



Intel® 800 Mailbox Exchange Server 2007 Storage Solution

Intel® Server Chassis SC5400 and Server Board S5000PSL

Tested with: ESRP – Storage Version 2.1, Windows Server 2003 R2

Tested Date: January 9, 2009

Publish Date: September 7, 2009



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Hardware Components

Quantity	Item	Manufacturer	Model
One	Intel® Server Board	Intel	S5000PSL. Additional information is available at: http://www.intel.com/products/server/motherboards/s5000psl/s5000psl-overview.htm .
One	Intel® Server Chassis	Intel	SC5400. Additional information is available at: http://www.intel.com/products/server/chassis/sc5400/sc5400-overview.htm .
One (Select one)	Intel® RAID Controller	Intel	SRCSASJV. Additional information is available at: http://www.intel.com/products/server/raid-controllers/srcsasjv/srcsasjv-overview.htm .
	Intel® RAID Controller	Intel	SRCSASRB. Additional information is available at: http://www.intel.com/products/server/raid-controllers/srcsasrb/srcsasrb-overview.htm .
Two	Intel® Xeon® Processors	Intel	Please refer to the Supported Processor List at http://www.intel.com/support/motherboards/server/sb/CS-022346.htm . Processors must support Intel® EM64T.
4 GB minimum	Memory	Any supported	Please refer to the Tested Memory List at http://www.intel.com/support/motherboards/server/s5000psl/sb/CS-022924.htm .
One (60 GB minimum)	SAS or SATA 3.5-inch hard drives	Any supported	Please refer to the Server Hard Drive Validation Test Report at http://www.intel.com/support/motherboards/server/sb/CS-025416.htm .

Table 1 - Intel® Server Board S5000PSL Hardware Configuration

Software Components

Item	Version	Manufacturer	Comment
1	Windows Server 2003 R2	Microsoft	Any 64-bit edition
1	Exchange Server 2007	Microsoft	Available in 64-bit only

Table 2 - Installation Software BOM



Introduction

This document provides information on Intel's storage solution for Microsoft Exchange Server 2007, based on the Microsoft Exchange Solution Reviewed Program (ESRP) – Storage program*.

*The ESRP – Storage program was developed by Microsoft Corporation to provide a common storage testing framework for vendors to provide information on its storage solutions for Microsoft Exchange Server 2007 software. For more details on the Microsoft ESRP – Storage program, please view: <http://www.microsoft.com/technet/prodtechnol/exchange/2007/esrp.msp>.

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Features

This document describes an Exchange storage solution for 800 users on the Intel® Server Chassis SC5400 storage system. The tested user profile was 0.30 IOPS per user with a mailbox limit of 250 MB.

Solution Description

The tested solution consists of one Intel® server chassis and server board with an Intel® SRCSASJV RAID controller and 6 500GB SATA-interface desktop-class disk drives installed into the 4-drive and 6-drive cages in the Intel® SC5400 system chassis. This configuration includes 5TB of raw capacity. The Intel® SRCSASJV controller supports SAS and SATA interfaces to disk drives, and can support a mixture of SAS and SATA interface disk drives.

The ESRP-Storage program focuses on storage solution testing to address performance and reliability issues with storage design. However, storage is not the only factor to take into consideration when designing a scale up Exchange solution. Other factors which affect the server scalability are: server processor utilization, server physical and virtual memory limitations, resource requirements for other applications, directory and network service latencies, network infrastructure limitations, replication and recovery requirements, and client usage profiles. All these factors are beyond the scope for ESRP-Storage. Therefore, the number of mailboxes hosted per server as part of the tested configuration may not necessarily be viable for some customer deployment.



For more information on identifying and addressing performance bottlenecks in an Exchange system, please refer to Microsoft's Troubleshooting Microsoft Exchange Server Performance, available at <http://go.microsoft.com/fwlink/?LinkId=23454>.

Test Server Configuration

Component	Description
Server Chassis	Intel® SC5400
Server Board	Intel® S500PSL
CPU	2 Intel® Xeon® E5320, quad-core, 1.86 GHz (8 total cores)
Memory	4 GB DDR2 ECC
NIC	Dual Intel® Gigabit Ethernet (Intel® 82563EB)
RAID Controller	Intel® SRCSASJV
Internal Boot Disk	Qty. 1 - Seagate 320GB
Disk Array Disks	Qty. 6 - Seagate Barracuda 7200.11, ST3500320AS, 500GB, 7200 RPM

Targeted Customer Profile

This solution is intended for small and medium-sized organization hosting up to 800 mailboxes. The configuration used for testing is:

- Number of mailboxes: 800
- Number of hosts: 1
- User I/O profile: 0.30 I/O per second (IOPS)
- 3 Storage Groups, 3 Databases
- Mailbox size: 250 MB



Tested Deployment

The following tables summarize the testing environment:

Description	Data
Number of Exchange mailboxes simulated	800
Number of hosts	1
Number of storage groups / host	3
Number of mailbox stores / storage group	1
Number of mailboxes / mailbox store	267
Number of mailbox store LUNs / storage group	1
Simulated profile: I/O's per second per mailbox	0.30 IOPS
Database LUN size	930 GB
Log LUN size	465 GB
Backup LUN size / storage group	N/A
Total database size for performance testing	195.3 GB
% storage capacity used by Exchange database	20%

Primary Storage Hardware

Component	Description
Storage Connectivity (Fibre Channel, SAS, SATA, iSCSI)	SAS/SATA
Storage model and OS firmware	
Storage cache	512 MB
Number of storage controllers	1
Number of storage ports	2
Maximum bandwidth of storage	6 Gb/sec (2 x 3 Gb SAS ports)
Adapter model and firmware	Intel® SRCSASJV
Number of adapters / host	1
Host server type	Intel® S5000PSL, 2 Intel® Xeon® E5320 quad-core (1.86 GHz), 8 total cores
Total number of disks tested in solution	6
Maximum number of spindles can be hosted in the storage	10



Primary Storage Software

Component	Description
HBA driver	Intel SRCASJV
HBA Queue Target Setting	N/A
HBA Queue Depth Setting	N/A
Multi-Pathing	N/A
Host OS	MS Windows Server 2003 R2 Enterprise x64 Edition w/ Service Pack 1
ESE.dll file version	08.00.0685.024
Replication solution name / version	N/A

Primary Storage Disk Configuration (Mailbox Store Disks)

Component	Description
Disk type, speed and firmware revision	Seagate SATA, 7200 RPM, SD15 (ST3500329AS)
Raw capacity per disk (GB)	465.8
Number of physical disks in test	4
Total raw storage capacity (GB)	1863.2
Number of slices per LUN or number of disks per LUN	2
RAID level	RAID 10
Total formatted capacity	930

Primary Storage Disk Configuration (Transactional Log Disks)

Component	Description
Disk type, speed and firmware revision	Seagate SATA, 7200 RPM, SD15 (ST3500329AS)
Raw capacity per disk (GB)	465.8
Number of physical disks in test	2
Total raw storage capacity (GB)	931.6
Number of slices per LUN or number of disks per LUN	2
RAID level	RAID 1
Total formatted capacity	464.7



Best Practices

Exchange Server is a disk-intensive application. Based on the testing runs using the ESRP framework, we recommend the following Microsoft best practices for storage system design for Exchange Server 2007, available at: <http://technet.microsoft.com/en-us/library/bb124518.aspx>.

Contact for Additional Information

Consult the *Certified Intel RAID Configurations for Microsoft Exchange Servers* document available at: <http://www.intelraid.com/tech.php>.

Test Result Summary

This section provides a high level summary of the test data from ESRP and the link to the detailed HTML reports which are generated by ESRP testing framework. Please click on the underlined headings below to view the HTML report for each test.

Reliability

A number of tests in the framework are to check Reliability tests runs for 24 hours. The goal is to verify the storage can handle high I/O load for a long period of time. Both log and database files will be analyzed for integrity after the stress test to ensure no database/log corruption.

The following list provides an overview: (click on the underlined word will show the HTML report after the reliability tests run)

- No errors reported in the saved eventlog file.
- No errors reported in during the database and log checksum process.

Primary Storage Performance Results

The Primary Storage performance testing is designed to exercise the storage with maximum sustainable Exchange type of I/O for 2 hours. The test is to show how long it takes for the storage to respond to an I/O under load. The data below is the sum of all of the logical disk I/O's and average of all the logical disks I/O latency in the 2 hours test duration. Each server is listed separately and the aggregate numbers across all servers is listed as well.

Individual Server Metrics:

The sum of I/O's across Storage Groups and the average latency across all Storage Groups on a per server basis.



I/O Component	Metric
Database I/O	
Average Database Disk Transfers/sec	152.168
Average Database Disk Reads/sec	157.468
Average Database Disk Writes/sec	146.867
Average Database Disk Read Latency (ms)	0.018
Average Database Disk Write Latency (ms)	0.049
Transaction Log I/O	
Average Log Disk Writes/sec	95.087
Average Log Disk Write Latency (ms)	0.001

Conclusion

This document is developed by storage solution providers, and reviewed by Microsoft Exchange Product team. The test results/data presented in this document is based on the tests introduced in the ESRP test framework. Customer should not quote the data directly for his/her pre-deployment verification. It is still necessary to go through the exercises to validate the storage design for a specific customer environment.

ESRP program is not designed to be a benchmarking program; tests are not designed to getting the maximum throughput for a giving solution. Rather, it is focused on producing recommendations from vendors for Exchange application. So the data presented in this document should not be used for direct comparisons among the solutions.



Appendix A - Test Results

Microsoft Exchange Server Jetstress 24 Hour Reliability

Microsoft Exchange Server **Jetstress**

Stress Test Result Report

Test Summary

Overall Test Result **Pass**

Machine Name DMRTK-SRVR-12

Test Description Intel SRCASJV 6-SATA drives, mailboxes=0800, size=250, IOPS=0.3, threads=3, DB=RAID10(2+2), Log=RAID1(1+1), SG=3, Partition=1

Test Start Time 1/8/2009 4:04:12 PM

Test End Time 1/9/2009 4:21:06 PM

Jetstress Version 08.02.0060.000

Ese Version 08.00.0685.024

Operating System Microsoft Windows Server 2003 R2 Service Pack 2 (5.2.3790.131072)

Performance Log C:\Data\Jetstress\Stress_2009_1_8_16_4_19.blg
C:\Data\Jetstress\DBChecksum_2009_1_9_16_21_6.blg

Database Sizing and Throughput

Achieved I/O per Second 304.335

Target I/O per Second 240

Initial database size 213099528192

Final database size 244133576704

Database files (count) 3

Jetstress System Parameters

Thread count 3 (per-storage group)

Log buffers 9000

Minimum database cache 96.0 MB

Maximum database cache 768.0 MB

Insert operations 25%

Delete operations 10%



Replace operations 50%
Read operations 15%
Lazy commits 80%

Disk Subsystem Performance

LogicalDisk	Avg. Disk sec/Read	Avg. Disk sec/Write	Disk Reads/sec	Disk Writes/sec	Avg. Disk Bytes/Write
Database (M:)	0.018	0.049	157.468	146.867	(n/a)
Log (L:)	0.000	0.001	0.000	95.087	10408.992

Host System Performance

Counter	Average	Minimum	Maximum
% Processor Time	0.409	0.129	1.952
Available MBytes	2597.445	2579.000	2673.000
Free System Page Table Entries	4170701.000	4170701.000	4170701.000
Transition Pages RePurposed/sec	0.000	0.000	0.000
Pool Nonpaged Bytes	34294749.156	34258944.000	34344960.000
Pool Paged Bytes	45671719.822	44933120.000	47071232.000
Database Page Fault Stalls/sec	0.000	0.000	0.000

Test Log

1/8/2009 4:04:12 PM -- Jetstress testing begins ...
 1/8/2009 4:04:12 PM -- Prepare testing begins ...
 1/8/2009 4:04:16 PM -- Attaching databases ...
 1/8/2009 4:04:16 PM -- Prepare testing ends.
 1/8/2009 4:04:16 PM -- Dispatching transactions begins ...
 1/8/2009 4:04:16 PM -- Database cache settings: (minimum: 96.0 MB, maximum: 768.0 MB)
 1/8/2009 4:04:16 PM -- Database flush thresholds: (start: 7.7 MB, stop: 15.4 MB)
 1/8/2009 4:04:19 PM -- Database read latency thresholds: (average: 0.02 seconds/read, maximum: 0.1 seconds/read).
 1/8/2009 4:04:19 PM -- Log write latency thresholds: (average: 0.01 seconds/write, maximum: 0.1 seconds/write).
 1/8/2009 4:04:21 PM -- Operation mix: Sessions 3, Inserts 25%, Deletes 10%, Replaces 50%, Reads 15%, Lazy Commits 80%.
 1/8/2009 4:04:21 PM -- Performance logging begins (interval: 15000 ms).
 1/8/2009 4:04:21 PM -- Attaining prerequisites:
 1/8/2009 4:20:08 PM -- \Database (JetstressWin)\Database Cache Size, Last: 725164000.0 (lower bound: 724775700.0, upper bound: none)



1/9/2009 4:20:09 PM -- Performance logging ends.
1/9/2009 4:20:09 PM -- JetInterop batch transaction stats: 250364, 249922, and 250627.
1/9/2009 4:20:11 PM -- Dispatching transactions ends.
1/9/2009 4:20:11 PM -- Shutting down databases ...
1/9/2009 4:21:06 PM -- Instance1688.1 (complete), Instance1688.2 (complete), and Instance1688.3 (complete)
1/9/2009 4:21:07 PM -- Performance logging begins (interval: 15000 ms).
1/9/2009 4:21:07 PM -- Verifying database checksums ...
1/9/2009 4:45:55 PM -- M: (100% processed)
1/9/2009 4:45:57 PM -- Performance logging ends.
1/9/2009 4:45:57 PM -- C:\Data\Jetstress\DBChecksum_2009_1_9_16_21_6.blg has 99 samples.
1/9/2009 4:46:04 PM -- C:\Data\Jetstress\DBChecksum_2009_1_9_16_21_6.html is saved.
1/9/2009 4:46:04 PM -- Verifying log checksums ...
1/9/2009 4:46:10 PM -- L:\01 (22 logs passed), L:\02 (22 logs passed), and L:\03 (22 logs passed)
1/9/2009 4:46:10 PM -- C:\Data\Jetstress\Stress_2009_1_8_16_4_19.blg has 5823 samples.
1/9/2009 4:46:10 PM -- Creating test report ...
1/9/2009 4:48:03 PM -- Volume M: has 0.0184 for Avg. Disk sec/Read.
1/9/2009 4:48:03 PM -- Volume L: has 0.0009 for Avg. Disk sec/Write.
1/9/2009 4:48:03 PM -- Volume L: has 0.0000 for Avg. Disk sec/Read.
1/9/2009 4:48:03 PM -- Test has 0 Maximum Database Page Fault Stalls/sec.
1/9/2009 4:48:03 PM -- Test has 0 Database Page Fault Stalls/sec samples higher than 0.
1/9/2009 4:48:03 PM -- C:\Data\Jetstress\Stress_2009_1_8_16_4_19.xml has 5759 samples queried.



Microsoft Exchange Server Jetstress

Test Result Report

Checksum Statistics - All

Database	Seen pages	Bad pages	Correctable pages	Wrong page no pages	File length / seconds taken
M:\01\Jetstress1.edb	9936722	0	0	0	77630 MBytes / 508 seconds
M:\02\Jetstress1.edb	9927250	0	0	0	77556 MBytes / 507 seconds
M:\03\Jetstress1.edb	9937490	0	0	0	77636 MBytes / 472 seconds
(Sum)	29801462	0	0	0	232823 MBytes / 1488 seconds

Disk Subsystem Performance (of checksum)

LogicalDisk	Avg. Disk sec/Read	Avg. Disk sec/Write	Disk Reads/sec	Disk Writes/sec
M:	0.099	0.000	2378.911	0.005

Memory System Performance (of checksum)

Counter	Average	Minimum	Maximum
% Processor Time	7.613	2.017	73.917
Available MBytes	3388.081	3381.000	3390.000
Free System Page Table Entries	4170701.000	4170701.000	4170701.000
Transition Pages RePurposed/sec	0.000	0.000	0.000
Pool Nonpaged Bytes	34620219.475	34586624.000	34668544.000
Pool Paged Bytes	46526091.636	46231552.000	47304704.000

Test Log

1/8/2009 4:04:12 PM -- Jetstress testing begins ...
 1/8/2009 4:04:12 PM -- Prepare testing begins ...
 1/8/2009 4:04:16 PM -- Attaching databases ...
 1/8/2009 4:04:16 PM -- Prepare testing ends.
 1/8/2009 4:04:16 PM -- Dispatching transactions begins ...
 1/8/2009 4:04:16 PM -- Database cache settings: (minimum: 96.0 MB, maximum: 768.0 MB)
 1/8/2009 4:04:16 PM -- Database flush thresholds: (start: 7.7 MB, stop: 15.4 MB)
 1/8/2009 4:04:19 PM -- Database read latency thresholds: (average: 0.02 seconds/read, maximum: 0.1 seconds/read).
 1/8/2009 4:04:19 PM -- Log write latency thresholds: (average: 0.01 seconds/write, maximum:



0.1 seconds/write).

1/8/2009 4:04:21 PM -- Operation mix: Sessions 3, Inserts 25%, Deletes 10%, Replaces 50%, Reads 15%, Lazy Commits 80%.

1/8/2009 4:04:21 PM -- Performance logging begins (interval: 15000 ms).

1/8/2009 4:04:21 PM -- Attaining prerequisites:

1/8/2009 4:20:08 PM -- \Database(JetstressWin)\Database Cache Size, Last: 725164000.0
(lower bound: 724775700.0, upper bound: none)

1/9/2009 4:20:09 PM -- Performance logging ends.

1/9/2009 4:20:09 PM -- JetInterop batch transaction stats: 250364, 249922, and 250627.

1/9/2009 4:20:11 PM -- Dispatching transactions ends.

1/9/2009 4:20:11 PM -- Shutting down databases ...

1/9/2009 4:21:06 PM -- Instance1688.1 (complete), Instance1688.2 (complete), and Instance1688.3 (complete)

1/9/2009 4:21:07 PM -- Performance logging begins (interval: 15000 ms).

1/9/2009 4:21:07 PM -- Verifying database checksums ...

1/9/2009 4:45:55 PM -- M: (100% processed)

1/9/2009 4:45:57 PM -- Performance logging ends.

1/9/2009 4:45:57 PM -- [C:\Data\Jetstress\DBChecksum_2009_1_9_16_21_6.blg](#) has 99 samples.



Microsoft Exchange Server **Jetstress 2 Hour Performance**

Microsoft Exchange Server **Jetstress**

Performance Test Result Report

Test Summary

Overall Test Result **Pass**

Machine Name DMRTK-SRVR-12

Test Description Intel® SRCASJV 6-SATA drives, mailboxes=0800, size=250, IOPS=0.3, threads=3, DB=RAID10(2+2), Log=RAID1(1+1), SG=3, Partition=1

Test Start Time 1/8/2009 11:27:48 AM

Test End Time 1/8/2009 3:23:14 PM

Jetstress Version 08.02.0060.000

Ese Version 08.00.0685.024

Operating System Microsoft Windows Server 2003 R2 Service Pack 2 (5.2.3790.131072)

Performance Log C:\Data\Jetstress\Performance_2009_1_8_13_6_21.blg
C:\Data\Jetstress\DBChecksum_2009_1_8_15_23_14.blg

Database Sizing and Throughput

Achieved I/O per Second 313.545

Target I/O per Second 240

Initial database size 209727307776

Final database size 213099528192

Database files (count) 3

Jetstress System Parameters

Thread count 3 (per-storage group)

Log buffers 9000

Minimum database cache 96.0 MB

Maximum database cache 768.0 MB

Insert operations 25%

Delete operations 10%

Replace operations 50%



Read operations 15%
Lazy commits 80%

Disk Subsystem Performance

LogicalDisk	Avg. Disk sec/Read	Avg. Disk sec/Write	Disk Reads/sec	Disk Writes/sec	Avg. Disk Bytes/Write
Database (M:)	0.018	0.050	156.493	157.052	(n/a)
Log (L:)	0.000	0.001	0.000	107.055	10505.636

Host System Performance

Counter	Average	Minimum	Maximum
% Processor Time	0.427	0.165	0.870
Available MBytes	2516.242	2513.000	2591.000
Free System Page Table Entries	4170701.000	4170701.000	4170701.000
Transition Pages RePurposed/sec	0.000	0.000	0.000
Pool Nonpaged Bytes	33962419.200	33959936.000	33976320.000
Pool Paged Bytes	45446553.600	44765184.000	45551616.000
Database Page Fault Stalls/sec	0.000	0.000	0.000

Test Log

1/8/2009 11:27:48 AM -- Jetstress testing begins ...
 1/8/2009 11:27:48 AM -- Prepare testing begins ...
 1/8/2009 11:27:48 AM -- Creating M:\01\Jetstress1.edb.
 1/8/2009 11:27:48 AM -- Database cache settings: (minimum: 32.0 MB, maximum: 256.0 MB)
 1/8/2009 11:27:48 AM -- Database flush thresholds: (start: 2.6 MB, stop: 5.1 MB)
 1/8/2009 11:57:56 AM -- 60.0% of 65.1 GB complete (2380282 records inserted).
 1/8/2009 12:20:38 PM -- 100.0% of 65.1 GB complete (3805131 records inserted).
 1/8/2009 12:20:44 PM -- Duplicating 2 databases:
 1/8/2009 1:06:14 PM -- 100.0% of 130.2 GB complete (130.2 GB duplicated).
 1/8/2009 1:06:17 PM -- Attaching databases ...
 1/8/2009 1:06:17 PM -- Prepare testing ends.
 1/8/2009 1:06:17 PM -- Dispatching transactions begins ...
 1/8/2009 1:06:17 PM -- Database cache settings: (minimum: 96.0 MB, maximum: 768.0 MB)
 1/8/2009 1:06:17 PM -- Database flush thresholds: (start: 7.7 MB, stop: 15.4 MB)
 1/8/2009 1:06:21 PM -- Database read latency thresholds: (average: 0.02 seconds/read, maximum: 0.05 seconds/read).
 1/8/2009 1:06:21 PM -- Log write latency thresholds: (average: 0.01 seconds/write, maximum: 0.05 seconds/write).



1/8/2009 1:06:22 PM -- Operation mix: Sessions 3, Inserts 25%, Deletes 10%, Replaces 50%, Reads 15%, Lazy Commits 80%.

1/8/2009 1:06:22 PM -- Performance logging begins (interval: 15000 ms).

1/8/2009 1:06:22 PM -- Attaining prerequisites:

1/8/2009 1:22:18 PM -- \Database (JetstressWin)\Database Cache Size, Last: 725090300.0 (lower bound: 724775700.0, upper bound: none)

1/8/2009 3:22:20 PM -- Performance logging ends.

1/8/2009 3:22:20 PM -- JetInterop batch transaction stats: 27039, 26929, and 26761.

1/8/2009 3:22:20 PM -- Dispatching transactions ends.

1/8/2009 3:22:20 PM -- Shutting down databases ...

1/8/2009 3:23:14 PM -- Instance556.1 (complete), Instance556.2 (complete), and Instance556.3 (complete)

1/8/2009 3:23:14 PM -- Performance logging begins (interval: 15000 ms).

1/8/2009 3:23:14 PM -- Verifying database checksums ...

1/8/2009 3:44:48 PM -- M: (100% processed)

1/8/2009 3:44:50 PM -- Performance logging ends.

1/8/2009 3:44:50 PM -- [C:\Data\Jetstress\DBChecksum_2009_1_8_15_23_14.blg](#) has 86 samples.

1/8/2009 3:44:53 PM -- [C:\Data\Jetstress\DBChecksum_2009_1_8_15_23_14.html](#) is saved.

1/8/2009 3:44:53 PM -- Verifying log checksums ...

1/8/2009 3:44:57 PM -- L:\01 (21 logs passed), L:\02 (22 logs passed), and L:\03 (21 logs passed)

1/8/2009 3:44:57 PM -- [C:\Data\Jetstress\Performance_2009_1_8_13_6_21.blg](#) has 543 samples.

1/8/2009 3:44:57 PM -- Creating test report ...

1/8/2009 3:45:03 PM -- Volume M: has 0.0182 for Avg. Disk sec/Read.

1/8/2009 3:45:03 PM -- Volume L: has 0.0010 for Avg. Disk sec/Write.

1/8/2009 3:45:03 PM -- Volume L: has 0.0000 for Avg. Disk sec/Read.

1/8/2009 3:45:03 PM -- Test has 0 Maximum Database Page Fault Stalls/sec.

1/8/2009 3:45:03 PM -- Test has 0 Database Page Fault Stalls/sec samples higher than 0.

1/8/2009 3:45:03 PM -- [C:\Data\Jetstress\Performance_2009_1_8_13_6_21.xml](#) has 479 samples queried.



Microsoft Exchange Server Jetstress

Test Result Report

Checksum Statistics - All

Database	Seen pages	Bad pages	Correctable pages	Wrong page no pages	File length / seconds taken
M:\01\Jetstress1.edb	8671298	0	0	0	67744 MBytes / 426 seconds
M:\02\Jetstress1.edb	8674370	0	0	0	67768 MBytes / 431 seconds
M:\03\Jetstress1.edb	8667458	0	0	0	67714 MBytes / 435 seconds
(Sum)	26013126	0	0	0	203227 MBytes / 1293 seconds

Disk Subsystem Performance (of checksum)

LogicalDisk	Avg. Disk sec/Read	Avg. Disk sec/Write	Disk Reads/sec	Disk Writes/sec
M:	0.096	0.000	2514.827	0.009

Memory System Performance (of checksum)

Counter	Average	Minimum	Maximum
% Processor Time	2.590	1.808	3.032
Available MBytes	3306.151	3299.000	3308.000
Free System Page Table Entries	4170701.000	4170701.000	4170701.000
Transition Pages RePurposed/sec	0.000	0.000	0.000
Pool Nonpaged Bytes	34604008.186	34566144.000	34648064.000
Pool Paged Bytes	44935406.140	44605440.000	45703168.000

Test Log

1/8/2009 11:27:48 AM -- Jetstress testing begins ...
 1/8/2009 11:27:48 AM -- Prepare testing begins ...
 1/8/2009 11:27:48 AM -- Creating M:\01\Jetstress1.edb.
 1/8/2009 11:27:48 AM -- Database cache settings: (minimum: 32.0 MB, maximum: 256.0 MB)
 1/8/2009 11:27:48 AM -- Database flush thresholds: (start: 2.6 MB, stop: 5.1 MB)
 1/8/2009 11:57:56 AM -- 60.0% of 65.1 GB complete (2380282 records inserted).
 1/8/2009 12:20:38 PM -- 100.0% of 65.1 GB complete (3805131 records inserted).
 1/8/2009 12:20:44 PM -- Duplicating 2 databases:
 1/8/2009 1:06:14 PM -- 100.0% of 130.2 GB complete (130.2 GB duplicated).
 1/8/2009 1:06:17 PM -- Attaching databases ...



1/8/2009 1:06:17 PM -- Prepare testing ends.
1/8/2009 1:06:17 PM -- Dispatching transactions begins ...
1/8/2009 1:06:17 PM -- Database cache settings: (minimum: 96.0 MB, maximum: 768.0 MB)
1/8/2009 1:06:17 PM -- Database flush thresholds: (start: 7.7 MB, stop: 15.4 MB)
1/8/2009 1:06:21 PM -- Database read latency thresholds: (average: 0.02 seconds/read, maximum: 0.05 seconds/read).
1/8/2009 1:06:21 PM -- Log write latency thresholds: (average: 0.01 seconds/write, maximum: 0.05 seconds/write).
1/8/2009 1:06:22 PM -- Operation mix: Sessions 3, Inserts 25%, Deletes 10%, Replaces 50%, Reads 15%, Lazy Commits 80%.
1/8/2009 1:06:22 PM -- Performance logging begins (interval: 15000 ms).
1/8/2009 1:06:22 PM -- Attaining prerequisites:
1/8/2009 1:22:18 PM -- \Database(JetstressWin)\Database Cache Size, Last: 725090300.0 (lower bound: 724775700.0, upper bound: none)
1/8/2009 3:22:20 PM -- Performance logging ends.
1/8/2009 3:22:20 PM -- JetInterop batch transaction stats: 27039, 26929, and 26761.
1/8/2009 3:22:20 PM -- Dispatching transactions ends.
1/8/2009 3:22:20 PM -- Shutting down databases ...
1/8/2009 3:23:14 PM -- Instance556.1 (complete), Instance556.2 (complete), and Instance556.3 (complete)
1/8/2009 3:23:14 PM -- Performance logging begins (interval: 15000 ms).
1/8/2009 3:23:14 PM -- Verifying database checksums ...
1/8/2009 3:44:48 PM -- M: (100% processed)
1/8/2009 3:44:50 PM -- Performance logging ends.
1/8/2009 3:44:50 PM -- C:\Data\Jetstress\DBChecksum_2009_1_8_15_23_14.blg has 86 samples.