Principled Technologies®

TEST REPORT
AUGUST 2006

SPECjbb2005 performance with varying numbers of virtual machines on Intel- and AMD-processor-based servers

Executive summary

Intel Corporation (Intel) commissioned Principled Technologies (PT) to measure the performance and power consumption of multiple virtualized instances of SPECjbb2005 in dual-processor servers using the following two processors:

- Dual-Core AMD Opteron 285 (Hewlett-Packard ProLiant DL385)
- Dual-Core Intel Xeon Processor 5160 (Supermicro SuperServer 7045B-8R+B)

To create the virtual machines on each system, we used the experimental 64-bit guest support of VMware's ESX Server, version 3.0 (www.vmware.com/products/vi/esx/). We created 4 virtual machines, each running Windows Server 2003 Enterprise x64 Edition. We tested the servers running 1, 2, and 4 virtual machines, each one executing the SPECjbb2005 benchmark. We allocated each virtual machine 1 processor and 1800 MB of RAM.

KEY FINDINGS

- The Dual-Core Intel Xeon Processor 5160-based server out performed the Dual-Core AMD Opteron 285-based server in all virtual machine environments while running SPECjbb2005
- The Dual-Core Intel Xeon Processor 5160-based server delivered 80 percent more performance on SPECjbb2005 in the single-virtual-machine environment than the Dual-Core AMD Opteron 285-based server (see Figure 1).
- In the two- and four-virtual-machine environments, the Dual-Core Intel Xeon processor 5160-based server delivered 68 and 43 percent more performance, respectively, on SPECjbb2005 than the Dual-Core AMD Opteron 285-based server (see Figure 1).

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).

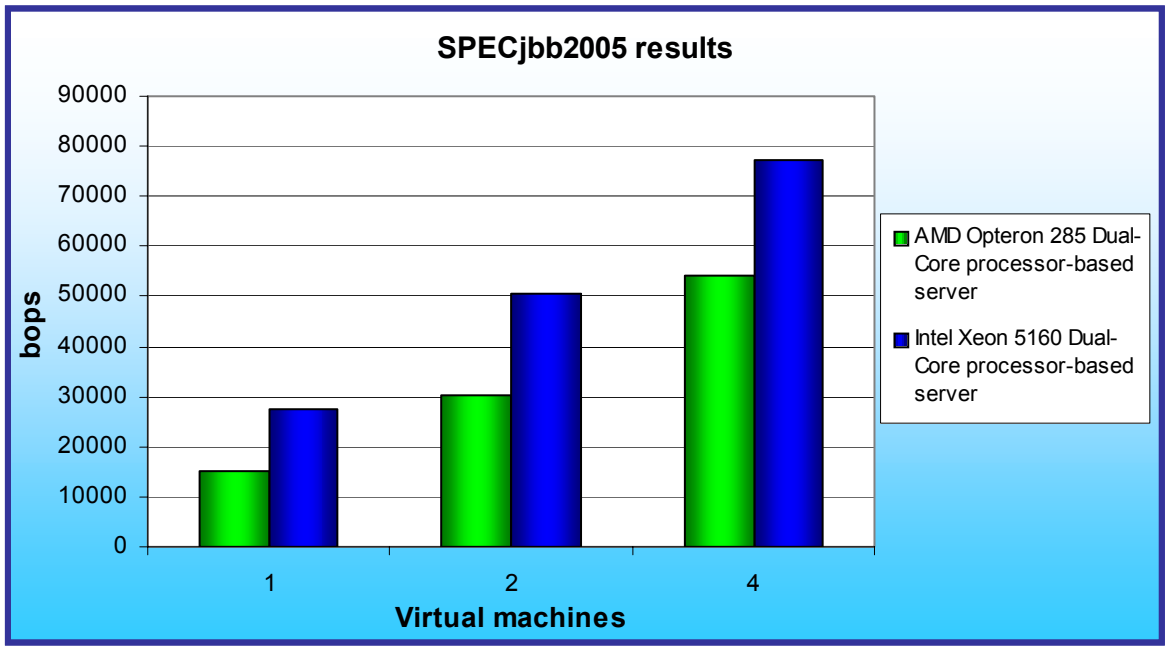


Figure 1: SPECjbb2005 business operations per second results for the two test servers with 1, 2, and 4 virtual machines. Higher numbers of operations per second are better.

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.)

Figure 1 shows the SPECjbb2005 test results, in bops, of the two test servers running one, two, and four virtual machines. Each result is the median peak score of three runs of the benchmark. A higher SPECjbb2005 score indicates the server is able to handle more Java requests and thus deliver greater throughput.

The Dual-Core Intel Xeon Processor 5160-based server produced higher results in all three environments.

In the one-virtual-machine environment, the Dual-Core Intel Xeon Processor 5160-based server was 80 percent faster over the Dual-Core AMD Opteron 285-based server. With two virtual machines, the difference was 68 percent while with four virtual machines the Dual-Core Intel Xeon Processor 5160-based server was 43 percent faster.

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.

Test results

Figures 2 through 4 show the median SPECjbb2005 results for both servers with 1, 2, and 4 virtual machines executing the benchmark. SPECjbb2005 computes its score 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 SPEC required files. We do present here all the data necessary to reproduce these results.)

SPECjbb2005 results with 1 virtual machine (bops)		
Server	**Dual-Core AMD Opteron 285-based server**	**Dual-Core Intel Xeon Processor 5160-based server**
Warehouse 1	14537	26635
Warehouse 2	15930	28070
Warehouse 3	15770	27472
Warehouse 4	15434	26425
Warehouse 5	15034	25095
Warehouse 6	14744	24083
Warehouse 7	14452	22790
Warehouse 8	14155	21428
Score	**15233**	**27352**

Figure 2: SPECjbb2005 median results in business operations per second (bops), both per warehouse and overall, for the two test servers with 1 virtual machine. Higher numbers are better.

With only 1 virtual machine running the benchmark, each server produces a single SPECjbb2005 result. As Figures 3 and 4 illustrate, when multiple virtual machines are each executing the benchmark, each virtual machine produces its own score. To obtain the total bops score for a server in this configuration, we sum the scores of all the virtual machines. A higher number of bops is better in all cases.

SPECjbb2005 results with 2 virtual machines (bops)				
Server	Dual-Core AMD Opteron 285-based server		Dual-Core Intel Xeon Processor 5160-based server	
	VM1	VM2	VM1	VM2
Warehouse 1	14279	14476	24139	24443
Warehouse 2	15607	15975	26408	26285
Warehouse 3	15538	15849	26310	26131
Warehouse 4	15187	15508	25041	25035
Warehouse 5	15030	15166	23834	23828
Warehouse 6	14525	15024	22826	22913
Warehouse 7	14237	14754	21874	21618
Warehouse 8	13807	14136	20439	20885
Score	**14943**	**15225**	**25274**	**25364**
Combined VM Score	**30168**		**50638**	

Figure 3: SPECjbb2005 median results in business operations per second (bops), both per warehouse and overall, for the two test servers with 2 virtual machines. Higher numbers are better.

SPECjbb2005 results with 4 virtual machines (bops)								
Server	Dual-Core AMD Opteron 285-based server				Dual-Core Intel Xeon Processor 5160-based server			
	VM1	VM2	VM3	VM4	VM1	VM2	VM3	VM4
Warehouse 1	13047	12924	12673	12956	18769	18624	18753	18849
Warehouse 2	13983	14189	14121	14224	19622	19950	20290	19660
Warehouse 3	14021	14084	13864	14183	20106	20251	20068	19982
Warehouse 4	13867	13889	13553	13864	19411	19176	19376	19282
Warehouse 5	13670	13536	13422	13676	18434	18732	18772	19155
Warehouse 6	13519	13286	13059	13485	18085	18138	18088	17931
Warehouse 7	13272	13157	12847	13190	17552	17724	17708	17655
Warehouse 8	12917	12845	12591	12852	16764	16845	18223	17713
Score	**13515**	**13556**	**13397**	**13590**	**19195**	**19287**	**19522**	**19255**
Combined VM Score	**54058**				**77259**			

Figure 4: SPECjbb2005 median results in business operations per second (bops), both per warehouse and overall, for the two test servers with 4 virtual machines. Higher numbers are better.

Test methodology

Figure 5 summarizes some key aspects of the configurations of the two server systems; Appendix A provides detailed configuration information. Intel provided both servers.

Server	Dual-Core AMD Opteron 285-based server	Dual-Core Intel Xeon processor 5160-based server
Vendor	Hewlett-Packard	Supermicro
Model	ProLiant DL385	SuperServer 7045B-8R+B
Processor frequency (GHz)	2.6GHz	3.0GHz
Single/Dual-Core processors	Dual	Dual
Motherboard	HP ProLiant DL385 G1 399684-001	Supermicro X7DB8+
Chipset	AMD 8111/8131 chipset	Intel 5000P Chipset
RAM (8GB in each)	8 x 1GB PC-3200	8 x 1GB PC2-4400 FBDIMM
Hard Drive	3 x Seagate Cheetah ST336754LC 15K RPM 37 GB drives attached through Adaptec 39320A-R PCI-X 133-MHz SCSI controller	3 x Seagate Cheetah ST336754LC 15K RPM 37 GB drives attached through Adaptec 39320A-R PCI-X 133-MHz SCSI controller

Figure 5: Summary of some key aspects of the server configurations.

The difference in RAM types reflects the capabilities of the two motherboards: The Supermicro X7DB8+ motherboard offered two independent front-side busses at a speed of 1333 MHz and contained Fully-Buffered DIMM (FBDIMM) modules that used commodity DDR2 PC2-4400 533-MHz memory components. The HP ProLiant DL385 G1 motherboard supported 184-pin DDR memory, and the highest memory speed available for the Dual-Core AMD Opteron 285-based server was DDR PC3200 400-MHz RAM.

With the following exceptions, we used the default BIOS settings on each server: we disabled the HW Prefetcher and the Adjacent Cache Line Prefetcher on the Dual-Core Intel Xeon processor 5160-based server. These options were not available on the Dual-Core AMD Opteron 285-based server.

We began by installing a fresh copy of Microsoft Windows Server 2003 x64 Enterprise Edition Service Pack 1 on each server on the third SCSI drive. We followed this process for each installation:

1. Assign a computer name of “AMD” or “INTEL”, depending on the server.
2. For the licensing mode, use the default setting of five concurrent connections.
3. Enter the password “password” for the administrator log on.
4. Select Eastern Time Zone.
5. Use specific IP address for the Network installation.
6. Use the default name “WORKGROUP” for the workgroup.

We applied the following updates from the Microsoft Windows Update site:

- Security Update for Windows Server 2003 x64 Edition (KB911280)
- Security Update for Windows Server 2003 x64 Edition (KB917953)
- Security Update for Windows Server 2003 x64 Edition (KB918439)
- Security Update for Windows Server 2003 x64 Edition (KB917344)
- Security Update for Windows Server 2003 x64 Edition (KB914389)
- Security Update for Windows Server 2003 x64 Edition (KB917734)
- Security Update for Windows Server 2003 x64 Edition (KB908531)
- Security Update for Windows Server 2003 x64 Edition (KB911562)

- Security Update for Windows Server 2003 x64 Edition (KB911927)
- Security Update for Windows Server 2003 x64 Edition (KB908519)
- Security Update for Windows Server 2003 x64 Edition (KB912919)
- Security Update for Windows Server 2003 x64 Edition (KB896424)
- Security Update for Windows Server 2003 x64 Edition (KB900725)
- Security Update for Windows Server 2003 x64 Edition (KB902400)
- Security Update for Windows Server 2003 x64 Edition (KB904706)
- Security Update for Windows Server 2003 x64 Edition (KB901017)
- Security Update for Windows Server 2003 x64 Edition (KB890046)
- Security Update for Windows Server 2003 x64 Edition (KB899587)
- Security Update for Windows Server 2003 x64 Edition (KB899591)
- Security Update for Windows Server 2003 x64 Edition (KB893756)
- Security Update for Windows Server 2003 x64 Edition (KB899588)
- Security Update for Windows Server 2003 x64 Edition (KB901214)
- Security Update for Windows Server 2003 x64 Edition (KB896422)
- Security Update for Windows Server 2003 x64 Edition (KB896358)
- Security Update for Windows Server 2003 x64 Edition (KB896428)
- Security Update for Windows Media Player Plug-in (KB911564)
- Update for Windows Server 2003 x64 Edition (KB898715)
- Update for Windows Server 2003 x64 Edition (KB914784)
- Update for Windows Server 2003 x64 Edition (KB910437)
- Cumulative Security Update for Internet Explorer for Windows Server 2003 x64 Edition (KB916281)
- Cumulative Security Update for Outlook Express for Windows Server 2003 x64 Edition (KB911567)

To improve Java performance, we enabled large pages in memory on all servers. To enable this service, the administrator must first assign additional privileges to the user who will be running the application. We assigned this privilege only to the administrator, because we used that account for our tests. To enable large pages, we did the following:

- Select Control Panel -> Administrative Tools -> Local Security Policy.
- Select Local Policies -> User Rights Assignment.
- Select “Lock pages in memory”, add users and/or groups.

Installing the server and configuring the SCSI drives

We set up the servers so we could run 1, 2, or 4 virtual machines under the experimental 64-bit guest support of VMware's ESX Server, version 3.0. We first created a partition on one disk drive and installed Windows Server 2003 Enterprise x64 Edition. We then installed VMware ESX Server, version 3.0 and edited the Grub loader so we could dual-boot the operating systems. Figure 6 illustrates the disk layout we used to accommodate both operating systems and four virtual machines.

SCSI drives	Partition type	Partition size
SCSI drive 1		
Windows boot partition	ntfs	20MB
/boot	ext3	100MB
/	ext3	4000MB
Swap	swap	544MB
Vmkore	vmkore	100MB
Virtual machine storage (x2)	vmfs	29000MB
SCSI drive 2		
/var/log	ext3	2000MB
Virtual machine storage (x2)	vmfs	29000MB
SCSI drive 3		
Windows Server 2003 Enterprise x64 Edition	ntfs	6000MB
Virtual machine storage (x2)	vmfs	29000MB

Figure 6: SCSI drive configurations for both operating systems and all the virtual machines.

Installing VMware ESX Server 3.0

We installed VMware ESX Server 3.0 by following this process:

1. Reboot the server with the VMware ESX Server CD in the CD-ROM drive. The installation wizard will start and guide the installation process.
2. Assign a host name (“amd.localhost” or “intel.localhost”, as appropriate).
3. Enter the password “password” for the administrator account.
4. Select Eastern/New York Time Zone.
5. Use specific IP addresses for each server.
6. Once the installation is complete, reboot the server.
7. Log into the VMware ESX 3.0 Server.
8. Edit the Grub configuration file (grub.conf) in the boot/grub directory and add the following lines:

```
title Windows Server 2003 Enterprise x64 Edition
    rootnoverify (hd0,0)
    chainloader +1
```

10. Attach one management desktop system directly to each server using a crossover Cat 5 network cable.
11. Apply IP addresses in the same subnet as the above IP address.
12. On each management desktop system, use a Web browser to work with the Web interface available in VMware's ESX Server 3.0.
13. Download and install the VMware Virtual Infrastructure Client 2.0 from the VMware ESX 3.0 Server. This software serves as a management console to the VMware ESX Server and lets you build and set the resources for each of the virtual machines.
14. Mount the vmfs partitions in Figure 6.
    - In the Configuration tab of the Virtual Infrastructure Client, click the Storage (SCSI, SAN, and NFS) item under Hardware.
    - Use the Add Storage… wizard to mount each directory.
    - Accept all default settings with one exception: mount only the partition you designated for virtual machine storage, not the entire SCSI drive.
    - Repeat this three more times and name the three storage partitions storage1, storage2, and storage3.
15. Use the New Virtual Machine Wizard to create the first virtual machine with the following parameters:
    - Storage area: storage1
    - Guest operating system: Microsoft Windows Server 2003, Enterprise x64 Edition
    - Memory: 1800MB
    - Number of NICs: 1

- Hard disk space: 8 GB
- CPUs: 1 virtual processor
- SCSI controller type: LSI Logic
- Virtual machine name: windows64-1

20. After creating the first virtual machine with the VMware Infrastructure Client, place the Windows Server 2003 CD in the management desktop system.
21. Power on the virtual machine.
22. Mount the virtual CD-ROM drive connecting the virtual machine to the CD-ROM drive on the management desktop system.
23. The virtual machine will boot and detect the bootable installation disk.
24. Install Windows Server 2003 Enterprise x64 Edition with the same configuration and updates we showed previously.
25. Install VMware tools by clicking Inventory->Virtual Machine->Install VMware Tools.
26. Follow the installation wizard accepting all of the default settings.
27. Enable time synchronization between the virtual machine and the host system by doing the following:
    - Click the VMware Tools icon in the task bar.
    - Check “Time synchronization between the virtual machine and the console operating system”.
    - Click Apply.
    - Click OK.
28. To reduce the resource consumption for each virtual machine, we disabled the following Windows services in Start – Administrative Tools – Services:

    - automatic updates
    - computer browser
    - cryptographic services
    - dhcp client
    - distributed link tracking client
    - distributed transaction coordinator
    - dns client
    - help and support
    - ipsec services
    - logical disk manager
    - print spooler
    - protected storage
    - remote registry
    - secondary logon
    - shell hardware detection
    - system event notification
    - task scheduler
    - tcp/ip netbios helper
    - windows time
    - wireless configuration

29. Shut down Windows and make sure the virtual machine is completely powered down.

Cloning the virtual machines

To create the other virtual machines, we did the following:

1. On the VMware ESX Server, push Alt-F1 to switch to a console.
2. Log in as root.
3. Maneuver to the storage area where the newly created virtual machine resides: /vmfs/volumes.
4. VMware has already created a directory in storage1 named windows64-1 for the first virtual machine you previously built.

5. Use the mkdir command to create the directories for the other virtual machines. Spread the directories so that each storage area contains two. For example, you might enter the following:
   - mkdir ./storage2/windows64-2
   - mkdir ./storage3/windows64-3
   - mkdir ./storage3/windows64-4
6. When you finish this process, each storage partition should have two virtual machine directories.
7. Maneuver to the directory that holds the first virtual machine (/vmfs/volumes/storage1/windows64-1).
8. Copy the two core files, windows64-1.vmdk and windows64-1-flat.vmdk, to one of the directories you just created.
9. On the management desktop system running VMware Virtual Infrastructure Client, click the Virtual Machines tab.
10. Click File->New->Virtual Machine…
11. Use the Custom selection for Wizard Type and configure each virtual machine with the same parameters as above.
12. At the Select a Disk screen, choose Use an existing virtual disk.
13. Click Next.
14. Maneuver to the directory of the next virtual machine.
15. Repeat Steps 9 through 14 for the remaining virtual machines.
16. Boot each virtual machine, one at a time, starting with virtual machine No. 2.
17. Change the IP address to the next address in numerical order.
18. Change the computer name to the next name in logical succession (for example, windows64-2, and windows64-3).
19. Reboot the virtual machine.

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 to the directory C:\SPECjbb2005 on each server's hard disk.

SPECjbb2005 requires a Java Virtual Machine (JVM) on the system under test. We used the BEA JRockit 5.0 update 6 (P26.4.0-10-62459-1.5.0_06-20060529-2101-win-x86_64 for Microsoft Windows) JVM for this testing and left the default installation settings.

After installation, as per the 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 created a batch file in the root SPECjbb2005 directory to issue the Java run command that launched the benchmark. Intel created the scripts we used to launch this benchmark. Figure 7 shows the contents of the batch file.

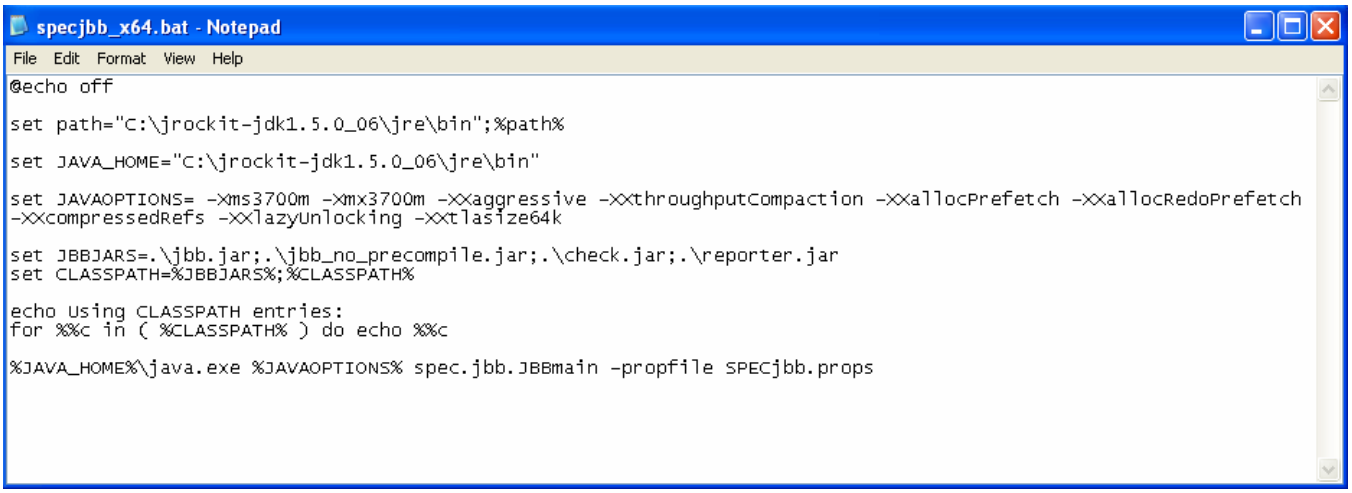


Figure 7: The text of the batch file we used to execute the SPECjbb2005 benchmark on all servers.

In the batch file we used the "set JAVAOPTIONS" command to set the Java options that control the performance of the JVM. Intel specified the following Java option settings:

- *-Xms1024m* 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 1024 MB.
- *-Xmx1024m* This option sets the minimum 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.
- *-XXtlasize64k* This option sets the thread-local area size the JVM uses.

Launching the benchmarks simultaneously in multi-virtual-machine environments

To run copies of SPECjbb2005 in multiple virtual machines simultaneously, we ran a DOS batch file that used the presence of a file as a flag to determine when to start the benchmark. The batch file ran a simple loop with a sleep delay of one second in each loop. The loop continued until it located a specific file, at which point it waited 30 seconds and then launched SPECjbb2005.

We placed the looping batch file in the root directory of each virtual machine. From our desktop management system, we mapped network drives to each of the four virtual machines and created another batch file in the desktop management system to copy the launching file to each virtual machine. Once we had launched the looping batch file in each virtual machine, we moved to the desktop system and launched the copying batch file.

After each test, we powered off the virtual machines and restarted VMware ESX Server before running the test again.

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.

Processors	Dual-Core AMD Opteron 285	Dual-Core Intel Xeon processor 5160
System configuration information		
General		
Vendor	Hewlett-Packard	Supermicro
Model	ProLiant DL385	SuperServer 7045B-8R+B
Processor and OS kernel: (physical, core, logical) / (UP, MP)	2P4C4L / MP	2P4C4L / MP
Number of physical processors	2	2
Single/Dual-Core processors	Dual	Dual
System Power Management Policy	Always On	Always On
CPU		
Vendor	AMD	Intel
Name	Dual-Core AMD Opteron 285	Dual-Core Intel Xeon processor 5160
Stepping	2	4
Socket type	940	LGA 771
Core frequency (GHz)	2.6 GHz	3.0 GHz
Front-side bus frequency (MHz)	2000-MHz HyperTransport	1333-MHz Dual Independent Busses (DIB)
L1 Cache	64 KB + 64 KB	32 KB + 32 KB
L2 Cache	2 MB (1 MB per core)	4 MB (Shared)
Platform		
Vendor	Dual-Core AMD Opteron 285 server	Dual-Core Intel Xeon processor 5160 server
Motherboard model number	HP ProLiant DL385 G1, P98330CRHSQ06H	Supermicro X7DB8+
Motherboard chipset	AMD 8111/8131 chipset	Intel 5000P Chipset
Motherboard revision number	C03	92
Motherboard serial number	USE606N50M	TM63S03434
BIOS name and version	Hewlett Packard, version A05, 12/15/2005	Phoenix Technologies LTD, version 6.00, 05/03/2006
BIOS settings	Default	HW Prefetcher and Adjacent Cache Line Prefetcher disabled
Chipset INF driver	Microsoft Version 5.2.3790.1830	Microsoft Version 5.2.3790.1830
Memory module(s)		
Vendor and model number	Viking VI4CR287228ETPA2	Micron MT18HTF12872FDY
Type	PC-3200 Registered DIMM	FBDIMM using PC2-4400 components
Speed (MHz)	400	533
Speed in the system currently running @ (MHz)	400	533
Timing/Latency (tCL-tRCD-iRP-tRASmin)	3-3-3-8	4-4-4-12
Size	8192 MB	8192 MB

Number of RAM modules	8	8
Chip organization	Double-sided	Double-sided
Channel	Dual	Dual
Hard disk		
Vendor and model number	Seagate ST336754LC	Seagate ST336754LC
Number of disks in system	3	3
Size	37 GB	37 GB
Buffer Size	8 MB	8 MB
RPM	15,000	15,000
Type	SCSI	SCSI
Controller	Adaptec SCSI 39320A-R PCI-X 133MHz (VMware ESX Server) LSI Logic PCI-X Ultra 320 SCSI Host Adapter (Windows virtual machine)	Adaptec SCSI 39320A-R PCI-X 133MHz (VMware ESX Server) LSI Logic PCI-X Ultra 320 SCSI Host Adapter (Windows virtual machine)
Controller driver	VMware Version 6.3.9 (Adaptec) Microsoft Version 5.2.3790.1830 (LSI Logic)	VMware Version 6.3.9 (Adaptec) Microsoft Version 5.2.3790.1830 (LSI Logic)
Operating system (Windows)		
Name	Microsoft Windows 2003 Server, Enterprise x64 Edition	Microsoft Windows 2003 Server, Enterprise x64 Edition
Build number	3790	3790
Service Pack	SP1	SP1
Microsoft Windows update date	06/28/2006	06/28/2006
File system	NTFS	NTFS
Kernel	ACPI Multiprocessor x64-based PC	ACPI Multiprocessor x64-based PC
Language	English	English
Microsoft DirectX version	DirectX 9.0c	DirectX 9.0c
Operating system (VMware)		
Name	VMware ESX Server 3.0	VMware ESX Server 3.0
File system	ext3 (server) vmfs (virtual machines)	ext3 (server) vmfs (virtual machines)
Kernel	Version 2.4.21-37.0.2	Version 2.4.21-37.0.2
Language	English	English
Graphics		
Vendor and model number	ATI Rage XL	ATI Rage XL
Chipset	ATI Rage XL PCI (B41)	ATI Rage XL PCI (B41)
BIOS version	GR-xlcpq-5.882-4.333	GR-xlints3y.09a-4.332
Type	Integrated	Integrated
Memory size	8 MB	8 MB
Resolution	800 x 600	800 x 600
Driver	VMware SVGA II, VMware Inc., Version 11.2.0.0	VMware SVGA II, VMware Inc., Version 11.2.0.0
Network card/subsystem		
Vendor and model number	Broadcom dual NetXtreme Gigabit	Intel PRO/1000 EB Network Connection
Type	Integrated	Integrated
Driver	Microsoft Intel PRO/2000 MT Version 8.1.8.0 (VMware)	Microsoft Intel PRO/2000 MT Version 8.1.8.0 (VMware)
Optical drive		

Vendor and model number	Samsung SN-124	LITE-ON SOHC-5236V
Type	CD-ROM	DVD/CD-ROM
Interface	Internal	Internal
USB ports		
# of ports	3 (1 front, 2 back)	4 (2 front, 2 back)
Type of ports (USB 1.1, USB 2.0)	USB 1.1	USB 2.0

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

Appendix B – SPECjbb2005 output

This appendix provides the benchmark output for both of the test servers in each of the virtual-machine configurations we tested.

Dual-Core AMD Opteron 285-based server with 1 virtual machine

SPECjbb2005

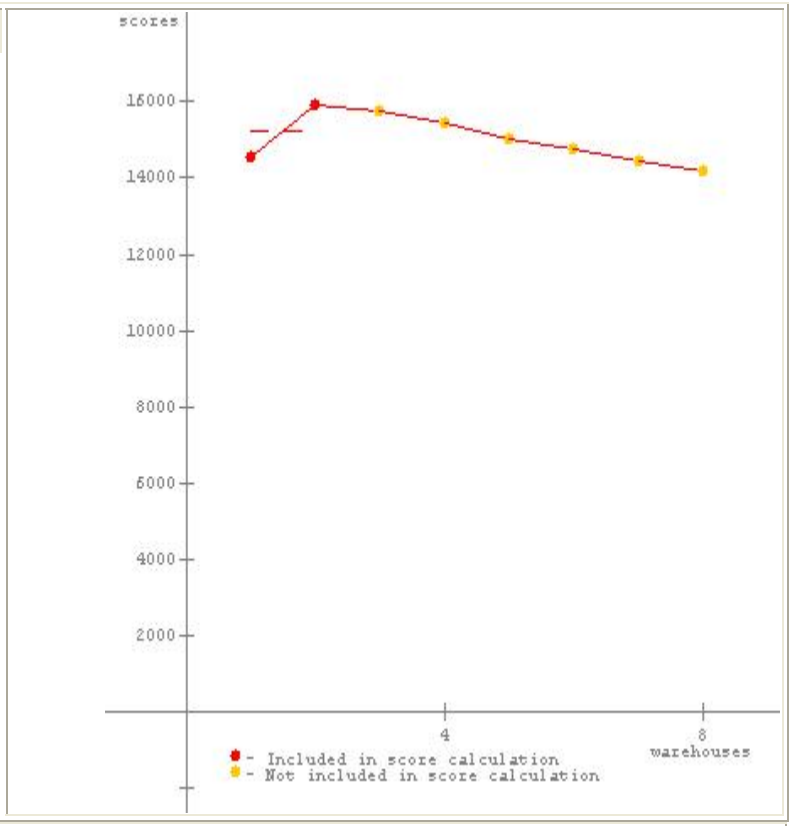
SPECjbb2005 bops = 15233,
SPECjbb2005 bops/JVM = 15233

Hewlett Packard HP ProLiant DL385 G1 399684-001

BEA BEA Jrockit 5.0 update 6, build P26.4.0-10-62459-1.5.0_06-20060529-2101-win-x86_64

No errors. Valid run.

Warehouses	SPECjbb2005 bops	Incl. in metric
1	14537	*
2	15930	*
3	15770	
4	15434	
5	15034	
6	14744	
7	14452	
8	14155	
SPECjbb2005	**(from 1 to 2)**	**15233 SPECjbb2005 bops**



SPEC license # 3184	**Tested by:** Principled Technologies, Inc.	**Test date:** Aug 18, 2006

Hardware	
Hardware Vendor	Hewlett Packard
Vendor URL	http://www.hp.com
Model	HP ProLiant DL385 G1 399684-001
Processor	Dual-Core AMD Opteron

Software	
Software Vendor	BEA
Vendor URL	http://www.bea.com
JVM Version	BEA Jrockit 5.0 update 6, build P26.4.0-10-62459-1.5.0_06-20060529-2101-win-x86_64
JVM Command Line	java -Xms1024m -Xmx1024m -Xxaggressive -XXthroughputCompaction -XXallocPrefetch -

	285
MHz	2600
# of Chips	2
# of Cores	4
# of Cores/Chip	2
HW Threading Enabled?	N/A
Procs Avail to Java	1
Memory (MB)	8192
Memory Details	8 of 8 DIMMs filled with 1GB DDR400 ECC Registered
Primary cache	64KBI+64KBD
Secondary cache	1 MB per core
Other cache	
Filesystem	NTFS
Disks	3 x 37GB SCSI
Other hardware	

	XXallocRedoPrefetch -XXcompressedRefs -XXlazyUnlocking -XXtlasize64k
JVM Initial Heap Memory (MB)	1024
JVM Maximum Heap Memory (MB)	1024
JVM Address bits	64
JVM CLASSPATH	.\jbb.jar; .\jbb_no_precompile.jar; .\check.jar; .\reporter.jar;
JVM BOOTCLASSPATH	C:\jrockit-jdk1.5.0_06\jre\bin\jrockit\jrockit.jar; C:\jrockit-jdk1.5.0_06\jre\bin\jrockit\managementapi.jar; C:\jrockit-jdk1.5.0_06\jre\lib\managementapi.jar; C:\jrockit-jdk1.5.0_06\jre\lib\rt.jar; C:\jrockit-jdk1.5.0_06\jre\lib\i18n.jar; C:\jrockit-jdk1.5.0_06\jre\lib\sunrsasign.jar; C:\jrockit-jdk1.5.0_06\jre\lib\jsse.jar; C:\jrockit-jdk1.5.0_06\jre\lib\jce.jar; C:\jrockit-jdk1.5.0_06\jre\lib\charsets.jar; C:\jrockit-jdk1.5.0_06\jre\classes
OS Version	Microsoft 2003 Server Enterprise x64 Edition, Service Pack 1
Other software	

Test Information	
Tested by	Principled Technologies, Inc.
SPEC license #	3184
Test location	Durham, NC
Test date	Aug 18, 2006
H/w available	
JVM available	July 2006
OS available	May-2003
Other s/w available	Feb-2000

AOT Compilation

Tuning
In the local security settings, "lock pages in memory" was enabled

Notes
"Notes here"

No errors. Valid run.

Details of Runs

Warehouses	Thrput	Total heap (MB)		Thread spread %	% > 120s	transaction type	Count	Time (in seconds)	
		Size	Used					total	max
1	14537	1024	262	<0.01%	.013	new_order	1532639	64.2	1.11
						payment	1057385	29.9	2.14

						order_status	105738	4.42	.625
						delivery	105738	83.1	1.00
						stock_level	105738	8.61	1.28
						cust_report	582127	44.8	1.58
2	15930	1024	388	32.4%	.033	new_order	1680197	119	.578
						payment	1158908	83.5	.891
						order_status	115891	5.80	.266
						delivery	115889	162	2.34
						stock_level	115891	13.1	.328
						cust_report	637613	90.2	.562
3	15770	1024	485	81.0%	.013	new_order	1663123	211	1.31
						payment	1147040	169	.875
						order_status	114704	21.1	2.25
						delivery	114704	160	.906
						stock_level	114704	17.9	4.78
						cust_report	630964	133	5.88
4	15434	1024	866	18.5%	.033	new_order	1627818	269	1.28
						payment	1122807	141	1.05
						order_status	112283	16.2	3.27
						delivery	112279	333	1.25
						stock_level	112281	24.3	1.02
						cust_report	617793	169	3.58
5	15034	1024	427	25.8%	<0.01	new_order	1585514	328	2.11
						payment	1093436	202	1.42
						order_status	109344	26.9	3.17
						delivery	109343	357	4.72
						stock_level	109344	21.0	.766
						cust_report	601346	242	4.25
6	14744	1024	936	30.6%	.013	new_order	1555907	384	1.98
						payment	1072436	309	2.24
						order_status	107243	18.1	1.02
						delivery	107244	407	8.95
						stock_level	107243	26.0	2.80
						cust_report	588959	278	21.1
7	14452	1024	533	22.2%	<0.01	new_order	1524030	517	2.25
						payment	1051115	332	1.86
						order_status	105110	29.7	3.36
						delivery	105112	434	2.11
						stock_level	105112	45.3	3.13

						cust_report	578191	308	4.56
8	14155	1024	621	38.9%	.033	new_order	1492756	585	4.28
						payment	1029769	435	2.33
						order_status	102979	25.9	2.03
						delivery	102977	469	2.24
						stock_level	102976	43.4	2.28
						cust_report	566799	343	5.83

Virtual machine 1

SPECjbb2005

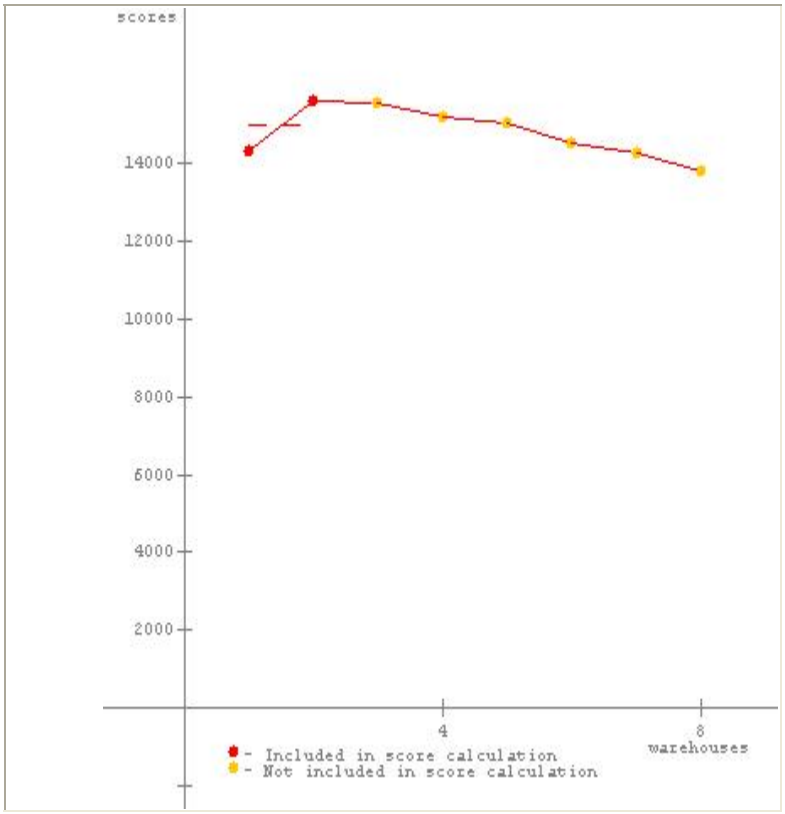
SPECjbb2005 bops = 14943,
SPECjbb2005 bops/JVM = 14943

Hewlett Packard HP ProLiant DL385 G1 399684-001

BEA BEA Jrockit 5.0 update 6, build P26.4.0-10-62459-1.5.0_06-20060529-2101-win-x86_64

No errors. Valid run.

Warehouses	SPECjbb2005 bops	Incl. in metric
1	14279	*
2	15607	*
3	15538	
4	15187	
5	15030	
6	14525	
7	14237	
8	13807	
SPECjbb2005	**(from 1 to 2)**	**14943 SPECjbb2005 bops**



SPEC license # 3184	**Tested by:** Principled Technologies, Inc.	**Test date:** Aug 18, 2006

Hardware	
Hardware Vendor	Hewlett Packard
Vendor URL	http://www.hp.com
Model	HP ProLiant DL385 G1 399684-001
Processor	Dual-Core AMD Opteron 285
MHz	2600
# of Chips	2
# of Cores	4
# of Cores/Chip	2
HW Threading Enabled?	N/A
Procs Avail to Java	1
Memory (MB)	8192
Memory Details	8 of 8 DIMMs filled with 1GB DDR400 ECC Registered
Primary cache	64KBI+64KBD
Secondary cache	1 MB per core
Other cache	
Filesystem	NTFS
Disks	3 x 37GB SCSI
Other hardware	

Software	
Software Vendor	BEA
Vendor URL	http://www.bea.com
JVM Version	BEA Jrockit 5.0 update 6, build P26.4.0-10-62459-1.5.0_06-20060529-2101-win-x86_64
JVM Command Line	java -Xms1024m -Xmx1024m -Xxaggressive -XXthroughputCompaction -XXallocPrefetch -XXallocRedoPrefetch -XXcompressedRefs -XXlazyUnlocking -XXtlasize64k
JVM Initial Heap Memory (MB)	1024
JVM Maximum Heap Memory (MB)	1024
JVM Address bits	64
JVM CLASSPATH	.\jbb.jar; .\jbb_no_precompile.jar; .\check.jar; .\reporter.jar;
JVM BOOTCLASSPATH	C:\jrockit-jdk1.5.0_06\jre\bin\jrockit\jrockit.jar; C:\jrockit-jdk1.5.0_06\jre\bin\jrockit\managementapi.jar; C:\jrockit-jdk1.5.0_06\jre\lib\managementapi.jar; C:\jrockit-jdk1.5.0_06\jre\lib\rt.jar; C:\jrockit-jdk1.5.0_06\jre\lib\i18n.jar; C:\jrockit-jdk1.5.0_06\jre\lib\sunrsasign.jar; C:\jrockit-jdk1.5.0_06\jre\lib\jsse.jar; C:\jrockit-jdk1.5.0_06\jre\lib\jce.jar; C:\jrockit-jdk1.5.0_06\jre\lib\charsets.jar; C:\jrockit-jdk1.5.0_06\jre\classes
OS Version	Microsoft 2003 Server Enterprise x64 Edition, Service Pack 1
Other software	

Test Information	
Tested by	Principled Technologies, Inc.
SPEC license #	3184
Test location	Durham, NC
Test date	Aug 18, 2006
H/w available	
JVM available	July 2006
OS available	May-2003
Other s/w available	Feb-2000

AOT Compilation

Tuning
In the local security settings, "lock pages in memory" was enabled

Notes
"Notes here"

No errors. Valid run.

Details of Runs

Warehouses	Thrput	Total heap (MB)		Thread spread %	% > 120s	transaction type	Count	Time (in seconds)	
		Size	Used					total	max
1	14279	1024	605	<0.01%	.013	new_order	1506412	63.7	1.08
						payment	1038644	27.1	.484
						order_status	103864	6.08	2.16
						delivery	103864	84.4	1.03
						stock_level	103864	8.86	1.28
						cust_report	570872	45.3	1.19
2	15607	1024	968	24.0%	.013	new_order	1646153	127	.546
						payment	1135217	74.4	.454
						order_status	113521	6.82	.218
						delivery	113521	165	1.13
						stock_level	113522	13.0	.204
						cust_report	624279	85.3	.407
3	15538	1024	435	85.4%	<0.01	new_order	1638490	202	1.33
						payment	1130122	169	.969
						order_status	113012	24.8	2.70
						delivery	113012	157	5.36
						stock_level	113012	14.9	3.49
						cust_report	621760	144	5.25
4	15187	1024	1024	44.5%	<0.01	new_order	1602397	272	1.25
						payment	1104585	164	1.14
						order_status	110458	18.9	3.47
						delivery	110458	292	10.9
						stock_level	110460	23.6	.656
						cust_report	606771	177	7.61
5	15030	1024	427	37.0%	.013	new_order	1584586	333	2.20
						payment	1093203	227	1.84
						order_status	109320	19.1	4.42
						delivery	109320	356	4.55
						stock_level	109321	28.2	1.06
						cust_report	601813	213	9.52
6	14525	1024	790	31.5%	.163	new_order	1533853	400	3.00
						payment	1058088	284	2.03
						order_status	105809	23.9	1.75

						delivery	105809	412	10.1
						stock_level	105809	50.2	9.58
						cust_report	582319	248	3.25
7	14237	1024	611	31.7%	<0.01	new_order	1501700	497	4.73
						payment	1035501	350	1.98
						order_status	103550	28.8	2.84
						delivery	103550	456	3.72
						stock_level	103549	34.9	1.13
						cust_report	569314	301	4.03
8	13807	1024	686	32.0%	<0.01	new_order	1456215	588	3.63
						payment	1004196	430	2.34
						order_status	100420	29.6	3.75
						delivery	100420	453	5.67
						stock_level	100419	39.0	1.81
						cust_report	552173	369	7.67

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

Virtual machine 2

SPECjbb2005

SPECjbb2005 bops = 15225, SPECjbb2005 bops/JVM = 15225

Hewlett Packard HP ProLiant DL385 G1 399684-001

BEA BEA Jrockit 5.0 update 6, build P26.4.0-10-62459-1.5.0_06-20060529-2101-win-x86_64

No errors. Valid run.

Warehouses	SPECjbb2005 bops	Incl. in metric
1	14476	*
2	15975	*
3	15849	
4	15508	
5	15166	
6	15024	
7	14754	
8	14136	
SPECjbb2005	**(from 1 to 2)**	**15225 SPECjbb2005**

		bops	
SPEC license # 3184	**Tested by:** Principled Technologies, Inc.	**Test date:** Aug 18, 2006	

Hardware	
Hardware Vendor	Hewlett Packard
Vendor URL	http://www.hp.com
Model	HP ProLiant DL385 G1 399684-001
Processor	Dual-Core AMD Opteron 285
MHz	2600
# of Chips	2
# of Cores	4
# of Cores/Chip	2
HW Threading Enabled?	N/A
Procs Avail to Java	1
Memory (MB)	8192
Memory Details	8 of 8 DIMMs filled with 1GB DDR400 ECC Registered
Primary cache	64KBI+64KBD
Secondary cache	1 MB per core
Other cache	
Filesystem	NTFS
Disks	3 x 37GB SCSI
Other hardware	

Software	
Software Vendor	BEA
Vendor URL	http://www.bea.com
JVM Version	BEA Jrockit 5.0 update 6, build P26.4.0-10-62459-1.5.0_06-20060529-2101-win-x86_64
JVM Command Line	java -Xms1024m -Xmx1024m -Xxaggressive -XXthroughputCompaction -XXallocPrefetch -XXallocRedoPrefetch -XXcompressedRefs -XXlazyUnlocking -XXtlasize64k
JVM Initial Heap Memory (MB)	1024
JVM Maximum Heap Memory (MB)	1024
JVM Address bits	64
JVM CLASSPATH	.\jbb.jar; .\jbb_no_precompile.jar; .\check.jar; .\reporter.jar;
JVM BOOTCLASSPATH	C:\jrockit-jdk1.5.0_06\jre\bin\jrockit\jrockit.jar; C:\jrockit-jdk1.5.0_06\jre\bin\jrockit\managementapi.jar; C:\jrockit-jdk1.5.0_06\jre\lib\managementapi.jar; C:\jrockit-jdk1.5.0_06\jre\lib\rt.jar; C:\jrockit-jdk1.5.0_06\jre\lib\i18n.jar; C:\jrockit-jdk1.5.0_06\jre\lib\sunrsasign.jar; C:\jrockit-jdk1.5.0_06\jre\lib\jsse.jar; C:\jrockit-jdk1.5.0_06\jre\lib\jce.jar; C:\jrockit-jdk1.5.0_06\jre\lib\charsets.jar; C:\jrockit-jdk1.5.0_06\jre\classes
OS Version	Microsoft 2003 Server Enterprise x64 Edition, Service Pack 1
Other software	

Test Information	
Tested by	Principled Technologies, Inc.
SPEC license #	3184
Test location	Durham, NC
Test date	Aug 18, 2006
H/w available	
JVM available	July 2006

AOT Compilation

Tuning
In the local security settings, "lock pages in memory" was enabled

Notes
"Notes here"

Other s/w	Feb-2000

No errors. Valid run.

Details of Runs

Warehouses	Thrput	Total heap (MB)		Thread spread %	% > 120s	transaction type	Count	Time (in seconds)	
		Size	Used					total	max
1	14476	1024	162	<0.01%	.072	new_order	1527502	65.0	1.11
						payment	1053561	27.1	2.16
						order_status	105356	4.74	.766
						delivery	105356	85.0	1.02
						stock_level	105356	10.1	2.25
						cust_report	579623	43.9	1.20
2	15975	1024	220	38.0%	<0.01	new_order	1685000	116	.547
						payment	1161861	98.6	.844
						order_status	116187	6.64	.203
						delivery	116185	153	1.09
						stock_level	116186	12.5	.562
						cust_report	638720	87.3	.672
3	15849	1024	261	82.7%	<0.01	new_order	1671697	213	1.14
						payment	1152762	169	.781
						order_status	115277	22.8	1.78
						delivery	115275	158	2.81
						stock_level	115276	11.4	1.25
						cust_report	633825	137	6.05
4	15508	1024	946	25.7%	<0.01	new_order	1635352	275	1.78
						payment	1127948	146	1.09
						order_status	112794	13.6	1.45
						delivery	112794	305	1.36
						stock_level	112795	29.0	3.84
						cust_report	620531	182	3.08
5	15166	1024	428	24.9%	<0.01	new_order	1599420	344	2.81
						payment	1103063	207	1.20
						order_status	110306	23.5	1.78
						delivery	110305	346	2.45
						stock_level	110305	30.4	1.33
						cust_report	606709	234	4.45
6	15024	1024	376	29.6%	<0.01	new_order	1583745	418	3.56
						payment	1092751	298	1.70

						order_status	109275	22.1	1.41
						delivery	109272	408	11.3
						stock_level	109276	31.1	1.45
						cust_report	601740	250	3.28
7	14754	1024	590	30.9%	.013	new_order	1555916	473	2.08
						payment	1073177	346	2.64
						order_status	107318	20.9	1.64
						delivery	107315	455	8.05
						stock_level	107318	57.6	12.5
						cust_report	590434	315	9.73
8	14136	1024	694	35.4%	<0.01	new_order	1491040	578	4.44
						payment	1028158	417	3.30
						order_status	102815	26.2	1.44
						delivery	102816	499	3.48
						stock_level	102816	40.0	7.45
						cust_report	565280	338	3.53

SPECjbb2005 Version: [SPECjbb2005 1.07, March 15, 2006]
Reporting page, Copyright © 2005 SPEC. All rights reserved
Dual-Core AMD Opteron 285-based server with 4 virtual machines

Virtual machine 1

SPECjbb2005

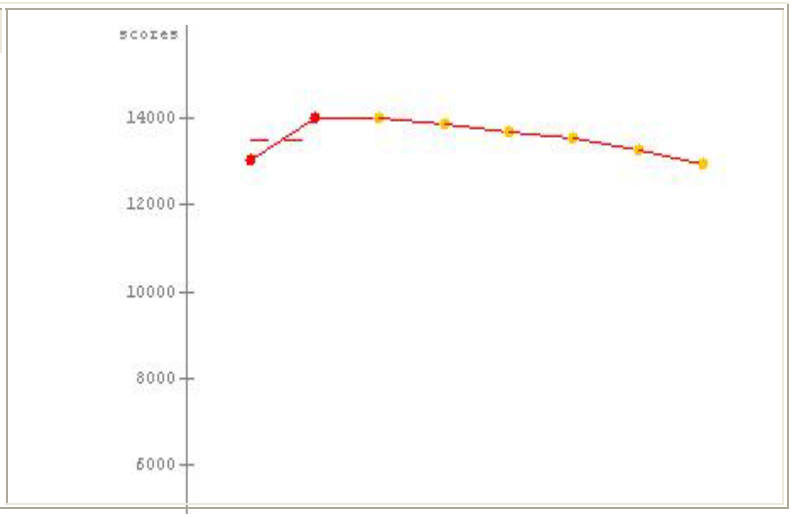
SPECjbb2005 bops = 13515,
SPECjbb2005 bops/JVM = 13515

Hewlett Packard HP ProLiant DL385 G1 399684-001

BEA BEA Jrockit 5.0 update 6, build P26.4.0-10-62459-1.5.0_06-20060529-2101-win-x86_64

No errors. Valid run.

Warehouses	SPECjbb2005 bops	Incl. in metric
1	13047	*
2	13983	*
3	14021	
4	13867	
5	13670	
6	13519	
7	13272	
8	12917	



SPECjbb2005	(from 1 to 2)	13515 SPECjbb2005 bops	

SPEC license # 3184	Tested by: Principled Technologies, Inc.	Test date: Aug 17, 2006

Hardware	
Hardware Vendor	Hewlett Packard
Vendor URL	http://www.hp.com
Model	HP ProLiant DL385 G1 399684-001
Processor	Dual-Core AMD Opteron 285
MHz	2600
# of Chips	2
# of Cores	4
# of Cores/Chip	2
HW Threading Enabled?	N/A
Procs Avail to Java	1
Memory (MB)	8192
Memory Details	8 of 8 DIMMs filled with 1GB DDR400 ECC Registered
Primary cache	64KBI+64KBD
Secondary cache	1 MB per core
Other cache	
Filesystem	NTFS
Disks	3 x 37GB SCSI
Other hardware	

Software	
Software Vendor	BEA
Vendor URL	http://www.bea.com
JVM Version	BEA Jrockit 5.0 update 6, build P26.4.0-10-62459-1.5.0_06-20060529-2101-win-x86_64
JVM Command Line	java -Xms1024m -Xmx1024m -Xxaggressive -XXthroughputCompaction -XXallocPrefetch -XXallocRedoPrefetch -XXcompressedRefs -XXlazyUnlocking -XXtlasize64k
JVM Initial Heap Memory (MB)	1024
JVM Maximum Heap Memory (MB)	1024
JVM Address bits	64
JVM CLASSPATH	.\jbb.jar; .\jbb_no_precompile.jar; .\check.jar; .\reporter.jar;
JVM BOOTCLASSPATH	C:\jrockit-jdk1.5.0_06\jre\bin\jrockit\jrockit.jar; C:\jrockit-jdk1.5.0_06\jre\bin\jrockit\managementapi.jar; C:\jrockit-jdk1.5.0_06\jre\lib\managementapi.jar; C:\jrockit-jdk1.5.0_06\jre\lib\rt.jar; C:\jrockit-jdk1.5.0_06\jre\lib\i18n.jar; C:\jrockit-jdk1.5.0_06\jre\lib\sunrsasign.jar; C:\jrockit-jdk1.5.0_06\jre\lib\jsse.jar; C:\jrockit-jdk1.5.0_06\jre\lib\jce.jar; C:\jrockit-jdk1.5.0_06\jre\lib\charsets.jar; C:\jrockit-jdk1.5.0_06\jre\classes
OS Version	Microsoft 2003 Server Enterprise x64 Edition, Service Pack 1
Other software	

Test Information	
Tested by	Principled Technologies, Inc.
SPEC license #	3184
Test location	Durham, NC
Test date	Aug 17, 2006
H/w available	
JVM available	July 2006
OS available	May-2003

AOT Compilation

Tuning
In the local security settings, "lock pages in memory" was enabled

Notes
"Notes here"

Other s/w available	Feb-2000

No errors. Valid run.

Details of Runs

Warehouses	Thrput	Total heap (MB)		Thread spread %	% > 120s	transaction type	Count	Time (in seconds)	
		Size	Used					total	max
1	13047	1024	824	<0.01%	.013	new_order	1375781	65.6	1.14
						payment	948960	28.5	2.77
						order_status	94896	4.93	.796
						delivery	94896	82.5	1.05
						stock_level	94896	8.19	1.02
						cust_report	522138	45.5	1.23
2	13983	1024	777	22.6%	.013	new_order	1474387	127	1.17
						payment	1017075	66.7	.500
						order_status	101708	6.19	.438
						delivery	101707	169	1.19
						stock_level	101707	13.1	.406
						cust_report	559763	88.9	1.13
3	14021	1024	801	19.1%	.013	new_order	1479129	205	.891
						payment	1019828	96.0	.829
						order_status	101983	13.4	1.50
						delivery	101983	248	1.20
						stock_level	101982	24.9	1.66
						cust_report	560528	121	.891
4	13867	1024	610	24.7%	.013	new_order	1462946	276	1.56
						payment	1008634	145	1.20
						order_status	100864	15.3	.890
						delivery	100864	319	7.34
						stock_level	100863	29.0	4.50
						cust_report	554324	166	3.83
5	13670	1024	670	31.1%	.345	new_order	1446417	320	1.75
						payment	997596	211	1.53
						order_status	99760	21.9	3.41
						delivery	99757	373	11.8
						stock_level	99760	28.1	1.25
						cust_report	548777	236	10.6
6	13519	1024	363	29.6%	.124	new_order	1426655	412	2.16

						payment	984408	268	1.58
						order_status	98440	23.4	1.02
						delivery	98439	437	7.88
						stock_level	98439	35.2	1.52
						cust_report	542142	252	11.0
7	13272	1024	566	36.6%	.013	new_order	1399826	485	5.01
						payment	965331	357	1.80
						order_status	96533	17.6	1.94
						delivery	96533	456	10.0
						stock_level	96532	33.1	1.55
						cust_report	530843	315	4.31
8	12917	1024	583	39.0%	<0.01	new_order	1362244	530	3.39
						payment	939479	432	2.33
						order_status	93947	26.4	3.28
						delivery	93948	510	2.47
						stock_level	93948	63.2	14.3
						cust_report	516702	341	6.88

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

Virtual machine 2

SPECjbb2005

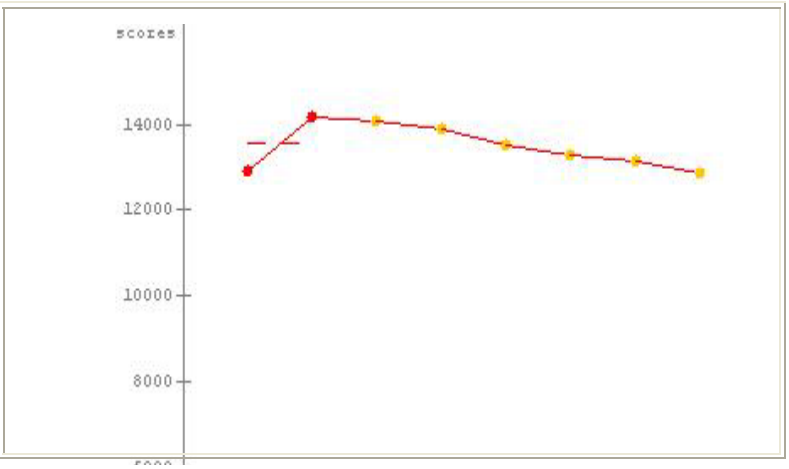
SPECjbb2005 bops = 13556,
SPECjbb2005 bops/JVM = 13556

Hewlett Packard HP ProLiant DL385 G1 399684-001

BEA BEA Jrockit 5.0 update 6, build P26.4.0-10-62459-1.5.0_06-20060529-2101-win-x86_64

No errors. Valid run.

Warehouses	SPECjbb2005 bops	Incl. in metric
1	12924	*
2	14189	*
3	14084	
4	13889	
5	13536	
6	13286	
7	13157	



8	12845	
SPECjbb2005	**(from 1 to 2)**	**13556 SPECjbb2005 bops**

SPEC license # 3184	**Tested by:** Principled Technologies, Inc.	**Test date:** Aug 17, 2006

Hardware	
Hardware Vendor	Hewlett Packard
Vendor URL	http://www.hp.com
Model	HP ProLiant DL385 G1 399684-001
Processor	Dual-Core AMD Opteron 285
MHz	2600
# of Chips	2
# of Cores	4
# of Cores/Chip	2
HW Threading Enabled?	N/A
Procs Avail to Java	1
Memory (MB)	8192
Memory Details	8 of 8 DIMMs filled with 1GB DDR400 ECC Registered
Primary cache	64KBI+64KBD
Secondary cache	1 MB per core
Other cache	
Filesystem	NTFS
Disks	3 x 37GB SCSI
Other hardware	

Software	
Software Vendor	BEA
Vendor URL	http://www.bea.com
JVM Version	BEA Jrockit 5.0 update 6, build P26.4.0-10-62459-1.5.0_06-20060529-2101-win-x86_64
JVM Command Line	java -Xms1024m -Xmx1024m -Xxaggressive -XXthroughputCompaction -XXallocPrefetch -XXallocRedoPrefetch -XXcompressedRefs -XXlazyUnlocking -XXtlasize64k
JVM Initial Heap Memory (MB)	1024
JVM Maximum Heap Memory (MB)	1024
JVM Address bits	64
JVM CLASSPATH	.\jbb.jar; .\jbb_no_precompile.jar; .\check.jar; .\reporter.jar;
JVM BOOTCLASSPATH	C:\jrockit-jdk1.5.0_06\jre\bin\jrockit\jrockit.jar; C:\jrockit-jdk1.5.0_06\jre\bin\jrockit\managementapi.jar; C:\jrockit-jdk1.5.0_06\jre\lib\managementapi.jar; C:\jrockit-jdk1.5.0_06\jre\lib\rt.jar; C:\jrockit-jdk1.5.0_06\jre\lib\i18n.jar; C:\jrockit-jdk1.5.0_06\jre\lib\sunrsasign.jar; C:\jrockit-jdk1.5.0_06\jre\lib\jsse.jar; C:\jrockit-jdk1.5.0_06\jre\lib\jce.jar; C:\jrockit-jdk1.5.0_06\jre\lib\charsets.jar; C:\jrockit-jdk1.5.0_06\jre\classes
OS Version	Microsoft 2003 Server Enterprise x64 Edition, Service Pack 1
Other software	

Test Information	
Tested by	Principled Technologies, Inc.
SPEC license #	3184
Test location	Durham, NC
Test date	Aug 17, 2006
H/w available	

AOT Compilation

Tuning
In the local security settings, "lock pages in memory" was enabled

Notes
"Notes here"

JVM available	July 2006
OS available	May-2003
Other s/w available	Feb-2000

No errors. Valid run.

Details of Runs

Warehouses	Thrput	Total heap (MB)		Thread spread %	% > 120s	transaction type	Count	Time (in seconds)	
		Size	Used					total	max
1	12924	1024	609	<0.01%	.052	new_order	1363325	65.0	1.23
						payment	940419	29.1	2.20
						order_status	94042	3.81	.797
						delivery	94042	87.1	1.08
						stock_level	94041	7.75	1.33
						cust_report	517506	42.6	1.05
2	14189	1024	387	21.2%	.052	new_order	1497181	129	.547
						payment	1032443	73.7	.765
						order_status	103245	8.14	.453
						delivery	103243	162	.578
						stock_level	103244	13.5	.281
						cust_report	567700	86.7	.484
3	14084	1024	275	81.6%	.052	new_order	1485769	204	1.50
						payment	1024850	167	.718
						order_status	102485	22.8	2.58
						delivery	102484	167	3.39
						stock_level	102485	13.8	.515
						cust_report	563930	139	6.05
4	13889	1024	897	19.8%	.045	new_order	1464978	272	1.38
						payment	1010589	141	1.08
						order_status	101058	12.4	.657
						delivery	101058	317	5.92
						stock_level	101061	27.0	2.72
						cust_report	556203	182	1.31
5	13536	1024	426	27.6%	.046	new_order	1428164	323	2.78
						payment	984888	214	1.53
						order_status	98489	20.5	1.00
						delivery	98487	389	17.2
						stock_level	98488	35.2	4.14
						cust_report	541612	201	2.36

6	13286	1024	759	29.5%	.163	new_order	1403501	390	3.13
						payment	967801	284	1.88
						order_status	96781	41.7	5.39
						delivery	96779	404	3.95
						stock_level	96781	37.3	1.81
						cust_report	532103	265	5.16
7	13157	1024	555	32.9%	.143	new_order	1388993	505	4.06
						payment	958218	363	2.47
						order_status	95822	21.5	1.52
						delivery	95819	435	2.09
						stock_level	95821	44.9	1.73
						cust_report	527446	302	5.22
8	12845	1024	611	42.7%	.052	new_order	1355526	524	4.36
						payment	934653	467	3.02
						order_status	93466	20.4	2.98
						delivery	93465	527	14.1
						stock_level	93465	50.6	2.47
						cust_report	513772	318	6.81

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

Virtual machine 3

SPECjbb2005

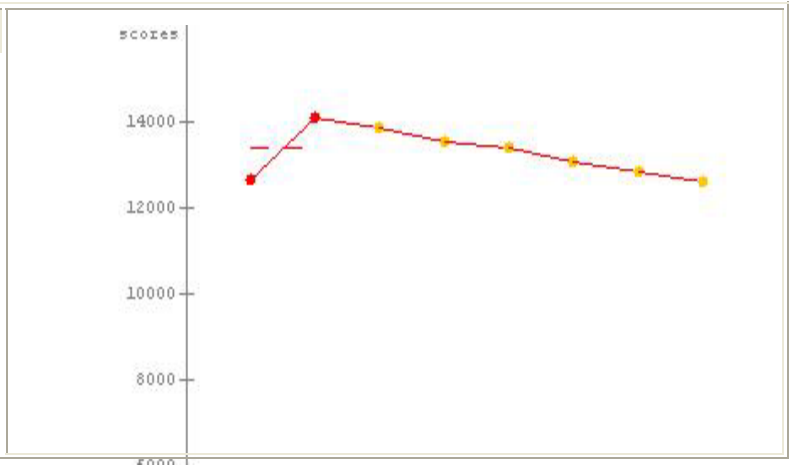
SPECjbb2005 bops = 13397,
SPECjbb2005 bops/JVM = 13397

Hewlett Packard HP ProLiant DL385 G1 399684-001

BEA BEA Jrockit 5.0 update 6, build P26.4.0-10-62459-1.5.0_06-20060529-2101-win-x86_64

No errors. Valid run.

Warehouses	SPECjbb2005 bops	Incl. in metric
1	12673	*
2	14121	*
3	13864	
4	13553	
5	13422	
6	13059	
7	12847	



8	12591	
SPECjbb2005	**(from 1 to 2)**	**13397 SPECjbb2005 bops**

SPEC license # 3184	**Tested by:** Principled Technologies, Inc.	**Test date:** Aug 17, 2006

Hardware	
Hardware Vendor	Hewlett Packard
Vendor URL	http://www.hp.com
Model	HP ProLiant DL385 G1 399684-001
Processor	Dual-Core AMD Opteron 285
MHz	2600
# of Chips	2
# of Cores	4
# of Cores/Chip	2
HW Threading Enabled?	N/A
Procs Avail to Java	1
Memory (MB)	8192
Memory Details	8 of 8 DIMMs filled with 1GB DDR400 ECC Registered
Primary cache	64KBI+64KBD
Secondary cache	1 MB per core
Other cache	
Filesystem	NTFS
Disks	3 x 37GB SCSI
Other hardware	

Software	
Software Vendor	BEA
Vendor URL	http://www.bea.com
JVM Version	BEA Jrockit 5.0 update 6, build P26.4.0-10-62459-1.5.0_06-20060529-2101-win-x86_64
JVM Command Line	java -Xms1024m -Xmx1024m -Xxaggressive -XXthroughputCompaction -XXallocPrefetch -XXallocRedoPrefetch -XXcompressedRefs -XXlazyUnlocking -XXtlasize64k
JVM Initial Heap Memory (MB)	1024
JVM Maximum Heap Memory (MB)	1024
JVM Address bits	64
JVM CLASSPATH	.\jbb.jar; .\jbb_no_precompile.jar; .\check.jar; .\reporter.jar;
JVM BOOTCLASSPATH	C:\jrockit-jdk1.5.0_06\jre\bin\jrockit\jrockit.jar; C:\jrockit-jdk1.5.0_06\jre\bin\jrockit\managementapi.jar; C:\jrockit-jdk1.5.0_06\jre\lib\managementapi.jar; C:\jrockit-jdk1.5.0_06\jre\lib\rt.jar; C:\jrockit-jdk1.5.0_06\jre\lib\i18n.jar; C:\jrockit-jdk1.5.0_06\jre\lib\sunrsasign.jar; C:\jrockit-jdk1.5.0_06\jre\lib\jsse.jar; C:\jrockit-jdk1.5.0_06\jre\lib\jce.jar; C:\jrockit-jdk1.5.0_06\jre\lib\charsets.jar; C:\jrockit-jdk1.5.0_06\jre\classes
OS Version	Microsoft 2003 Server Enterprise x64 Edition, Service Pack 1
Other software	

Test Information	
Tested by	Principled Technologies, Inc.
SPEC license #	3184
Test location	Durham, NC
Test date	Aug 17, 2006
H/w available	

AOT Compilation

Tuning
In the local security settings, "lock pages in memory" was enabled

Notes
"Notes here"

JVM available	July 2006
OS available	May-2003
Other s/w available	Feb-2000

No errors. Valid run.

Details of Runs

Warehouses	Thrput	Total heap (MB)		Thread spread %	% > 120s	transaction type	Count	Time (in seconds)	
		Size	Used					total	max
1	12673	1024	994	<0.01%	.052	new_order	1336686	64.7	1.14
						payment	922138	27.2	2.17
						order_status	92214	4.51	.796
						delivery	92214	86.7	1.05
						stock_level	92214	9.02	1.33
						cust_report	507594	43.3	1.22
2	14121	1024	228	56.1%	.052	new_order	1489855	107	.547
						payment	1027541	112	.563
						order_status	102755	4.50	.204
						delivery	102753	151	1.80
						stock_level	102755	11.6	.407
						cust_report	565222	88.4	.454
3	13864	1024	930	76.3%	.045	new_order	1462847	203	1.33
						payment	1008737	157	.875
						order_status	100874	19.9	2.44
						delivery	100873	187	6.09
						stock_level	100874	16.3	.563
						cust_report	554624	131	3.95
4	13553	1024	615	43.5%	.046	new_order	1429735	251	1.13
						payment	986144	155	1.13
						order_status	98614	8.37	.656
						delivery	98614	325	5.61
						stock_level	98616	26.8	1.42
						cust_report	542556	183	6.13
5	13422	1024	438	27.1%	.045	new_order	1416123	346	3.16
						payment	976581	219	1.23
						order_status	97657	17.0	1.91
						delivery	97658	351	5.50
						stock_level	97659	26.6	.766
						cust_report	537035	224	6.30

6	13059	1024	998	34.1%	.052	new_order	1377629	410	2.39
						payment	950251	288	1.92
						order_status	95027	15.7	3.03
						delivery	95025	411	2.64
						stock_level	95024	48.9	6.11
						cust_report	522881	246	3.63
7	12847	1024	874	37.1%	.339	new_order	1359746	425	3.03
						payment	937483	360	2.50
						order_status	93748	27.8	2.11
						delivery	93748	514	15.1
						stock_level	93750	36.1	1.81
						cust_report	515218	310	13.1
8	12591	1024	519	37.9%	.091	new_order	1328716	571	4.94
						payment	916513	432	2.20
						order_status	91651	28.1	3.70
						delivery	91650	486	2.52
						stock_level	91650	45.4	1.67
						cust_report	504303	349	8.36

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

Virtual machine 4

SPECjbb2005

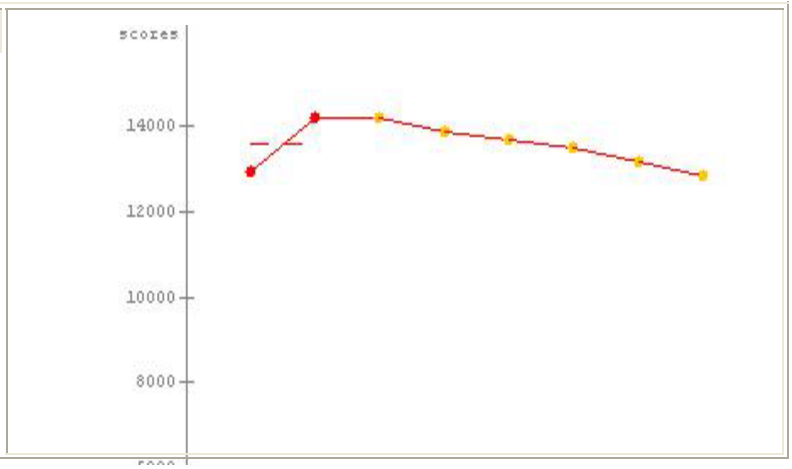
SPECjbb2005 bops = 13590,
SPECjbb2005 bops/JVM = 13590

Hewlett Packard HP ProLiant DL385 G1 399684-001

BEA BEA Jrockit 5.0 update 6, build P26.4.0-10-62459-1.5.0_06-20060529-2101-win-x86_64

No errors. Valid run.

Warehouses	SPECjbb2005 bops	Incl. in metric
1	12956	*
2	14224	*
3	14183	
4	13864	
5	13676	
6	13485	
7	13190	



8	12852	
SPECjbb2005	**(from 1 to 2)**	**13590 SPECjbb2005 bops**

SPEC license # 3184	**Tested by:** Principled Technologies, Inc.	**Test date:** Aug 17, 2006

Hardware	
Hardware Vendor	Hewlett Packard
Vendor URL	http://www.hp.com
Model	HP ProLiant DL385 G1 399684-001
Processor	Dual-Core AMD Opteron 285
MHz	2600
# of Chips	2
# of Cores	4
# of Cores/Chip	2
HW Threading Enabled?	N/A
Procs Avail to Java	1
Memory (MB)	8192
Memory Details	8 of 8 DIMMs filled with 1GB DDR400 ECC Registered
Primary cache	64KBI+64KBD
Secondary cache	1 MB per core
Other cache	
Filesystem	NTFS
Disks	3 x 37GB SCSI
Other hardware	

Software	
Software Vendor	BEA
Vendor URL	http://www.bea.com
JVM Version	BEA Jrockit 5.0 update 6, build P26.4.0-10-62459-1.5.0_06-20060529-2101-win-x86_64
JVM Command Line	java -Xms1024m -Xmx1024m -Xxaggressive -XXthroughputCompaction -XXallocPrefetch -XXallocRedoPrefetch -XXcompressedRefs -XXlazyUnlocking -XXtlasize64k
JVM Initial Heap Memory (MB)	1024
JVM Maximum Heap Memory (MB)	1024
JVM Address bits	64
JVM CLASSPATH	.\jbb.jar; .\jbb_no_precompile.jar; .\check.jar; .\reporter.jar;
JVM BOOTCLASSPATH	C:\jrockit-jdk1.5.0_06\jre\bin\jrockit\jrockit.jar; C:\jrockit-jdk1.5.0_06\jre\bin\jrockit\managementapi.jar; C:\jrockit-jdk1.5.0_06\jre\lib\managementapi.jar; C:\jrockit-jdk1.5.0_06\jre\lib\rt.jar; C:\jrockit-jdk1.5.0_06\jre\lib\i18n.jar; C:\jrockit-jdk1.5.0_06\jre\lib\sunrsasign.jar; C:\jrockit-jdk1.5.0_06\jre\lib\jsse.jar; C:\jrockit-jdk1.5.0_06\jre\lib\jce.jar; C:\jrockit-jdk1.5.0_06\jre\lib\charsets.jar; C:\jrockit-jdk1.5.0_06\jre\classes
OS Version	Microsoft 2003 Server Enterprise x64 Edition, Service Pack 1
Other software	

Test Information	
Tested by	Principled Technologies, Inc.
SPEC license #	3184
Test location	Durham, NC
Test date	Aug 17, 2006
H/w available	

AOT Compilation

Tuning
In the local security settings, "lock pages in memory" was enabled

Notes
"Notes here"

JVM available	July 2006
OS available	May-2003
Other s/w available	Feb-2000

No errors. Valid run.

Details of Runs

Warehouses	Thrput	Total heap (MB)		Thread spread %	% > 120s	transaction type	Count	Time (in seconds)	
		Size	Used					total	max
1	12956	1024	679	<0.01%	.052	new_order	1367026	62.2	1.14
						payment	942757	29.6	2.25
						order_status	94274	4.61	.797
						delivery	94276	88.1	1.03
						stock_level	94275	9.13	1.33
						cust_report	518478	42.3	1.24
2	14224	1024	879	20.4%	.046	new_order	1500361	126	.562
						payment	1034932	72.1	.547
						order_status	103493	6.65	.469
						delivery	103494	167	.562
						stock_level	103494	12.2	.391
						cust_report	569510	86.7	.688
3	14183	1024	996	72.3%	.046	new_order	1496874	193	1.11
						payment	1031989	140	.844
						order_status	103199	21.9	2.91
						delivery	103197	200	12.6
						stock_level	103199	23.9	5.72
						cust_report	567086	132	6.03
4	13864	1024	623	23.2%	.208	new_order	1465152	268	1.58
						payment	1010408	143	.953
						order_status	101040	11.4	.890
						delivery	101041	329	16.1
						stock_level	101040	25.0	2.81
						cust_report	555670	169	1.80
5	13676	1024	366	25.7%	.052	new_order	1442786	326	2.00
						payment	995097	212	1.50
						order_status	99511	17.6	.781
						delivery	99510	379	16.8
						stock_level	99510	33.9	5.73
						cust_report	547416	214	2.17

6	13485	1024	544	31.9%	.046	new_order	1422950	393	3.02
						payment	981163	287	1.45
						order_status	98117	16.7	1.22
						delivery	98117	422	1.88
						stock_level	98115	32.7	1.17
						cust_report	539375	271	11.5
7	13190	1024	984	31.1%	.150	new_order	1393068	460	4.00
						payment	960736	369	2.38
						order_status	96073	19.7	2.94
						delivery	96073	471	1.89
						stock_level	96072	43.5	1.14
						cust_report	528401	303	15.2
8	12852	1024	618	36.6%	.052	new_order	1356058	565	2.47
						payment	935203	435	2.70
						order_status	93521	39.8	4.78
						delivery	93520	483	3.81
						stock_level	93519	43.8	5.83
						cust_report	514340	338	11.6

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

Dual-Core Intel Xeon Processor 5160-based server with 1 virtual machine

SPECjbb2005

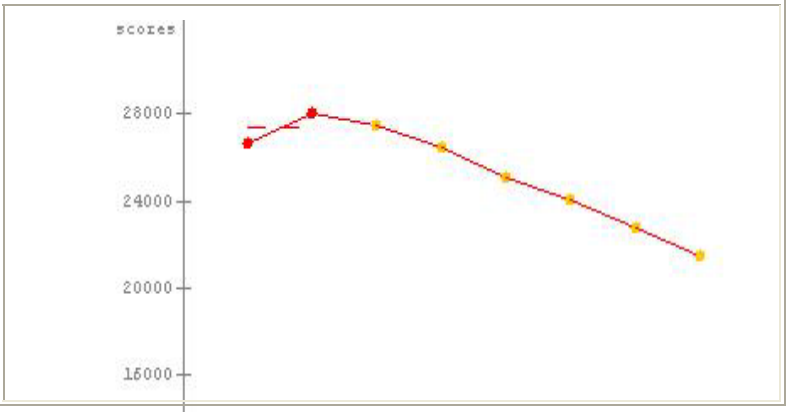
SPECjbb2005 bops = 27352,
SPECjbb2005 bops/JVM = 27352

Intel Supermicro X7DB8+

BEA BEA Jrockit 5.0 update 6, build P26.4.0-10-62459-1.5.0_06-20060529-2101-win-x86_64

No errors. Valid run.

Warehouses	SPECjbb2005 bops	Incl. in metric
1	26635	*
2	28070	*
3	27472	
4	26425	
5	25095	
6	24083	



7	22790	
8	21428	
SPECjbb2005	**(from 1 to 2)**	**27352 SPECjbb2005 bops**

SPEC license # 3184	**Tested by:** Principled Technologies, Inc.	**Test date:** Aug 18, 2006

Hardware	
Hardware Vendor	Intel
Vendor URL	http://www.intel.com
Model	Supermicro X7DB8+
Processor	Dual-Core Intel Xeon Processor 5160
MHz	3000
# of Chips	2
# of Cores	4
# of Cores/Chip	2
HW Threading Enabled?	Yes
Procs Avail to Java	1
Memory (MB)	8192
Memory Details	8 of 8 DIMMs filled with 1GB DDR2-4400 FB-DIMMs
Primary cache	32KBI+32KBD
Secondary cache	4 MB shared
Other cache	
Filesystem	NTFS
Disks	3 x 37GB SCSI
Other hardware	

Software	
Software Vendor	BEA
Vendor URL	http://www.bea.com
JVM Version	BEA Jrockit 5.0 update 6, build P26.4.0-10-62459-1.5.0_06-20060529-2101-win-x86_64
JVM Command Line	java -Xms1024m -Xmx1024m -Xxaggressive -XXthroughputCompaction -XXallocPrefetch -XXallocRedoPrefetch -XXcompressedRefs -XXlazyUnlocking -XXtlasize64k
JVM Initial Heap Memory (MB)	1024
JVM Maximum Heap Memory (MB)	1024
JVM Address bits	64
JVM CLASSPATH	.\jbb.jar; .\jbb_no_precompile.jar; .\check.jar; .\reporter.jar;
JVM BOOTCLASSPATH	C:\jrockit-jdk1.5.0_06\jre\bin\jrockit\jrockit.jar; C:\jrockit-jdk1.5.0_06\jre\bin\jrockit\managementapi.jar; C:\jrockit-jdk1.5.0_06\jre\lib\managementapi.jar; C:\jrockit-jdk1.5.0_06\jre\lib\rt.jar; C:\jrockit-jdk1.5.0_06\jre\lib\i18n.jar; C:\jrockit-jdk1.5.0_06\jre\lib\sunrsasign.jar; C:\jrockit-jdk1.5.0_06\jre\lib\jsse.jar; C:\jrockit-jdk1.5.0_06\jre\lib\jce.jar; C:\jrockit-jdk1.5.0_06\jre\lib\charsets.jar; C:\jrockit-jdk1.5.0_06\jre\classes
OS Version	Microsoft 2003 Server Enterprise x64 Edition, Service Pack 1
Other software	

Test Information	
Tested by	Principled Technologies, Inc.
SPEC license #	3184
Test location	Durham, NC
Test date	Aug 18, 2006

AOT Compilation

Tuning
In the local security settings, "lock pages in memory" was enabled

Notes

H/w available		"Notes here"
JVM available	July 2006	
OS available	May-2003	
Other s/w available	Feb-2000	

No errors. Valid run.

Details of Runs

Warehouses	Thrput	Total heap (MB)		Thread spread %	% > 120s	transaction type	Count	Time (in seconds)	
		Size	Used					total	max
1	26635	1024	927	<0.01%	<0.01	new_order	2808835	103	.453
						payment	1937219	38.5	1.70
						order_status	193723	5.22	.687
						delivery	193722	41.5	.828
						stock_level	193722	6.81	.922
						cust_report	1065598	40.1	.937
2	28070	1024	909	36.7%	<0.01	new_order	2960430	194	.672
						payment	2041560	107	.625
						order_status	204156	8.78	.469
						delivery	204156	72.8	.813
						stock_level	204156	8.21	.453
						cust_report	1122684	81.8	.937
3	27472	1024	425	69.4%	<0.01	new_order	2897869	286	1.11
						payment	1998078	178	.828
						order_status	199808	23.4	2.27
						delivery	199807	91.7	2.25
						stock_level	199807	15.1	2.64
						cust_report	1098283	117	1.44
4	26425	1024	973	46.7%	.137	new_order	2790456	400	1.22
						payment	1924486	215	1.13
						order_status	192449	13.1	1.00
						delivery	192447	139	1.66
						stock_level	192448	20.7	2.83
						cust_report	1058514	157	3.73
5	25095	1024	337	23.5%	.352	new_order	2655643	499	1.64
						payment	1831515	265	1.33
						order_status	183152	19.9	1.70
						delivery	183152	186	1.53
						stock_level	183152	27.7	2.66

						cust_report	1007383	194	4.56
6	24083	1024	717	27.2%	.013	new_order	2539815	660	2.45
						payment	1751722	289	1.83
						order_status	175174	27.1	1.34
						delivery	175171	203	3.91
						stock_level	175171	24.3	1.25
						cust_report	963631	221	9.45
7	22790	1024	635	30.9%	.501	new_order	2415400	750	2.34
						payment	1665756	368	2.13
						order_status	166577	26.3	2.13
						delivery	166577	227	2.44
						stock_level	166577	30.4	2.14
						cust_report	916130	270	7.84
8	21428	1024	695	30.7%	.683	new_order	2274863	881	2.77
						payment	1569051	430	2.72
						order_status	156904	37.1	4.59
						delivery	156904	198	2.55
						stock_level	156904	42.7	2.03
						cust_report	863229	309	2.69

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

Dual-Core Intel Xeon Processor 5160-based server with 2 virtual machines
Virtual machine 1

SPECjbb2005

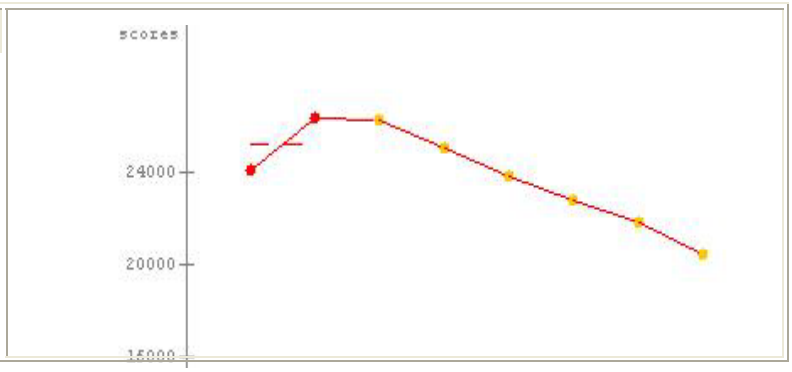
SPECjbb2005 bops = 25274,
SPECjbb2005 bops/JVM = 25274

Intel Supermicro X7DB8+

BEA BEA Jrockit 5.0 update 6, build P26.4.0-10-62459-1.5.0_06-20060529-2101-win-x86_64

No errors. Valid run.

Warehouses	SPECjbb2005 bops	Incl. in metric
1	24139	*
2	26408	*
3	26310	
4	25041	
5	23834	



6	22826	
7	21874	
8	20439	
SPECjbb2005	**(from 1 to 2)**	**25274 SPECjbb2005 bops**

SPEC license # 3184	**Tested by:** Principled Technologies, Inc.	**Test date:** Aug 18, 2006

Hardware	
Hardware Vendor	Intel
Vendor URL	http://www.intel.com
Model	Supermicro X7DB8+
Processor	Dual-Core Intel Xeon Processor 5160
MHz	3000
# of Chips	2
# of Cores	4
# of Cores/Chip	2
HW Threading Enabled?	Yes
Procs Avail to Java	1
Memory (MB)	8192
Memory Details	8 of 8 DIMMs filled with 1GB DDR2-4400 FB-DIMMs
Primary cache	32KBI+32KBD
Secondary cache	4 MB shared
Other cache	
Filesystem	NTFS
Disks	3 x 37GB SCSI
Other hardware	

Software	
Software Vendor	BEA
Vendor URL	http://www.bea.com
JVM Version	BEA Jrockit 5.0 update 6, build P26.4.0-10-62459-1.5.0_06-20060529-2101-win-x86_64
JVM Command Line	java -Xms1024m -Xmx1024m -Xxaggressive -XXthroughputCompaction -XXallocPrefetch -XXallocRedoPrefetch -XXcompressedRefs -XXlazyUnlocking -XXtlasize64k
JVM Initial Heap Memory (MB)	1024
JVM Maximum Heap Memory (MB)	1024
JVM Address bits	64
JVM CLASSPATH	.\jbb.jar; .\jbb_no_precompile.jar; .\check.jar; .\reporter.jar;
JVM BOOTCLASSPATH	C:\jrockit-jdk1.5.0_06\jre\bin\jrockit\jrockit.jar; C:\jrockit-jdk1.5.0_06\jre\bin\jrockit\managementapi.jar; C:\jrockit-jdk1.5.0_06\jre\lib\managementapi.jar; C:\jrockit-jdk1.5.0_06\jre\lib\rt.jar; C:\jrockit-jdk1.5.0_06\jre\lib\i18n.jar; C:\jrockit-jdk1.5.0_06\jre\lib\sunrsasign.jar; C:\jrockit-jdk1.5.0_06\jre\lib\jsse.jar; C:\jrockit-jdk1.5.0_06\jre\lib\jce.jar; C:\jrockit-jdk1.5.0_06\jre\lib\charsets.jar; C:\jrockit-jdk1.5.0_06\jre\classes
OS Version	Microsoft 2003 Server Enterprise x64 Edition, Service Pack 1
Other software	

Test Information	
Tested by	Principled Technologies, Inc.
SPEC license #	3184
Test location	Durham, NC

AOT Compilation

Tuning
In the local security settings, "lock pages in memory" was enabled

Test date	Aug 18, 2006
H/w available	
JVM available	July 2006
OS available	May-2003
Other s/w available	Feb-2000

Notes
"Notes here"

No errors. Valid run.

Details of Runs

Warehouses	Thrput	Total heap (MB)		Thread spread %	% > 120s	transaction type	Count	Time (in seconds)	
		Size	Used					total	max
1	24139	1024	341	<0.01%	<0.01	new_order	2545218	98.2	.844
						payment	1755713	35.3	1.67
						order_status	175571	4.44	.594
						delivery	175572	48.3	.766
						stock_level	175571	5.72	.719
						cust_report	966205	41.4	.938
2	26408	1024	739	16.1%	<0.01	new_order	2784841	201	.656
						payment	1920723	82.0	.500
						order_status	192071	9.00	.484
						delivery	192072	91.8	1.64
						stock_level	192073	8.82	.453
						cust_report	1056606	80.4	.640
3	26310	1024	964	82.7%	.143	new_order	2779034	295	1.13
						payment	1916207	187	.859
						order_status	191619	17.4	1.94
						delivery	191621	85.3	2.42
						stock_level	191621	10.7	.531
						cust_report	1053370	118	3.11
4	25041	1024	923	17.5%	<0.01	new_order	2641148	413	1.42
						payment	1821281	177	1.05
						order_status	182129	14.6	1.03
						delivery	182128	168	3.03
						stock_level	182128	20.8	1.39
						cust_report	1001416	149	4.42
5	23834	1024	490	18.9%	<0.01	new_order	2513627	481	2.19
						payment	1733467	235	1.53
						order_status	173347	22.0	1.45
						delivery	173346	203	1.81

						stock_level	173348	41.6	14.1
						cust_report	953310	200	1.52
6	22826	1024	410	22.4%	.508	new_order	2419234	591	2.63
						payment	1668519	279	2.03
						order_status	166853	33.6	1.34
						delivery	166852	247	2.28
						stock_level	166851	31.4	1.31
						cust_report	917797	248	2.41
7	21874	1024	783	26.0%	<0.01	new_order	2306266	701	2.14
						payment	1590908	393	2.45
						order_status	159090	31.6	4.59
						delivery	159091	230	2.83
						stock_level	159090	27.5	2.17
						cust_report	875551	271	2.50
8	20439	1024	881	31.1%	<0.01	new_order	2155251	802	4.22
						payment	1486559	455	2.44
						order_status	148654	40.7	2.72
						delivery	148656	265	3.09
						stock_level	148655	35.2	2.09
						cust_report	817868	290	5.94

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

Virtual machine 2

SPECjbb2005

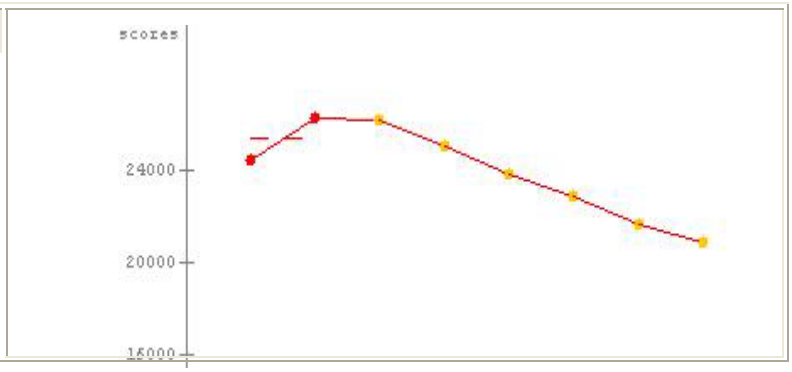
SPECjbb2005 bops = 25364,
SPECjbb2005 bops/JVM = 25364

Intel Supermicro X7DB8+

BEA BEA Jrockit 5.0 update 6, build P26.4.0-10-62459-1.5.0_06-20060529-2101-win-x86_64

No errors. Valid run.

Warehouses	SPECjbb2005 bops	Incl. in metric
1	24443	*
2	26285	*
3	26131	
4	25035	
5	23828	



6	22913	
7	21618	
8	20885	
SPECjbb2005	**(from 1 to 2)**	**25364 SPECjbb2005 bops**

SPEC license # 3184	**Tested by:** Principled Technologies, Inc.	**Test date:** Aug 18, 2006

Hardware	
Hardware Vendor	Intel
Vendor URL	http://www.intel.com
Model	Supermicro X7DB8+
Processor	Dual-Core Intel Xeon Processor 5160
MHz	3000
# of Chips	2
# of Cores	4
# of Cores/Chip	2
HW Threading Enabled?	Yes
Procs Avail to Java	1
Memory (MB)	8192
Memory Details	8 of 8 DIMMs filled with 1GB DDR2-4400 FB-DIMMs
Primary cache	32KBI+32KBD
Secondary cache	4 MB shared
Other cache	
Filesystem	NTFS
Disks	3 x 37GB SCSI
Other hardware	

Software	
Software Vendor	BEA
Vendor URL	http://www.bea.com
JVM Version	BEA Jrockit 5.0 update 6, build P26.4.0-10-62459-1.5.0_06-20060529-2101-win-x86_64
JVM Command Line	java -Xms1024m -Xmx1024m -Xxaggressive -XXthroughputCompaction -XXallocPrefetch -XXallocRedoPrefetch -XXcompressedRefs -XXlazyUnlocking -XXtlasize64k
JVM Initial Heap Memory (MB)	1024
JVM Maximum Heap Memory (MB)	1024
JVM Address bits	64
JVM CLASSPATH	.\jbb.jar; .\jbb_no_precompile.jar; .\check.jar; .\reporter.jar;
JVM BOOTCLASSPATH	C:\jrockit-jdk1.5.0_06\jre\bin\jrockit\jrockit.jar; C:\jrockit-jdk1.5.0_06\jre\bin\jrockit\managementapi.jar; C:\jrockit-jdk1.5.0_06\jre\lib\managementapi.jar; C:\jrockit-jdk1.5.0_06\jre\lib\rt.jar; C:\jrockit-jdk1.5.0_06\jre\lib\i18n.jar; C:\jrockit-jdk1.5.0_06\jre\lib\sunrsasign.jar; C:\jrockit-jdk1.5.0_06\jre\lib\jsse.jar; C:\jrockit-jdk1.5.0_06\jre\lib\jce.jar; C:\jrockit-jdk1.5.0_06\jre\lib\charsets.jar; C:\jrockit-jdk1.5.0_06\jre\classes
OS Version	Microsoft 2003 Server Enterprise x64 Edition, Service Pack 1
Other software	

Test Information	
Tested by	Principled Technologies, Inc.
SPEC license #	3184
Test location	Durham, NC

AOT Compilation

Tuning
In the local security settings, "lock pages in memory" was enabled

Test date	Aug 18, 2006
H/w available	
JVM available	July 2006
OS available	May-2003
Other s/w available	Feb-2000

Notes
"Notes here"

No errors. Valid run.

Details of Runs

Warehouses	Thrput	Total heap (MB)		Thread spread %	% > 120s	transaction type	Count	Time (in seconds)	
		Size	Used					total	max
1	24443	1024	341	<0.01%	5.96	new_order	2731772	102	.781
						payment	1883681	38.1	1.75
						order_status	188369	5.51	.578
						delivery	188368	52.3	.843
						stock_level	188369	7.31	.922
						cust_report	1035588	43.2	.938
2	26285	1024	458	9.37%	6.07	new_order	2939806	216	.578
						payment	2027584	83.9	.562
						order_status	202759	9.45	.453
						delivery	202759	94.9	.594
						stock_level	202759	9.33	.235
						cust_report	1115370	86.0	.453
3	26131	1024	592	79.1%	5.96	new_order	2920232	308	1.55
						payment	2013798	192	.922
						order_status	201379	23.0	1.97
						delivery	201379	97.6	3.42
						stock_level	201379	11.6	.641
						cust_report	1107362	123	3.03
4	25035	1024	463	40.6%	5.96	new_order	2797427	418	1.36
						payment	1929334	217	1.22
						order_status	192933	14.6	2.17
						delivery	192931	166	2.97
						stock_level	192932	27.0	7.45
						cust_report	1061234	159	1.48
5	23828	1024	551	16.2%	5.96	new_order	2662401	522	1.75
						payment	1836305	238	1.41
						order_status	183628	24.0	1.58
						delivery	183631	223	2.99

						stock_level	183631	28.7	1.33
						cust_report	1010197	218	5.63
6	22913	1024	665	25.1%	5.97	new_order	2561050	635	2.17
						payment	1765855	340	2.47
						order_status	176585	21.8	1.36
						delivery	176582	226	2.28
						stock_level	176585	42.3	10.5
						cust_report	970668	238	1.86
7	21618	1024	725	30.6%	6.10	new_order	2418580	770	2.31
						payment	1668138	389	2.08
						order_status	166812	37.9	4.00
						delivery	166814	240	2.56
						stock_level	166814	34.2	2.03
						cust_report	917683	298	3.13
8	20885	1024	576	34.5%	6.21	new_order	2339257	850	2.77
						payment	1613212	458	2.69
						order_status	161321	36.7	3.52
						delivery	161322	286	5.66
						stock_level	161321	39.4	1.94
						cust_report	887175	350	4.23

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

Dual-Core Intel Xeon Processor 5160-based server with 4 virtual machines

Virtual machine 1

SPECjbb2005

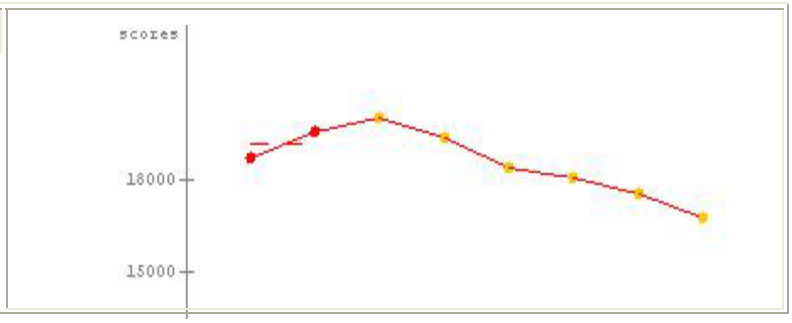
SPECjbb2005 bops = 19195,
SPECjbb2005 bops/JVM = 19195

Intel Supermicro X7DB8+

BEA BEA Jrockit 5.0 update 6, build P26.4.0-10-62459-1.5.0_06-20060529-2101-win-x86_64

No errors. Valid run.

Warehouses	SPECjbb2005 bops	Incl. in metric
1	18769	*
2	19622	*
3	20106	
4	19411	



5	18434	
6	18085	
7	17552	
8	16764	
SPECjbb2005	**(from 1 to 2)**	**19195 SPECjbb2005 bops**

SPEC license # 3184	**Tested by:** Principled Technologies, Inc.	**Test date:** Aug 17, 2006

Hardware	
Hardware Vendor	Intel
Vendor URL	http://www.intel.com
Model	Supermicro X7DB8+
Processor	Dual-Core Intel Xeon Processor 5160
MHz	3000
# of Chips	2
# of Cores	4
# of Cores/Chip	2
HW Threading Enabled?	Yes
Procs Avail to Java	1
Memory (MB)	8192
Memory Details	8 of 8 DIMMs filled with 1GB DDR2-4400 FB-DIMMs
Primary cache	32KBI+32KBD
Secondary cache	4 MB shared
Other cache	
Filesystem	NTFS
Disks	3 x 37GB SCSI
Other hardware	

Software	
Software Vendor	BEA
Vendor URL	http://www.bea.com
JVM Version	BEA Jrockit 5.0 update 6, build P26.4.0-10-62459-1.5.0_06-20060529-2101-win-x86_64
JVM Command Line	java -Xms1024m -Xmx1024m -Xxaggressive -XXthroughputCompaction -XXallocPrefetch -XXallocRedoPrefetch -XXcompressedRefs -XXlazyUnlocking -XXtlasize64k
JVM Initial Heap Memory (MB)	1024
JVM Maximum Heap Memory (MB)	1024
JVM Address bits	64
JVM CLASSPATH	.\jbb.jar; .\jbb_no_precompile.jar; .\check.jar; .\reporter.jar;
JVM BOOTCLASSPATH	C:\jrockit-jdk1.5.0_06\jre\bin\jrockit\jrockit.jar; C:\jrockit-jdk1.5.0_06\jre\bin\jrockit\managementapi.jar; C:\jrockit-jdk1.5.0_06\jre\lib\managementapi.jar; C:\jrockit-jdk1.5.0_06\jre\lib\rt.jar; C:\jrockit-jdk1.5.0_06\jre\lib\i18n.jar; C:\jrockit-jdk1.5.0_06\jre\lib\sunrsasign.jar; C:\jrockit-jdk1.5.0_06\jre\lib\jsse.jar; C:\jrockit-jdk1.5.0_06\jre\lib\jce.jar; C:\jrockit-jdk1.5.0_06\jre\lib\charsets.jar; C:\jrockit-jdk1.5.0_06\jre\classes
OS Version	Microsoft 2003 Server Enterprise x64 Edition, Service Pack 1
Other software	

Test Information	
Tested by	Principled Technologies, Inc.
SPEC license #	3184

AOT Compilation

Tuning

Test location	Durham, NC
Test date	Aug 17, 2006
H/w available	
JVM available	July 2006
OS available	May-2003
Other s/w available	Feb-2000

In the local security settings, "lock pages in memory" was enabled

Notes
"Notes here"

No errors. Valid run.

Details of Runs

Warehouses	Thrput	Total heap (MB)		Thread spread %	% > 120s	transaction type	Count	Time (in seconds)	
		Size	Used					total	max
1	18769	1024	958	<0.01%	.033	new_order	1980420	87.7	1.31
						payment	1365444	32.2	1.83
						order_status	136544	4.57	.609
						delivery	136544	63.8	1.00
						stock_level	136544	7.79	.985
						cust_report	750471	39.3	1.13
2	19622	1024	775	67.0%	<0.01	new_order	2069172	139	.563
						payment	1427151	155	1.70
						order_status	142715	6.66	.515
						delivery	142714	95.0	.641
						stock_level	142715	9.29	.453
						cust_report	785135	70.1	.563
3	20106	1024	353	94.3%	<0.01	new_order	2120448	241	2.19
						payment	1462317	219	1.69
						order_status	146231	18.8	3.00
						delivery	146231	94.5	13.1
						stock_level	146232	8.01	.485
						cust_report	804182	133	10.5
4	19411	1024	784	92.4%	<0.01	new_order	2047193	323	3.56
						payment	1411688	324	1.97
						order_status	141168	24.9	5.34
						delivery	141169	120	4.64
						stock_level	141168	13.9	1.03
						cust_report	776186	149	9.27
5	18434	1024	363	32.0%	<0.01	new_order	1944435	467	2.84
						payment	1340760	226	2.00
						order_status	134075	17.5	1.41

						delivery	134076	246	5.50
						stock_level	134077	24.9	.844
						cust_report	737080	204	3.42
6	18085	1024	476	33.1%	<0.01	new_order	1907911	563	3.89
						payment	1315374	300	2.97
						order_status	131538	17.7	1.27
						delivery	131536	270	19.2
						stock_level	131537	38.8	2.91
						cust_report	722844	244	2.36
7	17552	1024	595	40.4%	<0.01	new_order	1850956	628	3.30
						payment	1276614	403	2.45
						order_status	127662	32.2	4.42
						delivery	127659	273	6.81
						stock_level	127659	38.2	8.66
						cust_report	702256	291	3.88
8	16764	1024	662	41.0%	.241	new_order	1772142	764	4.55
						payment	1222128	476	3.16
						order_status	122212	31.6	1.88
						delivery	122211	342	8.16
						stock_level	122213	33.7	1.77
						cust_report	672113	280	6.31

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

Virtual machine 2

SPECjbb2005

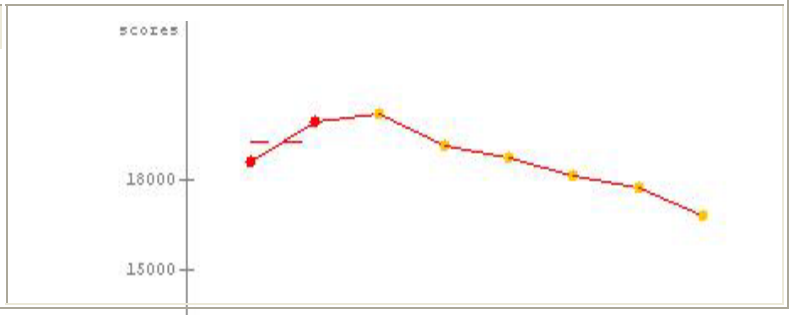
SPECjbb2005 bops = 19287,
SPECjbb2005 bops/JVM = 19287

Intel Supermicro X7DB8+

BEA BEA Jrockit 5.0 update 6, build P26.4.0-10-62459-1.5.0_06-20060529-2101-win-x86_64

No errors. Valid run.

Warehouses	SPECjbb2005 bops	Incl. in metric
1	18624	*
2	19950	*
3	20251	
4	19176	



5	18732	
6	18138	
7	17724	
8	16845	
SPECjbb2005	**(from 1 to 2)**	**19287 SPECjbb2005 bops**

SPEC license # 3184	**Tested by:** Principled Technologies, Inc.	**Test date:** Aug 17, 2006

Hardware	
Hardware Vendor	Intel
Vendor URL	http://www.intel.com
Model	Supermicro X7DB8+
Processor	Dual-Core Intel Xeon Processor 5160
MHz	3000
# of Chips	2
# of Cores	4
# of Cores/Chip	2
HW Threading Enabled?	Yes
Procs Avail to Java	1
Memory (MB)	8192
Memory Details	8 of 8 DIMMs filled with 1GB DDR2-4400 FB-DIMMs
Primary cache	32KBI+32KBD
Secondary cache	4 MB shared
Other cache	
Filesystem	NTFS
Disks	3 x 37GB SCSI
Other hardware	

Software	
Software Vendor	BEA
Vendor URL	http://www.bea.com
JVM Version	BEA Jrockit 5.0 update 6, build P26.4.0-10-62459-1.5.0_06-20060529-2101-win-x86_64
JVM Command Line	java -Xms1024m -Xmx1024m -Xxaggressive -XXthroughputCompaction -XXallocPrefetch -XXallocRedoPrefetch -XXcompressedRefs -XXlazyUnlocking -XXtlasize64k
JVM Initial Heap Memory (MB)	1024
JVM Maximum Heap Memory (MB)	1024
JVM Address bits	64
JVM CLASSPATH	.\jbb.jar; .\jbb_no_precompile.jar; .\check.jar; .\reporter.jar;
JVM BOOTCLASSPATH	C:\jrockit-jdk1.5.0_06\jre\bin\jrockit\jrockit.jar; C:\jrockit-jdk1.5.0_06\jre\bin\jrockit\managementapi.jar; C:\jrockit-jdk1.5.0_06\jre\lib\managementapi.jar; C:\jrockit-jdk1.5.0_06\jre\lib\rt.jar; C:\jrockit-jdk1.5.0_06\jre\lib\i18n.jar; C:\jrockit-jdk1.5.0_06\jre\lib\sunrsasign.jar; C:\jrockit-jdk1.5.0_06\jre\lib\jsse.jar; C:\jrockit-jdk1.5.0_06\jre\lib\jce.jar; C:\jrockit-jdk1.5.0_06\jre\lib\charsets.jar; C:\jrockit-jdk1.5.0_06\jre\classes
OS Version	Microsoft 2003 Server Enterprise x64 Edition, Service Pack 1
Other software	

Test Information	
Tested by	Principled Technologies, Inc.
SPEC license #	3184

AOT Compilation

Tuning

Test location	Durham, NC
Test date	Aug 17, 2006
H/w available	
JVM available	July 2006
OS available	May-2003
Other s/w available	Feb-2000

Notes
In the local security settings, "lock pages in memory" was enabled
"Notes here"

No errors. Valid run.

Details of Runs

Warehouses	Thrput	Total heap (MB)		Thread spread %	% > 120s	transaction type	Count	Time (in seconds)	
		Size	Used					total	max
1	18624	1024	772	<0.01%	<0.01	new_order	1964373	87.5	.891
						payment	1354582	33.6	2.00
						order_status	135459	5.48	.578
						delivery	135457	62.7	.969
						stock_level	135457	8.28	1.05
						cust_report	744781	37.9	1.03
2	19950	1024	710	20.1%	<0.01	new_order	2102951	173	.610
						payment	1451008	80.4	.531
						order_status	145101	7.11	.266
						delivery	145101	119	.625
						stock_level	145101	15.9	.469
						cust_report	799059	77.4	.531
3	20251	1024	977	76.1%	<0.01	new_order	2135748	263	1.33
						payment	1472890	177	1.11
						order_status	147288	17.1	1.86
						delivery	147289	135	9.89
						stock_level	147289	12.1	.812
						cust_report	810031	111	.922
4	19176	1024	322	23.5%	.013	new_order	2021885	371	1.41
						payment	1394776	165	1.23
						order_status	139477	19.6	1.20
						delivery	139477	215	4.30
						stock_level	139476	24.7	3.38
						cust_report	767663	157	5.94
5	18732	1024	437	19.6%	.163	new_order	1978382	449	1.97
						payment	1364538	227	1.44
						order_status	136453	22.9	1.14

						delivery	136453	247	3.47
						stock_level	136452	24.1	1.16
						cust_report	750673	220	8.42
6	18138	1024	415	22.0%	.085	new_order	1915109	512	2.39
						payment	1320265	307	1.89
						order_status	132025	19.4	1.00
						delivery	132026	286	3.16
						stock_level	132026	47.8	1.77
						cust_report	725429	259	17.0
7	17724	1024	715	27.0%	.098	new_order	1871269	592	2.77
						payment	1290254	383	2.03
						order_status	129024	36.7	3.88
						delivery	129025	345	7.28
						stock_level	129025	58.7	15.5
						cust_report	709235	254	4.56
8	16845	1024	726	36.0%	<0.01	new_order	1776332	705	3.42
						payment	1225164	479	2.38
						order_status	122516	39.3	2.72
						delivery	122517	336	2.56
						stock_level	122518	49.4	2.16
						cust_report	673989	298	7.86

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

Virtual machine 3

SPECjbb2005

SPECjbb2005 bops = 19522,
SPECjbb2005 bops/JVM = 19522

Intel Supermicro X7DB8+

BEA BEA Jrockit 5.0 update 6, build P26.4.0-10-62459-1.5.0_06-20060529-2101-win-x86_64

No errors. Valid run.

Warehouses	SPECjbb2005 bops	Incl. in metric
1	18753	*
2	20290	*
3	20068	
4	19376	

5	18772	
6	18088	
7	17708	
8	18223	
SPECjbb2005	**(from 1 to 2)**	**19522 SPECjbb2005 bops**

SPEC license # 3184	**Tested by:** Principled Technologies, Inc.	**Test date:** Aug 17, 2006

Hardware	
Hardware Vendor	Intel
Vendor URL	http://www.intel.com
Model	Supermicro X7DB8+
Processor	Dual-Core Intel Xeon Processor 5160
MHz	3000
# of Chips	2
# of Cores	4
# of Cores/Chip	2
HW Threading Enabled?	Yes
Procs Avail to Java	1
Memory (MB)	8192
Memory Details	8 of 8 DIMMs filled with 1GB DDR2-4400 FB-DIMMs
Primary cache	32KBI+32KBD
Secondary cache	4 MB shared
Other cache	
Filesystem	NTFS
Disks	3 x 37GB SCSI
Other hardware	

Software	
Software Vendor	BEA
Vendor URL	http://www.bea.com
JVM Version	BEA Jrockit 5.0 update 6, build P26.4.0-10-62459-1.5.0_06-20060529-2101-win-x86_64
JVM Command Line	java -Xms1024m -Xmx1024m -Xxaggressive -XXthroughputCompaction -XXallocPrefetch -XXallocRedoPrefetch -XXcompressedRefs -XXlazyUnlocking -XXtlasize64k
JVM Initial Heap Memory (MB)	1024
JVM Maximum Heap Memory (MB)	1024
JVM Address bits	64
JVM CLASSPATH	.\jbb.jar; .\jbb_no_precompile.jar; .\check.jar; .\reporter.jar;
JVM BOOTCLASSPATH	C:\jrockit-jdk1.5.0_06\jre\bin\jrockit\jrockit.jar; C:\jrockit-jdk1.5.0_06\jre\bin\jrockit\managementapi.jar; C:\jrockit-jdk1.5.0_06\jre\lib\managementapi.jar; C:\jrockit-jdk1.5.0_06\jre\lib\rt.jar; C:\jrockit-jdk1.5.0_06\jre\lib\i18n.jar; C:\jrockit-jdk1.5.0_06\jre\lib\sunrsasign.jar; C:\jrockit-jdk1.5.0_06\jre\lib\jsse.jar; C:\jrockit-jdk1.5.0_06\jre\lib\jce.jar; C:\jrockit-jdk1.5.0_06\jre\lib\charsets.jar; C:\jrockit-jdk1.5.0_06\jre\classes
OS Version	Microsoft 2003 Server Enterprise x64 Edition, Service Pack 1
Other software	

Test Information	
Tested by	Principled Technologies, Inc.
SPEC license #	3184

AOT Compilation

Tuning

Test location	Durham, NC
Test date	Aug 17, 2006
H/w available	
JVM available	July 2006
OS available	May-2003
Other s/w available	Feb-2000

In the local security settings, "lock pages in memory" was enabled
Notes
"Notes here"

No errors. Valid run.

Details of Runs

Warehouses	Thrput	Total heap (MB)		Thread spread %	% > 120s	transaction type	Count	Time (in seconds)	
		Size	Used					total	max
1	18753	1024	341	<0.01%	5.61	new_order	2088700	93.4	1.03
						payment	1440389	32.1	1.86
						order_status	144038	6.04	.719
						delivery	144038	65.0	1.06
						stock_level	144038	8.23	1.08
						cust_report	792076	43.3	1.06
2	20290	1024	702	19.5%	5.61	new_order	2259658	189	.640
						payment	1558389	82.4	.563
						order_status	155839	7.38	.594
						delivery	155838	128	.890
						stock_level	155839	13.0	.625
						cust_report	857122	79.5	.546
3	20068	1024	888	79.9%	5.61	new_order	2235753	270	1.30
						payment	1541315	179	1.02
						order_status	154132	29.5	2.63
						delivery	154130	133	3.89
						stock_level	154131	13.3	3.63
						cust_report	846889	124	4.06
4	19376	1024	382	22.5%	5.61	new_order	2158073	375	1.34
						payment	1488140	187	1.19
						order_status	148814	18.6	1.86
						delivery	148813	242	3.28
						stock_level	148813	18.7	.672
						cust_report	818199	165	2.91
5	18772	1024	491	18.5%	5.61	new_order	2090593	465	2.24
						payment	1441838	264	1.69
						order_status	144184	28.0	1.50

						delivery	144184	259	4.33
						stock_level	144182	29.6	1.11
						cust_report	793080	204	2.38
6	18088	1024	580	23.3%	5.61	new_order	2014254	584	2.52
						payment	1389199	311	1.72
						order_status	138921	24.8	1.70
						delivery	138922	290	2.00
						stock_level	138920	29.2	1.72
						cust_report	764139	259	5.98
7	17708	1024	652	33.1%	5.62	new_order	1972421	659	2.53
						payment	1360245	418	2.30
						order_status	136024	22.9	2.13
						delivery	136023	320	2.48
						stock_level	136022	45.2	3.09
						cust_report	748072	293	7.53
8	18223	1024	769	25.6%	5.61	new_order	2030262	805	2.84
						payment	1399702	474	2.73
						order_status	139970	40.8	2.70
						delivery	139971	343	11.3
						stock_level	139971	39.1	1.61
						cust_report	769146	308	7.20

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

Virtual machine 4

SPECjbb2005

SPECjbb2005 bops = 19255,
SPECjbb2005 bops/JVM = 19255

Intel Supermicro X7DB8+

BEA BEA Jrockit 5.0 update 6, build P26.4.0-10-62459-1.5.0_06-20060529-2101-win-x86_64

No errors. Valid run.

Warehouses	SPECjbb2005 bops	Incl. in metric
1	18849	*
2	19660	*
3	19982	
4	19282	

5	19155	
6	17931	
7	17655	
8	17713	
SPECjbb2005	**(from 1 to 2)**	**19255 SPECjbb2005 bops**

SPEC license # 3184	**Tested by:** Principled Technologies, Inc.	**Test date:** Aug 17, 2006

Hardware	
Hardware Vendor	Intel
Vendor URL	http://www.intel.com
Model	Supermicro X7DB8+
Processor	Dual-Core Intel Xeon Processor 5160
MHz	3000
# of Chips	2
# of Cores	4
# of Cores/Chip	2
HW Threading Enabled?	Yes
Procs Avail to Java	1
Memory (MB)	8192
Memory Details	8 of 8 DIMMs filled with 1GB DDR2-4400 FB-DIMMs
Primary cache	32KBI+32KBD
Secondary cache	4 MB shared
Other cache	
Filesystem	NTFS
Disks	3 x 37GB SCSI
Other hardware	

Software	
Software Vendor	BEA
Vendor URL	http://www.bea.com
JVM Version	BEA Jrockit 5.0 update 6, build P26.4.0-10-62459-1.5.0_06-20060529-2101-win-x86_64
JVM Command Line	java -Xms1024m -Xmx1024m -Xxaggressive -XXthroughputCompaction -XXallocPrefetch -XXallocRedoPrefetch -XXcompressedRefs -XXlazyUnlocking -XXtlasize64k
JVM Initial Heap Memory (MB)	1024
JVM Maximum Heap Memory (MB)	1024
JVM Address bits	64
JVM CLASSPATH	.\jbb.jar; .\jbb_no_precompile.jar; .\check.jar; .\reporter.jar;
JVM BOOTCLASSPATH	C:\jrockit-jdk1.5.0_06\jre\bin\jrockit\jrockit.jar; C:\jrockit-jdk1.5.0_06\jre\bin\jrockit\managementapi.jar; C:\jrockit-jdk1.5.0_06\jre\lib\managementapi.jar; C:\jrockit-jdk1.5.0_06\jre\lib\rt.jar; C:\jrockit-jdk1.5.0_06\jre\lib\i18n.jar; C:\jrockit-jdk1.5.0_06\jre\lib\sunrsasign.jar; C:\jrockit-jdk1.5.0_06\jre\lib\jsse.jar; C:\jrockit-jdk1.5.0_06\jre\lib\jce.jar; C:\jrockit-jdk1.5.0_06\jre\lib\charsets.jar; C:\jrockit-jdk1.5.0_06\jre\classes
OS Version	Microsoft 2003 Server Enterprise x64 Edition, Service Pack 1
Other software	

Test Information	
Tested by	Principled Technologies, Inc.
SPEC license #	3184

AOT Compilation

Tuning

Test location	Durham, NC
Test date	Aug 17, 2006
H/w available	
JVM available	July 2006
OS available	May-2003
Other s/w available	Feb-2000

Notes
In the local security settings, "lock pages in memory" was enabled
"Notes here"

No errors. Valid run.

Details of Runs

Warehouses	Thrput	Total heap (MB)		Thread spread %	% > 120s	transaction type	Count	Time (in seconds)	
		Size	Used					total	max
1	18849	1024	908	<0.01%	4.25	new_order	2072338	92.5	.922
						payment	1429115	35.7	1.83
						order_status	142911	5.18	.625
						delivery	142912	65.5	.969
						stock_level	142913	7.24	1.02
						cust_report	785894	37.9	.328
2	19660	1024	851	14.5%	4.25	new_order	2160674	187	.782
						payment	1490612	77.9	.969
						order_status	149061	8.04	.390
						delivery	149061	131	.594
						stock_level	149061	10.8	.297
						cust_report	820546	77.9	.532
3	19982	1024	592	64.1%	4.35	new_order	2199088	282	1.31
						payment	1516447	149	.796
						order_status	151645	18.6	2.61
						delivery	151644	156	1.17
						stock_level	151645	14.8	.906
						cust_report	833813	119	2.91
4	19282	1024	386	17.9%	4.25	new_order	2119823	382	1.83
						payment	1461963	176	1.42
						order_status	146196	10.2	.687
						delivery	146197	218	2.72
						stock_level	146195	31.7	9.25
						cust_report	804098	167	3.89
5	19155	1024	937	22.5%	4.41	new_order	2109181	467	2.61
						payment	1454570	244	1.64
						order_status	145458	17.4	3.28

						delivery	145457	272	1.56
						stock_level	145456	31.8	3.77
						cust_report	799962	206	4.75
6	17931	1024	477	22.7%	4.26	new_order	1971211	560	2.66
						payment	1359602	288	1.97
						order_status	135958	29.3	2.61
						delivery	135960	314	3.50
						stock_level	135959	38.9	2.02
						cust_report	748000	249	2.77
7	17655	1024	695	33.5%	4.26	new_order	1941752	653	2.69
						payment	1338671	376	1.99
						order_status	133868	31.8	2.63
						delivery	133867	322	2.73
						stock_level	133867	43.2	3.74
						cust_report	735589	299	5.53
8	17713	1024	753	27.5%	4.26	new_order	1947013	753	4.95
						payment	1343048	489	2.59
						order_status	134304	35.9	4.66
						delivery	134304	317	9.17
						stock_level	134307	40.6	2.64
						cust_report	739085	342	3.33

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

Principled Technologies, Inc.
4813 Emperor Blvd., Suite 100
Durham, NC 27703
www.principledtechnologies.com
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.