



# SPEC® CINT2006 Result

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## NEC Corporation

Express5800/320Fd-LR  
(Intel Xeon E5405)

**SPECint®2006 = 19.7**

**SPECint\_base2006 = 17.4**

CPU2006 license: 9006

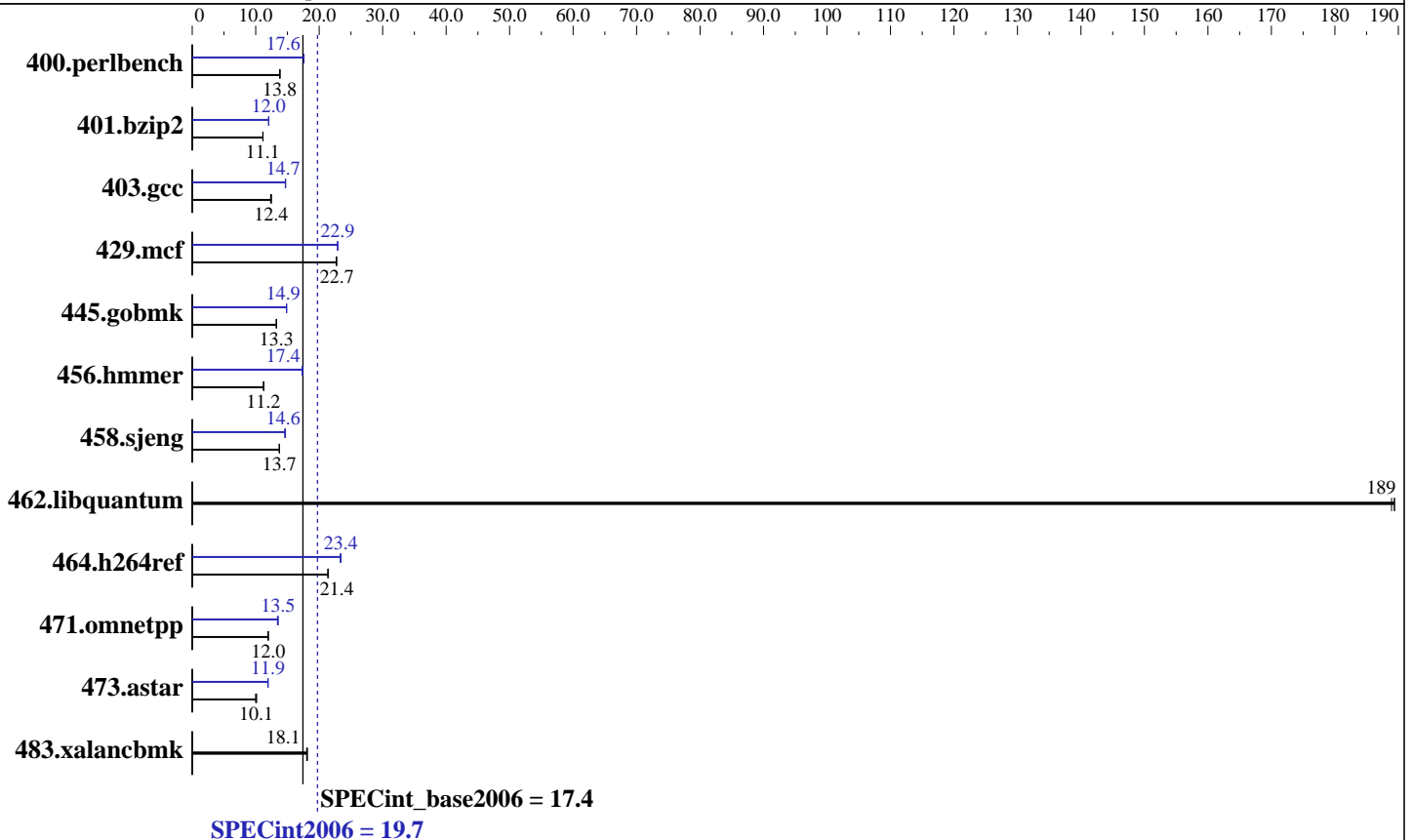
Test sponsor: NEC Corporation

Tested by: NEC Corporation

Test date: Dec-2008

Hardware Availability: Oct-2008

Software Availability: Nov-2008



### Hardware

CPU Name: Intel Xeon E5405  
 CPU Characteristics: 1333 MHz system bus  
 CPU MHz: 2000  
 FPU: Integrated  
 CPU(s) enabled: 8 cores, 2 chips, 4 cores/chip  
 CPU(s) orderable: 1,2 chips (fault tolerant, see Platform Notes)  
 Primary Cache: 32 KB I + 32 KB D on chip per core  
 Secondary Cache: 12 MB I+D on chip per chip, 6 MB shared / 2 cores  
 L3 Cache: None  
 Other Cache: None  
 Memory: 12 GB (6x2 GB PC2-5300F, 2 rank, CL5-5-5, ECC)  
 Disk Subsystem: 2x146.5 GB SAS, 15000 RPM, Software RAID Level1  
 Other Hardware: None

### Software

Operating System: Red Hat Enterprise Linux Server release 5.2  
 Advanced Platform, Kernel 2.6.18-92.1.13.el5 on an x86\_64  
 Compiler: Intel C++ Compiler 11.0 for Linux  
 Build 20081105 Package ID: l\_cproc\_p\_11.0.074  
 Auto Parallel: Yes  
 File System: ext3  
 System State: Run level 3 (multi-user)  
 Base Pointers: 32-bit  
 Peak Pointers: 32/64-bit  
 Other Software: MicroQuill SmartHeap Library 8.1  
 ft Server Control Software 6.0.2-198



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## Results Table

Benchmark	Base						Peak					
	Seconds	Ratio	Seconds	Ratio	Seconds	Ratio	Seconds	Ratio	Seconds	Ratio	Seconds	Ratio
400.perlbench	<b>708</b>	<b>13.8</b>	707	13.8	708	13.8	555	17.6	556	17.6	<b>555</b>	<b>17.6</b>
401.bzip2	868	11.1	864	11.2	<b>866</b>	<b>11.1</b>	<b>801</b>	<b>12.0</b>	802	12.0	801	12.0
403.gcc	652	12.3	646	12.5	<b>647</b>	<b>12.4</b>	549	14.7	547	14.7	<b>548</b>	<b>14.7</b>
429.mcf	402	22.7	401	22.7	<b>401</b>	<b>22.7</b>	<b>398</b>	<b>22.9</b>	398	22.9	398	22.9
445.gobmk	792	13.3	<b>791</b>	<b>13.3</b>	791	13.3	706	14.9	707	14.8	<b>706</b>	<b>14.9</b>
456.hammer	<b>830</b>	<b>11.2</b>	830	11.2	829	11.3	537	17.4	538	17.4	<b>537</b>	<b>17.4</b>
458.sjeng	883	13.7	881	13.7	<b>881</b>	<b>13.7</b>	830	14.6	824	14.7	<b>827</b>	<b>14.6</b>
462.libquantum	109	189	<b>109</b>	<b>189</b>	110	189	109	189	<b>109</b>	<b>189</b>	110	189
464.h264ref	1033	21.4	<b>1035</b>	<b>21.4</b>	1035	21.4	949	23.3	945	23.4	<b>946</b>	<b>23.4</b>
471.omnetpp	524	11.9	522	12.0	<b>522</b>	<b>12.0</b>	466	13.4	462	13.5	<b>463</b>	<b>13.5</b>
473.astar	694	10.1	703	9.98	<b>695</b>	<b>10.1</b>	588	11.9	588	11.9	<b>588</b>	<b>11.9</b>
483.xalancbmk	381	18.1	<b>381</b>	<b>18.1</b>	383	18.0	381	18.1	<b>381</b>	<b>18.1</b>	383	18.0

Results appear in the order in which they were run. Bold underlined text indicates a median measurement.

## Operating System Notes

'ulimit -s unlimited' was used to set the stacksize to unlimited prior to run  
OMP\_NUM\_THREADS set to number of cores  
KMP\_AFFINITY set to "physical,0"

## Platform Notes

This Express5800/320Fd-LR is a fault-tolerant server.  
Two modules are installed in this server.  
Each module physically has "2CPU chips,12GB memory", The total physical configuration is "4CPU chips,24GB memory".  
Using fault-tolerant lockstep technology, these two modules communicate with each other and execute the same instructions at the same time, The operating system only sees "2CPU chips,12GB memory" as the other components add only redundancy and do not contribute to any performance benefit.

## General Notes

The NEC Express5800/320Fd-LR(Intel Xeon E5405) and the Bull NovaScale R630 E1 LR(Intel Xeon E5405, 2.00 GHz) models are electronically equivalent. The results have been measured on a NEC Express5800/320Fd-LR(Intel Xeon E5405) model.

## Base Compiler Invocation

C benchmarks:  
icc

Continued on next page



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## Base Compiler Invocation (Continued)

C++ benchmarks:  
icpc

## Base Portability Flags

400.perlbench: -DSPEC\_CPU\_LINUX\_IA32  
462.libquantum: -DSPEC\_CPU\_LINUX  
483.xalancbmk: -DSPEC\_CPU\_LINUX

## Base Optimization Flags

C benchmarks:  
-xSSE4.1 -ipo -O3 -no-prec-div -static -parallel  
-par-runtime-control -opt-prefetch

C++ benchmarks:  
-xSSE4.1 -ipo -O3 -no-prec-div -opt-prefetch -Wl,-z,muldefs  
-L/opt/SmartHeap\_8.1/lib -lsmartheap

## Base Other Flags

C benchmarks:  
403.gcc: -Dalloca=\_alloca

## Peak Compiler Invocation

C benchmarks (except as noted below):  
icc

401.bzip2: /opt/intel/Compiler/11.0/074/bin/intel64/icc  
-L/opt/intel/Compiler/11.0/074/ipp/em64t/lib  
-I/opt/intel/Compiler/11.0/074/ipp/em64t/include

456.hmmer: /opt/intel/Compiler/11.0/074/bin/intel64/icc  
-L/opt/intel/Compiler/11.0/074/ipp/em64t/lib  
-I/opt/intel/Compiler/11.0/074/ipp/em64t/include

C++ benchmarks:  
icpc



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## Peak Portability Flags

400.perlbench: -DSPEC\_CPU\_LINUX\_IA32  
401.bzip2: -DSPEC\_CPU\_LP64  
456.hmmer: -DSPEC\_CPU\_LP64  
462.libquantum: -DSPEC\_CPU\_LINUX  
483.xalancbmk: -DSPEC\_CPU\_LINUX

## Peak Optimization Flags

C benchmarks:

400.perlbench: -prof-gen(pass 1) -prof-use(pass 2) -xSSE4.1 -ipo -O3  
-no-prec-div -static -ansi-alias -opt-prefetch

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

403.gcc: -xSSE4.1 -ipo -O3 -no-prec-div -static -inline-alloc  
-opt-malloc-options=3

429.mcf: -xSSE4.1 -ipo -O3 -no-prec-div -static -opt-prefetch

445.gobmk: -prof-gen(pass 1) -prof-use(pass 2) -xSSE4.1 -O2 -ipo  
-no-prec-div -ansi-alias

456.hmmer: -xSSE4.1 -ipo -O3 -no-prec-div -static -unroll2  
-ansi-alias -auto-ilp32

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

462.libquantum: basepeak = yes

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

C++ benchmarks:

471.omnetpp: -prof-gen(pass 1) -prof-use(pass 2) -xSSE4.1 -ipo -O3  
-no-prec-div -ansi-alias -opt-ra-region-strategy=block  
-Wl,-z,muldefs -L/opt/SmartHeap\_8.1/lib -lsmartheap

473.astar: -prof-gen(pass 1) -prof-use(pass 2) -xSSE4.1 -ipo -O3  
-no-prec-div -ansi-alias -opt-ra-region-strategy=routine  
-Wl,-z,muldefs -L/opt/SmartHeap\_8.1/lib -lsmartheap

483.xalancbmk: basepeak = yes



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## 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-ic11.0-int-linux64-revE.html>

<http://www.spec.org/cpu2006/flags/NEC-Intel-Linux-Settings-flags-revB.html>

You can also download the XML flags sources by saving the following links:

<http://www.spec.org/cpu2006/flags/Intel-ic11.0-int-linux64-revE.xml>

<http://www.spec.org/cpu2006/flags/NEC-Intel-Linux-Settings-flags-revB.xml>

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For other inquiries, please contact [webmaster@spec.org](mailto:webmaster@spec.org).

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