# SPEC® CINT2006 Result
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## Bull SAS

NovaScale R470 F3 (Intel Xeon E5-4610, 2.40 GHz)

$SPECint®\_rate2006 = $ 878

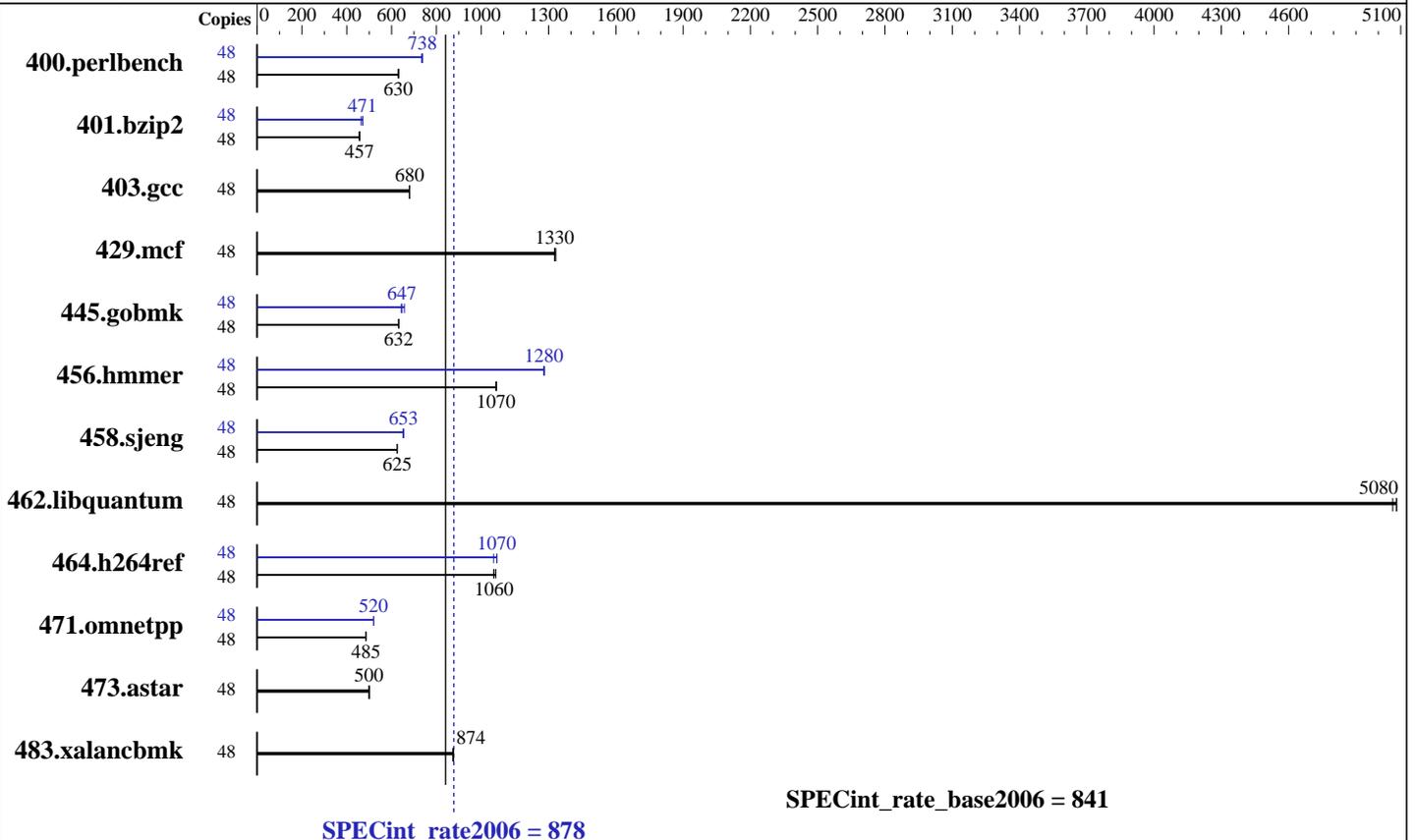$SPECint\_rate\_base2006 = $ 841

**CPU2006 license:** 20
**Test sponsor:** Bull SAS
**Tested by:** Dell Inc.

**Test date:** Mar-2012
**Hardware Availability:** May-2012
**Software Availability:** Feb-2012



| Copies | | |
|---|---|---|
| 400.perlbench | 48 | 738 |
| | 48 | 630 |
| 401.bzip2 | 48 | 471 |
| | 48 | 457 |
| 403.gcc | 48 | 680 |
| 429.mcf | 48 | 1330 |
| 445.gobmk | 48 | 647 |
| | 48 | 632 |
| 456.hmmer | 48 | 1280 |
| | 48 | 1070 |
| 458.sjeng | 48 | 653 |
| | 48 | 625 |
| 462.libquantum | 48 | 5080 |
| 464.h264ref | 48 | 1070 |
| | 48 | 1060 |
| 471.omnetpp | 48 | 520 |
| | 48 | 485 |
| 473.astar | 48 | 500 |
| 483.xalancbmk | 48 | 874 |

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## Hardware

**CPU Name:** Intel Xeon E5-4610
**CPU Characteristics:** Intel Turbo Boost Technology up to 2.90 GHz
**CPU MHz:** 2400
**FPU:** Integrated
**CPU(s) enabled:** 24 cores, 4 chips, 6 cores/chip, 2 threads/core
**CPU(s) orderable:** 2,4 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:** 15 MB I+D on chip per chip
**Other Cache:** None
**Memory:** 256 GB (32 x 8 GB 2Rx4 PC3-12800R-11, ECC, running at 1333 MHz)
**Disk Subsystem:** 4 x 300 GB 10000 RPM SAS, RAID 0
**Other Hardware:** None

## Software

**Operating System:** SUSE Linux Enterprise Server 11 SP2 (x86_64) 3.0.13-0.27-default
**Compiler:** C/C++: Version 12.1.0.225 of Intel C++ Studio XE for Linux
**Auto Parallel:** No
**File System:** ext3
**System State:** Run level 3 (multi-user)
**Base Pointers:** 32-bit
**Peak Pointers:** 32/64-bit
**Other Software:** Microquill SmartHeap V9.01

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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 | 48 | 743 | 631 | 744 | 630 | **744** | **630** | 48 | 639 | 734 | 635 | 738 | **636** | **738** |
| 401.bzip2 | 48 | 1010 | 459 | **1014** | **457** | 1017 | 456 | 48 | **984** | **471** | 998 | 464 | 982 | 471 |
| 403.gcc | 48 | 568 | 680 | **568** | **680** | 569 | 680 | 48 | 568 | 680 | **568** | **680** | 569 | 680 |
| 429.mcf | 48 | 329 | 1330 | **330** | **1330** | 330 | 1330 | 48 | 329 | 1330 | **330** | **1330** | 330 | 1330 |
| 445.gobmk | 48 | 795 | 633 | 798 | 631 | **797** | **632** | 48 | **779** | **647** | 766 | 657 | 783 | 643 |
| 456.hmmer | 48 | 420 | 1070 | **420** | **1070** | 420 | 1070 | 48 | 350 | 1280 | **350** | **1280** | 350 | 1280 |
| 458.sjeng | 48 | 930 | 624 | **930** | **625** | 930 | 625 | 48 | 891 | 652 | **889** | **653** | 889 | 653 |
| 462.libquantum | 48 | 196 | 5060 | 196 | 5080 | **196** | **5080** | 48 | 196 | 5060 | 196 | 5080 | **196** | **5080** |
| 464.h264ref | 48 | 997 | 1070 | 1007 | 1050 | **1005** | **1060** | 48 | **994** | **1070** | 993 | 1070 | 1007 | 1050 |
| 471.omnetpp | 48 | 617 | 486 | 619 | 485 | **618** | **485** | 48 | 577 | 520 | **577** | **520** | 578 | 519 |
| 473.astar | 48 | **674** | **500** | 673 | 500 | 675 | 499 | 48 | **674** | **500** | 673 | 500 | 675 | 499 |
| 483.xalancbmk | 48 | **379** | **874** | 379 | 875 | 379 | 874 | 48 | **379** | **874** | 379 | 875 | 379 | 874 |

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"
```

## Platform Notes

```
    System Profile set to Custom
    CPU Power Management set to Maximum Performance
    Memory Frequency set to Maximum Performance
    Turbo Boost set to Enabled
    C States/C1E set to Enabled
    Sysinfo program /root/CPU2006-1.2/config/sysinfo.rev6800
    $Rev: 6800 $ $Date:: 2011-10-11 #$ 6f2ebdff5032aaa42e583f96b07f99d3
    running on icon4p Fri Mar 16 09:50:07 2012

    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 E5-4610 0 @ 2.40GHz
         4 "physical id"s (chips)
         48 "processors"
```
Continued on next page

## Bull SAS

NovaScale R470 F3 (Intel Xeon E5-4610, 2.40 GHz)

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### Platform Notes (Continued)

```
    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 : 6
       siblings  : 12
       physical 0: cores 0 1 2 3 4 5
       physical 1: cores 0 1 2 3 4 5
       physical 2: cores 0 1 2 3 4 5
       physical 3: cores 0 1 2 3 4 5
    cache size : 15360 KB

  From /proc/meminfo
     MemTotal:       264501512 kB
     HugePages_Total:        0
     Hugepagesize:        2048 kB

  /usr/bin/lsb_release -d
     SUSE Linux Enterprise Server 11 (x86_64)

  From /etc/*release* /etc/*version*
     SuSE-release:
        SUSE Linux Enterprise Server 11 (x86_64)
        VERSION = 11
        PATCHLEVEL = 2

  uname -a:
     Linux icon4p 3.0.13-0.27-default #1 SMP Wed Feb 15 13:33:49 UTC 2012
     (d73692b) x86_64 x86_64 x86_64 GNU/Linux

  run-level 3 Mar 16 09:47 last=S

  SPEC is set to: /root/CPU2006-1.2
     Filesystem      Type  Size  Used Avail Use% Mounted on
     /dev/sda2       ext3  1.1T  123G  917G  12% /

  Additional information from dmidecode:

  (End of data from sysinfo program)
```

### General Notes

```
  Environment variables set by runspec before the start of the run:
  LD_LIBRARY_PATH = "/root/CPU2006-1.2/libs/32:/root/CPU2006-1.2/libs/64"

  Binaries compiled on a system with 1x Core i7-860 CPU + 8GB
  memory using RHEL5.5
  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.:
```

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## General Notes (Continued)

```
numactl --interleave=all runspec <etc>
The Dell PowerEdge R820 and
the Bull NovaScale R470 F3 Models are electronically equivalent.
The results have been measured on a Dell PowerEdge R820 model.
```

## 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`

## 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/smartheap -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`

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**Tested by:** Dell Inc.

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**Hardware Availability:** May-2012

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# Peak Compiler Invocation (Continued)

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:

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: `basepeak = yes`

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`

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# Peak Optimization Flags (Continued)

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/smartheap -lsmartheap`

473.astar: basepeak = yes

483.xalancbmk: basepeak = yes

# Peak Other Flags

C benchmarks:

403.gcc: `-Dalloca=_alloca`

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The flags files that were used to format this result can be browsed at
http://www.spec.org/cpu2006/flags/Intel-ic12.1-official-linux64.20111122.html
http://www.spec.org/cpu2006/flags/Dell-Platform-Settings-V1.2-revA.20120410.00.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-ic12.1-official-linux64.20111122.xml
http://www.spec.org/cpu2006/flags/Dell-Platform-Settings-V1.2-revA.20120410.00.xml

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

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