revD.20171221.xml

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

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