SPECjbb2005 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 SPECjbb2005 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

<div style="border: 1px solid">

KEY FINDING

- The Supermicro SuperServer 6025B-TR+V with two Quad-Core Intel Xeon processor X5355s delivered over 151 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).

</div>

In this section, we discuss the best results for each server. For complete details of the performance of each Java Virtual Machine (JVM) by warehouse for each server, see the Test results section.

Figure 1 shows the SPECjbb2005 results, in bops, of the test servers. Each result is the median score of three runs of the benchmark. See the Test results section for the scores from all three runs. A higher SPECjbb2005 score indicates the server is able to handle more Java requests and thus deliver greater throughput.

The Supermicro SuperServer 6025B-TR+V with two Quad-Core Intel Xeon processor X5355s produced the higher results, 194,688 bops, while the Supermicro A+ Server 2021M-T2R+V with two dual-core AMD Opteron processor model 2220 SEs achieved 77,460 bops. The Supermicro SuperServer 6025B-TR+V with two Quad-Core Intel Xeon processor X5355s thus delivered a 151.3 percent performance increase over the Supermicro A+ Server 2021M-T2R+V with two dual-core AMD Opteron processor model 2220 SEs.
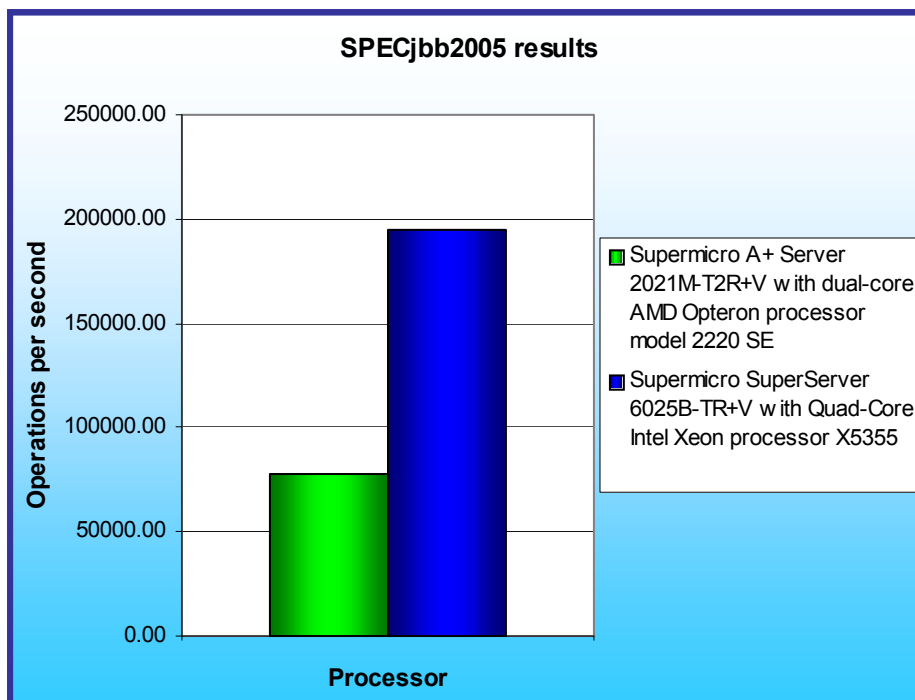

Figure 1: SPECjbb2005 business operations per second (dual-processor) results for the test servers. Higher numbers of operations per second are better.

Workload

SPECjbb2005 is an industry-standard benchmark created by the Standard Performance Evaluation Corp. (SPEC) to measure a server's Java performance. SPEC modeled SPECjbb2005 on the three-tier client/server architecture, with the middle layer as the primary focus. Per SPEC. "Random input selection represents the first (user) tier. SPECjbb2005 fully implements the middle tier business logic. The third tier is represented by tables of objects, implemented by Java Collections, rather than a separate database." (www.spec.org/jbb2005/docs/UserGuide.html).

SPECjbb2005 utilizes multiple special data groups and multiple threads as it runs. Each data unit is a

"warehouse", which is a roughly 25MB collection of data objects. Each thread represents an active user posting transaction requests within a warehouse. The benchmark run begins with one warehouse and then increases the number of warehouses; its goal is to saturate the server's processor capacity. As the number of warehouses increases, so does the number of threads. The benchmark's results portray the server's throughput in bops (business operations per second). Because bops is a rate, a higher number of bops is better. (For more information on SPECjbb2005, go to www.spec.org.)

Test results

Figure 2 shows the median SPECjbb2005 results with processor affinity for both servers. We used processor affinity to map processes to logical processors, a practice that typically helps the server achieve maximum performance. (We verified with experiments that both systems scored higher with processor affinity than without it.) In each test, we ran two JVMs at the same time, a common practice on servers with many processors. To compute the overall score for the system, SPECjbb2005 sums the scores of all the JVMs. SPECjbb2005 computes the score of each JVM by taking the average of the results during mixes when the server is running at peak performance. (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 files SPEC requires. We do present here all the data necessary to reproduce these results.)

	Operations per second	
	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
JVM 1	38,770	96,848
JVM 2	38,690	97,840
Total Score	77,460	194,688

Figure 2: SPECjbb2005 results for each server by JVM. Higher numbers are better.

Figure 3 shows the results by warehouse for the Supermicro A+ Server 2021M-T2R+V with two dual-core AMD Opteron processor model 2220 SEs for all three runs. Run 3 produced the median results.

Principled Technologies, Inc.: SPECjbb2005 performance on Intel- and AMD-processor-based servers running Red Hat Enterprise Linux v.4.4

2

Supermicro A+ Server 2021M-T2R+V with dual-core AMD Opteron processor model 2220 SE			
	Run 1	**Run 2**	**Run 3**
Warehouse	**JVM 1**		
1	16,793	16,934	17,313
2	38,436	38,476	38,597
3	38,860	38,739	38,555
4	38,982	38,485	39,159
5	38,578	38,338	38,531
6	38,772	38,115	38,607
7	38,494	38,141	38,214
8	38,039	37,868	38,032
Score	**38,759**	**38,567**	**38,770**
Warehouse	**JVM 2**		
1	17,664	17,162	17,648
2	38,300	38,123	38,261
3	38,973	38,263	38,824
4	38,891	37,979	38,986
5	38,282	38,524	38,387
6	38,045	38,633	38,242
7	38,134	38,050	37,574
8	37,941	37,672	37,188
Score	**38,721**	**38,122**	**38,690**
Total Score	**77,480**	**76,689**	**77,460**

Figure 3: SPECjbb2005 results for the Supermicro A+ Server 2021M-T2R+V with two dual-core AMD Opteron processor model 2220 SEs. Higher numbers are better.

Figure 4 shows the results by warehouse for the Supermicro SuperServer 6025B-TR+V with two Quad-Core Intel Xeon processor X5355s for all three runs. Run 3 produced the median results.

Principled Technologies, Inc.: SPECjbb2005 performance on Intel- and AMD-
processor-based servers running Red Hat Enterprise Linux v.4.4

3

Supermicro SuperServer 6025B-TR+V with Quad-Core Intel Xeon processor X5355			
	Run 1	**Run 2**	**Run 3**
Warehouse	**JVM 1**		
1	31,522	32,110	32,221
2	65,346	64,959	64,912
3	82,459	81,865	81,937
4	100,027	99,009	99,056
5	98,540	98,406	98,311
6	97,656	96,771	97,011
7	95,337	95,218	95,696
8	95,150	93,984	94,167
Score	**97,342**	**96,678**	**96,848**
Warehouse	**JVM 2**		
1	31,893	31,706	31,045
2	65,417	65,105	65,569
3	82,162	82,228	81,777
4	99,613	100,342	99,517
5	100,071	98,908	99,662
6	97,502	98,997	98,824
7	96,035	96,523	96,439
8	94,303	94,953	94,760
Score	**97,505**	**97,945**	**97,840**
Total Score	**194,847**	**194,623**	**194,688**

Figure 4: SPECjbb2005 results for the Supermicro SuperServer 6025B-TR+V with two Quad-Core Xeon processor X5355s. Higher numbers are better.

Principled Technologies, Inc.: SPECjbb2005 performance on Intel- and AMD-
processor-based servers running Red Hat Enterprise Linux v.4.4

4

Test methodology

Figure 5 summarizes some 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 5: 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 SuperServer 6025B-TR+V with two Quad-Core Intel Xeon processor X5355s, we disabled the HW Prefetcher and Adjacent Cache Line Prefetcher. On the Supermicro A+ Server 2021M-T2R+V with two dual-core AMD Opteron processor model 2220 SEs, 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.

SPECjbb2005 configuration

We used SPECjbb2005 version 1.07, dated March 15, 2006. We followed SPEC's run rules. (For more information about SPECjbb2005 and its run rules, see www.spec.org/jbb2005/docs/RunRules.html.) We installed SPECjbb2005 by copying the contents of the SPECjbb2005 CD on the server's hard disk.

SPECjbb2005 requires a Java Virtual Machine (JVM) on the system under test. For both systems we used the BEA JRockit 5.0 (build P27.1.0-19-75699-1.5.0_10-20070125-1059-linux-x86_64) JVM. In all tests, we left the default benchmark installation settings.

After installation, as per the SPECjbb run rules we edited the SPECjbb_config.props file in the root SPECjbb2005 directory to include disclosure information about the server and our license information. SPECjbb2005 uses this file when generating the results output for each run. We also modified the SPECjbb.props file to change the number of JVM instances to two. This change allows a server to run two JVM instances during testing.

We created a shell script, which we placed in the root SPECjbb2005 directory of each server, to issue the Java run command to launch the benchmark. During testing, we used the terminal console window to run this shell script.

Principled Technologies, Inc.: SPECjbb2005 performance on Intel- and AMD-processor-based servers running Red Hat Enterprise Linux v.4.4

5

Figure 6 shows the shell script we used for the Supermicro A+ Server 2021M-T2R+V with two dual-core AMD Opteron processor model 2220 SEs. Figure 7 shows the shell script we used for the Supermicro SuperServer 6025B-TR+V with two Quad-Core Intel Xeon processor X5355s. We used the same Java options for both test servers. In each script, we set the following Java options:

- *-Xms3000m*   This option sets the minimum heap size. We set the minimum and maximum heap sizes to be the same, so the heap size would stay a constant 3000MB.
- *-Xmx3000m*   This option sets the maximum heap size.
- *-XXaggressive*   This option basically tells the JVM to perform at maximum speed.
- *-XXthroughputCompaction*   This option adjusts the compaction ratio dynamically based on live data in the heap.
- *-XXallocPrefetch*   This option tells the JVM to prefetch a chunk of data when it uses a related, earlier bit of data.
- *-XXallocRedoPrefetch*   This option also affects JVM prefetch behavior.
- *-XXcompressedRefs*   This option turns on compressed references.
- *-XXlazyUnlocking*   This option affects when the JVM releases locks.
- *-XXtlasize128k*   This option sets the thread-local area size the JVM uses.

To improve Java performance, we enabled large pages in memory. To enable this service, we included the commands at the start of our shell script. We also used the "taskset" command on both servers to set processor affinity. While we used the same "taskset" command on both servers, we set the number of bound processors differently on the two systems because they have different numbers of logical processors.

Principled Technologies, Inc.: SPECjbb2005 performance on Intel- and AMD-
processor-based servers running Red Hat Enterprise Linux v.4.4

6

```
taskset_run_multi.sh
File  Edit  View  Insert  Format  Help

echo
date

echo
echo Setting OS tunning options...
echo 3200 > /proc/sys/vm/nr_hugepages
mkdir -p  /mnt/hugepages
mount none /mnt/hugepages -t hugetlbfs
chmod 777 /mnt/hugepages
cat /proc/meminfo | grep Huge

sleep 2

echo
PATH=/jrockit-jdk1.5.0_10/jre/bin:$PATH
echo PATH="$PATH"

echo
java -version

sleep 1
echo
date

JVM_OPTIONS="-Xms3000m -Xmx3000m -XXaggressive -XXthroughputCompaction -XXallocPrefetch -XXallocRedoPrefetch -XXcompressedRefs -XXlazyUnlocking -XXtlasize128k"
echo
echo Starting Controller
#java -cp jbb.jar:check.jar -Xms32m -Xmx32m spec.jbb.Controller -propfile SPECjbb.props &
java -cp jbb.jar:check.jar -Xms256m -Xmx256m -Xgc:parallel spec.jbb.Controller -propfile SPECjbb.props &
sleep 5

echo "Starting instance 1"
taskset --cpu-list 0,2,4,6 java -cp jbb.jar:check.jar $JVM_OPTIONS spec.jbb.JBBmain -propfile SPECjbb.props -id 1 > multi.1 &

echo "Starting instance 2"
taskset --cpu-list 1,3,5,7 java -cp jbb.jar:check.jar $JVM_OPTIONS spec.jbb.JBBmain -propfile SPECjbb.props -id 2 > multi.2 &

date

For Help, press F1                                                                                                    NUM
```

Figure 7: The text of the shell script we used to execute the SPECjbb2005 benchmark on the Supermicro SuperServer 6025B-TR+V with two Quad-Core Intel Xeon processor X5355s.

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
General processor setup		
Number of processor packages	2	2
Number of cores per processor package	2	4
Number of hardware threads per core	1	1
CPU		
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)
Platform		
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	HW Prefetcher disabled
Memory module(s)		
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
Hard disk		
Vendor and model number	Western Digital Raptor WD740ADFD	Western Digital Raptor WD740ADFD
Number of disks in system	1	1
Size	74 GB	74 GB

Principled Technologies, Inc.: SPECjbb2005 performance on Intel- and AMD-processor-based servers running Red Hat Enterprise Linux v.4.4

8

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
Operating system		
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
Graphics		
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
Network card/subsystem		
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
Optical drive		
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
USB ports		
Number	4	4
Type	USB 2.0	USB 2.0

Figure 8: Detailed system configuration information for the test servers.

Principled Technologies, Inc.: SPECjbb2005 performance on Intel- and AMD-
processor-based servers running Red Hat Enterprise Linux v.4.4

9

Appendix B – SPECjbb2005 output

This appendix provides the output of the benchmark for each of the test servers.

Supermicro A+ Server 2021M-T2R+V with two dual-core AMD Opteron processor model 2220 SEs
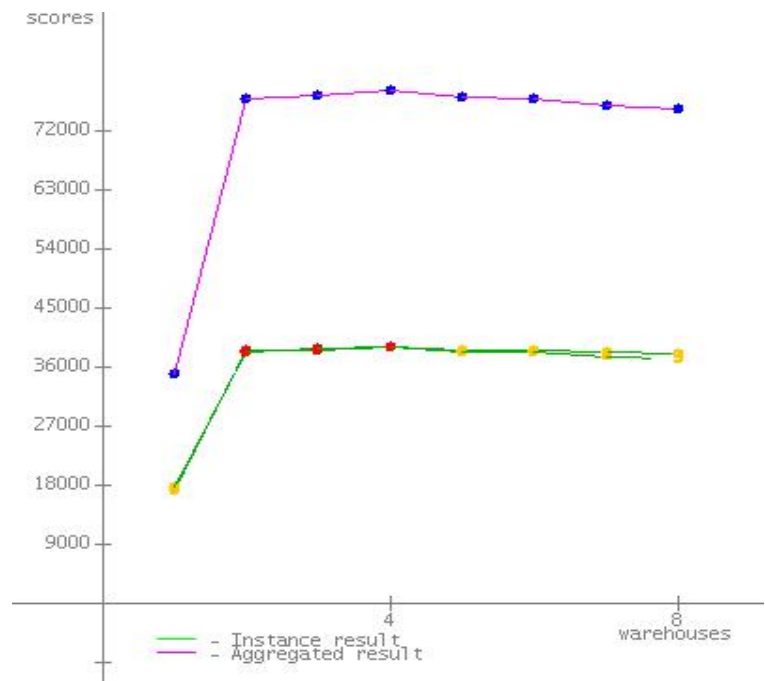
SPECjbb2005

**SPECjbb2005 bops = 77460,
SPECjbb2005 bops/JVM = 38730**

Supermicro A+ Server 2021M-T2R+V

BEA JRockit(R) (build P27.1.0-19-75699-1.5.0_10-20070125-1059-linux-x86_64, compiled mode)

JVM run	JVM Scores
1	38770
2	38690
SPECjbb2005 bops = 77460, SPECjbb2005 bops/JVM = 38730	

Hardware	
Hardware Vendor	Supermicro
Vendor URL	http://www.supermicro.com
Model	A+ Server 2021M-T2R+V
Processor	Dual-Core AMD Opteron 2220 SE
MHz	2800
# of Chips	2
# of Cores	2
# of Cores/Chip	2
HW Threading	No

Software	
Software Vendor	BEA
Vendor URL	http://www.bea.com
JVM Version	JRockit(R) (build P27.1.0-19-75699-1.5.0_10-20070125-1059-linux-x86_64)
JVM Command Line	java -Xms3000m -Xmx3000m -XXaggressive -XXthroughputCompaction -XXallocPrefetch -XXallocRedoPrefetch -XXcompressedRefs -XXlazyUnlocking -XXtlasize128k
JVM Initial Heap Memory (MB)	3000
JVM Maximum Heap Memory (MB)	3000
JVM Address bits	64
JVM CLASSPATH	jbb.jar:

Principled Technologies, Inc.: SPECjbb2005 performance on Intel- and AMD-processor-based servers running Red Hat Enterprise Linux v.4.4

10

Enabled?			check.jar
Procs Avail to Java	4	**JVM BOOTCLASSPATH**	/jrockit-jdk1.5.0_10/jre/lib/amd64/jrockit/jrockit1.5.0.jar: /jrockit-jdk1.5.0_10/jre/lib/amd64/jrockit/managementapi.jar: /jrockit-jdk1.5.0_10/jre/lib/amd64/jrockit/jmxmapi.jar: /jrockit-jdk1.5.0_10/jre/lib/amd64/jrockit/rmp.jar: /jrockit-jdk1.5.0_10/jre/lib/rt.jar: /jrockit-jdk1.5.0_10/jre/lib/i18n.jar: /jrockit-jdk1.5.0_10/jre/lib/sunrsasign.jar: /jrockit-jdk1.5.0_10/jre/lib/jsse.jar: /jrockit-jdk1.5.0_10/jre/lib/jce.jar: /jrockit-jdk1.5.0_10/jre/lib/charsets.jar: /jrockit-jdk1.5.0_10/jre/classes
Memory (MB)	8196		
Memory Details	4 x 2GB PC2-5300 ECC registered		
Primary cache	64KBI+64KBD (per core)		
Secondary cache	2 x 1MB		
Other cache	N/A		
Filesystem	ext3	**OS Version**	Red Hat Enterprise Linux 4 update 4
Disks	1 x 73GB SATA	**Other software**	
Other hardware			

Test Information	
Tested by	Principled Technologies
SPEC license #	3184
Test location	Durham, NC
Test date	Feb 7, 2007
H/w available	
JVM available	2007
OS available	
Other s/w available	

AOT Compilation

Tuning

Notes

Principled Technologies, Inc.: SPECjbb2005 performance on Intel- and AMD-processor-based servers running Red Hat Enterprise Linux v.4.4

11

JVM 1 Scores:

No errors. Valid run.

	SPECjbb2005 bops	
Warehouses	**SPECjbb2005 bops**	**Incl. in metric**
1	17313	
2	38597	*
3	38555	*
4	39159	*
5	38531	
6	38607	
7	38214	
8	38032	
SPECjbb2005	**(from 2 to 4)**	**38770 SPECjbb2005 bops**
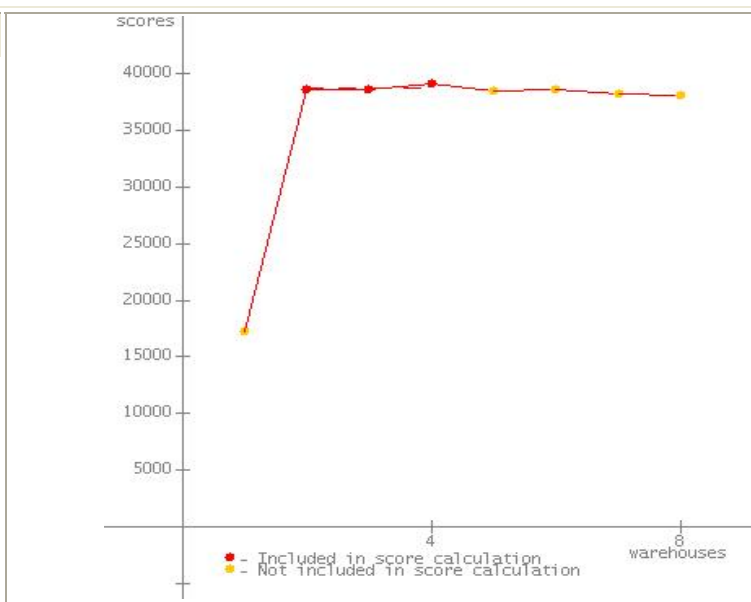
SPEC license # 3184	**Tested by:** Principled Technologies	**Test date:** Feb 7, 2007

JVM 2 Scores:

No errors. Valid run.

	SPECjbb2005 bops	
Warehouses	**SPECjbb2005 bops**	**Incl. in metric**
1	17648	
2	38261	*
3	38824	*
4	38986	*
5	38387	
6	38242	
7	37574	
8	37188	
SPECjbb2005	**(from 2 to 4)**	**38690 SPECjbb2005 bops**
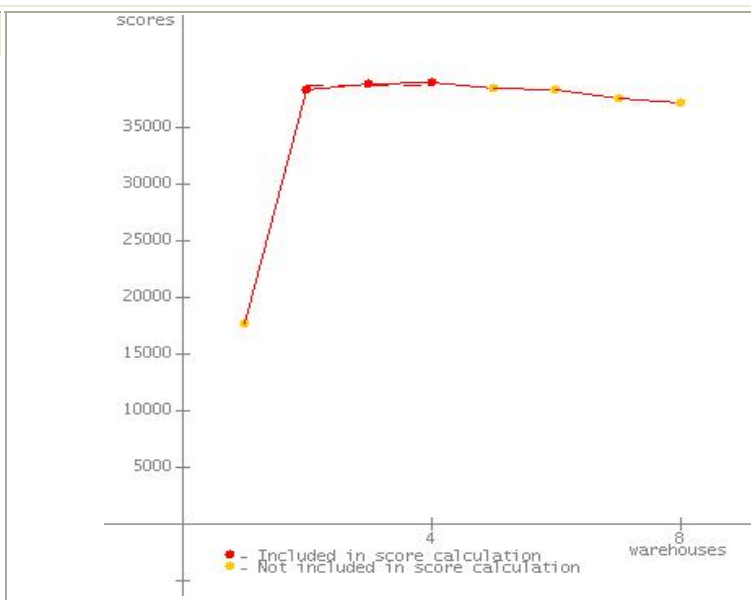
|		
SPEC license # 3184	**Tested by:** Principled Technologies	**Test date:** Feb 7, 2007

SPECjbb2005 Version: [SPECjbb2005 1.07, March 15, 2006]
Reporting page, Copyright © 2005 SPEC. All rights reserved

Principled Technologies, Inc.: SPECjbb2005 performance on Intel- and AMD-
processor-based servers running Red Hat Enterprise Linux v.4.4

12

SPECjbb2005

<mark>**SPECjbb2005 bops = 194688,
SPECjbb2005 bops/JVM = 97344**</mark>

Supermicro SuperServer 6025B-TR+V

BEA JRockit(R) (build P27.1.0-19-75699-1.5.0_10-
20070125-1059-linux-x86_64, compiled mode)

JVM run	JVM Scores
1	96848
2	97840
SPECjbb2005 bops = 194688, SPECjbb2005 bops/JVM = 97344	
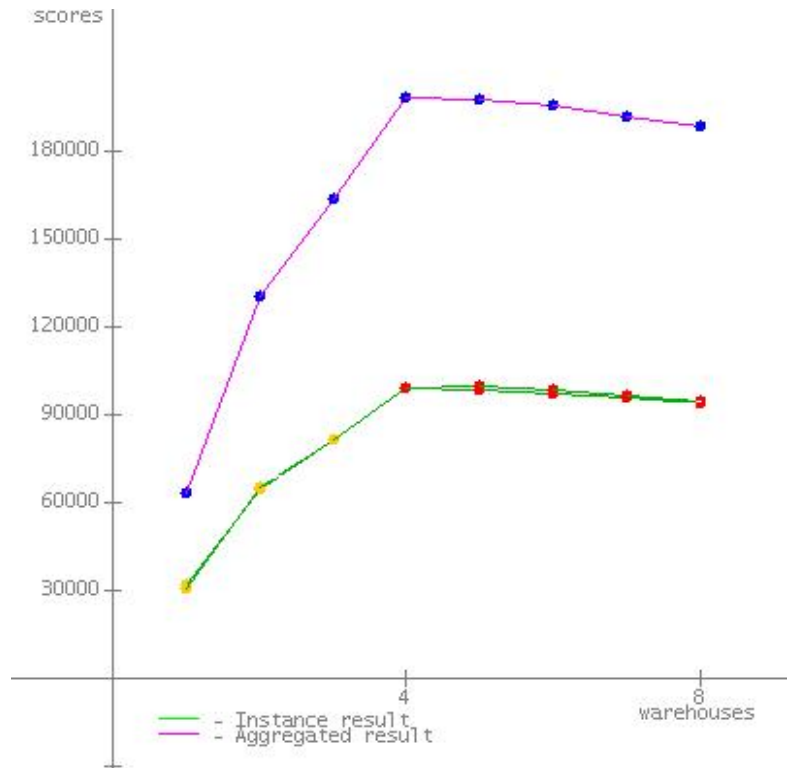
Hardware	
Hardware Vendor	Supermicro
Vendor URL	http://www.supermicro.com
Model	SuperServer 6025B-TR+V
Processor	Quad-Core Intel Xeon X5355
MHz	2660
# of Chips	2
# of Cores	4
# of Cores/Chip	4
HW Threading Enabled?	No

Software	
Software Vendor	BEA
Vendor URL	http://www.bea.com
JVM Version	JRockit(R) (build P27.1.0-19-75699-1.5.0_10-20070125-1059-linux-x86_64)
JVM Command Line	java -Xms3000m -Xmx3000m -XXaggressive -XXthroughputCompaction -XXallocPrefetch -XXallocRedoPrefetch -XXcompressedRefs -XXlazyUnlocking -XXtlasize128k
JVM Initial Heap Memory (MB)	3000
JVM Maximum Heap Memory (MB)	3000
JVM Address bits	64
JVM CLASSPATH	jbb.jar:

Principled Technologies, Inc.: SPECjbb2005 performance on Intel- and AMD-
processor-based servers running Red Hat Enterprise Linux v.4.4

13

Procs Avail to Java	8
Memory (MB)	8196
Memory Details	4 x 2GB PC2-5300 ECC registered
Primary cache	32KBI+32KBD (per core)
Secondary cache	2 x 4MB (each 4MB shared by 2 cores)
Other cache	N/A
Filesystem	ext3
Disks	1 x 73GB SATA
Other hardware	

	check.jar
JVM BOOTCLASSPATH	/jrockit-jdk1.5.0_10/jre/lib/amd64/jrockit/jrockit1.5.0.jar: /jrockit-jdk1.5.0_10/jre/lib/amd64/jrockit/managementapi.jar: /jrockit-jdk1.5.0_10/jre/lib/amd64/jrockit/jmxmapi.jar: /jrockit-jdk1.5.0_10/jre/lib/amd64/jrockit/rmp.jar: /jrockit-jdk1.5.0_10/jre/lib/rt.jar: /jrockit-jdk1.5.0_10/jre/lib/i18n.jar: /jrockit-jdk1.5.0_10/jre/lib/sunrsasign.jar: /jrockit-jdk1.5.0_10/jre/lib/jsse.jar: /jrockit-jdk1.5.0_10/jre/lib/jce.jar: /jrockit-jdk1.5.0_10/jre/lib/charsets.jar: /jrockit-jdk1.5.0_10/jre/classes
OS Version	Red Hat Enterprise Linux 4 update 4
Other software	

Test Information	
Tested by	Principled Technologies
SPEC license #	3184
Test location	Durham, NC
Test date	Feb 6, 2007
H/w available	
JVM available	2007
OS available	
Other s/w available	

AOT Compilation

Tuning

Notes

Principled Technologies, Inc.: SPECjbb2005 performance on Intel- and AMD-processor-based servers running Red Hat Enterprise Linux v.4.4

14

JVM 1 Scores:

No errors. Valid run.

Warehouses	SPECjbb2005 bops	Incl. in metric
1	32221	
2	64912	
3	81937	
4	99056	*
5	98311	*
6	97011	*
7	95696	*
8	94167	*
SPECjbb2005	(from 4 to 8)	96848 SPECjbb2005 bops

SPEC license # 3184 | **Tested by:** Principled Technologies | **Test date:** Feb 6, 2007

JVM 2 Scores:

No errors. Valid run.

Warehouses	SPECjbb2005 bops	Incl. in metric
1	31045	
2	65569	
3	81777	
4	99517	*
5	99662	*
6	98824	*
7	96439	*
8	94760	*
SPECjbb2005	(from 4 to 8)	97840 SPECjbb2005 bops

SPEC license # 3184 | **Tested by:** Principled Technologies | **Test date:** Feb 6, 2007

SPECjbb2005 Version: [SPECjbb2005 1.07, March 15, 2006]
Reporting page, Copyright © 2005 SPEC. All rights reserved

Principled Technologies, Inc.: SPECjbb2005 performance on Intel- and AMD-processor-based servers running Red Hat Enterprise Linux v.4.4

15
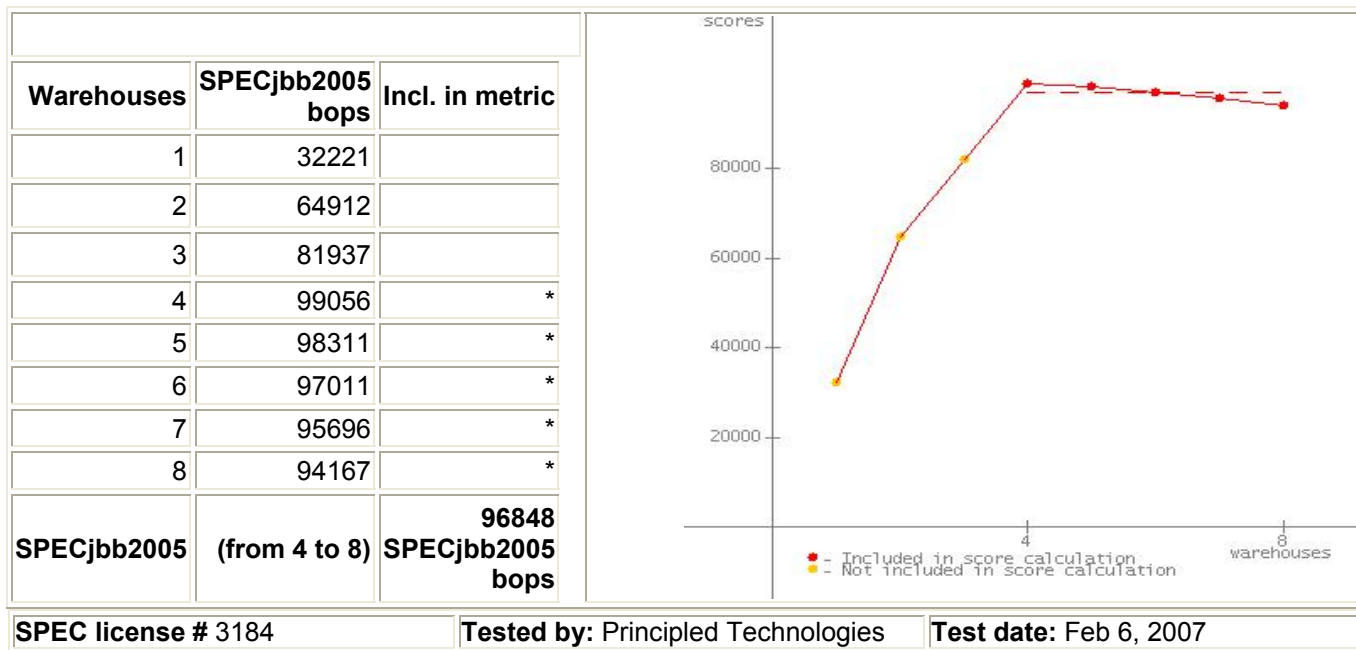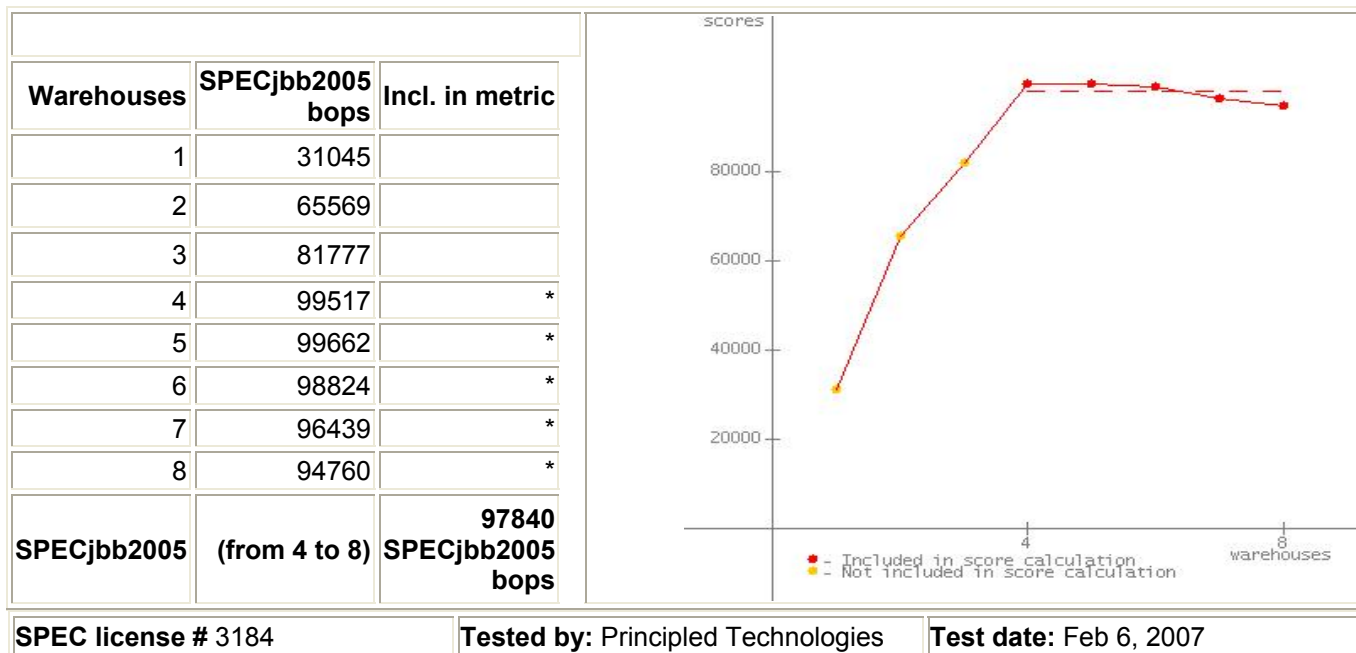
Principled Technologies®

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

Principled Technologies, Inc.: SPECjbb2005 performance on Intel- and AMD-
processor-based servers running Red Hat Enterprise Linux v.4.4

16