



ESRP Storage Program EMC Symmetrix DMX1000P SRDF/S Storage Solution for Microsoft Exchange Server Synchronously Replicated Storage

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Overview

This document provides information on the EMC® Symmetrix® DMX1000P storage solution with synchronous replication, based on the Microsoft Exchange Solution Reviewed Program (ESRP) - Storage program¹. For any questions or comments regarding the contents of this document, see the “Contact Information” section.

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Features

This document describes an approach that can be used to configure Exchange solutions around EMC’s high-end DMX1000P storage systems. The EMC Symmetrix DMX1000P is a fully integrated, high-performance networked storage system, optimized for server consolidation and heavy transaction-processing loads. This single-bay storage system can be configured with up to 144 2 GB/s high-performance Fibre Channel disk drives, providing a maximum raw capacity of over 59 TB. The performance results and best practices discussed in this document provide tested guidelines for configuring the DMX1000P for a high-performance Exchange environment. For this solution, a DMX1000P array was used and configured for 16,000 Exchange 2003 users in a synchronously replicated environment using EMC Synchronous SRDF (SRDF/S). Each of the 16,000 users is

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1. 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 software. For more details on the Microsoft ESRP - Storage program, please go to <http://www.microsoftstoragepartners.com/>.

Solution description

profiled using a value of 1 IOPS per user and a 200 MB mailbox requirement.

In configuring this Exchange solution, a concept was used that, for the purposes of this document, is referred to as a *building-block approach*. The building-block approach defines the number of spindles required for a certain number of users per Exchange Server. In this case, 32 Symmetrix spindles will support 4000 users per Exchange Server. To scale the solution, additional server/spindle building blocks are added to increase the number of users in "blocks" of 4000. By using this approach, configuration maintenance and growth of an enterprise Exchange environment is much simpler.

Solution description

Sizing and configuring storage for use with Microsoft Exchange Server is a complicated process driven by many variables and factors, which vary from organization to organization.

One method often used in an effort to simplify the sizing and configuration of large amounts of EMC Symmetrix/DMX storage for use with Microsoft Exchange Server 2000/2003 is to define a unit of measure or work. Such a unit of measure or work—in this case one server with 32 storage spindles—meets all of the Microsoft Exchange Server recommended metrics for satisfactory performance. The idea is similar in nature to using building blocks, where a predefined amount of Exchange Server work can be quantified and deployed on a compartmentalized amount of Symmetrix storage, which is known to have a predicted performance result.

This unit of work—or building block—needs to be scalable. In that way, an organization can simply take this unit of work and multiply it by some factor until the desired amount of Microsoft Exchange Server work (i.e., Microsoft MAPI Outlook users) has been properly met or configured to satisfy the Microsoft Exchange Server recommended performance metrics.

If this unit of work is properly configured, it will match the Microsoft Exchange Server recommendations for a healthy-performing system, from both a disk and an end-user perspective.

This solution used a per Exchange Server building block. It has been tested to scale at varying limits (4000, 8000, 16,000 users) on two single-bay DMX1000Ps configured in an EMC SRDF environment.

It should be generally accepted that the 16,000 users expressed here as a maximum in this configuration is only a function of the number of installed

physical drives required to support the total IOP/second workload (a number of users profiled at 1 IOP per second). In this case, because the DMX1000P is configured with the maximum number of drives (144 146-GB 15K), it is not possible to scale additional users at this profile while achieving the Microsoft exchange recommended I/O response times. However, if it was determined that the required IOPS per second profile was .5 IOPS per second for example, it is possible that the DMX1000P could support 32,000 users.

These synchronously replicated EMC DMX arrays are configured with EMC synchronous SRDF, configured with zero distance.

Note: Although the two DMX arrays are physically located with zero distances, the following results should be comparable to distances out to five miles, factoring in four I/O round trips using Fibre Channel RDF links. When using GigE RDF, the protocol dictates only two round trips.

Table 1 describes the characteristics of each building block:

Table 1 Building block characteristics

Number of users	4,000
Number of Exchange Servers	1
IOPS per user	1.0
Mailbox size	200 MB
Number of disks required for Logs and Database	32
Disk type	146 GB 15K
RAID type	1/0
Number of storage groups per server	4

Using the performance characteristics of the Symmetrix DMX architecture and the I/O capability of the 146-GB disk drives, 32 spindles are required to provide the necessary performance to match the I/O requirements of 4000, 1.0 IOPS users. Each disk in the group of 32 is split into logical volumes called *hypervolumes*. Hypervolumes from different spindles are then combined into aggregate volumes called Symmetrix *metavolumes*. These metavolumes are then presented to the Exchange Server as LUNs for database and log storage. Each metavolume is comprised of 16

Solution description

hypervolumes. The size of the hypervolumes, and therefore the number of hypervolumes per spindle, varies. EMC has determined that sharing the database and log volumes on the same spindles does not adversely affect performance.

This design was then duplicated three times, resulting in four "building-blocks" of 4000 users to get to the required 16,000 total number of users.

SRDF Synchronous

SRDF *Synchronous* replication provides realtime mirroring of data between the source Symmetrix and the target Symmetrix systems. Data is written to the cache of both systems before the application I/O is completed, thus ensuring the highest possible data availability.

With SRDF/S synchronous replication, shown in Figure 1, each and every I/O from the local host is first written to the Symmetrix cache (1) and is then sent over the RDF links to the remote Symmetrix unit (2). Once the remote Symmetrix unit reports that the data has reached its cache successfully (3), the I/O is acknowledged to the local host (4).

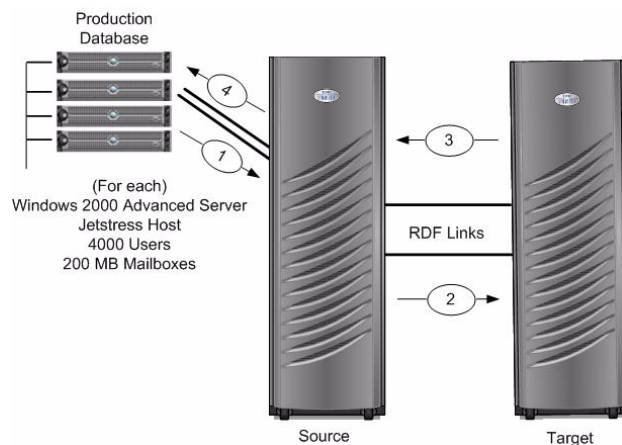


Figure 1 SRDF/S synchronous replication

The testing discussed in this report covers three major aspects critical to Exchange stability and performance, including the following:

- 24-Hour Stress Test
- 2-Hour Performance Test
- Backup-to-Disk Performance

The 24-hour stress test measures the longer-term stability of the Exchange infrastructure running under load for a full 24-hour day duration. The 2-hour performance test provides performance under a heavy load for a shorter time frame. The backup-to-disk testing measures the time required to perform streaming Exchange backups. Each of these three test points is critical in validating a storage subsystem for a high-performing, stable Exchange environment.

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 consider when designing a scalable Exchange solution. Other factors that 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
- Client usage profiles

Due to such variables, the number of mailboxes hosted per server, as part of the tested configuration, may not necessarily be viable for some customer deployments.

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>.

Targeted customer profile

This solution is intended for Enterprise Exchange customers who would like to consolidate their Exchange users on a high-performance, highly available storage platform. This configuration is designed to support 16,000 Exchange users, with the following assumptions:

- 4 Exchange Servers
- 4,000 users per Exchange Server
- 1 IOPS per user
- 200-MB mailbox
- 4 Exchange storage groups
- 5 databases per storage group

Tested deployment

The following tables summarize the tested environment.

Simulated Exchange configuration

Table 2 lists the simulated Exchange configuration details.

Table 2 Simulated Exchange configuration

Item	Description
Number of Exchange mailboxes simulated	16,000
Number of hosts	4
Number of mailboxes/host	4,000
Number of storage groups/host	4
Number of mailbox stores/storage group	5
Number of mailboxes/mailbox store	200
Number of mailbox store LUNs/storage group	1
Simulated profile: I/O's per second per mailbox (IOPS)	1.0
Database LUN size	247 GB

Table 2 Simulated Exchange configuration

Item	Description
Log LUN size	16 GB
Backup LUN size/storage group	N/A
Total database size for performance testing	3,364 GB
Percentage storage capacity used by Exchange database	78%

Hardware

Table 3 lists the hardware used in the environment.

Table 3 Hardware

Item	Description
Storage type (SAN, DAS, iSCSI, NAS)	SAN
Storage model and OS/firmware revision	2 DMX1000P (one production, one replication) FW: Enginuity/5670.48.56 EMC DMX 1000 WHQL Listing
Storage cache	32 GB
Number of storage controllers	9 front end (FAs), 3 SRDF (RAs), 16 back end (DAs)
Number of storage ports	18 ports
Maximum bandwidth of storage connectivity to host	4 Gb (2x2-Gb HBA) with EMC PowerPath [®] (v. 4.4) across 4 FA ports
Switch type/model/firmware revision	2-GB Connectrix DS-32M2
HBA model and firmware	Emulex LP10000 1.90A4
Number of HBAs/host	1 dual port (two connections)
Host server type	Dell PowerEdge 6650 4 processor, hyperthreaded, 4-GB RAM
Total number of disks tested in solution	128
Maximum number of spindles that can be hosted in the storage	144

Software

Table 4 lists the software used in the environment.

Item	Description
HBA driver	Fibre Channel StorPort 5.1.10a4
HBA QueueTarget Setting	N/A
HBA QueueDepth Setting	128
Multipathing	EMC PowerPath: load balancing and fault tolerant 4.4
Host OS	Windows 2003 Enterprise Edition, Service Pack 1
ESE.dll file version	6.5.7226.2
Replication solution name/version	EMC SRDF Synchronous (Engenuity)

Disk configuration (mailbox store disks)

Table 5 lists the disk configuration (mailbox store disks) for the environment.

Item	Description
Disk type, speed and firmware revision	15K FC
Raw capacity per disk (GB)	146 GB
Number of physical disks in test	128
Total raw storage capacity (GB)	18,688 GB
Disk slice size (GB)	16.88 GB
Number of slices per LUN or number of disks per LUN	16 hypervolumes
RAID level	RAID 1/0 striped mirror: at the storage level
Total formatted capacity	4,300 GB

Disk configuration (transactional log disks)

Table 6 lists the disk configuration (transactional log disks) for the environment.

Table 6 **Disk configuration**

Item	Description
Disk type, speed and firmware revision	15K FC
Raw capacity per disk (GB)	146 GB
Number of LUNs in test	16 hypervolumes
Total raw storage capacity (GB)	18,688 GB
Disk slice size (GB)	1.079 GB
Number of slices per LUN or number of disks per LUN	16 hypervolumes
RAID level	RAID 1/0 Striped Mirror: at the storage level
Total formatted capacity	276 GB

Streaming backup

N/A

Replication

Table 7 Replication configuration

Item	Description
Replication mechanism	EMC Synchronous SRDF
Number of links	3 fibre RDF adapters
Simulated link distance	0 miles (with similar results up to five miles)
Link type	Fibre Channel
Link bandwidth	2 GB

Best practices

Microsoft Exchange Server is a disk-intensive application. It is characterized as a very bursty (mostly 4-KB random access) read/write operation to the database files, with a sequential, synchronous (mostly 512 byte) write operation to the transaction logs. It is this random, bursty workload, with periods of high peaks, that makes designing a well-performing storage solution with Microsoft Exchange Server a challenge. Different corporate environments have different user and storage requirements, so storage design cannot be simply based on generalizations.

Based on the testing run using the ESRP framework, EMC recommends following these Best Practices to improve storage performance with Exchange solutions.

Core storage

1. Use *diskpart* (in Windows 2003 SP1) to align all Microsoft-Exchange-related disks, using a value of 64 (128 hidden sectors). This aligns all of the Exchange-related NTFS partitions on a 64-KB boundary.

Format all Microsoft-Exchange-related NTFS partitions using a 64-KB Allocation Unit (AU) cluster size. While this cluster size has been shown to have no effect on normal Microsoft Exchange database operations (transaction activity), studies have shown that a 64-KB cluster size increases performance with certain Microsoft Exchange and

NTFS-related operations, such as Exchange backups and Exchange check-summing activities associated with Microsoft Exchange VSS-related operations.

2. Isolate the Microsoft Exchange Database workload from other I/O-intensive applications or workloads. This ensures the highest levels of performance for Microsoft Exchange and makes troubleshooting easier in the event of a disk-related Microsoft Exchange performance problem.
3. In the past it has been a best practice to isolate the sequential, synchronous transaction log I/O from the asynchronous database I/O for performance, as well as for disaster/recovery purposes. Assuming the environment has been properly sized from a total I/O server workload perspective, and a proper RAID-protection level has been deployed (RAID 1/0), it is acceptable to share log I/O with database I/O on the same physical spindles, while maintaining the highest levels of protection and performance.

Note: When utilizing synchronous multi-site replication, data and log LUNs from the same storage group may be located on common spindles. When a remote replica is not implemented, to improve reliability, data and log from the same SG should *not* be located on the same spindles.

4. Size and configure the environment for spindle performance as a primary consideration, with spindle or storage capacity a secondary issue. In other words, size for performance first and make the capacity requirements work. Note, however, that when configuring the Symmetrix DMX for use with SRDF/S, some specific configuration information must be considered. The basic operational modes of SRDF/S should be understood to be managed at the EMC Symmetrix logical volume level. That is, in SRDF synchronous mode *only one application write I/O per logical volume* may be active on the link at any given moment. This creates the material effect of serializing the database application I/O at the Symmetrix hypervolume level. If the application attempts to write to the same hypervolume in parallel, these I/O writes will only queue, which increases the serialization effects of SRDF/S and, ultimately, the overall I/O response time. Therefore, the number of configured hypervolumes contained in the Symmetrix metavolume when using SRDF/S is a determining factor for performance. The actual number used in any implementation will vary depending upon the number of users, bandwidth, latency, and other factors and must be determined by an EMC technical consultant.

Therefore, in order to optimally utilize the RDF link, maximize the link's throughput capabilities, and fully satisfy the application's transactional requirements (total request IOPS) while minimizing queuing, it is critical to provide for an adequate number of active, configured Symmetrix hypervolumes for use with SRDF/S.

As long as this I/O processing model is understood, then defining a metavolume with an adequate number of hypervolumes represents a great technique for enhancing or maximizing I/O concurrency. This increases parallel I/O processing, while minimizing the effects of I/O serialization at the hypervolume level when operating in an SRDF/S environment.

5. Striped metavolumes should be used for all Microsoft Exchange Server implementations. Striped metavolumes provide full utilization of the back-end hypervolumes. Concatenated metavolumes, on the other hand, limit I/O capacity to a single hypervolume at any given time.
6. Most performance-related issues that arise are usually associated with an undersized environment. Sizing-related performance issues are usually a result of an inadequate number of physical spindles, which are unable to support the Microsoft Exchange I/O workload on the DMX back end, or an inadequate number of DMX front-end adapters (FAs). The number of host front-end adapters is also critical in getting optimal performance. Careful analysis is required to design a system that has the proper number of spindles and FAs for each environment.
7. The EMC Symmetrix/DMX includes some very powerful native I/O tracing and performance-analysis tools. Additionally, EMC Corporation provides sophisticated performance-analysis software-related tools, which are also often used in root-cause analysis in conjunction with the native EMC Symmetrix/DMX tracing facilities. In the event a performance problem cannot be resolved using common performance analysis, EMC Corporation strongly recommends that a case be opened with EMC Customer Service, so that the appropriate Customer Support resources may be engaged.

Replication

1. A single EMC Fibre Channel adapter is physically capable of satisfying the Microsoft Exchange Server write I/O demands for a single Microsoft Exchange Server configured with 4000 concurrent Microsoft Exchange users at 1 IOP per user. Nonetheless, EMC recommends that a minimum of two Fibre Channel RDF adapters be configured per 4000 users for redundancy and fault tolerance purposes.

2. Configure multiple EMC DMX RDF adapters to provide the ability to create a virtual priority queue for specific Microsoft Exchange database-related I/O. For example, when using multiple EMC RDF adapters, it is possible to virtually "group" or configure all Microsoft Exchange transaction log I/O for multiple servers on one EMC RDF adapter, while an additional EMC RDF adapter is configured to service all the asynchronous Microsoft Exchange Server database I/O for multiple Microsoft Exchange Servers. This allows for the highest quality of service for the Microsoft Exchange Server transaction log I/O and, ultimately, Microsoft Exchange Server end-users.

For large deployments of Microsoft Exchange Server, a performance benefit may be achieved by grouping transaction log write I/O and database write I/O on separate EMC DMX RDF adapters.

Note: When deploying multiple SRDF groups for use with multiple RDF adapters—each configured with dedicated specific Exchange Server I/O—use of EMC Consistency technology is required. EMC Consistency technology protects against a catastrophic failure of one of the RDF adapters, which could otherwise create a logical inconsistency with Microsoft Exchange Server (i.e., database ahead of transaction log). As of this writing, EMC Consistency technology for EMC SRDF/S is achieved through the use of EMC PowerPath and the creation of EMC Consistency Groups, or the use of Symmetrix ECA (Engenuity Consistency Assist) technology.

EMC PowerPath is a host-based application that manages multi-path connections to storage systems, performs path load balancing, and supports Symmetrix consistency group. ECA is a Symmetrix-based function that provides consistency protection for related volumes. Consistency protection ensures that if any I/O on one path is interrupted, I/O on all paths in the consistency group is halted. This avoids out-of-order transactions.

3. The physical distance separating the Symmetrix DMX arrays has a material effect on the Microsoft Exchange Server database write operations in terms of I/O. This response time is a function of the protocol used in the mirroring SRDF/S database write operations. For SRDF traffic that begins as a GigE or ESCON, the distance considered for calculating write latency is one round trip. For SRDF traffic that begins as Fibre Channel, two round trips are needed in order to ship a data frame, so four times the actual distance must be considered. For example, for one SRDF write I/O operations:
 - Data centers that are 100 km apart add 2 ms to overall latency.
 - Data centers that are 200 km apart add 4 ms to overall latency.

Note: the impact of distance increases at a rate of approximately 1 ms for each 200 km (125 miles) of the physical link.

EMC recommends using synchronous mode, primarily, for metro distances (less than 200km/125 miles), when up-to-the-second, point-in-time recoverability is an absolute requirement.

Please reference the Microsoft Exchange white paper: [*Deployment Guidelines for Data Replication*](#). For support policies on data replication please refer to Microsoft Knowledge Base [895847](#).

Testing and performance results

This section provides a high-level summary of the test data from ESRP, as well as links to the detailed reports located in [“Appendix A: Test Reports” on page 22](#), which are generated by the ESRP testing framework.

Reliability

One of the tests in the framework is designed to test reliability over a 24-hour period. The goal of this test is to verify that the storage can handle high I/O load for a long period of time. Following the stress test, both log and database files are analyzed for integrity to ensure there is no database/log corruption.

The following list provides an overview of the results of those tests:

- There were no errors reported in the event log for the storage reliability testing.
- There were no errors reported for the database and log checksum.
- There were no errors reported for the backup-to-disk test.

Performance

To see the Jetstress performance results (2-hour performance test), see [“Performance testing” on page 22](#).

The purpose of performance testing is to exercise the storage with maximum sustainable Exchange-type I/O for two hours. The test is used to show how long it takes for the storage to respond to an I/O under load. The data included in the following tables is a sample taken from each of the attached host/s. It is the average of all the logical disks in the two-hour test duration.

EXCHSRDF2

Average of the database disks read latency (ms)	15 ms
Average of the database disks write latency (ms)	21 ms
Average of the log disks write latency (ms)	5 ms
Average database disk read I/O per second	880 IOPS
Average database disk write I/O per second	374 IOPS
Average log disk write I/O per second	43
Average database disk read I/O per second per host	3,520 IOPs per sec. (880 IOPS * 4 SGs)
Average database disk write I/O per second per host	1,496 IOPs per sec. (374 IOPS * 4 SGs)
Average log disk write I/O per second per host	172 IOPs (43 IOPS * 4 SGs)
Max database page fault stalls per second	0

EXCHSRDF3

Average of the database disks read latency (ms)	15 ms
Average of the database disks write latency (ms)	24 ms
Average of the log disks write latency (ms)	5 ms
Average database disk read I/O per second	863 IOPS
Average database disk write I/O per second	366 IOPS
Average log disk write I/O per second	39
Average database disk read I/O per second per host	3,452 IOPs per sec. (863 IOPS * 4 SGs)

Testing and performance results

Average database disk write I/O per second per host	1,464 IOPs per sec. (366 IOPs * 4 SGs)
Average log disk write I/O per second per host	156 IOPs (39 IOPs * 4 SGs)
Max database page fault stalls per second	0

EXCHSRDF4

Average of the database disks read latency (ms)	15 ms
Average of the database disks write latency (ms)	23 ms
Average of the log disks write latency (ms)	5 ms
Average database disk read I/O per second	861 IOPS
Average database disk write I/O per second	365 IOPS
Average log disk write I/O per second	39
Average database disk read I/O per second per host	3,444 IOPs per sec. (861 IOPS * 4 SGs)
Average database disk write I/O per second per host	1,460 IOPs per sec. (365 IOPS * 4 SGs)
Average log disk write I/O per second host per host	156 IOPs (39 IOPs * 4 SGs)
Max database page fault stalls per second	0

EXCHSRDF5

Average of the database disks read latency (ms)	15 ms
Average of the database disks write latency (ms)	25 ms
Average of the log disks write latency (ms)	5 ms
Average database disk read I/O per second	859 IOPS
Average database disk write I/O per second	365 IOPS
Average log disk write I/O per second	39

Average database disk read I/O per second per host	3,436 IOPs per sec. (859 IOPS * 4 SGs)
Average database disk write I/O per second per host	1,460 IOPs per sec. (365 IOPS * 4 SGs)
Average log disk write I/O per second per host	156 IOPs (39 IOPS * 4 SGs)
Max database page fault stalls per second	0

Streaming backup performance

This test runs through four phases:

1. Performance log generating:

This phase runs similarly to the performance test run; however, circular logging is disabled. The test stops after 100 log files are created in each storage group.

2. Soft recovery:

After phase one, the checkpoint files are deleted, and the application will mount the databases. This will force Jet to go through each log file. Disk performance is measured while each log file is replayed.

3. Database checksum:

This phase is performed to simulate the integrity check (i.e., **eseutil /k**) against all the databases. Disk performance is measured.

4. Log checksum:

This phase is to simulate the integrity check (i.e., **eseutil /k**) against all log files to ensure no corruption.

Database read-only performance

To see the backup-to-disk-database read-only complete performance results, see [“Backup testing” on page 53](#).

This test is used to measure the maximum rate at which databases could be recovered. The following tables show the average rate for a single database file:

MB read/sec per storage group	46
MB read/sec total	184
MB read/sec per host	44.7
File size/seconds taken	46.4 (43110 MB/929 seconds)

Conclusion**Log read-only performance**

This test is used to measure the maximum rate at which the log files can be played against the databases. The following tables show the average rate for 100 log files played in a single storage group. Each log file is 5 MB.

Seconds/log file played	2.7
Average log disks read bytes/sec	3990387

Conclusion

This document highlights the performance results and configuration best practices for a 4-server, 16,000-user Microsoft Exchange configuration on the EMC DMX1000P storage array.

As this document illustrates, EMC's Symmetrix DMX1000P high-performance and highly available storage array is more than capable of supporting enterprise-level Exchange deployments of up to 16,000 users at 1 IOPs per user. A careful analysis of each environment must be performed in order to understand the specific requirements of the architecture and to adapt a solution that best fits those needs. The information included in this document helps provide the tools necessary to configure the EMC DMX1000P array to support a high-performance Exchange configuration.

This document is developed by EMC, and reviewed by Microsoft Exchange Product team. The test results/data presented in this document are based on the tests introduced in the ESRP test framework. The 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.

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

Contact Information

If you encounter a problem with this solution that requires technical support or analysis, call the nearest EMC office or contact the EMC Customer Support Center at one of the following numbers:

United States: **(800) 782-4362 (SVC-4EMC)**

Canada: **(800) 543-4782 (543-4SVC)**

Worldwide: **(508) 497-7901)**

Note: Please do not request a specific support representative unless one has already been assigned to your particular system problem.

For additional information on EMC products and services available to customers and partners, please refer to:

[http//EMC.com](http://EMC.com)

or to

<http://powerlink.EMC.com>

Appendix A: Test Reports

Performance testing

SRDFAEXCH2

The following table shows a quick overview of checksum statistics:

Database	Pages seen	Bad checksums	Correctable checksums	Wrong page numbers	MB read/sec (File size/Seconds taken)
I:Jetstress.edb	11036674	0	0	0	46.9 MB/sec (43112 MB/918 seconds)
I:Jetstress1.edb	11036930	0	0	0	46.6 MB/sec (43113 MB/925 seconds)
I:Jetstress2.edb	11033090	0	0	0	46.5 MB/sec (43098 MB/926 seconds)
I:Jetstress3.edb	11036162	0	0	0	46.5 MB/sec (43110 MB/926 seconds)
I:Jetstress4.edb	11036418	0	0	0	46.5 MB/sec (43111 MB/926 seconds)
J:Jetstress.edb	11037186	0	0	0	46.9 MB/sec (43114 MB/919 seconds)
J:Jetstress1.edb	11036674	0	0	0	46.5 MB/sec (43112 MB/926 seconds)
J:Jetstress2.edb	11036674	0	0	0	46.5 MB/sec (43112 MB/927 seconds)
J:Jetstress3.edb	11034882	0	0	0	46.6 MB/sec (43105 MB/925 seconds)
J:Jetstress4.edb	11035650	0	0	0	46.6 MB/sec (43108 MB/925 seconds)
K:Jetstress.edb	11037186	0	0	0	46.8 MB/sec (43114 MB/921 seconds)
K:Jetstress1.edb	11034882	0	0	0	46.5 MB/sec (43105 MB/927 seconds)

K:Jetstress2.edb	11035394	0	0	0	46.5 MB/sec (43107 MB/927 seconds)
K:Jetstress3.edb	11036162	0	0	0	46.6 MB/sec (43110 MB/925 seconds)
K:Jetstress4.edb	11035906	0	0	0	46.7 MB/sec (43109 MB/923 seconds)
L:Jetstress.edb	11033346	0	0	0	46.8 MB/sec (43099 MB/921 seconds)
L:Jetstress1.edb	11033090	0	0	0	46.5 MB/sec (43098 MB/927 seconds)
L:Jetstress2.edb	11034626	0	0	0	46.5 MB/sec (43104 MB/926 seconds)
L:Jetstress3.edb	11036930	0	0	0	46.5 MB/sec (43113 MB/927 seconds)
L:Jetstress4.edb	11034882	0	0	0	46.7 MB/sec (43105 MB/923 seconds)
(sum)	220712744	0	0	0	46.6 MB/sec (862159 MB/18501 seconds)

The following table shows a quick overview of database and log performance counter sample data:

Storage Volume	Avg. Disk sec/Read	Avg. Disk sec/Write	Disk Reads/sec	Disk Writes/sec	Disk Read Bytes/sec	Total Seconds
I:	0.342	0.000	749.35	0.000	49109040.00	919.02
I:	0.343	0.000	747.26	0.000	48971920.00	925.57
I:	0.343	0.000	746.44	0.000	48918720.00	926.07
I:	0.343	0.000	745.84	0.000	48879390.00	926.89
I:	0.343	0.000	745.74	0.002	48872930.00	926.16
J:	0.342	0.000	748.92	0.000	49081090.00	919.83
J:	0.343	0.000	746.72	0.000	48936980.00	926.52
J:	0.343	0.000	745.72	0.000	48871570.00	927.90

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J:	0.344	0.000	745.48	0.000	48855520.00	925.55
J:	0.343	0.000	745.41	0.002	48850840.00	925.57
K:	0.342	0.000	747.70	0.003	49001480.00	921.29
K:	0.343	0.000	745.85	0.002	48879720.00	927.29
K:	0.343	0.000	745.11	0.001	48831570.00	927.77
K:	0.344	0.000	744.97	0.001	48822600.00	925.93
K:	0.343	0.000	745.25	0.002	48840240.00	924.04
L:	0.343	0.001	747.43	0.014	48982740.00	921.77
L:	0.343	0.000	745.45	0.007	48853570.00	927.08
L:	0.343	0.000	745.23	0.004	48839200.00	926.41
L:	0.344	0.000	744.81	0.003	48811610.00	927.69
L:	0.344	0.001	745.10	0.004	48830460.00	923.83

The following table shows a quick overview of processor and memory performance counter sample data:

Counter	Average	Minimum	Maximum
% Processor Time	7.608	0.000	20.07
Available MBytes	3025.63	3021.00	3073.00
Free System Page Table Entries	20832.73	20834.00	20834.00
Pages/sec	0.000	0.000	0.951
Pool Nonpaged Bytes	34233730.00	34062340.00	34373630.00
Pool Paged Bytes	34728840.00	33193980.00	34754560.00

The performance log is saved to file C:\Program Files\jetstressSP2\DatabaseChecksum_2005_10_24_17-51-17.blg

10/24/2005 3:49:36 PM -- Environment validation results:

Detected JetstressUI version: 6.5.7638.1

Detected operating system: Microsoft Windows Server 2003 (5.2.3790.0) Service Pack 1

Detected ESE.dll version: 6.5.7638.2

Detected ESEPERF.dll version: 6.5.7638.1

10/24/2005 3:49:40 PM -- Validating input parameters, it may take a few minutes...

10/24/2005 3:49:40 PM -- Attaching databases... (it may take a few minutes if the databases are in dirty shutdown state)

10/24/2005 3:49:58 PM -- Loading performance counters...

10/24/2005 3:49:58 PM -- Instance 1: IO parameters are thread count (14), insert (17), replace (70), delete (5), and lazy commit (90)

10/24/2005 3:49:58 PM -- Instance 2: IO parameters are thread count (14), insert (17), replace (70), delete (5), and lazy commit (90)

10/24/2005 3:49:58 PM -- Instance 3: IO parameters are thread count (14), insert (17), replace (70), delete (5), and lazy commit (90)

10/24/2005 3:49:58 PM -- Instance 4: IO parameters are thread count (14), insert (17), replace (70), delete (5), and lazy commit (90)

10/24/2005 3:49:58 PM -- Start Jetstress test...

10/24/2005 3:50:01 PM -- Starting Performance test run...

10/24/2005 3:50:03 PM -- Performance logging started.

10/24/2005 3:50:03 PM -- Performance data will be saved to C:\Program Files\jetstressSP2\Performance_2005_10_24_15-49-58.blg.

10/24/2005 5:50:26 PM -- Adding new data to the performance log file...

10/24/2005 5:50:28 PM -- Performance logging stopped.

10/24/2005 5:50:28 PM -- Stopping Jetstress...

10/24/2005 5:51:16 PM -- Test run is completed, please open C:\Program Files\jetstressSP2\Performance_2005_10_24_15-49-58.html for test result.

10/24/2005 5:51:18 PM -- Performance logging started.

10/24/2005 5:51:18 PM -- Performance data will be saved to C:\Program Files\jetstressSP2\DatabaseChecksum_2005_10_24_17-51-17.blg.

10/24/2005 5:51:18 PM -- Checksum validation may take a while depending on the file sizes.

10/24/2005 7:08:25 PM -- Database checksum in progress:

Storage Group #1 (100%), Storage Group #2 (100%), Storage Group #3 (100%), and Storage Group #4 (100%).

10/24/2005 7:08:25 PM -- Performance logging stopped.

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10/24/2005 7:08:25 PM -- Checksum is completed, please open C:\Program Files\jetstressSP2\DatabaseChecksum_2005_10_24_17-51-17.html for checksum result.

The purpose of this test is to verify the storage configuration which the customer is planning to deploy. The test run has been successful in terms of the disk latency, but refer to the table below to determine if the actual disk IO throughput requirement has been met. If not, you will need to increase the thread count to increase the load, provided that the disk latency will not exceed the threshold. Also, please check the status pane in the Jetstress window, to make sure that no errors were logged during the database checksum validation.

Planned Exchange Profile:

Total test database size	Production data size	Total number of databases	Expected I/O	Achieved I/O
841.74 GB (based on the attached database)	(n/a)	20 (4 storage(s) * 5 database(s))	4000.00 (4000 mailboxes of 1.00 IOPS)	5019.73

Jetstress parameter summary:

Instance	threadCount	logBufferSize	opInsert	opReplace	opDelete	lazyCommit
1	14	9000	17	70	5	90
2	14	9000	17	70	5	90
3	14	9000	17	70	5	90
4	14	9000	17	70	5	90

Database and log performance counter sample data:

Instance	Storage Volume	Avg. Disk sec/Read	Avg. Disk sec/Write	Disk Reads/sec	Disk Writes/sec	Avg. Disk Bytes/Write
1	Data (I:)	0.015	0.021	888.46	377.57	(n/a)
	Log (E:)	0.000	0.005	(n/a)	43.45	13770.33
2	Data (J:)	0.015	0.021	876.51	372.90	(n/a)
	Log (F:)	0.000	0.005	(n/a)	43.09	13736.30
3	Data (K:)	0.015	0.023	882.41	375.21	(n/a)
	Log (G:)	0.000	0.005	(n/a)	43.30	13727.58
4	Data (L:)	0.015	0.023	875.07	371.60	(n/a)
	Log (H:)	0.000	0.005	(n/a)	42.80	13755.62

The following table shows a quick overview of processor and memory performance counter sample data:

Counter	Average	Minimum	Maximum
% Processor Time	6.869	0.000	10.18
Available MBytes	2112.42	2072.00	2630.00
Free System Page Table Entries	20834.00	20834.00	20834.00
Pages/sec	0.736	0.000	295.49
Pool Nonpaged Bytes	33136090.00	33132540.00	33226750.00
Pool Paged Bytes	33520590.00	32178180.00	34873340.00
Database Page Fault Stalls/sec	0.000	0.000	0.000

The performance log is saved to file C:\Program Files\jetstressSP2\Performance_2005_10_24_15-49-58.blg

10/24/2005 3:49:36 PM -- Environment validation results:

Detected JetstressUI version: 6.5.7638.1

Detected operating system: Microsoft Windows Server 2003 (5.2.3790.0) Service Pack 1

Detected ESE.dll version: 6.5.7638.2

Detected ESEPERF.dll version: 6.5.7638.1

10/24/2005 3:49:40 PM -- Validating input parameters, it may take a few minutes...

10/24/2005 3:49:40 PM -- Attaching databases ... (it may take a few minutes if the databases are in dirty shutdown state)

10/24/2005 3:49:58 PM -- Loading performance counters...

10/24/2005 3:49:58 PM -- Instance 1: IO parameters are thread count (14), insert (17), replace (70), delete (5), and lazy commit (90)

10/24/2005 3:49:58 PM -- Instance 2: IO parameters are thread count (14), insert (17), replace (70), delete (5), and lazy commit (90)

10/24/2005 3:49:58 PM -- Instance 3: IO parameters are thread count (14), insert (17), replace (70), delete (5), and lazy commit (90)

10/24/2005 3:49:58 PM -- Instance 4: IO parameters are thread count (14), insert (17), replace (70), delete (5), and lazy commit (90)

10/24/2005 3:49:58 PM -- Start Jetstress test...

10/24/2005 3:50:01 PM -- Starting Performance test run...

10/24/2005 3:50:03 PM -- Performance logging started.

10/24/2005 3:50:03 PM -- Performance data will be saved to C:\Program Files\jetstressSP2\Performance_2005_10_24_15-49-58.blg.

10/24/2005 5:50:26 PM -- Adding new data to the performance log file...

10/24/2005 5:50:28 PM -- Performance logging stopped.

10/24/2005 5:50:28 PM -- Stopping Jetstress...

10/24/2005 5:51:16 PM -- Test run is completed, please open C:\Program Files\jetstressSP2\Performance_2005_10_24_15-49-58.html for test result.

SRDFAEXCH3

The following section provides a quick overview of the checksum statistics for SRDFAEXCH3:

Database	Pages seen	Bad checksums	Correctable checksums	Wrong page numbers	MB read/sec (File size/Seconds taken)
I:Jetstress.edb	11034370	0	0	0	43.6 MB/sec (43103 MB/989 seconds)
I:Jetstress1.edb	11034882	0	0	0	43.5 MB/sec (43105 MB/991 seconds)
I:Jetstress2.edb	11033602	0	0	0	43.4 MB/sec (43100 MB/992 seconds)
I:Jetstress3.edb	11033858	0	0	0	43.4 MB/sec (43101 MB/992 seconds)
I:Jetstress4.edb	11033090	0	0	0	48.0 MB/sec (43098 MB/898 seconds)
J:Jetstress.edb	11033346	0	0	0	43.5 MB/sec (43099 MB/990 seconds)
J:Jetstress1.edb	11034114	0	0	0	43.4 MB/sec (43102 MB/992 seconds)
J:Jetstress2.edb	11033858	0	0	0	43.5 MB/sec (43101 MB/990 seconds)
J:Jetstress3.edb	11033090	0	0	0	43.5 MB/sec (43098 MB/991 seconds)
J:Jetstress4.edb	11032578	0	0	0	48.0 MB/sec (43096 MB/898 seconds)
K:Jetstress.edb	11033602	0	0	0	43.5 MB/sec (43100 MB/991 seconds)
K:Jetstress1.edb	11033858	0	0	0	43.4 MB/sec (43101 MB/992 seconds)
K:Jetstress2.edb	11035138	0	0	0	43.5 MB/sec (43106 MB/991 seconds)
K:Jetstress3.edb	11035394	0	0	0	43.5 MB/sec (43107 MB/990 seconds)

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K:Jetstress4.edb	11032322	0	0	0	48.0 MB/sec (43095 MB/898 seconds)
L:Jetstress.edb	11033602	0	0	0	43.5 MB/sec (43100 MB/991 seconds)
L:Jetstress1.edb	11032834	0	0	0	43.4 MB/sec (43097 MB/992 seconds)
L:Jetstress2.edb	11032322	0	0	0	43.4 MB/sec (43095 MB/991 seconds)
L:Jetstress3.edb	11034370	0	0	0	43.4 MB/sec (43103 MB/992 seconds)
L:Jetstress4.edb	11034370	0	0	0	48.1 MB/sec (43103 MB/896 seconds)
(sum)	220674600	0	0	0	44.3 MB/sec (862010 MB/19457 seconds)

The following table shows a quick overview of database and log performance counter sample data:

Storage Volume	Avg. Disk sec/Read	Avg. Disk sec/Write	Disk Reads/sec	Disk Writes/sec	Disk Read Bytes/sec	Total Seconds
I:	0.367	0.000	696.51	0.000	45645950.00	989.12
I:	0.367	0.000	696.02	0.000	45614020.00	991.76
I:	0.368	0.000	695.60	0.000	45586900.00	992.79
I:	0.368	0.000	695.47	0.000	45578030.00	992.07
I:	0.363	0.000	709.12	0.002	46472570.00	898.69
J:	0.367	0.000	695.45	0.000	45577290.00	990.87
J:	0.368	0.000	695.22	0.000	45562050.00	992.66
J:	0.368	0.000	695.54	0.000	45583200.00	990.49
J:	0.368	0.000	695.46	0.000	45577810.00	991.80
J:	0.363	0.000	709.11	0.002	46472300.00	898.38
K:	0.368	0.000	695.00	0.002	45547310.00	991.62

K:	0.368	0.000	694.88	0.001	45539780.00	992.71
K:	0.368	0.000	695.13	0.001	45556090.00	991.40
K:	0.368	0.000	695.39	0.000	45572950.00	990.76
K:	0.363	0.000	709.02	0.002	46466220.00	898.58
L:	0.368	0.003	695.00	0.013	45547420.00	991.65
L:	0.368	0.001	694.88	0.006	45539440.00	992.29
L:	0.368	0.001	695.08	0.004	45552890.00	991.91
L:	0.368	0.001	694.95	0.003	45544190.00	992.82
L:	0.363	0.001	708.98	0.005	46463760.00	896.58

The following table shows a quick overview of processor and memory performance counter sample data:

Counter	Average	Minimum	Maximum
% Processor Time	7.481	0.000	15.20
Available MBytes	3037.88	2959.00	3077.00
Free System Page Table Entries	20773.40	20751.00	20773.00
Pages/sec	0.000	0.000	0.970
Pool Nonpaged Bytes	34867490.00	34803710.00	34938880.00
Pool Paged Bytes	29801690.00	28356610.00	29810690.00

The performance log is saved to file C:\Program Files\jetstressSP2\DatabaseChecksum_2005_10_24_17-51-22.blg

10/24/2005 3:49:43 PM -- Environment validation results:

Detected JetstressUI version: 6.5.7638.1
 Detected operating system: Microsoft Windows Server 2003 (5.2.3790.0)
 Service Pack 1
 Detected ESE.dll version: 6.5.7638.2
 Detected ESEPERF.dll version: 6.5.7638.1

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10/24/2005 3:49:44 PM -- Validating input parameters, it may take a few minutes...

10/24/2005 3:49:45 PM -- Attaching databases ... (it may take a few minutes if the databases are in dirty shutdown state)

10/24/2005 3:50:02 PM -- Loading performance counters...

10/24/2005 3:50:02 PM -- Instance 1: IO parameters are thread count (14), insert (17), replace (70), delete (5), and lazy commit (90)

10/24/2005 3:50:02 PM -- Instance 2: IO parameters are thread count (14), insert (17), replace (70), delete (5), and lazy commit (90)

10/24/2005 3:50:02 PM -- Instance 3: IO parameters are thread count (14), insert (17), replace (70), delete (5), and lazy commit (90)

10/24/2005 3:50:02 PM -- Instance 4: IO parameters are thread count (14), insert (17), replace (70), delete (5), and lazy commit (90)

10/24/2005 3:50:02 PM -- Start Jetstress test...

10/24/2005 3:50:05 PM -- Starting Performance test run...

10/24/2005 3:50:07 PM -- Performance logging started.

10/24/2005 3:50:07 PM -- Performance data will be saved to C:\Program Files\jetstressSP2\Performance_2005_10_24_15-50-2.blg.

10/24/2005 5:50:30 PM -- Adding new data to the performance log file...

10/24/2005 5:50:32 PM -- Performance logging stopped.

10/24/2005 5:50:32 PM -- Stopping Jetstress...

10/24/2005 5:51:21 PM -- Test run is completed, please open C:\Program Files\jetstressSP2\Performance_2005_10_24_15-50-2.html for test result.

10/24/2005 5:51:23 PM -- Performance logging started.

10/24/2005 5:51:23 PM -- Performance data will be saved to C:\Program Files\jetstressSP2\DatabaseChecksum_2005_10_24_17-51-22.blg.

10/24/2005 5:51:23 PM -- Checksum validation may take a while depending on the file sizes.

10/24/2005 7:12:29 PM -- Database checksum in progress: Storage Group #1 (100%), Storage Group #2 (100%), Storage Group #3 (100%), and Storage Group #4 (100%).

10/24/2005 7:12:29 PM -- Performance logging stopped.

10/24/2005 7:12:29 PM -- Checksum is completed, please open C:\Program Files\jetstressSP2\DatabaseChecksum_2005_10_24_17-51-22.html for checksum result.

The purpose of this test is to verify the storage configuration which the customer is planning to deploy. The test run has been successful in terms of the disk latency, but refer to the table below to determine if the actual disk IO throughput requirement has been met. If not, you will need to increase the thread count to increase the load, provided that the disk latency will not exceed the threshold. Also, please check the status pane in the Jetstress window, to make sure that no errors were logged during the database checksum validation.

Planned Exchange profile:

Total test database size	Production data size	Total number of databases	Expected I/O	Achieved I/O
841.64 GB (based on the attached database)	(n/a)	20 (4 storage(s) * 5 database(s))	4000.00 (4000 mailboxes of 1.00 IOPS)	4915.63

Jetstress test parameter summary

Instance	threadCount	logBufferSize	opInsert	opReplace	opDelete	lazyCommit
1	14	9000	17	70	5	90
2	14	9000	17	70	5	90
3	14	9000	17	70	5	90
4	14	9000	17	70	5	90

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Disk subsystem performance summary:

Instance	Storage Volume	Avg. Disk sec/Read	Avg. Disk sec/Write	Disk Reads/sec	Disk Writes/sec	Avg. Disk Bytes/Write
1	Data (I:)	0.015	0.022	863.40	366.47	(n/a)
	Log (E:)	0.000	0.005	(n/a)	39.22	14832.50
2	Data (J:)	0.015	0.024	863.34	367.25	(n/a)
	Log (F:)	0.000	0.005	(n/a)	39.15	14895.62
3	Data (K:)	0.015	0.024	862.65	365.79	(n/a)
	Log (G:)	0.000	0.005	(n/a)	39.22	14787.01
4	Data (L:)	0.015	0.024	861.14	365.59	(n/a)
	Log (H:)	0.000	0.005	(n/a)	39.25	14748.88

Processor and memory performance counter sample data:

Counter	Average	Minimum	Maximum
% Processor Time	6.816	0.000	10.03
Available MBytes	2086.21	2060.00	2623.00
Free System Page Table Entries	20773.42	20773.00	20813.00
Pages/sec	0.694	0.000	326.20
Pool Nonpaged Bytes	33697360.00	33689600.00	33759230.00
Pool Paged Bytes	29616360.00	29089790.00	30109700.00
Database Page Fault Stalls/sec	0.000	0.000	0.000

The performance log is saved to file C:\Program Files\jetstressSP2\Performance_2005_10_24_15-50-2.blg

10/24/2005 3:49:43 PM -- Environment validation results:

Detected JetstressUI version: 6.5.7638.1

Detected operating system: Microsoft Windows Server 2003 (5.2.3790.0) Service Pack 1

Detected ESE.dll version: 6.5.7638.2

Detected ESEPERF.dll version: 6.5.7638.1

10/24/2005 3:49:44 PM -- Validating input parameters, it may take a few minutes...

10/24/2005 3:49:45 PM -- Attaching databases ... (it may take a few minutes if the databases are in dirty shutdown state)

10/24/2005 3:50:02 PM -- Loading performance counters...

10/24/2005 3:50:02 PM -- Instance 1: IO parameters are thread count (14), insert (17), replace (70), delete (5), and lazy commit (90)

10/24/2005 3:50:02 PM -- Instance 2: IO parameters are thread count (14), insert (17), replace (70), delete (5), and lazy commit (90)

10/24/2005 3:50:02 PM -- Instance 3: IO parameters are thread count (14), insert (17), replace (70), delete (5), and lazy commit (90)

10/24/2005 3:50:02 PM -- Instance 4: IO parameters are thread count (14), insert (17), replace (70), delete (5), and lazy commit (90)

10/24/2005 3:50:02 PM -- Start Jetstress test...

10/24/2005 3:50:05 PM -- Starting Performance test run...

10/24/2005 3:50:07 PM -- Performance logging started.

10/24/2005 3:50:07 PM -- Performance data will be saved to C:\Program Files\jetstressSP2\Performance_2005_10_24_15-50-2.blg.

10/24/2005 5:50:30 PM -- Adding new data to the performance log file...

10/24/2005 5:50:32 PM -- Performance logging stopped.

10/24/2005 5:50:32 PM -- Stopping Jetstress...

10/24/2005 5:51:21 PM -- Test run is completed, please open C:\Program Files\jetstressSP2\Performance_2005_10_24_15-50-2.html for test result

.SRDFAEXCH4

The following section provides a quick overview of the checksum statistics for SRDFAEXCH4.

Database	Pages seen	Bad checksums	Correctable checksums	Wrong page numbers	MB read/sec (File size/Seconds taken)
I:Jetstress.edb	10724354	0	0	0	44.0 MB/sec (41892 MB/951 seconds)
I:Jetstress1.edb	10724354	0	0	0	43.9 MB/sec (41892 MB/954 seconds)
I:Jetstress2.edb	10726658	0	0	0	43.9 MB/sec (41901 MB/954 seconds)
I:Jetstress3.edb	10726914	0	0	0	44.0 MB/sec (41902 MB/952 seconds)
I:Jetstress4.edb	10726914	0	0	0	45.7 MB/sec (41902 MB/915 seconds)
J:Jetstress.edb	10724866	0	0	0	43.9 MB/sec (41894 MB/953 seconds)
J:Jetstress1.edb	10727682	0	0	0	44.0 MB/sec (41905 MB/953 seconds)
J:Jetstress2.edb	10726402	0	0	0	43.9 MB/sec (41900 MB/954 seconds)
J:Jetstress3.edb	10725890	0	0	0	43.9 MB/sec (41898 MB/953 seconds)
J:Jetstress4.edb	10726658	0	0	0	45.8 MB/sec (41901 MB/915 seconds)
K:Jetstress.edb	10726658	0	0	0	43.9 MB/sec (41901 MB/954 seconds)
K:Jetstress1.edb	10725634	0	0	0	43.9 MB/sec (41897 MB/954 seconds)
K:Jetstress2.edb	10726402	0	0	0	43.9 MB/sec (41900 MB/953 seconds)
K:Jetstress3.edb	10728706	0	0	0	43.9 MB/sec (41909 MB/954 seconds)

K:Jetstress4.edb	10728962	0	0	0	45.8 MB/sec (41910 MB/914 seconds)
L:Jetstress.edb	10724354	0	0	0	43.9 MB/sec (41892 MB/954 seconds)
L:Jetstress1.edb	10726146	0	0	0	43.9 MB/sec (41899 MB/953 seconds)
L:Jetstress2.edb	10726402	0	0	0	43.9 MB/sec (41900 MB/954 seconds)
L:Jetstress3.edb	10726146	0	0	0	43.9 MB/sec (41899 MB/955 seconds)
L:Jetstress4.edb	10725890	0	0	0	45.8 MB/sec (41898 MB/913 seconds)
(sum)	214525992	0	0	0	44.3 MB/sec (837992 MB/18923 seconds)

The following table shows a quick overview of database and log performance counter sample data:

Storage Volume	Avg. Disk sec/Read	Avg. Disk sec/Write	Disk Reads/sec	Disk Writes/sec	Disk Read Bytes/sec	Total Seconds
I:	0.363	0.000	703.79	0.000	46123720.00	951.80
I:	0.364	0.000	703.07	0.000	46076350.00	954.47
I:	0.364	0.000	702.78	0.000	46057140.00	954.47
I:	0.364	0.000	703.16	0.000	46082340.00	952.14
I:	0.361	0.001	708.88	0.002	46456770.00	915.95
J:	0.364	0.000	702.25	0.000	46022390.00	953.89
J:	0.364	0.000	702.84	0.000	46061320.00	953.34
J:	0.364	0.000	702.62	0.000	46047050.00	954.66
J:	0.364	0.000	702.67	0.000	46050160.00	953.78
J:	0.362	0.001	708.50	0.002	46431980.00	915.84
K:	0.364	0.001	701.71	0.005	45987360.00	954.80

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K:	0.364	0.000	702.01	0.003	46006690.00	954.89
K:	0.364	0.000	702.34	0.002	46028900.00	953.51
K:	0.364	0.000	702.29	0.001	46025400.00	954.89
K:	0.362	0.000	708.24	0.003	46415240.00	914.14
L:	0.364	0.002	701.65	0.010	45983260.00	954.58
L:	0.364	0.001	702.46	0.005	46036680.00	953.61
L:	0.364	0.001	702.35	0.003	46029120.00	954.36
L:	0.364	0.001	702.25	0.003	46022490.00	955.48
L:	0.362	0.001	708.44	0.004	46428340.00	913.92

The following table shows a quick overview of processor and memory performance counter sample data:

Counter	Average	Minimum	Maximum
% Processor Time	7.260	0.000	16.15
Available MBytes	3089.70	3005.00	3140.00
Free System Page Table Entries	21453.24	21452.00	21452.00
Pages/sec	0.000	0.000	0.959
Pool Nonpaged Bytes	31884950.00	31760380.00	31989760.00
Pool Paged Bytes	26829930.00	25387010.00	26849280.00

The performance log is saved to file C:\Program Files\jetstressSP2\DatabaseChecksum_2005_10_24_17-51-25.blg

10/24/2005 3:49:46 PM -- Environment validation results:

Detected JetstressUI version: 6.5.7638.1
 Detected operating system: Microsoft Windows Server 2003 (5.2.3790.0)
 Service Pack 1
 Detected ESE.dll version: 6.5.7638.2
 Detected ESEPERF.dll version: 6.5.7638.1

10/24/2005 3:49:46 PM -- Validating input parameters, it may take a few minutes...

10/24/2005 3:49:46 PM -- Attaching databases ... (it may take a few minutes if the databases are in dirty shutdown state)

10/24/2005 3:50:03 PM -- Loading performance counters...

10/24/2005 3:50:03 PM -- Instance 1: IO parameters are thread count (14), insert (17), replace (70), delete (5), and lazy commit (90)

10/24/2005 3:50:03 PM -- Instance 2: IO parameters are thread count (14), insert (17), replace (70), delete (5), and lazy commit (90)

10/24/2005 3:50:03 PM -- Instance 3: IO parameters are thread count (14), insert (17), replace (70), delete (5), and lazy commit (90)

10/24/2005 3:50:03 PM -- Instance 4: IO parameters are thread count (14), insert (17), replace (70), delete (5), and lazy commit (90)

10/24/2005 3:50:03 PM -- Start Jetstress test...

10/24/2005 3:50:07 PM -- Starting Performance test run...

10/24/2005 3:50:09 PM -- Performance logging started.

10/24/2005 3:50:09 PM -- Performance data will be saved to C:\Program Files\jetstressSP2\Performance_2005_10_24_15-50-3.blg.

10/24/2005 5:50:32 PM -- Adding new data to the performance log file...

10/24/2005 5:50:35 PM -- Performance logging stopped.

10/24/2005 5:50:35 PM -- Stopping Jetstress...

10/24/2005 5:51:24 PM -- Test run is completed, please open C:\Program Files\jetstressSP2\Performance_2005_10_24_15-50-3.html for test result.

10/24/2005 5:51:26 PM -- Performance logging started.

10/24/2005 5:51:26 PM -- Performance data will be saved to C:\Program Files\jetstressSP2\DatabaseChecksum_2005_10_24_17-51-25.blg.

10/24/2005 5:51:26 PM -- Checksum validation may take a while depending on the file sizes.

10/24/2005 7:10:18 PM -- Database checksum in progress: Storage Group #1 (100%), Storage Group #2 (100%), Storage Group #3 (100%), and Storage Group #4 (100%).

10/24/2005 7:10:18 PM -- Performance logging stopped.

10/24/2005 7:10:18 PM -- Checksum is completed, please open C:\Program Files\jetstressSP2\DatabaseChecksum_2005_10_24_17-51-25.html for checksum result.

Performance testing

The purpose of this test is to verify the storage configuration which the customer is planning to deploy. The test run has been successful in terms of the disk latency, but refer to the table below to determine if the actual disk IO throughput requirement has been met. If not, you will need to increase the thread count to increase the load, provided that the disk latency will not exceed the threshold. Also, please check the status pane in the Jetstress window, to make sure that no errors were logged during the database checksum validation.

Planned Exchange profile:

Total test database size	Production data size	Total number of databases	Expected I/O	Achieved I/O
818.07 GB (based on the attached database)	(n/a)	20 (4 storage(s) * 5 database(s))	4000.00 (4000 mailboxes of 1.00 IOPS)	4907.03

Jetstress test parameter summary:

Instance	threadCount	logBufferSize	opInsert	opReplace	opDelete	lazyCommit
1	14	9000	17	70	5	90
2	14	9000	17	70	5	90
3	14	9000	17	70	5	90
4	14	9000	17	70	5	90

Disk subsystem performance summary:

Instance	Storage Volume	Avg. Disk sec/Read	Avg. Disk sec/Write	Disk Reads/sec	Disk Writes/sec	Avg. Disk Bytes/Write
1	Data (I:)	0.015	0.023	861.02	365.66	(n/a)
	Log (E:)	0.000	0.005	(n/a)	39.31	14737.72
2	Data (J:)	0.015	0.023	860.50	365.38	(n/a)
	Log (F:)	0.000	0.005	(n/a)	39.59	14651.99
3	Data (K:)	0.015	0.025	862.30	366.50	(n/a)
	Log (G:)	0.000	0.005	(n/a)	39.40	14756.93
4	Data (L:)	0.015	0.024	860.38	365.30	(n/a)
	Log (H:)	0.000	0.005	(n/a)	39.35	14731.18

Processor/memory performance summary:

Counter	Average	Minimum	Maximum
% Processor Time	6.812	0.000	9.319
Available MBytes	2118.84	2111.00	2642.00
Free System Page Table Entries	21468.25	21452.00	21492.00
Pages/sec	0.000	0.000	0.067
Pool Nonpaged Bytes	30849310.00	30842880.00	30892030.00
Pool Paged Bytes	27007180.00	26001410.00	27226110.00
Database Page Fault Stalls/sec	0.000	0.000	0.000

The performance log is saved to file C:\Program Files\jetstressSP2\Performance_2005_10_24_15-50-3.blg

10/24/2005 3:49:46 PM -- Environment validation results:

Detected JetstressUI version: 6.5.7638.1

Detected operating system: Microsoft Windows Server 2003 (5.2.3790.0) Service Pack 1

Detected ESE.dll version: 6.5.7638.2

Detected ESEPERF.dll version: 6.5.7638.1

10/24/2005 3:49:46 PM -- Validating input parameters, it may take a few minutes...

10/24/2005 3:49:46 PM -- Attaching databases ... (it may take a few minutes if the databases are in dirty shutdown state)

10/24/2005 3:50:03 PM -- Loading performance counters...

10/24/2005 3:50:03 PM -- Instance 1: IO parameters are thread count (14), insert (17), replace (70), delete (5), and lazy commit (90)

10/24/2005 3:50:03 PM -- Instance 2: IO parameters are thread count (14), insert (17), replace (70), delete (5), and lazy commit (90)

10/24/2005 3:50:03 PM -- Instance 3: IO parameters are thread count (14), insert (17), replace (70), delete (5), and lazy commit (90)

10/24/2005 3:50:03 PM -- Instance 4: IO parameters are thread count (14), insert (17), replace (70), delete (5), and lazy commit (90)

10/24/2005 3:50:03 PM -- Start Jetstress test...

10/24/2005 3:50:07 PM -- Starting Performance test run...

10/24/2005 3:50:09 PM -- Performance logging started.

10/24/2005 3:50:09 PM -- Performance data will be saved to C:\Program Files\jetstressSP2\Performance_2005_10_24_15-50-3.blg.

10/24/2005 5:50:32 PM -- Adding new data to the performance log file...

10/24/2005 5:50:35 PM -- Performance logging stopped.

10/24/2005 5:50:35 PM -- Stopping Jetstress...

10/24/2005 5:51:24 PM -- Test run is completed, please open C:\Program Files\jetstressSP2\Performance_2005_10_24_15-50-3.html for test result.

SRDFAEXCH5

The following table shows a quick overview of checksum statistics:

Database	Pages seen	Bad checksums	Correctable checksums	Wrong page numbers	MB read/sec (File size/Seconds taken)
I:Jetstress.edb	10725378	0	0	0	43.6 MB/sec (41896 MB/962 seconds)
I:Jetstress1.edb	10726402	0	0	0	43.5 MB/sec (41900 MB/963 seconds)
I:Jetstress2.edb	10723842	0	0	0	43.5 MB/sec (41890 MB/963 seconds)
I:Jetstress3.edb	10727682	0	0	0	43.5 MB/sec (41905 MB/963 seconds)
I:Jetstress4.edb	10727170	0	0	0	45.4 MB/sec (41903 MB/922 seconds)
J:Jetstress.edb	10726146	0	0	0	43.5 MB/sec (41899 MB/963 seconds)
J:Jetstress1.edb	10726402	0	0	0	43.5 MB/sec (41900 MB/963 seconds)
J:Jetstress2.edb	10726402	0	0	0	43.5 MB/sec (41900 MB/964 seconds)
J:Jetstress3.edb	10727938	0	0	0	43.5 MB/sec (41906 MB/964 seconds)
J:Jetstress4.edb	10726146	0	0	0	45.5 MB/sec (41899 MB/920 seconds)
K:Jetstress.edb	10725890	0	0	0	43.4 MB/sec (41898 MB/965 seconds)

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K:Jetstress1.edb	10723842	0	0	0	43.4 MB/sec (41890 MB/964 seconds)
K:Jetstress2.edb	10726402	0	0	0	43.5 MB/sec (41900 MB/963 seconds)
K:Jetstress3.edb	10725634	0	0	0	43.5 MB/sec (41897 MB/963 seconds)
K:Jetstress4.edb	10727170	0	0	0	45.6 MB/sec (41903 MB/919 seconds)
L:Jetstress.edb	10725378	0	0	0	43.4 MB/sec (41896 MB/965 seconds)
L:Jetstress1.edb	10726658	0	0	0	43.5 MB/sec (41901 MB/963 seconds)
L:Jetstress2.edb	10726402	0	0	0	43.5 MB/sec (41900 MB/962 seconds)
L:Jetstress3.edb	10725890	0	0	0	43.4 MB/sec (41898 MB/964 seconds)
L:Jetstress4.edb	10725890	0	0	0	45.5 MB/sec (41898 MB/920 seconds)
(sum)	214522664	0	0	0	43.9 MB/sec (837979 MB/19104 seconds)

The following table shows a quick overview of database and log performance counter sample data:

Storage Volume	Avg. Disk sec/Read	Avg. Disk sec/Write	Disk Reads/sec	Disk Writes/sec	Disk Read Bytes/sec	Total Seconds
I:	0.367	0.000	696.43	0.000	45641220.00	962.03
I:	0.367	0.000	695.76	0.000	45596820.00	963.98
I:	0.368	0.000	695.79	0.000	45599360.00	963.88
I:	0.368	0.000	695.70	0.000	45593340.00	963.97
I:	0.365	0.000	701.92	0.002	46001060.00	922.03
J:	0.367	0.000	695.41	0.000	45574770.00	963.38
J:	0.367	0.000	695.78	0.000	45598180.00	963.23
J:	0.368	0.000	695.63	0.000	45588890.00	964.19
J:	0.368	0.000	695.58	0.000	45585120.00	964.16
J:	0.365	0.000	702.01	0.002	46006910.00	920.58
K:	0.368	0.001	693.59	0.005	45455280.00	965.83
K:	0.368	0.000	694.52	0.003	45516050.00	964.34
K:	0.368	0.000	694.79	0.002	45533460.00	963.95
K:	0.368	0.000	695.04	0.001	45550380.00	963.34
K:	0.365	0.001	701.51	0.003	45974260.00	919.05
L:	0.368	0.002	693.59	0.011	45454980.00	965.66
L:	0.368	0.001	694.86	0.006	45538550.00	963.53
L:	0.368	0.001	695.38	0.004	45572370.00	962.81
L:	0.368	0.000	695.30	0.003	45567100.00	964.44
L:	0.365	0.001	701.89	0.005	45999260.00	920.02

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The following table shows a quick overview of processor and memory performance counter sample data:

Counter	Average	Minimum	Maximum
% Processor Time	7.450	0.000	13.65
Available MBytes	3063.76	2972.00	3081.00
Free System Page Table Entries	20808.71	20810.00	20810.00
Pages/sec	0.000	0.000	0.970
Pool Nonpaged Bytes	32203410.00	32116740.00	32337920.00
Pool Paged Bytes	28869260.00	27418620.00	28897280.00

The performance log is saved to file C:\Program Files\jetstressSP2\DatabaseChecksum_2005_10_24_17-51-28.blg

10/24/2005 3:49:49 PM -- Environment validation results:

Detected JetstressUI version: 6.5.7638.1
 Detected operating system: Microsoft Windows Server 2003 (5.2.3790.0)
 Service Pack 1
 Detected ESE.dll version: 6.5.7638.2
 Detected ESEPERF.dll version: 6.5.7638.1

10/24/2005 3:49:49 PM -- Validating input parameters, it may take a few minutes...

10/24/2005 3:49:49 PM -- Attaching databases ... (it may take a few minutes if the databases are in dirty shutdown state)

10/24/2005 3:50:07 PM -- Loading performance counters...

10/24/2005 3:50:07 PM -- Instance 1: IO parameters are thread count (14), insert (17), replace (70), delete (5), and lazy commit (90)

10/24/2005 3:50:07 PM -- Instance 2: IO parameters are thread count (14), insert (17), replace (70), delete (5), and lazy commit (90)

10/24/2005 3:50:07 PM -- Instance 3: IO parameters are thread count (14), insert (17), replace (70), delete (5), and lazy commit (90)

10/24/2005 3:50:07 PM -- Instance 4: IO parameters are thread count (14), insert (17), replace (70), delete (5), and lazy commit (90)

10/24/2005 3:50:07 PM -- Start Jetstress test...

10/24/2005 3:50:11 PM -- Starting Performance test run...

10/24/2005 3:50:13 PM -- Performance logging started.
10/24/2005 3:50:13 PM -- Performance data will be saved to C:\Program Files\jetstressSP2\Performance_2005_10_24_15-50-7.blg.
10/24/2005 5:50:35 PM -- Adding new data to the performance log file...
10/24/2005 5:50:39 PM -- Performance logging stopped.
10/24/2005 5:50:39 PM -- Stopping Jetstress...
10/24/2005 5:51:27 PM -- Test run is completed, please open C:\Program Files\jetstressSP2\Performance_2005_10_24_15-50-7.html for test result.
10/24/2005 5:51:29 PM -- Performance logging started.
10/24/2005 5:51:29 PM -- Performance data will be saved to C:\Program Files\jetstressSP2\DatabaseChecksum_2005_10_24_17-51-28.blg.
10/24/2005 5:51:29 PM -- Checksum validation may take a while depending on the file sizes.
10/24/2005 7:11:06 PM -- Database checksum in progress:
Storage Group #1 (100%), Storage Group #2 (100%), Storage Group #3 (100%), and Storage Group #4 (100%).
10/24/2005 7:11:06 PM -- Performance logging stopped.
10/24/2005 7:11:06 PM -- Checksum is completed, please open C:\Program Files\jetstressSP2\DatabaseChecksum_2005_10_24_17-51-28.html for checksum result.

Performance testing

The purpose of this test is to verify the storage configuration which the customer is planning to deploy. The test run has been successful in terms of the disk latency, but refer to the table below to determine if the actual disk IO throughput requirement has been met. If not, you will need to increase the thread count to increase the load, provided that the disk latency will not exceed the threshold. Also, please check the status pane in the Jetstress window, to make sure that no errors were logged during the database checksum validation.

Planned Exchange profile:

Total test database size	Production data size	Total number of databases	Expected I/O	Achieved I/O
818.13 GB (based on the attached database)	(n/a)	20 (4 storage(s) * 5 database(s))	4000.00 (4000 mailboxes of 1.00 IOPS)	4892.40

Jetstress test parameter summary:

Instance	threadCount	logBufferSize	opInsert	opReplace	opDelete	lazyCommit
1	14	9000	17	70	5	90
2	14	9000	17	70	5	90
3	14	9000	17	70	5	90
4	14	9000	17	70	5	90

Disk subsystem performance:

Instance	Storage Volume	Avg. Disk sec/Read	Avg. Disk sec/Write	Disk Reads/sec	Disk Writes/sec	Avg. Disk Bytes/Write
1	Data (I:)	0.015	0.023	860.17	365.99	(n/a)
	Log (E:)	0.000	0.005	(n/a)	39.24	14754.67
2	Data (J:)	0.015	0.025	859.10	365.11	(n/a)
	Log (F:)	0.000	0.005	(n/a)	39.37	14717.39
3	Data (K:)	0.015	0.025	857.10	364.07	(n/a)

	Log (G:)	0.000	0.005	(n/a)	39.54	14611.77
4	Data (L:)	0.015	0.023	856.81	364.04	(n/a)
	Log (H:)	0.000	0.005	(n/a)	39.34	14642.19

Processor/memory performance:

Counter	Average	Minimum	Maximum
% Processor Time	6.838	0.000	9.84
Available MBytes	2090.27	2084.00	2604.00
Free System Page Table Entries	20810.00	20810.00	20810.00
Pages/sec	0.000	0.000	0.067
Pool Nonpaged Bytes	31233540.00	31223810.00	31260670.00
Pool Paged Bytes	29027710.00	28045310.00	29057020.00
Database Page Fault Stalls/sec	0.000	0.000	0.000

The performance log is saved to file C:\Program Files\jetstressSP2\Performance_2005_10_24_15-50-7.blg

10/24/2005 3:49:49 PM -- Environment validation results:

Detected JetstressUI version: 6.5.7638.1
 Detected operating system: Microsoft Windows Server 2003 (5.2.3790.0)
 Service Pack 1
 Detected ESE.dll version: 6.5.7638.2
 Detected ESEPERF.dll version: 6.5.7638.1

10/24/2005 3:49:49 PM -- Validating input parameters, it may take a few minutes...

10/24/2005 3:49:49 PM -- Attaching databases ... (it may take a few minutes if the databases are in dirty shutdown state)

10/24/2005 3:50:07 PM -- Loading performance counters...

10/24/2005 3:50:07 PM -- Instance 1: IO parameters are thread count (14), insert (17), replace (70), delete (5), and lazy commit (90)

10/24/2005 3:50:07 PM -- Instance 2: IO parameters are thread count (14),

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insert (17), replace (70), delete (5), and lazy commit (90)
 10/24/2005 3:50:07 PM -- Instance 3: IO parameters are thread count (14),
 insert (17), replace (70), delete (5), and lazy commit (90)
 10/24/2005 3:50:07 PM -- Instance 4: IO parameters are thread count (14),
 insert (17), replace (70), delete (5), and lazy commit (90)
 10/24/2005 3:50:07 PM -- Start Jetstress test...
 10/24/2005 3:50:11 PM -- Starting Performance test run...
 10/24/2005 3:50:13 PM -- Performance logging started.
 10/24/2005 3:50:13 PM -- Performance data will be saved to C:\Program
 Files\jetstressSP2\Performance_2005_10_24_15-50-7.blg.
 10/24/2005 5:50:35 PM -- Adding new data to the performance log file...
 10/24/2005 5:50:39 PM -- Performance logging stopped.
 10/24/2005 5:50:39 PM -- Stopping Jetstress...
 10/24/2005 5:51:27 PM -- Test run is completed, please open C:\Program
 Files\jetstressSP2\Performance_2005_10_24_15-50-7.html for test result.

The following table shows a quick overview of database and log
 performance counter sample data:

Storage Volume	Avg. Disk sec/Read	Avg. Disk sec/Write	Disk Reads/sec	Disk Writes/sec	Disk Read Bytes/sec	Total Seconds
----------------	--------------------	---------------------	----------------	-----------------	---------------------	---------------

Log (E:) 0.0010.00058.500.0513792652.00275.21

Log (F:) 0.0010.00064.300.0664128292.00272.64

Log (G:) 0.0010.00062.900.0564033339.00266.86

Log (H:) 0.0010.00062.220.0544007263.00279.07

The following table shows a quick overview of processor and memory
 performance counter sample data:

Counter	Average	Minimum	Maximum
---------	---------	---------	---------

% Processor Time 3.2610.0009.474

Available MBytes 2366.302278.003199.00

Free System Page Table Entries 20631.0020631.0020631.00

Pages/sec 0.1910.0001.000

Pool Nonpaged Bytes 62840920.0062746620.0062959620.00

Pool Paged Bytes 34298060.0032657410.0034316290.00

The performance log is saved to file C:\Documents and
 Settings\Administrator.SR DFA\Desktop\JetstressSP2\SoftRecovery_2006_3
 _20_20-5-43.blg

3/20/2006 7:12:32 PM -- Environment validation results:

Detected JetstressUI version: 6.5.7638.1

Detected operating system: Microsoft Windows Server 2003 (5.2.3790.0)
Service Pack 1

Detected ESE.dll version: 6.5.7638.2

Detected ESEPERF.dll version: 6.5.7638.1

3/20/2006 7:12:32 PM -- Validating input parameters, it may take a few minutes...

3/20/2006 7:12:32 PM -- Attaching databases ... (it may take a few minutes if the databases are in dirty shutdown state)

3/20/2006 7:31:15 PM -- Loading performance counters...

3/20/2006 7:31:15 PM -- Instance 1: IO parameters are thread count (14), insert (17), replace (70), delete (5), and lazy commit (90)

3/20/2006 7:31:15 PM -- Instance 2: IO parameters are thread count (14), insert (17), replace (70), delete (5), and lazy commit (90)

3/20/2006 7:31:15 PM -- Instance 3: IO parameters are thread count (14), insert (17), replace (70), delete (5), and lazy commit (90)

3/20/2006 7:31:15 PM -- Instance 4: IO parameters are thread count (14), insert (17), replace (70), delete (5), and lazy commit (90)

3/20/2006 7:31:15 PM -- Start Jetstress test...

3/20/2006 7:31:17 PM -- Starting StreamingBackup test run...

3/20/2006 7:31:19 PM -- Performance logging started.

3/20/2006 7:31:19 PM -- Performance data will be saved to C:\Documents and Settings\Administrator.SR DFA\Desktop\JetstressSP2\Performance_LogGeneration_2006_3_20_19-31-15.blg.

3/20/2006 8:05:06 PM -- Adding new data to the performance log file...

3/20/2006 8:05:06 PM -- Performance logging stopped.

3/20/2006 8:05:06 PM -- Stopping Jetstress...

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3/20/2006 8:05:42 PM -- Test run is completed, please open C:\Documents and Settings\Administrator.SR DFA\Desktop\JetstressSP2\Performance_LogGeneration_2006_3_20_19-31-15.html for test result.

3/20/2006 8:05:43 PM -- Soft recovery may take a while depending on the number of log files.

3/20/2006 8:05:44 PM -- Performance logging started.

3/20/2006 8:05:44 PM -- Performance data will be saved to C:\Documents and Settings\Administrator.SR DFA\Desktop\JetstressSP2\SoftRecovery_2006_3_20_20-5-43.blg.

3/20/2006 8:23:57 PM -- Adding new data to the performance log file...

3/20/2006 8:23:58 PM -- Performance logging stopped.

3/20/2006 8:23:58 PM -- Soft recovery is completed, please open C:\Documents and Settings\Administrator.SR DFA\Desktop\JetstressSP2\SoftRecovery_2006_3_20_20-5-43.html for soft recovery result.

Backup testing

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The following table shows a quick overview of database and log performance counter sample data:

Storage Volume	Avg. Disk sec/Read	Avg. Disk sec/Write	Disk Reads/sec	Disk Writes/sec	Disk Read Bytes/sec	Total Seconds
Log (E:)	0.001	0.000	58.50	0.051	3792652.00	275.21
Log (F:)	0.001	0.000	64.30	0.066	4128292.00	272.64
Log (G:)	0.001	0.000	62.90	0.056	4033339.00	266.86
Log (H:)	0.001	0.000	62.22	0.054	4007263.00	279.07

The following table shows a quick overview of processor and memory performance counter sample data:

Counter	Average	Minimum	Maximum
% Processor Time	3.261	0.000	9.474
Available MBytes	2366.30	2278.00	3199.00
Free System Page Table Entries	20631.00	20631.00	20631.00
Pages/sec	0.191	0.000	1.000
Pool Nonpaged Bytes	62840920.00	62746620.00	62959620.00
Pool Paged Bytes	34298060.00	32657410.00	34316290.00

The performance log is saved to file C:\Documents and Settings\Administrator.SRDFA\Desktop\JetstressSP2\SoftRecovery_2006_3_20_20-5-43.blg

3/20/2006 7:12:32 PM -- Environment validation results:

Detected JetstressUI version: 6.5.7638.1

Detected operating system: Microsoft Windows Server 2003 (5.2.3790.0)
Service Pack 1

Detected ESE.dll version: 6.5.7638.2

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Detected ESEPERF.dll version: 6.5.7638.1

3/20/2006 7:12:32 PM -- Validating input parameters, it may take a few minutes...

3/20/2006 7:12:32 PM -- Attaching databases ... (it may take a few minutes if the databases are in dirty shutdown state)

3/20/2006 7:31:15 PM -- Loading performance counters...

3/20/2006 7:31:15 PM -- Instance 1: IO parameters are thread count (14), insert (17), replace (70), delete (5), and lazy commit (90)

3/20/2006 7:31:15 PM -- Instance 2: IO parameters are thread count (14), insert (17), replace (70), delete (5), and lazy commit (90)

3/20/2006 7:31:15 PM -- Instance 3: IO parameters are thread count (14), insert (17), replace (70), delete (5), and lazy commit (90)

3/20/2006 7:31:15 PM -- Instance 4: IO parameters are thread count (14), insert (17), replace (70), delete (5), and lazy commit (90)

3/20/2006 7:31:15 PM -- Start Jetstress test...

3/20/2006 7:31:17 PM -- Starting StreamingBackup test run...

3/20/2006 7:31:19 PM -- Performance logging started.

3/20/2006 7:31:19 PM -- Performance data will be saved to C:\Documents and Settings\Administrator.SRDFA\Desktop\JetstressSP2\Performance_LogGeneration_2006_3_20_19-31-15.blg.

3/20/2006 8:05:06 PM -- Adding new data to the performance log file...

3/20/2006 8:05:06 PM -- Performance logging stopped.

3/20/2006 8:05:06 PM -- Stopping Jetstress...

3/20/2006 8:05:42 PM -- Test run is completed, please open C:\Documents and Settings\Administrator.SRDFA\Desktop\JetstressSP2\Performance_LogGeneration_2006_3_20_19-31-15.html for test result.

3/20/2006 8:05:43 PM -- Soft recovery may take a while depending on the number of log files.

3/20/2006 8:05:44 PM -- Performance logging started.

3/20/2006 8:05:44 PM -- Performance data will be saved to C:\Documents and Settings\Administrator.SRDFA\Desktop\JetstressSP2\SoftRecovery_2006_3_20_20-5-43.blg.

3/20/2006 8:23:57 PM -- Adding new data to the performance log file...

3/20/2006 8:23:58 PM -- Performance logging stopped.

3/20/2006 8:23:58 PM -- Soft recovery is completed, please open C:\Documents and Settings\Administrator.SRDFA\Desktop\JetstressSP2\SoftRecovery_2006_3_20_20-5-43.html for soft recovery result.

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