



## SPEC CPU2000 SPECint\_rate\_base performance on Intel- and AMD-processor-based servers running Red Hat Enterprise Linux v.4.4

### Executive summary

Intel Corporation (Intel) commissioned Principled Technologies (PT) to measure the SPEC CPU2000 SPECint\_rate\_base performance of the following dual-processor servers running Red Hat Enterprise Linux v.4.4:

- Supermicro A+ Server 2021M-T2R+V with dual-core AMD Opteron processor model 2220 SE
- Supermicro SuperServer 6025B-TR+V with Quad-Core Intel Xeon processor X5355

### KEY FINDING

- The Supermicro SuperServer 6025B-TR+V with two Quad-Core Intel Xeon processor X5355s delivered almost 148 percent higher peak performance than the Supermicro A+ Server 2021M-T2R+V with two dual-core AMD Opteron processor model 2220 SEs (see Figure 1).

In this section, we discuss the best results for each server. For details of the performance of each server with each number of benchmark instances (or, in SPEC CPU2000 terms, users), see the Test results section.

Figure 1 shows the SPECint\_rate\_base2000 results of the test servers for runs with two, four, and eight users. Each result is the SPECint\_rate\_base score in operations per second. By default, the benchmark performs three runs and uses the median result. A higher score is better.

A server will typically achieve its best SPECint\_rate\_base2000 results when it runs the same number of users as its available execution units. The Supermicro A+ Server 2021M-T2R+V with two dual-core AMD Opteron processor model 2220 SEs has 2 physical processors with 2 cores per processor, or 4 available execution units. Thus, we expected the optimum users for this server would also be 4. In our testing, however, the optimum number of users proved to be 8, though the improvement over 4 users was tiny. Because the Supermicro A+ Server 2021M-T2R+V with two dual-core AMD Opteron processor model 2220 SEs did achieve a 0.4 percent higher score with 8 users than with 4 users, we used its 8-user score as its peak in this report. The Supermicro SuperServer 6025B-TR+V with two Quad-Core Intel Xeon processor X5355s has 2 physical processors with 4 cores per processor, or 8 available execution units, so as we expected 8 users yielded its optimum results.

The Supermicro SuperServer 6025B-TR+V with two Quad-Core Intel Xeon processor X5355s produced the highest optimum results, 183, and yielded a 147.6 percent performance increase over the Supermicro A+ Server 2021M-T2R+V with two dual-core AMD Opteron processor model 2220 SEs, which achieved a score of 73.9.

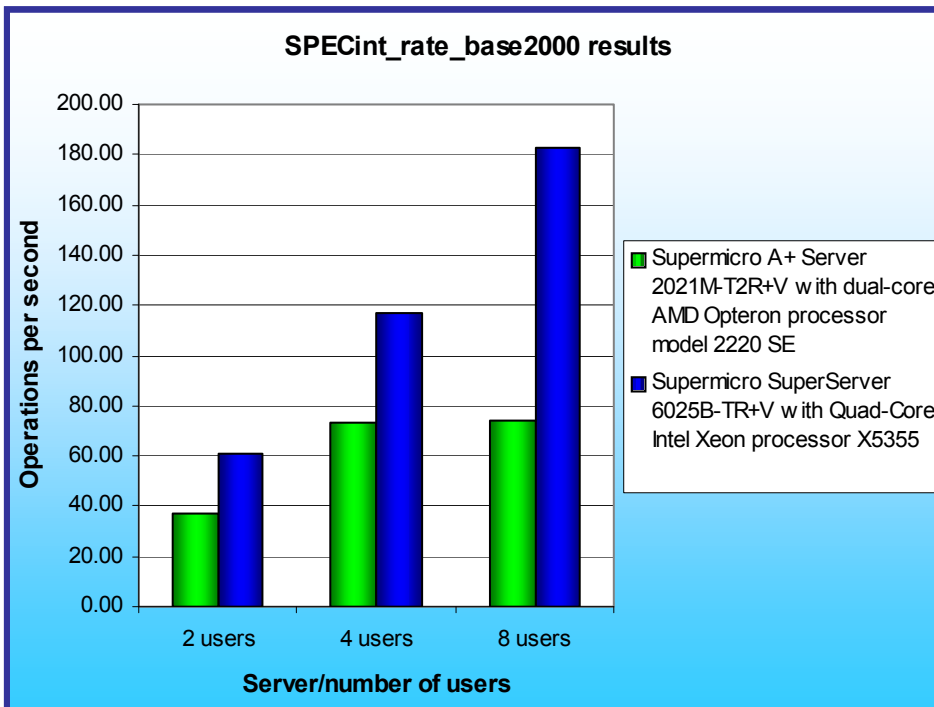


Figure 1: Peak (dual-processor) performance of the servers with 2, 4, and 8 users on the SPECint\_rate\_base2000 workload. Higher numbers are better.

## Workload

SPEC CPU2000 is an industry-standard benchmark created by the Standard Performance Evaluation Corp. (SPEC) to measure a server's compute-intensive performance. The benchmark consequently stresses the CPU and memory subsystems of the system under test. (For more information on SPEC CPU2000 and other SPEC benchmarks, see [www.spec.org](http://www.spec.org).)

The SPEC CPU2000 workload includes two benchmark suites: CINT2000 and CFP2000. We ran only the CINT2000 benchmark, which focuses on measuring and comparing compute-intensive integer performance. Specifically, we measured the SPECint\_rate\_base2000 results for the test servers with 2, 4, and 8 users. This workload produces results as the average of twelve normalized throughput ratios with conservative optimization for each benchmark.

Figure 2 lists the 12 applications that compose the CINT2000 benchmark. Eleven of the applications were written in C; one (252.eon) was written in C++.

Name	Reference Time	Remarks
164.gzip	1400	Data compression utility
175.vpr	1400	FPGA circuit placement and routing
176.gcc	1100	C compiler
181.mcf	1800	Minimum cost network flow solver
186.crafty	1000	Chess program
197.parser	1800	Natural language processing
252.eon	1300	Ray tracing
253.perlbnk	1800	Perl
254.gap	1100	Computational group theory
255.vortex	1900	Object Oriented Database
256.bzip2	1500	Data compression utility
300.twolf	3000	Place and route simulator

Figure 2: The applications that make up the CINT2000 benchmark.

A CINT2000 run performs each of the 12 application (tasks) three times and reports the median for each. It also calculates the geometric mean of those 12 results to produce an overall score.

## Test results

Figure 3 shows the SPECint\_rate\_base2000 results for both servers with 2, 4, and 8 users. Both servers achieved the best result with 8 users. (In SPEC's terms, these results are from "compliant" runs, which means we can disclose them publicly though we are not posting them on the SPEC Web site with all the SPEC required files. We do present here all the data necessary to reproduce these results.)

Server / # of users	2	4	8
Supermicro A+ Server 2021M-T2R+V with dual-core AMD Opteron processor model 2220 SE	37.1	73.6	73.9
Supermicro SuperServer 6025B-TR+V with Quad-Core Intel Xeon processor X5355	60.6	117	183

Figure 3: SPECint\_rate\_base2000 results of the servers with 2, 4, and 8 users. Higher numbers are better.

## Test methodology

Figure 4 summarizes some of the key aspects of the configurations of the server systems; Appendix A provides detailed configuration information.

Server	Supermicro A+ Server 2021M-T2R+V with two dual-core AMD Opteron processor model 2220 SEs	Supermicro SuperServer 6025B-TR+V with two Quad-Core Intel Xeon processor X5355s
Processor frequency (GHz)	2.8 GHz	2.66 GHz
System bus	2000 MHz HyperTransport	1333 MHz
Number of processor packages	2	2
Number of cores per processor package	2	4
Number of hardware threads per core	1	1
Motherboard	Super H8DME-2	Supermicro X7DBE+
Chipset	NVIDIA MCP55 Pro	Intel 5000P Chipset
RAM (8GB in each)	PC2-5300	PC2-5300 FBDIMM
Hard Drive	Western Digital WD740ADFD 74 GB 10,000 RPM	Western Digital WD740ADFD 74 GB 10,000 RPM
NICs	NVIDIA MCP55 Pro Chipset Dual-Port Ethernet Controller	Intel PRO/1000 EB Network Dual Port Network Connection

Figure 4: Summary of some key aspects of the server configurations.

Intel configured and provided both servers.

With the following exceptions, we used the default BIOS settings on each server: on the Supermicro A+ Server 2021M-T2R+V with two dual-core AMD Opteron processor model 2220 SEs server we changed the OS installation option to Linux.

We began by installing a fresh copy of Red Hat Enterprise Linux v.4.4 on both servers. We installed each system with the default operating system (OS) installation options.

### SPECCPU2000 configuration

We followed SPEC's standard instructions for building the CINT2000 executables. After studying the best results for this benchmark on the SPEC Web site, we chose the following software tools:

- Intel C/C++ Compiler 9.1 for EM64T, build 20061101 (Intel processor-based server)
- PathScale EKOPath Compiler Suite, Release 2.3.1 (AMD processor-based server)

The benchmark requires configuration files. From the SPEC Web site we chose the most recent (as of the testing for this report) SPECCPU2000 results that used the above compilers. We copied the configuration files for those results and used them, with modifications to reflect the appropriate system information about the server under test, in our testing. The configuration files we used appear in Appendix B.

We report only the base metrics for the SPECint\_rate test. SPEC requires the base metrics for all reported results and sets compilation guidelines that testers must follow in building the executables for such tests.

To begin the benchmark, we performed the following steps:

- Open a command prompt.
- Change to the cpu2000 directory.
- Type '. /shrc' at the command prompt.
- Enter "runspec -d -c <config file name> -r -u <#> -T base -v 10 --reportable int" , where
  - <config file name> = name of the configuration file
  - <#> = is 2, 4, or 8 depending on the number of users

When the run completes, the benchmark puts the results in the directory \cpu2000\result. The result file names are of the form CINT2000.<number>.<suffix>. The suffixes are html, asc, raw, and pdf. The number is three digits and associates a result file with its log, e.g. CINT2000.002. asc and log.002.

## Appendix A – Test server configuration information

This appendix provides detailed configuration information about each of the test server systems, which we list in alphabetical order.

Systems	Supermicro A+ Server 2021M-T2R+V with two dual-core AMD Opteron processor model 2220 SEs	Supermicro SuperServer 6025B-TR+V with two Quad-Core Intel Xeon processor X5355s
<b>General processor setup</b>		
Number of processor packages	2	2
Number of cores per processor package	2	4
Number of hardware threads per core	1	1
<b>CPU</b>		
Vendor	AMD	Intel
Name	dual-core AMD Opteron processor model 2220 SE	Quad-Core Intel Xeon processor X5355
Stepping	2	7
Socket type	F	LGA 771
Core frequency (GHz)	2.8 GHz	2.66 GHz
Front-side bus frequency (MHz)	2000 MHz HyperTransport	1333 MHz
L1 Cache	64 KB + 64 KB (per core)	32 KB + 32 KB (per core)
L2 Cache	2 x 1 MB	2 x 4MB (each 4MB shared by 2 cores)
<b>Platform</b>		
Vendor and model number	dual-core AMD Opteron processor model 2220 SE-based server	Quad-Core Intel Xeon processor X5355-based server
Motherboard model number	Super H8DME-2	Supermicro X7DBE+
Motherboard chipset	NVIDIA MCP55 Pro	Intel 5000P Chipset
Motherboard revision number	A2	92
Motherboard serial number	Q5785G16010104	TM66S06520
BIOS name and version	American Megatrends Inc. AMIBIOS 08.00.14 11/28/06	Phoenix BIOS DB8A026 Rev 1.1c
BIOS settings	OS installation Linux	Default
<b>Memory module(s)</b>		
Vendor and model number	Hynix HYMP525P72BP4-Y5	Kingston KVR667D2D4F5/2G
Type	PC-5300	PC2-5300 FBDIMM
Speed (MHz)	667 MHz	667 MHz
Speed in the system currently running @ (MHz)	667 MHz	667 MHz
Timing/Latency (tCL-tRCD-iRP-tRASmin)	5-5-5-15	5-5-5-15
Size	8186 MB	8196 MB
Number of RAM modules	4	4
Chip organization	Double-Sided	Double-Sided
<b>Hard disk</b>		
Vendor and model number	Western Digital Raptor WD740AFLD	Western Digital Raptor WD740AFLD
Number of disks in system	1	1
Size	74 GB	74 GB

Buffer Size	8 MB	8 MB
RPM	10,000	10,000
Type	SATA	SATA
Controller	NVIDIA MCP55 Pro SATA2 Controller	Intel 3100 Chipset SATA Controller
Controller driver	sata_nv	Ata_piix
<b>Operating system</b>		
Name	Red Hat Enterprise Linux 4 Advanced Server	Red Hat Enterprise Linux 4 Advanced Server
Build number	v.4.4	v.4.4
File system	Ext3	Ext3
Kernel	2.6.9-42.ELsmp	2.6.9-42.ELsmp
Language	English	English
<b>Graphics</b>		
Vendor and model number	ATI ES1000	ATI ES1000
Chipset	ATI ES1000 PCI	ATI ES1000 PCI
Type	Integrated	Integrated
Resolution	1024 x 768	1024 x 768
Driver	ATI ES1000	ATI ES1000
<b>Network card/subsystem</b>		
Vendor and model number	NVIDIA MCP55 Pro Chipset Dual-Port Ethernet Controller	Intel PRO/1000 EB Network Dual Port Network Connection
Type	Integrated	Integrated
Driver	eth0	eth0
<b>Optical drive</b>		
Vendor and model number	Matshita DVD-ROM SR-8178	Matshita DVD-ROM SR-8178
Type	DVD-ROM	CD/DVD
Interface	Internal	Internal
Dual/Single layer	Single	Single
<b>USB ports</b>		
Number	4	4
Type	USB 2.0	USB 2.0

Figure 5: Detailed configuration information for the test servers.

## Appendix B – SPECint\_rate configuration files

This appendix contains the benchmark configuration files we used to test the servers.

### Supermicro A+ Server 2021M-T2R+V with two dual-core AMD Opteron processor model 2220 SEs

```
#####
# pathscale-amd64.cfg
#
# Copyright 2003, 2004, 2005 PathScale, Inc. All Rights Reserved.
#
# Configuration file for use with the PathScale compiler on x86-64

check_md5 = 1

ext=ps_amd64_R23
teeout=yes
teerunout=yes

#####
# Machine-specific section
#####
hw_cpu      = AMD Opteron 2220SE
hw_cpu_mhz  = 2800
hw_disk     = SATA, 74GB
hw_fpu      = Integrated
hw_memory   = 4 x 2GB PC2-5300 ECC registered
hw_vendor   = Supermicro
hw_model    = A+ Server 2021M-T2R+V
hw_avail    =
sw_avail    =
hw_ncpu     = 2 chips, 4 cores, 2 cores per chip
hw_ncpuorder = 1-2
hw_ocache   = N/A
hw_other    = None
hw_parallel = No
hw_pcache   = 64KBI+64KBD (per core)
hw_scache   = 2 x 1MB
hw_tcache   = N/A
sw_file     = Linux/ext3
sw_os       = Red Hat Enterprise Linux 4 - Update 4
sw_state    = Multi-user, run level 5
submit= MYMASK='printf '0x%x' \${(1<<1$SPECUSERNUM)}'; /usr/bin/taskset \${MYMASK} $command
# System setup notes
# To add notes, uncomment these lines below and add the comments
notes6000   =
#notes6010  =
#notes6020  =
#notes6030  =
#notes6040  =
#notes6050  =
#notes6060  =
#notes6070  =
#notes6080  =
#notes6090  =
notes6100   = taskset utility used to bind CPU(s) to processes.
#####
# Software and license-specific section
#####
license_num = 3184
test_date   = Feb-2007
prepared_by =
company_name = Principled Technologies
tester_name =
reportable  = 1

sw_compiler010 = PathScale EKOPath(TM) Compiler
```

sw\_compiler020 = Suite, Release 2.3.1

default=default=default=default:

PS\_DIR = /opt/pathscale/2.3.1/bin  
ACML\_PSC64\_DIR = /opt/acml2.7.0/pathscale64/lib  
CC=pathcc  
FC=pathf95  
F77=pathf95  
CXX=pathCC

#####  
# Initial Notes  
#####

notes016 =  
notes018 = +FDO: PASS1= -fb\_create fbdata PASS2= -fb\_opt fbdata

#####  
# Final Notes  
#####

default=default=default=default:  
notes5000 =

#####  
# SPECint Tuning & Notes #  
#####

# Specify feedback-directed optimization for all SPECint runs.

int=default=default=default:  
PASS1\_CFLAGS = -fb\_create fbdata  
PASS1\_CXXFLAGS = -fb\_create fbdata  
PASS1\_LDFLAGS = -fb\_create fbdata  
PASS2\_CFLAGS = -fb\_opt fbdata  
PASS2\_CXXFLAGS = -fb\_opt fbdata  
PASS2\_LDFLAGS = -fb\_opt fbdata

int=base=default=default:  
COPTIMIZE = -Ofast  
CXXOPTIMIZE = -Ofast

notes021 =  
notes022 = Baseline optimization flags:  
notes023 = C programs: -Ofast +FDO  
notes024 = C++ programs: -Ofast +FDO

notes100 =  
notes101 = Portability Flags:  
notes106 = 186.crafty: -DLINUX\_i386  
notes107 = 252.eon: -DHAS\_ERRLIST -DSPEC\_CPU2000\_LP64  
notes108 = 253.perlbmk: -DSPEC\_CPU2000\_LINUX\_I386 -DSPEC\_CPU2000\_NEED\_BOOL  
notes109 = -DSPEC\_CPU2000\_LP64  
notes112 = 254.gap: -DSYS\_IS\_USG -DSYS\_HAS\_IOCTL\_PROTO -DSYS\_HAS\_TIME\_PROTO  
notes113 = -DSYS\_HAS\_CALLOC\_PROTO -DSPEC\_CPU2000\_LP64  
notes116 = 255.vortex: -DSPEC\_CPU2000\_LP64

#####  
# SPECint Portability flags #  
#####

186.crafty=default=default=default:  
CPORTABILITY = -DLINUX\_i386



252.eon=default=default=default:  
CXXPORTABILITY = -DHAS\_ERRLIST -DSPEC\_CPU2000\_LP64

253.perlbnk=default=default=default:  
CPORTABILITY = -DSPEC\_CPU2000\_LINUX\_I386 -DSPEC\_CPU2000\_NEED\_BOOL -DSPEC\_CPU2000\_LP64

254.gap=default=default=default:  
CPORTABILITY = -DSYS\_IS\_USG -DSYS\_HAS\_IOCTL\_PROTO -DSYS\_HAS\_TIME\_PROTO -DSYS\_HAS\_CALLOC\_PROTO -  
DSPEC\_CPU2000\_LP64

255.vortex=default=default=default:  
CPORTABILITY= -DSPEC\_CPU2000\_LP64

notes120 =  
notes125 = Peak Tuning:

164.gzip=peak=default=default:  
OPTIMIZE = -O3 -ipa -WOPT:val=0 -OPT:unroll\_size=0  
notes205= 164.gzip: -O3 -ipa -WOPT:val=0 -OPT:unroll\_size=0 +FDO

175.vpr=peak=default=default:  
OPTIMIZE = -O3 -ipa -m32  
notes208= 175.vpr: -O3 -ipa -m32 +FDO

176.gcc=peak=default=default:  
OPTIMIZE = -O3 -IPA:plimit=10000 -LNO:opt=0 -OPT:goto=off  
notes212= 176.gcc: -O3 -IPA:plimit=10000 -LNO:opt=0 -OPT:goto=off +FDO

181.mcf=peak=default=default:  
OPTIMIZE = -O3 -ipa -IPA:field\_reorder=on -m32  
notes214= 181.mcf: -O3 -ipa -IPA:field\_reorder=on -m32 +FDO

186.crafty=peak=default=default:  
OPTIMIZE = -Ofast -CG:local\_fwd\_sched=on -LNO:opt=0 -WOPT:val=0  
notes217= 186.crafty: -Ofast -CG:local\_fwd\_sched=on -LNO:opt=0 -WOPT:val=0 +FDO

197.parser=peak=default=default:  
OPTIMIZE = -O3 -ipa -m32 -IPA:ctype=on  
notes220= 197.parser: -O3 -ipa -m32 -IPA:ctype=on +FDO

252.eon=peak=default=default:  
OPTIMIZE = -Ofast -CG:gcm=off:p2align\_freq=1:prefetch=off -IPA:plimit=4000 -OPT:treeheight=on -TENV:X=4:frame\_pointer=off -fno-  
exceptions -LNO:fu=10:full\_unroll\_outer=on -GRA:optimize\_boundary=on  
notes223= 252.eon: -Ofast -CG:gcm=off:p2align\_freq=1:prefetch=off -IPA:plimit=4000  
notes224= -OPT:treeheight=on -TENV:X=4:frame\_pointer=off -fno-exceptions  
notes225= -LNO:fu=10:full\_unroll\_outer=on -GRA:optimize\_boundary=on +FDO

253.perlbnk=peak=default=default:  
OPTIMIZE = -O2 -ipa -OPT:Ofast:transform\_to\_memlib=off -fno-math-errno -IPA:plimit=10000  
notes227= 253.perlbnk: -O2 -ipa -OPT:Ofast:transform\_to\_memlib=off  
notes228= -fno-math-errno -IPA:plimit=10000 +FDO

254.gap=peak=default=default:  
basepeak = true  
notes240= 254.gap: basepeak = true

255.vortex=peak=default=default:  
OPTIMIZE = -Ofast -OPT:goto=off -CG:p2align=on -GRA:optimize\_boundary=on -IPA:min\_hotness=120  
notes233= 255.vortex: -Ofast -OPT:goto=off -CG:p2align=on  
notes234= -GRA:optimize\_boundary=on -IPA:min\_hotness=120 +FDO

256.bzip2=peak=default=default:  
basepeak = true  
notes240= 256.bzip2: basepeak = true

300.twolf=peak=default=default:  
OPTIMIZE = -O2 -CG:gcm=off:p2align\_freq=100000 -OPT:Ofast:unroll\_times\_max=8:unroll\_size=256:alias=disjoint -  
WOPT:mem\_opnds=on -m32  
notes245= 300.twolf: -O2 -CG:gcm=off:p2align\_freq=100000

notes246= -OPT:Ofast:unroll\_times\_max=8:unroll\_size=256:alias=disjoint  
notes247= -WOPT:mem\_opnds=on -m32 +FDO

```
#####  
#           #  
#           SPECfp Tuning           #  
#           #  
#####
```

# Specify feedback-directed optimization for all SPECfp C codes.

fp=default=default=default:  
COPTIMIZE = -Ofast -WOPT:mem\_opnds=on  
PASS1\_CFLAGS = -fb\_create fbdata  
PASS2\_CFLAGS = -fb\_opt fbdata  
FOPTIMIZE = -Ofast -LNO:fusion=2 -OPT:fast\_complex=on  
F77OPTIMIZE = -Ofast -LNO:fusion=2 -OPT:fast\_complex=on  
PASS1\_FFLAGS = -fb\_create fbdata  
PASS2\_FFLAGS = -fb\_opt fbdata  
PASS1\_F77FLAGS = -fb\_create fbdata  
PASS2\_F77FLAGS = -fb\_opt fbdata  
PASS1\_LDFLAGS = -fb\_create fbdata  
PASS2\_LDFLAGS = -fb\_opt fbdata

notes020 = +ACML means -L<acml2.7.0-install-dir>/pathscale64/lib -lacml,  
notes021 = which causes linking with AMD Core Math Library V2.7.0  
notes028 =  
notes030 = Baseline optimization  
notes032 = C programs: -Ofast -WOPT:mem\_opnds=on +FDO  
notes034 = Fortran programs: -Ofast -LNO:fusion=2 -OPT:fast\_complex=on +FDO  
notes101 = Portability Flags:  
notes102 = 178.galgel: -fixedform

178.galgel=default=default=default:  
FPORTABILITY=-fixedform

notes150 =  
notes155 =Peak Tuning:

168.wupwise=peak=default=default:  
F77OPTIMIZE = -Ofast -LNO:prefetch Ahead=5:prefetch=3 -OPT:unroll\_times\_max=8:unroll\_size=128:IEEE\_NaN\_Inf=off:ro=3 -  
IPA:linear=on:plimit=50000:callee\_limit=5000 -INLINE:aggressive=on  
feedback = 0  
notes204= 168.wupwise: -Ofast -LNO:prefetch Ahead=5:prefetch=3  
notes205= -OPT:unroll\_times\_max=8:unroll\_size=128:IEEE\_NaN\_Inf=off:ro=3  
notes206= -IPA:linear=on:plimit=50000:callee\_limit=5000  
notes207= -INLINE:aggressive=on

171.swim=peak=default=default:  
F77OPTIMIZE = -Ofast -CG:local\_fwd\_sched=on -LNO:fusion=2 -m3dnow  
feedback = 0  
notes210= 171.swim: -Ofast -CG:local\_fwd\_sched=on -LNO:fusion=2 -m3dnow

172.mgrid=peak=default=default:  
F77OPTIMIZE = -Ofast -CG:gcm=off -OPT:IEEE\_arith=3:unroll\_size=200 -LNO:fusion=2:fission=1:blocking=off:prefetch Ahead=2 -  
WOPT:mem\_opnds=on:aggstr=0  
feedback = 0  
notes215= 172.mgrid: -Ofast -CG:gcm=off -OPT:IEEE\_arith=3:unroll\_size=200  
notes216= -LNO:fusion=2:fission=1:blocking=off:prefetch Ahead=2  
notes217= -WOPT:mem\_opnds=on:aggstr=0

173.applu=peak=default=default:  
F77OPTIMIZE = -Ofast -CG:local\_fwd\_sched=on -OPT:ro=3 -TENV:X=3 -LNO:fusion=2:fission=2:full\_unroll\_size=10000  
notes220= 173.applu: -Ofast -CG:local\_fwd\_sched=on -OPT:ro=3 -TENV:X=3  
notes221= -LNO:fusion=2:fission=2:full\_unroll\_size=10000 +FDO

177.mesa=peak=default=default:  
COPTIMIZE = -O2 -ipa -OPT:Ofast -fno-math-errno -CG:local\_fwd\_sched=on -WOPT:mem\_opnds=on  
notes225= 177.mesa: -O2 -ipa -OPT:Ofast -fno-math-errno -CG:local\_fwd\_sched=on -WOPT:mem\_opnds=on +FDO

```

178.galgel=peak=default=default:
FOPTIMIZE = -Ofast -OPT:fast_complex=on
RM_SOURCES = lapak.f90
EXTRA_LIBS = -L$(ACML_PSC64_DIR) -lacml
notes230= 178.galgel: -Ofast -OPT:fast_complex=on +ACML +FDO
notes232= RM_SOURCES=lapak.f90

179.art=peak=default=default:
COPTIMIZE= -O3 -OPT:Ofast -fno-math-errno -mno-sse2 -m32
feedback = 0
notes235= 179.art: -O3 -OPT:Ofast -fno-math-errno -mno-sse2 -m32

183.equake=peak=default=default:
COPTIMIZE = -Ofast -CG:load_exe=2 -WOPT:mem_opnds=on -m32
notes240= 183.equake: -Ofast -CG:load_exe=2 -WOPT:mem_opnds=on -m32 +FDO

187.facerec=peak=default=default:
FOPTIMIZE = -Ofast -LNO:fusion=2 -OPT:fast_complex=on:IEEE_NaN_Inf=off:unroll_size=0
notes245= 187.facerec: -Ofast -LNO:fusion=2
notes246= -OPT:fast_complex=on:IEEE_NaN_Inf=off:unroll_size=0 +FDO

188.amp=peak=default=default:
COPTIMIZE = -O3 -OPT:alias=disjoint:unroll_times_max=8:Ofast:ro=3 -fno-math-errno -TENV:X=4
notes250= 188.amp: -O3 -OPT:alias=disjoint:unroll_times_max=8:Ofast:ro=3
notes251= -fno-math-errno -TENV:X=4 +FDO

189.lucas=peak=default=default:
FOPTIMIZE = -Ofast -OPT:ro=3:fast_nint=off:unroll_size=256 -WOPT:mem_opnds=on
notes255= 189.lucas: -Ofast -OPT:ro=3:fast_nint=off:unroll_size=256 -WOPT:mem_opnds=on +FDO

191.fma3d=peak=default=default:
FOPTIMIZE = -O2 -ipa -CG:load_exe=1 -OPT:Ofast:IEEE_arith=3:ro=3 -WOPT:mem_opnds=on:retype_expr=on -IPA:pu_reorder=1
notes260= 191.fma3d: -O2 -ipa -CG:load_exe=1 -OPT:Ofast:IEEE_arith=3:ro=3
notes261= -WOPT:mem_opnds=on:retype_expr=on -IPA:pu_reorder=1 +FDO

200.sixtrack=peak=default=default:
F77OPTIMIZE = -O3 -OPT:Ofast:Olimit=6000:early_intrinsics=on -fno-math-errno -CG:load_exe=1
notes265= 200.sixtrack: -O3 -OPT:Ofast:Olimit=6000:early_intrinsics=on
notes266= -fno-math-errno -CG:load_exe=1 +FDO

301.apsi=peak=default=default:
F77OPTIMIZE = -Ofast -CG:load_exe=0 -LNO:prefetch=0:simd=2
feedback=0
notes270= 301.apsi: -Ofast -CG:load_exe=0 -LNO:prefetch=0:simd=2

```

## Supermicro SuperServer 6025B-TR+V with two Quad-Core Intel Xeon processor X5355s

```

#####
# SPEC CPU2000 Linux x86_64 config file
# Intel C/C++ Compiler 9.1 for EM64T-based applications Build 20061101
#####

action = validate
tune = all
ext = ML370G5
PATHSEP = /

# Force compliance unless specifically overridden
check_md5=1
reportable=1
verbose=6

#####
# Defaults
#####

```

```

default=default=default=default:
CC = icc
CXX = icpc
F77 = ifort
FC = ifort

OBJ =.o

#####
# Portability & Libraries
#####

default=default=default=default:
PORTABILITY = -DSPEC_CPU2000_LP64

176.gcc=default=default=default:
CPORTABILITY = -Dalloca=_alloca -DUSG

178.galgel=default=default=default:
EXTRA_FFLAGS = -FI

186.crafty=default=default=default:
CPORTABILITY = -DLINUX_i386

252.eon=default=default=default:
CXXPORTABILITY = -DHAS_ERRLIST

253.perlbnk=default=default=default:
CPORTABILITY = -DSPEC_CPU2000_LINUX_I386 -DSPEC_CPU2000_NEED_BOOL

254.gap=default=default=default:
CPORTABILITY = -DSYS_IS_USG -DSYS_HAS_CALLOC_PROTO -DSYS_HASMALLOC_PROTO -DSYS_HAS_IOCTL_PROTO

#####
# Baseline Tuning Flags
#####

#
# int2000
# Base tuning default optimization
#

252.eon=base=default=default:
CXXOPTIMIZE= -fast

int=base=default=default:
PASS1_CFLAGS= -fast -auto_ilp32 -prof_gen
PASS2_CFLAGS= -fast -auto_ilp32 -prof_use
PASS1_LDFLAGS= -fast -auto_ilp32 -prof_gen
PASS2_LDFLAGS= -fast -auto_ilp32 -prof_use
ONESTEP=yes

#
# fp2000
# Base tuning default optimization
#

fp=base=default=default:
PASS1_CFLAGS= -fast -auto_ilp32 -prof_gen
PASS2_CFLAGS= -fast -auto_ilp32 -prof_use
PASS1_FFLAGS= -fast -prof_gen
PASS2_FFLAGS= -fast -prof_use
PASS1_LDFLAGS= -fast -prof_gen
PASS2_LDFLAGS= -fast -prof_use

#####
# Peak Tuning Flags
#####

```

```

#
# int2000
# Peak tuning
#

164.gzip=peak=default=default:
basepeak=1

175.vpr=peak=default=default:
basepeak=1

176.gcc=peak=default=default:
PASS1_CFLAGS= -fast -auto_ilp32 -prof_gen
PASS2_CFLAGS= -fast -auto_ilp32 -prof_use
PASS1_LDFLAGS= -fast -auto_ilp32 -prof_gen
PASS2_LDFLAGS= -fast -auto_ilp32 -prof_use

181.mcf=peak=default=default:
PASS1_CFLAGS= -fast -auto_ilp32 -prof_gen
PASS2_CFLAGS= -fast -auto_ilp32 -prof_use
PASS1_LDFLAGS= -fast -auto_ilp32 -prof_gen
PASS2_LDFLAGS= -fast -auto_ilp32 -prof_use
ONESTEP=yes

186.crafty=peak=default=default:
PASS1_CFLAGS= -fast -auto_ilp32 -prof_gen
PASS2_CFLAGS= -fast -auto_ilp32 -prof_use
PASS1_LDFLAGS= -fast -auto_ilp32 -prof_gen
PASS2_LDFLAGS= -fast -auto_ilp32 -prof_use
ONESTEP=yes

197.parser=peak=default=default:
PASS1_CFLAGS= -fast -auto_ilp32 -prof_gen
PASS2_CFLAGS= -fast -auto_ilp32 -prof_use
PASS1_LDFLAGS= -fast -auto_ilp32 -prof_gen
PASS2_LDFLAGS= -fast -auto_ilp32 -prof_use
ONESTEP=yes

252.eon=peak=default=default:
PASS1_CXXFLAGS= -fast -prof_gen
PASS2_CXXFLAGS= -fast -prof_use
PASS1_LDFLAGS= -fast -prof_gen
PASS2_LDFLAGS= -fast -prof_use

253.perlbnk=peak=default=default:
basepeak=1

254.gap=peak=default=default:
PASS1_CFLAGS= -fast -prof_gen
PASS2_CFLAGS= -fast -prof_use
PASS1_LDFLAGS= -fast -prof_gen
PASS2_LDFLAGS= -fast -prof_use
ONESTEP=yes

255.vortex=peak=default=default:
PASS1_CFLAGS= -fast -auto_ilp32 -prof_gen
PASS2_CFLAGS= -fast -auto_ilp32 -prof_use
PASS1_LDFLAGS= -fast -auto_ilp32 -prof_gen
PASS2_LDFLAGS= -fast -auto_ilp32 -prof_use
ONESTEP=yes

256.bzip2=peak=default=default:
basepeak=1

300.twolf=peak=default=default:
basepeak=1

#
# fp2000

```

```

# Peak tuning
#

168.wupwise=peak=default=default:
basepeak=1

171.swim=peak=default=default:
F77 = pathf95
F77OPTIMIZE = -Ofast -LNO:fusion=2:simd=0 -WOPT:val=0 -march=em64t

172.mgrid=peak=default=default:
F77 = pathf95
F77OPTIMIZE = -Ofast -CG:load_exe=0 -LNO:blocking=off:prefetch Ahead=5 -OPT:ro=3:unroll_size=256 -WOPT:mem_opnds=on -
march=em64t

173.applu=peak=default=default:
F77 = pathf95
F77OPTIMIZE = -O3 -ipa -CG:load_exe=0 -LNO:fission=1:fusion=2:blocking=off:full_unroll_size=9000 -OPT:IEEE_a=3:ro=3 -TENV:X=3 -
march=em64t

177.mesa=peak=default=default:
CC = pathcc
COPTIMIZE = -O2 -ipa -OPT:Ofast -fno-math-errno -CG:local_fwd_sched=on -GRA:optimize_boundary=on -march=em64t
PASS1_CFLAGS = -fb_create fbdata
PASS2_CFLAGS = -fb_opt fbdata
PASS1_LDFLAGS = -fb_create fbdata
PASS2_LDFLAGS = -fb_opt fbdata

178.galgel=peak=default=default:
basepeak=1

179.art=peak=default=default:
basepeak=1

183.quake=peak=default=default:
PASS1_CFLAGS= -fast -rcd -prof_gen -auto-ilp32
PASS2_CFLAGS= -fast -rcd -prof_use -auto-ilp32
PASS1_LDFLAGS= -fast -rcd -prof_gen -auto-ilp32
PASS2_LDFLAGS= -fast -rcd -prof_use -auto-ilp32
ONESTEP=yes

187.facerec=peak=default=default:
FC = pathf95
PASS1_FFLAGS = -fb_create fbdata
PASS2_FFLAGS = -fb_opt fbdata
PASS1_LDFLAGS = -fb_create fbdata
PASS2_LDFLAGS = -fb_opt fbdata
FOPTIMIZE = -Ofast -IPA:plimit=1500 -LNO:fusion=2 -OPT:IEEE_NaN_Inf=off:ro=3:unroll_size=0 -march=em64t

188.ammp=peak=default=default:
basepeak=1

189.lucas=peak=default=default:
FOPTIMIZE= -fast
ONESTEP=yes

191.fma3d=peak=default=default:
basepeak=1

200.sixtrack=peak=default=default:
basepeak=1

301.apsi=peak=default=default:
F77 = pathf95
F77OPTIMIZE = -Ofast -CG:load_exe=0 -LNO:opt=0:prefetch=1 -march=em64t

##### Tuning Info (Int) #####

int=default=default=default:

```

```

hw_parallel=No
sw_compiler1= Intel C++ Compiler for EM64T-based applications,
sw_compiler2= (Version 9.1 Build 20061101)
sw_avail=
notes0000= +FDO: PASS1=-prof_gen PASS2=-prof_use
notes0010= Base tuning for C programs: -fast -auto_ilp32 +FDO ONESTEP=yes
notes0020= Base tuning for C++ programs: -fast
notes0030= Portability flags:
notes0040= -DSPEC_CPU2000_LP64 applied to all benchmarks
notes0050= 176.gcc: -Dalloca=_alloca -DUSG
notes0060= 186.crafty: -DLINUX_i386
notes0070= 252.eon: -DHAS_ERRLIST
notes0080= 253.perlbnk: -DSPEC_CPU2000_LINUX_I386 -DSPEC_CPU2000_NEED_BOOL -DSPEC_CPU2000_GLIBC2
notes0090= 254.gap: -DSYS_IS_USG -DSYS_HAS_IOCTL_PROTO -DSYS_HAS_TIME_PROTO
notes0100= -DSYS_HAS_SIGNAL_PROTO -DSYS_HAS_ANSI -DSYS_HAS_CALLOC_PROTO
notes0110= Peak tuning:
notes0120= 164.gzip: basepeak=1
notes0130= 175.vpr: basepeak=1
notes0140= 176.gcc: -fast -auto_ilp32 +FDO
notes0150= 181.mcf: -fast -auto_ilp32 +FDO ONESTEP=yes
notes0160= 186.crafty: -fast -auto_ilp32 +FDO ONESTEP=yes
notes0170= 197.parser: -fast -auto_ilp32 +FDO ONESTEP=yes
notes0180= 252.eon: -fast +FDO
notes0190= 253.perlbnk: -fast +FDO ONESTEP=yes
notes0200= 254.gap: -fast +FDO ONESTEP=yes
notes0210= 255.vortex: -fast -auto_ilp32 +FDO ONESTEP=yes
notes0220= 256.bzip2: basepeak=1
notes0230= 300.twolf: basepeak=1
notes0240= BIOS Configuration Notes
notes0250= Power Regulator set to Static High

```

##### Tuning Info (Fp) #####

```

fp=default=default=default:
sw_compiler1= Intel C++ Compiler for EM64T-based applications,
sw_compiler2= (Version 9.1 Build 20060323)
sw_compiler3= Intel Fortran Compiler for EM64T-based applications,
sw_compiler4= (Version 9.1 Build 20060323)
sw_compiler5= PathScale EKOPath(TM) Compiler Suite, Release 2.4
sw_avail= May-2006
notes0000= +FDO: PASS1=-prof_gen PASS2=-prof_use (Intel Compiler)
notes0010= +FDO: PASS1= -fb_create fbdata PASS2=-fb_opt fbdata (PathScale Compiler)
notes0020= ifort is the Intel Fortran compiler, icc is the Intel C++ compiler; and
notes0030= pathf95 is PathScale Fortran compiler, pathcc is the PathScale C compiler.
notes0040= Base tuning for C programs: icc -fast -auto_ilp32 +FDO
notes0050= Base tuning for FORTRAN programs: ifort -fast +FDO
notes0060= Portability:
notes0070= -DSPEC_CPU2000_LP64 applied to all benchmarks
notes0080= 178.galgel: -FI
notes0090= Peak tuning:
notes0100= 168.wupwise: basepeak=1
notes0110= 171.swim: pathf95 -Ofast -LNO:fusion=2:simd=0 -WOPT:val=0 -march=em64t
notes0120= 172.mgrid: pathf95 -Ofast -CG:load_exe=0 -LNO:blocking=off:prefetch Ahead=5
notes0130= -OPT:ro=3:unroll_size=256 -WOPT:mem_opnds=on -march=em64t
notes0140= 173.applu: pathf95 -O3 -ipa -CG:load_exe=0
notes0150= -LNO:fission=1:fusion=2:blocking=off:full_unroll_size=9000
notes0160= -OPT:IEEE_a=3:ro=3 -TENV:X=3 -march=em64t
notes0170= 177.mesa: pathcc -O2 -ipa -OPT:Ofast -fno-math-errno -CG:local_fwd_sched=on
notes0180= -GRA:optimize_boundary=on -march=em64t +FDO
notes0190= 178.galgel: basepeak=1
notes0200= 179.art: basepeak=1
notes0210= 183.quake: icc -fast +FDO ONESTEP=yes -rcd -auto-ilp32
notes0220= 187.facerec: pathf95 -Ofast -IPA:plimit=1500 -LNO:fusion=2
notes0230= -OPT:IEEE_NaN_Inf=off:ro=3:unroll_size=0 -march=em64t +FDO
notes0240= 188.ammp: basepeak=1
notes0250= 189.lucas: ifort -fast ONESTEP=yes
notes0260= 191.fma3d: basepeak=1
notes0270= 200.sixtrack: basepeak=1
notes0280= 301.apsi: pathf95 -Ofast -CG:load_exe=0 -LNO:opt=0:prefetch=1 -march=em64t

```

notes0290= BIOS Configuration Notes  
notes0300= Power Regulator set to Static High

##### System Info #####

default=default=default=default:  
hw\_vendor=  
hw\_model=  
hw\_cpu=  
hw\_cpu\_mhz=  
hw\_fpu=  
hw\_ncpu=  
hw\_ncpuorder=  
hw\_parallel=  
hw\_pcache=  
hw\_scache=  
hw\_tcache=  
hw\_ocache=  
hw\_memory=  
hw\_disk=  
hw\_other=  
sw\_os1=  
sw\_os2=  
sw\_file=  
sw\_state=  
config=

##### Run Info #####

default=default=default=default:  
company\_name=  
machine\_name=  
license\_num=  
tester\_name=  
test\_date=  
hw\_avail=  
sw\_avail=  
prepared\_by=





# CINT2000 Result

Copyright ©1999-2005, Standard Performance Evaluation Corporation

Supernmicro

A+ Server 2021M-T2R+V

SPECint\_rate2000 = --

SPECint\_rate\_base2000 = 37.1

SPEC license #: 3184 Tested by:

Test date:

Feb-2007

Hardware Avail:

Software Avail:

## Notes/Tuning Information (Continued)

```
176.gcc:      -O3 -IPA:plimit=10000 -LNO:opt=0 -OPT:goto=off +FDO
181.mcf:      -O3 -ipa -IPA:field_reorder=on -m32 +FDO
186.crafty:   -Ofast -CG:local_fwd_sched=on -LNO:opt=0 -WOPT:val=0 +FDO
197.parser:   -O3 -ipa -m32 -IPA:cType=on +FDO
252.eon:      -Ofast -CG:gcm=off:p2align_freq=1:prefetch=off -IPA:plimit=4000
              -OPT:treeheight=on -TENV:X=4:frame_pointer=off -fno-exceptions
              -LNO:fu=10:full_unroll_outer=on -GRA:optimize_boundary=on +FDO
253.perlbnk:  -O2 -ipa -OPT:Ofast:transform_to_memlib=off
              -fno-math-errno -IPA:plimit=10000 +FDO
255.vortex:   -Ofast -OPT:goto=off -CG:p2align=on
              -GRA:optimize_boundary=on -IPA:min_hotness=120 +FDO
256.bzip2:    basepeak = true
300.twolf:    -O2 -CG:gcm=off:p2align_freq=100000
              -OPT:Ofast:unroll_times_max=8:unroll_size=256:alias-disjoint
              -WOPT:mem_opnds=on -m32 +FDO
```

taskset utility used to bind CPU(s) to processes.

Standard Performance Evaluation Corporation  
info@spec.org  
<http://www.spec.org/>



# CINT2000 Result

Copyright ©1999-2005, Standard Performance Evaluation Corporation

Supernmicro  
A+ Server 2021M-T2R+V

SPECint\_rate2000 = --

SPECint\_rate\_base2000 = 73.6

SPEC license #: 3184 Tested by:

Test date:

Feb-2007

Hardware Avail:

Software Avail:

## Notes/Tuning Information (Continued)

```
176.gcc:      -O3 -IPA:plimit=10000 -LNO:opt=0 -OPT:goto=off +FDO
181.mcf:      -O3 -ipa -IPA:field_reorder=on -m32 +FDO
186.crafty:   -Ofast -CG:local_fwd_sched=on -LNO:opt=0 -WOPT:val=0 +FDO
197.parser:   -O3 -ipa -m32 -IPA:cType=on +FDO
252.eon:      -Ofast -CG:gcm=off:p2align_freq=1:prefetch=off -IPA:plimit=4000
              -OPT:treeheight=on -TENV:X=4:frame_pointer=off -fno-exceptions
              -LNO:fu=10:full_unroll_outer=on -GRA:optimize_boundary=on +FDO
253.perlbnk:  -O2 -ipa -OPT:Ofast:transform_to_memlib=off
              -fno-math-errno -IPA:plimit=10000 +FDO
255.vortex:   -Ofast -OPT:goto=off -CG:p2align=on
              -GRA:optimize_boundary=on -IPA:min_hotness=120 +FDO
256.bzip2:    basepeak = true
300.twolf:    -O2 -CG:gcm=off:p2align_freq=100000
              -OPT:Ofast:unroll_times_max=8:unroll_size=256:alias-disjoint
              -WOPT:mem_opnds=on -m32 +FDO
```

taskset utility used to bind CPU(s) to processes.

Standard Performance Evaluation Corporation  
info@spec.org  
<http://www.spec.org/>



# CINT2000 Result

Copyright ©1999-2005, Standard Performance Evaluation Corporation

Supernmicro  
A+ Server 2021M-T2R+V

SPECint\_rate2000 = --  
SPECint\_rate\_base2000 = 73.9

SPEC license #: 3184 Tested by:

Test date:

Feb-2007

Hardware Avail:

Software Avail:

## Notes/Tuning Information (Continued)

```
176.gcc:      -O3 -IPA:plimit=10000 -LNO:opt=0 -OPT:goto=off +FDO
181.mcf:      -O3 -ipa -IPA:field_reorder=on -m32 +FDO
186.crafty:   -Ofast -CG:local_fwd_sched=on -LNO:opt=0 -WOPT:val=0 +FDO
197.parser:   -O3 -ipa -m32 -IPA:cType=on +FDO
252.eon:      -Ofast -CG:gcm=off:p2align_freq=1:prefetch=off -IPA:plimit=4000
              -OPT:treeheight=on -TENV:X=4:frame_pointer=off -fno-exceptions
              -LNO:fu=10:full_unroll_outer=on -GRA:optimize_boundary=on +FDO
253.perlbnk:  -O2 -ipa -OPT:Ofast:transform_to_memlib=off
              -fno-math-errno -IPA:plimit=10000 +FDO
255.vortex:   -Ofast -OPT:goto=off -CG:p2align=on
              -GRA:optimize_boundary=on -IPA:min_hotness=120 +FDO
256.bzip2:    basepeak = true
300.twolf:    -O2 -CG:gcm=off:p2align_freq=100000
              -OPT:Ofast:unroll_times_max=8:unroll_size=256:alias-disjoint
              -WOPT:mem_opnds=on -m32 +FDO
```

taskset utility used to bind CPU(s) to processes.

Standard Performance Evaluation Corporation  
info@spec.org  
http://www.spec.org/

Supermicro SuperServer 6025B-TR+V with two Quad-Core Intel Xeon processor X5355s (2 users)

CINT2000 Result																																																																																																						
Supermicro Supermicro X7DBE+					SPECint_rate2000 = -- SPECint_rate_base2000 = 60.6																																																																																																	
SPEC license # 3184		Tested by:		Test date:		Feb-2006		Hardware Avail:		Dec-2006		Software Avail:		May-2006																																																																																								
										<table border="1"> <thead> <tr> <th>Benchmark</th> <th>Base Copies</th> <th>Base Runtime</th> <th>Base Ratio</th> <th>Copies</th> <th>Runtime</th> <th>Ratio</th> </tr> </thead> <tbody> <tr><td>164.gzip</td><td>2</td><td>89.2</td><td>36.4</td><td></td><td></td><td></td></tr> <tr><td>175.vpr</td><td>2</td><td>69.7</td><td>46.6</td><td></td><td></td><td></td></tr> <tr><td>176.gcc</td><td>2</td><td>40.4</td><td>63.2</td><td></td><td></td><td></td></tr> <tr><td>181.mcf</td><td>2</td><td>52.6</td><td>79.3</td><td></td><td></td><td></td></tr> <tr><td>186.crafty</td><td>2</td><td>32.6</td><td>71.3</td><td></td><td></td><td></td></tr> <tr><td>197.parser</td><td>2</td><td>105</td><td>39.7</td><td></td><td></td><td></td></tr> <tr><td>252.eon</td><td>2</td><td>36.4</td><td>82.9</td><td></td><td></td><td></td></tr> <tr><td>253.perlbnk</td><td>2</td><td>56.0</td><td>74.6</td><td></td><td></td><td></td></tr> <tr><td>254.gap</td><td>2</td><td>49.7</td><td>51.4</td><td></td><td></td><td></td></tr> <tr><td>255.vortex</td><td>2</td><td>46.3</td><td>95.2</td><td></td><td></td><td></td></tr> <tr><td>256.bzip2</td><td>2</td><td>70.9</td><td>49.1</td><td></td><td></td><td></td></tr> <tr><td>300.twolf</td><td>2</td><td>102</td><td>68.2</td><td></td><td></td><td></td></tr> </tbody> </table>		Benchmark	Base Copies	Base Runtime	Base Ratio	Copies	Runtime	Ratio	164.gzip	2	89.2	36.4				175.vpr	2	69.7	46.6				176.gcc	2	40.4	63.2				181.mcf	2	52.6	79.3				186.crafty	2	32.6	71.3				197.parser	2	105	39.7				252.eon	2	36.4	82.9				253.perlbnk	2	56.0	74.6				254.gap	2	49.7	51.4				255.vortex	2	46.3	95.2				256.bzip2	2	70.9	49.1				300.twolf	2	102	68.2			
Benchmark	Base Copies	Base Runtime	Base Ratio	Copies	Runtime	Ratio																																																																																																
164.gzip	2	89.2	36.4																																																																																																			
175.vpr	2	69.7	46.6																																																																																																			
176.gcc	2	40.4	63.2																																																																																																			
181.mcf	2	52.6	79.3																																																																																																			
186.crafty	2	32.6	71.3																																																																																																			
197.parser	2	105	39.7																																																																																																			
252.eon	2	36.4	82.9																																																																																																			
253.perlbnk	2	56.0	74.6																																																																																																			
254.gap	2	49.7	51.4																																																																																																			
255.vortex	2	46.3	95.2																																																																																																			
256.bzip2	2	70.9	49.1																																																																																																			
300.twolf	2	102	68.2																																																																																																			
<b>Hardware</b>						<b>Software</b>																																																																																																
CPU: Intel Xeon processor X5355 (2.66GHz, 1333MHz bus) CPU MHz: 2666 FPU: Integrated CPU(s) enabled: 8 core, 2 chip, 4 cores/chip CPU(s) orderable: 1,2 Parallel: No Primary Cache: 32KB (I) + 32KB (D) (on chip) per core Secondary Cache: 2 x 4MB (shared) L3 Cache: N/A Other Cache: N/A Memory: 4x2GB PC2-5300 FBDIMM Disk Subsystem: SATA, 74GB Other Hardware:						Operating System: Red Hat Enterprise Linux 4 for AMD64/EM64T, Update 4 Kernel 2.6.9-42.EL.smp Compiler: Intel C++ Compiler for EM64T-based applications, (Version 9.1 Build 20061101) File System: ext2 System State: Default																																																																																																
<b>Notes/Tuning Information</b>																																																																																																						
<pre> +FDO: PASS1--prof_gen PASS2--prof use Base tuning for C programs: -fast -auto_ilp32 +FDO ONESTEP=yes Base tuning for C++ programs: -fast Portability flags: -DSPEC_CPU2000_LP64 applied to all benchmarks 176.gcc: -Dalloca=alloca -DUSG 186.crafty: -DLINUX_I386 252.eon: -DHAS_ERRLIST 253.perlbnk: -DSPEC_CPU2000_LINUX_I386 -DSPEC_CPU2000_NEED_BOOL -DSPEC_CPU2000_GLIBC22 254.gap: -DSYS_IS_USG -DSYS_HAS_IOCTL_PROTO -DSYS_HAS_TIME_PROTO           -DSYS_HAS_SIGNAL_PROTO -DSYS_HAS_ANSI -DSYS_HAS_CALLOC_PROTO  Peak tuning: 164.gzip: basepeak-1 175.vpr: basepeak-1 176.gcc: -fast -auto_ilp32 +FDO 181.mcf: -fast -auto_ilp32 +FDO ONESTEP=yes 186.crafty: -fast -auto_ilp32 +FDO ONESTEP=yes 197.parser: -fast -auto_ilp32 +FDO ONESTEP=yes 252.eon: -fast +FDO 253.perlbnk: -fast +FDO ONESTEP=yes           </pre>																																																																																																						
Standard Performance Evaluation Corporation info@spec.org http://www.spec.org/																																																																																																						

# CINT2000 Result

Copyright ©1999-2005, Standard Performance Evaluation Corporation

Supernmicro  
Supernmicro X7DBE+

SPECint\_rate2000 = --

SPECint\_rate\_base2000 = 60.6

SPEC license #: 3184 | Tested by: | Test date: Feb-2006 | Hardware Avail: Dec-2006 | Software Avail: May-2006

## Notes/Tuning Information (Continued)

```
254.gap:      -fast                +FDO    ONESTEP=yes
255.vortex:   -fast -auto_1lp32      +FDO    ONESTEP=yes
256.bzip2:    basepeak-1
300.twolf:    basepeak-1
BIOS Configuration Notes
Power Regulator set to Static High
```

Standard Performance Evaluation Corporation  
info@spec.org  
<http://www.spec.org/>



Supermicro SuperServer 6025B-TR+V with two Quad-Core Intel Xeon processor X5355s (4 users)

<b>CINT2000 Result</b>																																																																																																				
Copyright ©1999-2005, Standard Performance Evaluation Corporation																																																																																																				
<b>Supermicro</b> <b>Supermicro X7DBE+</b>					SPECint_rate2000 = --																																																																																															
					SPECint_rate_base2000 = 117																																																																																															
SPEC license # 3184		Tested by:		Test date:		Feb-2006		Hardware Avail:																																																																																												
Dec-2006		Software Avail:		May-2006																																																																																																
					<table border="1" style="width: 100%; border-collapse: collapse; font-size: small;"> <thead> <tr> <th>Benchmark</th> <th>Base Copies</th> <th>Base Runtime</th> <th>Base Ratio</th> <th>Copies</th> <th>Runtime</th> <th>Ratio</th> </tr> </thead> <tbody> <tr><td>164.gzip</td><td>4</td><td>90.0</td><td>72.2</td><td></td><td></td><td></td></tr> <tr><td>175.vpr</td><td>4</td><td>73.4</td><td>88.5</td><td></td><td></td><td></td></tr> <tr><td>176.gcc</td><td>4</td><td>41.8</td><td>122</td><td></td><td></td><td></td></tr> <tr><td>181.mcf</td><td>4</td><td>54.4</td><td>153</td><td></td><td></td><td></td></tr> <tr><td>186.crafty</td><td>4</td><td>32.7</td><td>142</td><td></td><td></td><td></td></tr> <tr><td>197.parser</td><td>4</td><td>107</td><td>78.3</td><td></td><td></td><td></td></tr> <tr><td>252.eon</td><td>4</td><td>36.5</td><td>165</td><td></td><td></td><td></td></tr> <tr><td>253.perlbnk</td><td>4</td><td>56.6</td><td>148</td><td></td><td></td><td></td></tr> <tr><td>254.gap</td><td>4</td><td>59.1</td><td>86.4</td><td></td><td></td><td></td></tr> <tr><td>255.vortex</td><td>4</td><td>47.6</td><td>185</td><td></td><td></td><td></td></tr> <tr><td>256.bzip2</td><td>4</td><td>74.4</td><td>93.6</td><td></td><td></td><td></td></tr> <tr><td>300.rwolf</td><td>4</td><td>102</td><td>136</td><td></td><td></td><td></td></tr> </tbody> </table>					Benchmark	Base Copies	Base Runtime	Base Ratio	Copies	Runtime	Ratio	164.gzip	4	90.0	72.2				175.vpr	4	73.4	88.5				176.gcc	4	41.8	122				181.mcf	4	54.4	153				186.crafty	4	32.7	142				197.parser	4	107	78.3				252.eon	4	36.5	165				253.perlbnk	4	56.6	148				254.gap	4	59.1	86.4				255.vortex	4	47.6	185				256.bzip2	4	74.4	93.6				300.rwolf	4	102	136			
Benchmark	Base Copies	Base Runtime	Base Ratio	Copies	Runtime	Ratio																																																																																														
164.gzip	4	90.0	72.2																																																																																																	
175.vpr	4	73.4	88.5																																																																																																	
176.gcc	4	41.8	122																																																																																																	
181.mcf	4	54.4	153																																																																																																	
186.crafty	4	32.7	142																																																																																																	
197.parser	4	107	78.3																																																																																																	
252.eon	4	36.5	165																																																																																																	
253.perlbnk	4	56.6	148																																																																																																	
254.gap	4	59.1	86.4																																																																																																	
255.vortex	4	47.6	185																																																																																																	
256.bzip2	4	74.4	93.6																																																																																																	
300.rwolf	4	102	136																																																																																																	
<b>Hardware</b>					<b>Software</b>																																																																																															
CPU: Intel Xeon processor X5355 (2.66GHz, 1333MHz bus) CPU MHz: 2666 FPU: Integrated CPU(s) enabled: 8 core, 2 chip, 4 cores/chip CPU(s) orderable: 1,2 Parallel: No Primary Cache: 32KB (I) + 32KB (D) (on chip) per core Secondary Cache: 2 x 4MB (shared) L3 Cache: N/A Other Cache: N/A Memory: 4x2GB PC2-5300 FBDIMM Disk Subsystem: SATA, 74GB Other Hardware:					Operating System: Red Hat Enterprise Linux 4 for AMD64/EM64T, Update 4 Kernel 2.6.9-42.EL.smp Compiler: Intel C++ Compiler for EM64T-based applications. (Version 9.1 Build 20061101) File System: ext2 System State: Default																																																																																															
<b>Notes/Tuning Information</b>																																																																																																				
<pre> +FDO: PASS1--prof_gen PASS2--prof use Base tuning for C programs: -fast -auto_ilp32 +FDO ONESTEP=yes Base tuning for C++ programs: -fast Portability flags: -DSPEC_CPU2000_LP64 applied to all benchmarks 176.gcc: -Dalloca=alloca -DUSG 186.crafty: -DLINUX_I386 252.eon: -DHAS_ERRLIST 253.perlbnk: -DSPEC_CPU2000_LINUX_I386 -DSPEC_CPU2000_NEED_BOOL -DSPEC_CPU2000_GLIBC22 254.gap: -DSYS_IS_USG -DSYS_HAS_IOCTL_PROTO -DSYS_HAS_TIME_PROTO           -DSYS_HAS_SIGNAL_PROTO -DSYS_HAS_ANSI -DSYS_HAS_CALLOC_PROTO  Peak tuning: 164.gzip: basepeak-1 175.vpr: basepeak-1 176.gcc: -fast -auto_ilp32 +FDO 181.mcf: -fast -auto_ilp32 +FDO ONESTEP=yes 186.crafty: -fast -auto_ilp32 +FDO ONESTEP=yes 197.parser: -fast -auto_ilp32 +FDO ONESTEP=yes 252.eon: -fast +FDO 253.perlbnk: -fast +FDO ONESTEP=yes           </pre>																																																																																																				
Standard Performance Evaluation Corporation info@spec.org http://www.spec.org/																																																																																																				

# CINT2000 Result

Copyright ©1999-2005, Standard Performance Evaluation Corporation

Supernmicro  
Supernmicro X7DBE+

SPECint\_rate2000 = --  
SPECint\_rate\_base2000 = 117

SPEC license #: 3184 | Tested by: | Test date: Feb-2006 | Hardware Avail: Dec-2006 | Software Avail: May-2006

## Notes/Tuning Information (Continued)

```
254.gap:      -fast          +FDO    ONESTEP=yes
255.vortex:   -fast -auto_1lp32  +FDO    ONESTEP=yes
256.bzip2:    basepeak-1
300.twolf:    basepeak-1
BIOS Configuration Notes
  Power Regulator set to Static High
```

Standard Performance Evaluation Corporation  
info@spec.org  
http://www.spec.org/

Supermicro SuperServer 6025B-TR+V with two Quad-Core Intel Xeon processor X5355s (8 users)

CINT2000 Result									
Supermicro Supermicro X7DBE+					SPECint_rate2000 = -- SPECint_rate_base2000 = 183				
SPEC license # 3184		Tested by:		Test date:		Hardware Avail:		Software Avail:	
500		400		300		200		100	
Feb-2006		Dec-2006		May-2006					
Benchmark	Base Copies	Base Runtime	Base Ratio	Copies	Runtime	Ratio			
164.gzip	8	92.8	140						
175.vpr	8	101	128						
176.gcc	8	51.7	197						
181.mcf	8	132	127						
186.crafty	8	32.9	282						
197.parser	8	146	115						
252.eon	8	36.6	330						
253.perlbnk	8	63.0	265						
254.gap	8	98.4	104						
255.vortex	8	58.7	300						
256.bzip2	8	96.4	144						
300.rwolf	8	109	255						
<b>Hardware</b>					<b>Software</b>				
CPU: Intel Xeon processor X5355 (2.66GHz, 1333MHz bus) CPU MHz: 2666 FPU: Integrated CPU(s) enabled: 8 core, 2 chip, 4 cores/chip CPU(s) orderable: 1,2 Parallel: No Primary Cache: 32KB (I) + 32KB (D) (on chip) per core Secondary Cache: 2 x 4MB (shared) L3 Cache: N/A Other Cache: N/A Memory: 4x2GB PC2-5300 FBDIMM Disk Subsystem: SATA, 74GB Other Hardware:					Operating System: Red Hat Enterprise Linux 4 for AMD64/EM64T, Update 4 Kernel 2.6.9-42.EL.smp Compiler: Intel C++ Compiler for EM64T-based applications. (Version 9.1 Build 20061101) File System: ext2 System State: Default				
<b>Notes/Tuning Information</b>									
+FDO: PASS1--prof_gen PASS2--prof use Base tuning for C programs: -fast -auto_ilp32 +FDO ONESTEP=yes Base tuning for C++ programs: -fast Portability flags: -DSPEC_CPU2000_LP64 applied to all benchmarks 176.gcc: -Dalloca- alloca -DUSG 186.crafty: -DLINUX_I386 252.eon: -DHAS_ERRLIST 253.perlbnk: -DSPEC_CPU2000_LINUX_I386 -DSPEC_CPU2000_NEED_BOOL -DSPEC_CPU2000_GLIBC22 254.gap: -DSYS_IS_USG -DSYS_HAS_IOCTL_PROTO -DSYS_HAS_TIME_PROTO -DSYS_HAS_SIGNAL_PROTO -DSYS_HAS_ANSI -DSYS_HAS_CALLOC_PROTO Peak tuning: 164.gzip: basepeak-1 175.vpr: basepeak-1 176.gcc: -fast -auto_ilp32 +FDO 181.mcf: -fast -auto_ilp32 +FDO ONESTEP=yes 186.crafty: -fast -auto_ilp32 +FDO ONESTEP=yes 197.parser: -fast -auto_ilp32 +FDO ONESTEP=yes 252.eon: -fast +FDO 253.perlbnk: -fast +FDO ONESTEP=yes									
Standard Performance Evaluation Corporation info@spec.org http://www.spec.org/									

# CINT2000 Result

Copyright ©1999-2005, Standard Performance Evaluation Corporation

Supernmicro  
Supernmicro X7DBE+

SPECint\_rate2000 = --  
SPECint\_rate\_base2000 = 183

SPEC license #: 3184 | Tested by: | Test date: Feb-2006 | Hardware Avail: Dec-2006 | Software Avail: May-2006

## Notes/Tuning Information (Continued)

```
254.gap:      -fast                +FDO  ONESTEP=yes
255.vortex:   -fast -auto_1lp32          +FDO  ONESTEP=yes
256.bzip2:    basepeak-1
300.twolf:    basepeak-1
BIOS Configuration Notes
  Power Regulator set to Static High
```

Standard Performance Evaluation Corporation  
info@spec.org  
http://www.spec.org/



Principled Technologies, Inc.  
1007 Slater Road, Suite 250  
Durham, NC 27703  
[www.principledtechnologies.com](http://www.principledtechnologies.com)  
[info@principledtechnologies.com](mailto:info@principledtechnologies.com)

Principled Technologies is a registered trademark of Principled Technologies, Inc.  
All other product names are the trademarks of their respective owners

**Disclaimer of Warranties; Limitation of Liability:**

PRINCIPLED TECHNOLOGIES, INC. HAS MADE REASONABLE EFFORTS TO ENSURE THE ACCURACY AND VALIDITY OF ITS TESTING, HOWEVER, PRINCIPLED TECHNOLOGIES, INC. SPECIFICALLY DISCLAIMS ANY WARRANTY, EXPRESSED OR IMPLIED, RELATING TO THE TEST RESULTS AND ANALYSIS, THEIR ACCURACY, COMPLETENESS OR QUALITY, INCLUDING ANY IMPLIED WARRANTY OF FITNESS FOR ANY PARTICULAR PURPOSE. ALL PERSONS OR ENTITIES RELYING ON THE RESULTS OF ANY TESTING DO SO AT THEIR OWN RISK, AND AGREE THAT PRINCIPLED TECHNOLOGIES, INC., ITS EMPLOYEES AND ITS SUBCONTRACTORS SHALL HAVE NO LIABILITY WHATSOEVER FROM ANY CLAIM OF LOSS OR DAMAGE ON ACCOUNT OF ANY ALLEGED ERROR OR DEFECT IN ANY TESTING PROCEDURE OR RESULT.

IN NO EVENT SHALL PRINCIPLED TECHNOLOGIES, INC. BE LIABLE FOR INDIRECT, SPECIAL, INCIDENTAL, OR CONSEQUENTIAL DAMAGES IN CONNECTION WITH ITS TESTING, EVEN IF ADVISED OF THE POSSIBILITY OF SUCH DAMAGES. IN NO EVENT SHALL PRINCIPLED TECHNOLOGIES, INC.'S LIABILITY, INCLUDING FOR DIRECT DAMAGES, EXCEED THE AMOUNTS PAID IN CONNECTION WITH PRINCIPLED TECHNOLOGIES, INC.'S TESTING. CUSTOMER'S SOLE AND EXCLUSIVE REMEDIES ARE AS SET FORTH HEREIN.