HP E5700 80TB Messaging System 3000 user – 2.5GB mailbox resiliency Exchange 2010 storage solution

Technical white paper

Table of contents

Overview

This solution brief provides information on an HP E5700 80TB Messaging System with HP P1210m storage controllers for Microsoft® Exchange Server 2010 (Exchange), 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 their storage solutions for Microsoft Exchange Server software. For more details on the Microsoft ESRP V3.0 – Storage program, please see http://technet.microsoft.com/en-us/exchange/ff182054.aspx.

Tested with: ESRP – Storage Version 3.0

Test Date: February 2011

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Features

The HP E5700 80TB Messaging System (E5700 80TB) is built on the next generation Infrastructure-to-Application (I2A) model designed to reduce IT management complexities and automate existing manual tasks to lower the total cost of ownership. HP and Microsoft have entered into a strategic partnership collaborating on an engineering roadmap for converged application platforms based on Microsoft SQL Server and Microsoft Exchange Server.

The HP E5700 80TB Messaging System is based on the converged application platform for Microsoft Exchange Server which is designed to simplify the initial planning, testing and configuration by providing a pre-tested and pre-packaged solution ready to deploy. The E5700 80TB configuration has been optimized for the Enterprise customer looking to support 3000 users with large 2.5GB mailbox capacities and mailbox resiliency features, all in a single appliance.

The pre-packaged E5700 80TB configuration ships with all the necessary server and storage hardware pre-integrated to simplify the ordering and initial deployment process. HP has also developed a series of setup and verification tools to perform the initial setup, configuration and verification of the HP E5700 80TB Messaging System. The tools have been developed in close collaboration between HP and Microsoft to reduce the time and complexity needed to deploy Microsoft Exchange Server 2010 SP1 (Exchange 2010). Many of the complex and time consuming hardware and software setup and configuration tasks are now done for you. The E5700 80TB also includes several HP value-add tools to monitor and manage the health of the messaging system.

The E5700 80TB has been designed to support 3000 users with an estimated mailbox profile of 200 messages sent/received per mailbox per day. To provide mailbox resiliency, the two server blades in the E5700 80TB host a two-copy Exchange 2010 Database Availability Group – configured with an active and one passive copy of each mailbox database. The E5700 80TB is configured with nine active databases in the DAG, each hosting approximately 334 mailboxes.

The DAG replication model supports both (unplanned) failovers and (administrator initiated) switchovers at the database level, unlike CCR (Cluster Continuous Replication) which requires the entire server to be failed over. The DAG availability feature also supports combining the Hub Transport (HT) and Client Access Server (CAS) roles on to the Mailbox (MBX) server. Unlike CCR which supports only the mailbox role, the DAG configuration removes the cluster limitations and allows multi-role configurations.

In the E5700 80TB both of the servers are configured as multi-role Exchange 2010 servers in the DAG, with the MBX, HT and CAS roles installed. The two servers are also configured in a CAS Array to support client connections. To ensure fault tolerance and to distribute the client requests between CAS servers in the CAS Array, a hardware or software based load balancer is recommended. Microsoft offers a qualification program for load balancers supporting Exchange 2010.

More information about the E5000 family is available at: http://www.hp.com/go/E5000.

In addition to the best practices described in this solution brief, more deployment guides on HP ProLiant servers for Exchange Server 2010 are available for free download from HP ActiveAnswers at http://www.hp.com/solutions/activeanswers/exchange

Solution description

This solution brief provides tested best practices to help administrators implement the Exchange deployment, with the following criteria:

- 3000 users total, with two (2) active Exchange servers and two (2) database copies
- 0.24 IOPS per user (0.2 with additional 20% headroom included)
- 2.5 GB tested mailbox size
- Database Availability Group (DAG) deployment with 2 copies of each database in the DAG
- 18 databases total (5 active and 4 passive on server 1; 4 active and 5 passive on server 2) during normal operations
- 24x7 background database maintenance configured during testing
- Storage in this solution is deployed as single disk RAID 1. See the *Storage configuration* section for more information.

ESRP – Storage is designed to size the storage subsystem for the mailbox server role, and is not designed to size for other Exchange roles, such as Hub Transport or Client Access Server (CAS). While these roles are supported in a DAG, ESRP-Storage does not help to size for those roles on the same server as the mailbox server role. The E5000 incorporates this multi-role design and to help size for these multi-role deployments, the "HP Sizer for Microsoft Exchange Server 2010" should be used. It is available at this site: http://www.hp.com/solutions/microsoft/exchange.

Figure 1 shows using the HP Sizer to select the E5700 80TB (or other E5000 models).

Figure 1. Using the HP Sizer to select the E5700 80TB (or other E5000 model)
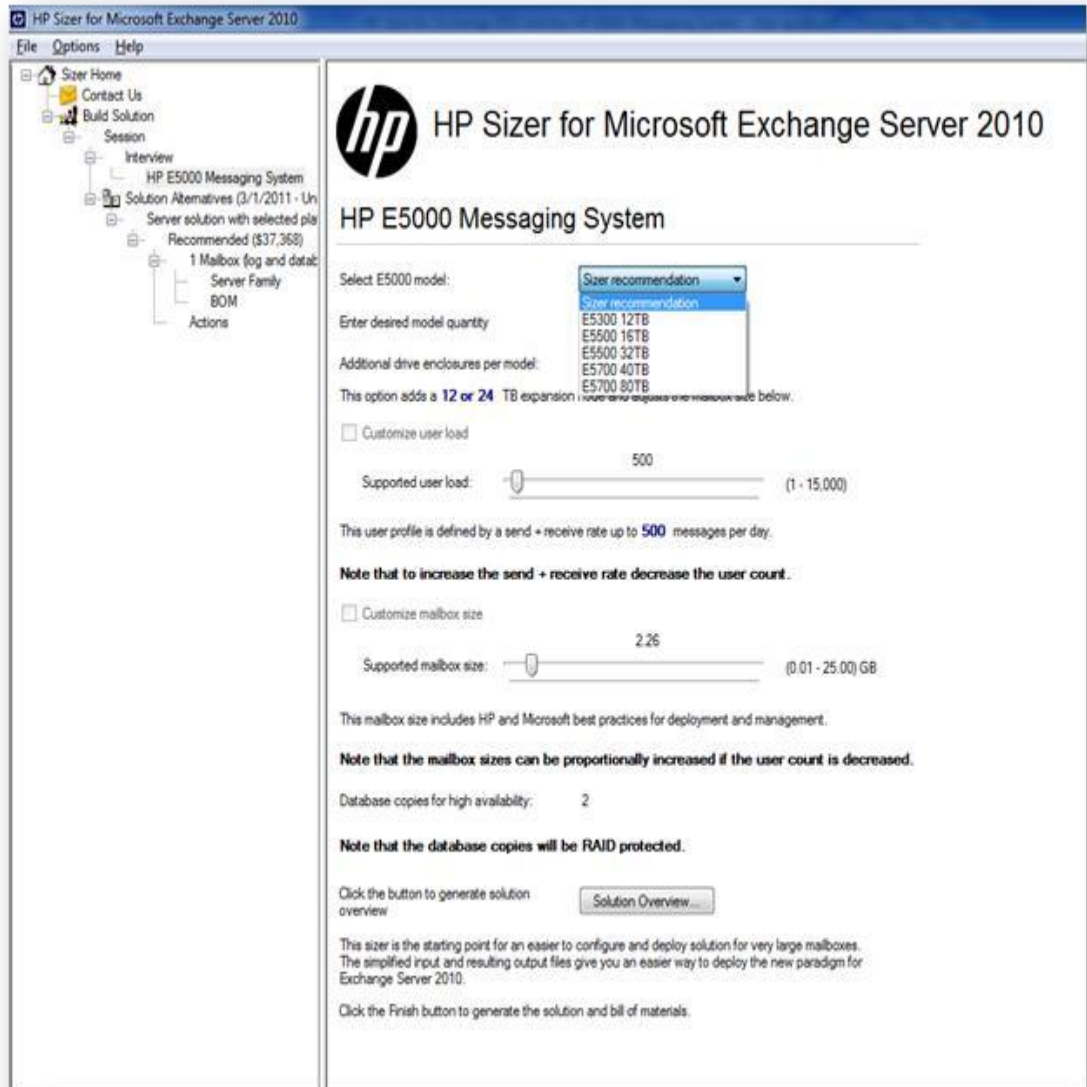
Figure 2 shows the tested solution hardware.

Figure 2. Front view of E5700 80TB

LFF Disk Storage Drawer

Server Blades

E5000 Expansion Nodes

Figure 3 shows the rear view of the E5700 80TB enclosure, with dual, redundant power supplies, cooling fans and I/O modules.

Figure 3. Rear view of the E5700 80TB with 2 expansion nodes

Server 1 & 2
LOM #1
1GbE pass
through NIC ports

Server 1 & 2
LOM #2
1GbE pass
through NIC ports

Server 1 & 2
Mezz NIC #1
1GbE pass
through NIC ports

Server 1 & 2
Mezz NIC #2
1GbE pass
through NIC ports

Redundant cooling

Enclosure Management Unit

Redundant power supplies

External SAS Ports

E5000 expansion node

E5000 expansion node

Dual-path SAS connections to storage
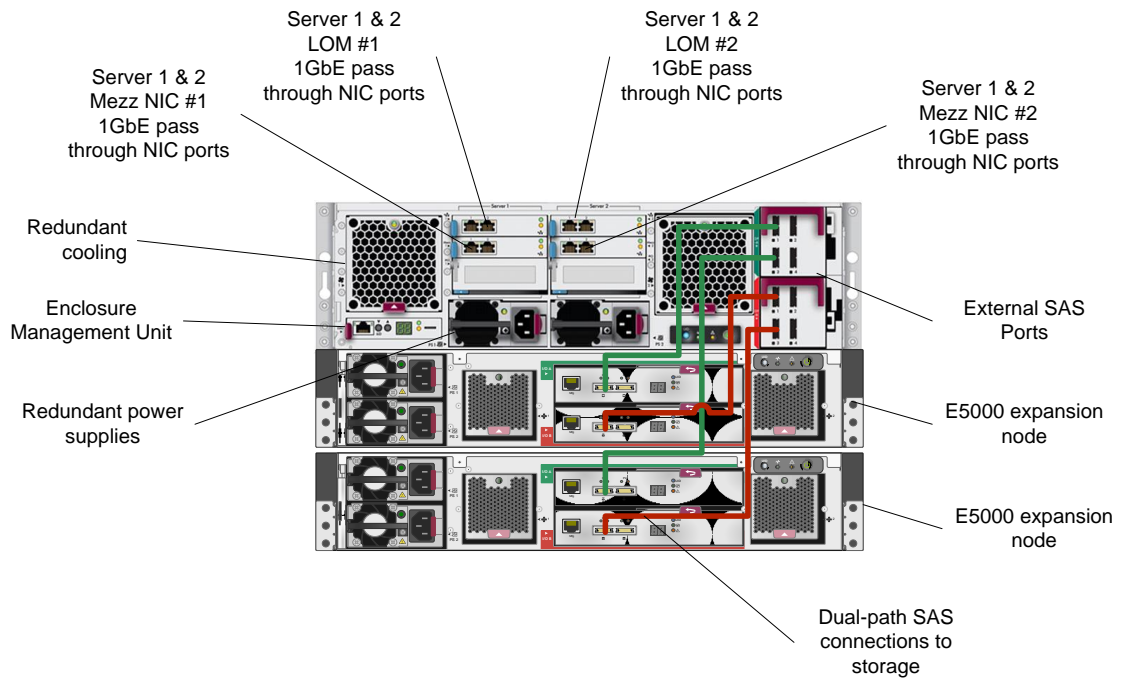
Storage configuration

The LFF storage drawer is connected to the server blades using the HP P1210m controllers installed in each of the server blades. The HP P1210m controllers manage RAID configurations and LUN ownership. For storage performance and redundancy, the controllers and the LFF storage drawer are connected using a dual-domain configuration. The dual-domain configuration uses two independent SAS data paths from the servers to the storage. The dual-domain communication paths allow disk I/O to be load balanced across both data paths as well as being capable of handling a single data path failure.

The E5000 system configuration includes the HP E5000 Configuration Wizard (ECW), which is used to deploy the storage in their optimal configurations. The E5000 Configuration Wizard assists during the initial out of box setup and configuration of the messaging system. This tool helps to configure each of the customer specific settings needed to prepare the server. Figure 4 depicts a screenshot of the ECW's introductory screen.

Figure 4. E5000 Configuration Wizard (ECW)
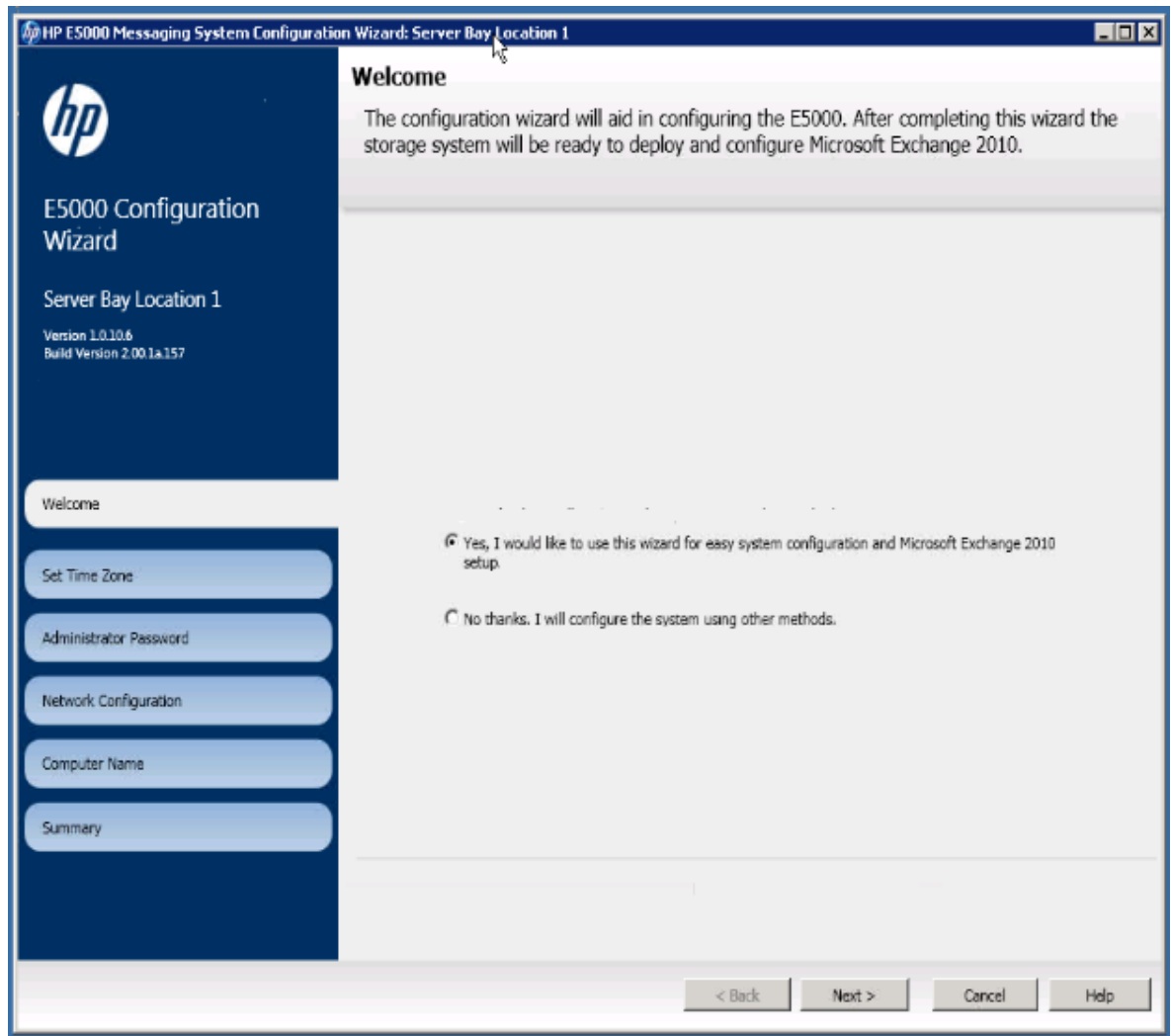
Figure 5 depicts the Logical Drive configuration

Figure 5. E5700 80TB storage logical diagram

DB Disks

36

= server 1 disks, RAID 1 pairs
= server 2 disks, RAID 1 pairs
= maintenance disk, RAID 0
= hot spare disk
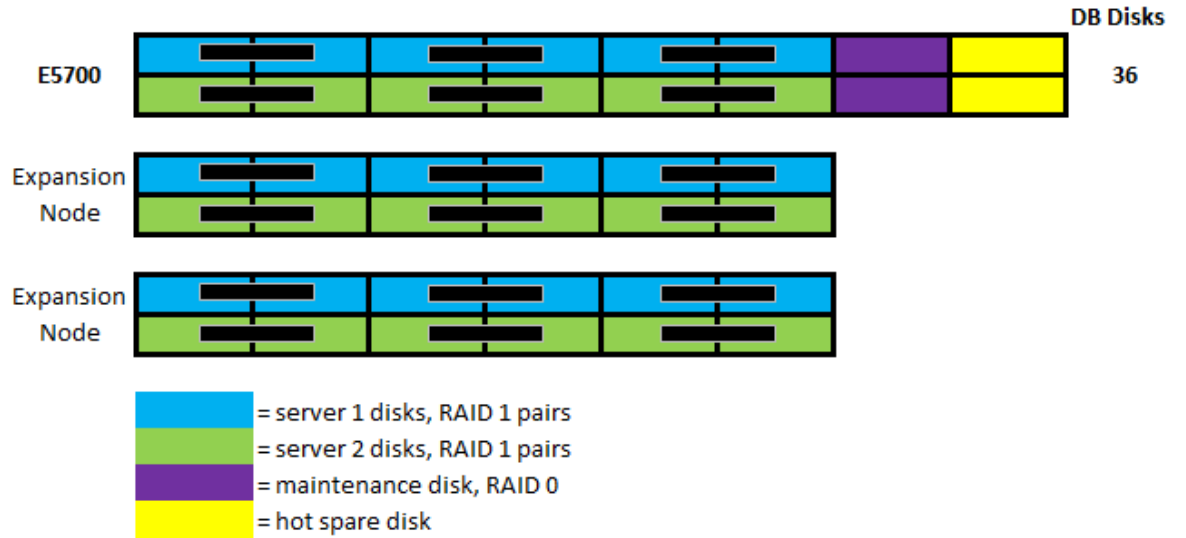
Targeted customer profile

This solution brief provides tested best practices to help administrators implement the Exchange deployment, with the following criteria:

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- 24x7 background database maintenance configured during testing

Tested deployment

The following table summarizes the testing environment.

Simulated Exchange configuration

Number of Exchange mailboxes simulated	3000
Number of Database Availability Groups (DAGs)	One (1)
Number of mailbox servers/DAG	Two (2)
Number of active mailboxes/server	1667 server 1; 1333 server 2
Number of databases/host	9 (5 active and 4 passive on server 1; 4 active and 5 passive on server 2)
Number of copies/database	2 including active
Number of mailboxes/database	334
Simulated profile: I/O operations per second per mailbox (IOPS, include 20% headroom)	0.24
Database maintenance (DBM)	Tested with 24/7 DBM enabled
Database and Log LUN size***	1862 GB
Total database size for performance testing	15,120 GB (18 databases * 840GB each)
% storage capacity used by Exchange database**	45% (15,120/33,516GB)

**Storage performance characteristics change based on the percentage utilization of the individual disks. Tests that use a small percentage of the storage (~25%) may exhibit reduced throughput if the storage capacity utilization is significantly increased beyond what is tested in this paper.

***Database and log files are combined within Exchange 2010 as a best practice. This is a new recommended configuration with Exchange 2010

Storage hardware

Storage Connectivity	SAS
Storage model & firmware	E5000 (0103 firmware)
Storage cache	See Controller Cache below
Number of storage controllers	1 per server
Number of storage ports	Connected one (1) 4x 6G SAS connector (two available)
Maximum bandwidth of storage connectivity to host	6 Gb per 4x SAS connector (1 in use for this solution)
Storage controller	P1210m
Controller cache	1GB Flash Backed Write Cache (50/50 read/write = Read cache and write cache can only be enabled or disabled. They are enabled by default.)
Host server type	HP E5460sb
Total number of disks tested in solution	36
Maximum number of spindles that can be hosted in the storage	64 (16 in the E5000 enclosure +12 per Expansion node x 4)

Storage software

Smart Array P1210m Driver	6.1.7600.16385
Queue depth & target setting	Not applicable
Multipathing	Not applicable
Host OS	Windows® Server 2008 R2 Enterprise
ESE.dll file version	14.1.218.12

Storage disk configuration (mailbox and log disks)

Disk type, speed and firmware	HP 2TB 6G 7.2K LFF MDL SAS HDD (firmware: HPGA)
Raw capacity per disk (GB)	1862 GB
Number of physical disks in test	36
Total raw storage capacity (GB)	67,032 GB
Disk slice size (GB)	N/A
RAID level	Single RAID 1 (JBOD)
Total formatted capacity	33516 GB
Storage capacity utilization	50% Formatted capacity/Total raw capacity
Database capacity utilization	22% Database size / Total raw capacity 15,120/67,032

Replication configuration

Replication Mechanism	Mailbox Resiliency
Number of links	4 (2 Dual-port Gigabit Ethernet)
Simulated link distance	LAN
Link type	IP Ethernet
Link bandwidth	1 Gb/s

Best practices

Exchange Server is a disk-intensive application. For Exchange 2010 best practices on storage design from Microsoft, please visit http://technet.microsoft.com/en-us/library/dd346703.aspx.
For Exchange Server solution guidance, please visit HP at
http://www.hp.com/solutions/microsoft/exchange.

The best practices for this solution are:

- The E5000 Messaging System includes built-in tools to automate and manage many of the deployment tasks, such as to configure storage and networking, and then later on, to ensure that firmware and drivers for all hardware are up to date.
- The ECW configures RAID arrays (with 256KB stripe size, per best practices at http://technet.microsoft.com/en-us/library/ee832792.aspx), and creates volumes as mount points, formatting them with 64K allocation unit sizes, as prescribed by Microsoft best practices.

- Databases and logs are placed on the same volumes on the same RAID1 arrays, since there are multiple database copies
- The E5000 Messaging System Quick Deployment Tool (QDT) has been developed to automate installing Exchange Server 2010 (see figure 6).

Figure 6. E5000 Messaging System Quick Deployment Tool – installing Exchange Server 2010
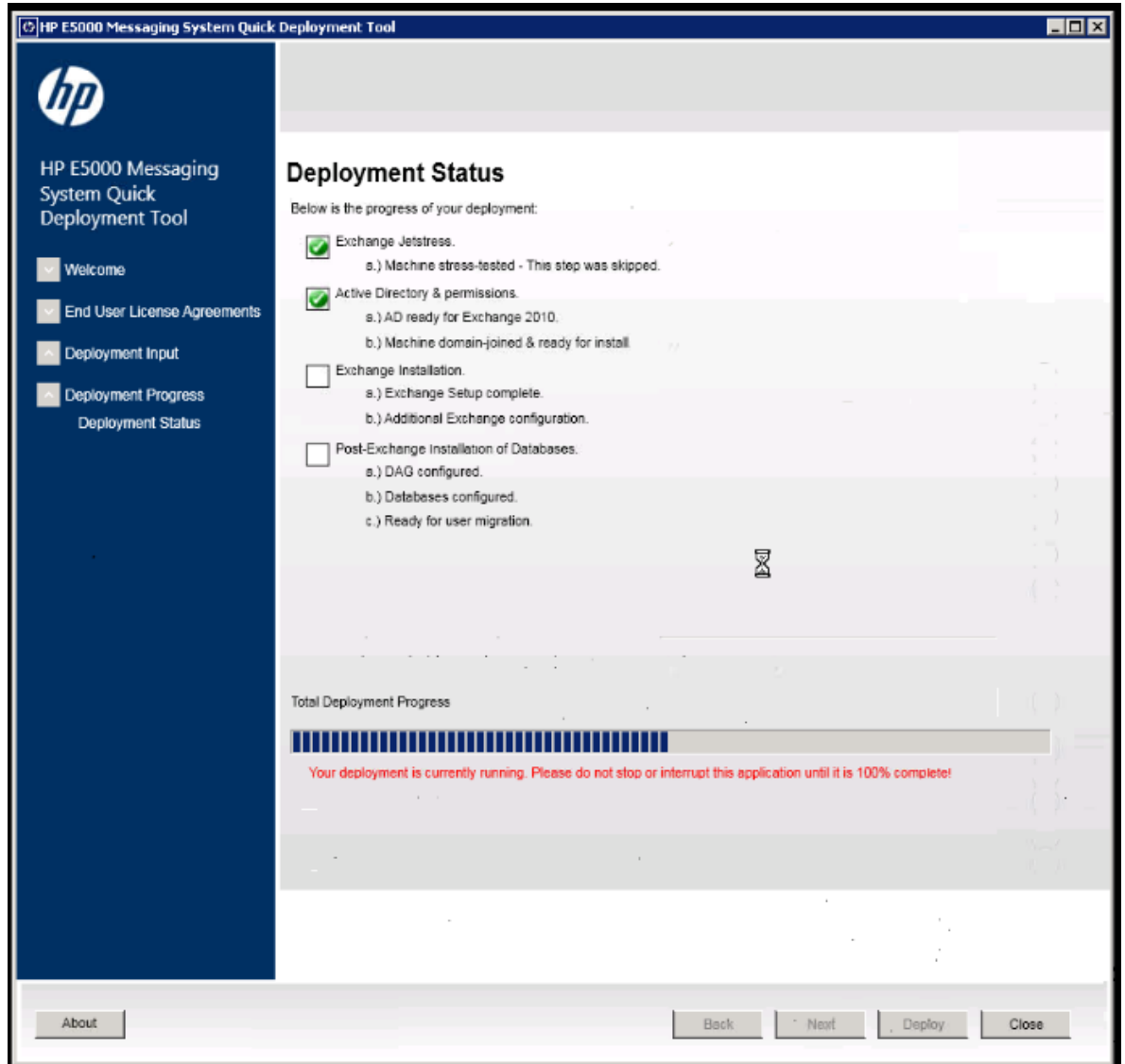
- Before installing Exchange Server 2010, you may test your storage solution with Jetstress to ensure it is configured properly and meets your requirements. The QDT has built-in access to the Jetstress tool to provide either a quicker test or full test. (see figure 7)

Figure 7. E5000 Messaging System Quick Deployment Tool – Jetstress Testing
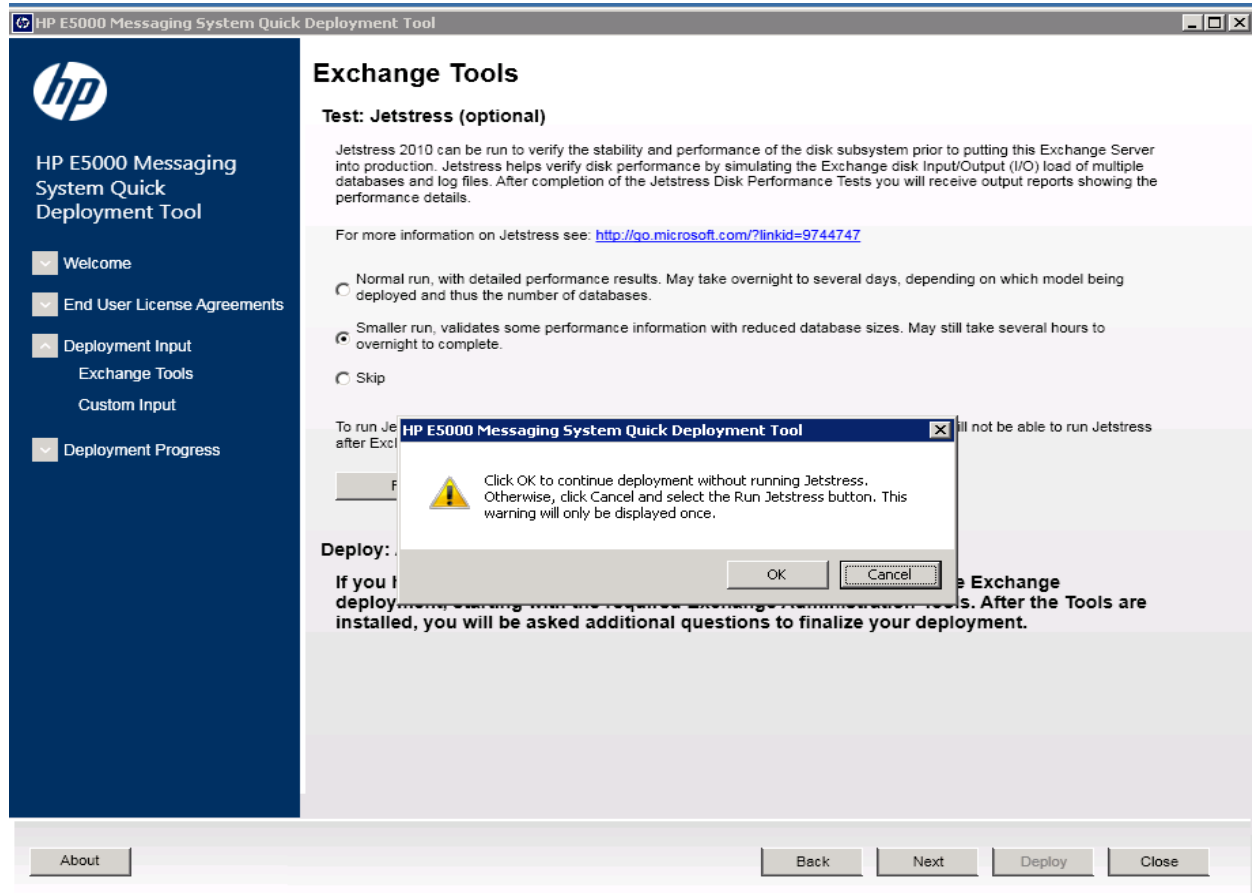
Test results summary

This section provides a high level summary of the test data from ESRP and a reference to the detailed HTML reports which are generated by ESRP testing framework.

An HP E5460sb server blade was used to drive the Jetstress I/O load, and simulate the storage I/O. For solutions that utilize a uniform building block style where each building block is independent and isolated, ESRP requires that only one of the building blocks be tested. In this case, a single unit was tested as the building block. However, for production deployments of this solution, two identically units are required.

Reliability

One of the tests in the framework is designed to test reliability over a 24-hour test period. The goal is to verify that 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:

- Any errors reported in the saved event log file?

  There were no relevant errors reported in the event log for the storage reliability testing

- Any errors reported during the database and log checksum process?

  There were no errors reported for the checksum process

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 shows how long it takes the storage to respond to an I/O under load. The data below is the sum of all of the logical disk I/Os and average of all the logical disks I/O latency in the 2 hours test duration.

This solution is designed around a 2 server DAG with a 1 server failure service level. It is important to understand not only the performance of the storage solution in normal operations with all servers hosting their share of databases, but also with a server failure where the remaining server is running all nine databases.

Note that the Jetstress load was increased for additional IOPS beyond the minimum needed disk transfers/sec, thus the read latencies are just below the threshold. This illustrates that the solution is capable of additional IOPS beyond the minimum needed.

Database I/O	Server 1 9 Active Database
Needed Disk Transfers/sec*	720
Database Disks Transfers/sec (total for server)	1011
Database Disks Reads/sec (avg per database)	67.7
Database Disks Writes/sec (avg per database)	44.8
Average Database Disk Read Latency (ms)	15.3
Average Database Disk Write Latency (ms)	6.0
Transaction Log I/O	
Log Disks Writes/sec	37.9
Average Log Disk Write Latency (ms)	0.87
Log Disk Reads/sec	0.95

*This row represents the IOPS necessary to satisfy the IOPS per user necessary for the number of active databases in this solution.

Database backup/recovery performance

There are two test reports in this section. The first one is to measure the sequential read rate of the database files, and the second is to measure the recovery/replay performance (playing transaction logs in to the database). One important characteristic of the default test is that these read rates and log replay rates are measured with all databases under concurrent or simultaneous load. The worst case scenario in this solution is when all 9 databases are mounted on one server.

Database Read-only Performance

The test is to measure the maximum rate at which databases could be backed up via a Volume Shadow Copy Service (VSS) aware backup application. The following table shows the average rate for a single database file.

Database Read-only	
MB Read/sec per database	101.5
MB Read/sec total per server	913.5

Transaction Log Recovery / Replay Performance

The test is to measure the maximum rate at which the log files can be played against the databases. The following table shows the average rate for 500 log files played. Each log file is 1 MB in size.

Transaction Log Replay	
Average time to play one log file (sec)	3.3

Conclusion

The information discussed in this solution brief highlights the tested performance results and configuration best practices for an Exchange Server solution supporting 3000 Exchange users with 2.5GB mailboxes. Testing was performed with an HP P1210m controller with 36 HP 2TB 6G 7.2K LFF MDL SAS HDD disks for Exchange database storage and transaction logs. The testing demonstrated that the storage subsystem was capable of supporting both the IOPS needed to support the 3000 Exchange users as well as providing additional headroom.

This document is developed by storage solution providers, and reviewed by Microsoft Exchange product team. The test results and data presented in this document are based on the tests introduced in the ESRP test framework and should be used as a guide, but each specific deployment should be tested to ensure that their solution performs to the requirements of their specific environment.

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

Appendix A – Test reports

Performance test result report 2HR

Server 1, (Normal load – 5 DB, 1733 users)

Test Summary

Overall Test Result	**Pass**
Machine Name	WIN-K8SJ5B9QCAV
Test Description	ESRP 2HR 5700 80TB Server 1
Test Start Time	2/24/2011 7:32:10 AM
Test End Time	2/24/2011 9:37:18 AM
Collection Start Time	2/24/2011 7:35:41 AM
Collection End Time	2/24/2011 9:35:40 AM
Jetstress Version	14.01.0180.003
Ese Version	14.01.0218.012
Operating System	Windows Server 2008 R2 Enterprise (6.1.7600.0)
Performance Log	C:\Program Files\Exchange Jetstress\ESRP_2HR_E5700 80TB_Server1_FINAL\Performance_2011_2_24_7_32_21.blg

Database Sizing and Throughput

Achieved Transactional I/O per Second	631.307
Target Transactional I/O per Second	400.08
Initial Database Size (bytes)	4404195164160
Final Database Size (bytes)	4406219440128
Database Files (Count)	5

Jetstress System Parameters

Thread Count	10 (per database)
Minimum Database Cache	160.0 MB
Maximum Database Cache	1280.0 MB
Insert Operations	40%
Delete Operations	20%
Replace Operations	5%
Read Operations	35%
Lazy Commits	70%
Run Background Database Maintenance	True
Number of Copies per Database	2

Database Configuration

Instance5116.1 Log Path: C:\ExchangeDatabases\VOL1\log
Database: C:\ExchangeDatabases\VOL1\Jetstress001001.edb

Instance5116.2 Log Path: C:\ExchangeDatabases\VOL2\log
Database: C:\ExchangeDatabases\VOL2\Jetstress002001.edb

Instance5116.3 Log Path: C:\ExchangeDatabases\VOL3\log
Database: C:\ExchangeDatabases\VOL3\Jetstress003001.edb

Instance5116.4 Log Path: C:\ExchangeDatabases\VOL4\log
Database: C:\ExchangeDatabases\VOL4\Jetstress004001.edb

Instance5116.5 Log Path: C:\ExchangeDatabases\VOL5\log
Database: C:\ExchangeDatabases\VOL5\Jetstress005001.edb

Transactional I/O Performance

MSExchange Database ==> Instances	I/O Database Reads Average Latency (msec)	I/O Database Writes Average Latency (msec)	I/O Database Reads/sec	I/O Database Writes/sec	I/O Database Reads Average Bytes	I/O Database Writes Average Bytes	I/O Log Reads Average Latency (msec)	I/O Log Writes Average Latency (msec)	I/O Log Reads/sec	I/O Log Writes/sec	I/O Log Reads Average Bytes	I/O Log Writes Average Bytes
Instance5116.1	15.915	3.665	77.722	50.448	33997.382	35224.457	0.000	0.839	0.000	42.742	0.000	4577.618
Instance5116.2	15.761	3.832	76.539	49.594	34057.896	35261.546	0.000	0.820	0.000	42.201	0.000	4621.286
Instance5116.3	15.551	3.802	76.035	49.228	34120.864	35209.126	0.000	0.809	0.000	41.933	0.000	4556.387
Instance5116.4	15.986	3.772	76.273	49.380	34068.976	35254.341	0.000	0.827	0.000	42.007	0.000	4579.421
Instance5116.5	15.818	3.854	76.480	49.608	34083.663	35225.795	0.000	0.817	0.000	42.396	0.000	4593.181

Background Database Maintenance I/O Performance

MSExchange Database ==> Instances	Database Maintenance IO Reads/sec	Database Maintenance IO Reads Average Bytes
Instance5116.1	27.066	261634.765
Instance5116.2	26.877	261721.186
Instance5116.3	26.856	261663.693
Instance5116.4	26.786	261689.860
Instance5116.5	27.059	261686.542

Log Replication I/O Performance

MSExchange Database ==> Instances	I/O Log Reads/sec	I/O Log Reads Average Bytes
Instance5116.1	0.790	231084.838
Instance5116.2	0.789	230140.062
Instance5116.3	0.774	229673.522
Instance5116.4	0.777	230076.812
Instance5116.5	0.789	231088.790

Total I/O Performance

MSExchange Database ==> Instances	I/O Database Reads Average Latency (msec)	I/O Database Writes Average Latency (msec)	I/O Database Reads/sec	I/O Database Writes/sec	I/O Database Reads Average Bytes	I/O Database Writes Average Bytes	I/O Log Reads Average Latency (msec)	I/O Log Writes Average Latency (msec)	I/O Log Reads/sec	I/O Log Writes/sec	I/O Log Reads Average Bytes	I/O Log Writes Average Bytes
Instance5116.1	15.915	3.665	104.787	50.448	92794.078	35224.457	12.653	0.839	0.790	42.742	231084.838	4577.618
Instance5116.2	15.761	3.832	103.416	49.594	93225.464	35261.546	11.912	0.820	0.789	42.201	230140.062	4621.286
Instance5116.3	15.551	3.802	102.891	49.228	93511.922	35209.126	11.993	0.809	0.774	41.933	229673.522	4556.387
Instance5116.4	15.986	3.772	103.059	49.380	93229.494	35254.341	12.553	0.827	0.777	42.007	230076.812	4579.421
Instance5116.5	15.818	3.854	103.539	49.608	93565.870	35225.795	13.172	0.817	0.789	42.396	231088.790	4593.181

Host System Performance

Counter	Average	Minimum	Maximum
% Processor Time	0.757	0.486	1.038
Available MBytes	4953.969	4948.000	5071.000
Free System Page Table Entries	33555149.529	33555130.000	33555646.000
Transition Pages RePurposed/sec	0.000	0.000	0.000
Pool Nonpaged Bytes	300709632.000	300695552.000	300756992.000
Pool Paged Bytes	111985245.867	111898624.000	112144384.000
Database Page Fault Stalls/sec	0.000	0.000	0.000

Test Log
2/24/2011 7:32:10 AM -- Jetstress testing begins ...
2/24/2011 7:32:10 AM -- Prepare testing begins ...
2/24/2011 7:32:15 AM -- Attaching databases ...
2/24/2011 7:32:15 AM -- Prepare testing ends.
2/24/2011 7:32:15 AM -- Dispatching transactions begins ...
2/24/2011 7:32:15 AM -- Database cache settings: (minimum: 160.0 MB, maximum: 1.2 GB)
2/24/2011 7:32:15 AM -- Database flush thresholds: (start: 12.8 MB, stop: 25.6 MB)
2/24/2011 7:32:21 AM -- Database read latency thresholds: (average: 20 msec/read, maximum: 100 msec/read).
2/24/2011 7:32:21 AM -- Log write latency thresholds: (average: 10 msec/write, maximum: 100 msec/write).
2/24/2011 7:32:29 AM -- Operation mix: Sessions 10, Inserts 40%, Deletes 20%, Replaces 5%, Reads 35%, Lazy Commits 70%.
2/24/2011 7:32:29 AM -- Performance logging begins (interval: 15000 ms).
2/24/2011 7:32:29 AM -- Attaining prerequisites:
2/24/2011 7:35:41 AM -- \MSExchange Database(JetstressWin)\Database Cache Size, Last: 1210065000.0 (lower bound: 1207960000.0, upper bound: none)

2/24/2011 9:35:41 AM -- Performance logging ends.
2/24/2011 9:37:07 AM -- JetInterop batch transaction stats: 28453, 28212, 28023, 28118 and 28167.
2/24/2011 9:37:07 AM -- Dispatching transactions ends.
2/24/2011 9:37:07 AM -- Shutting down databases ...
2/24/2011 9:37:18 AM -- Instance5116.1 (complete), Instance5116.2 (complete), Instance5116.3 (complete), Instance5116.4 (complete) and Instance5116.5 (complete)
2/24/2011 9:37:18 AM -- C:\Program Files\Exchange Jetstress\ESRP_2HR_E5700 80TB_Server1_FINAL\Performance_2011_2_24_7_32_21.blg has 492 samples.
2/24/2011 9:37:18 AM -- Creating test report ...
2/24/2011 9:37:22 AM -- Instance5116.1 has 15.9 for I/O Database Reads Average Latency.
2/24/2011 9:37:22 AM -- Instance5116.1 has 0.8 for I/O Log Writes Average Latency.
2/24/2011 9:37:22 AM -- Instance5116.1 has 0.8 for I/O Log Reads Average Latency.
2/24/2011 9:37:22 AM -- Instance5116.2 has 15.8 for I/O Database Reads Average Latency.
2/24/2011 9:37:22 AM -- Instance5116.2 has 0.8 for I/O Log Writes Average Latency.
2/24/2011 9:37:22 AM -- Instance5116.2 has 0.8 for I/O Log Reads Average Latency.
2/24/2011 9:37:22 AM -- Instance5116.3 has 15.6 for I/O Database Reads Average Latency.
2/24/2011 9:37:22 AM -- Instance5116.3 has 0.8 for I/O Log Writes Average Latency.
2/24/2011 9:37:22 AM -- Instance5116.3 has 0.8 for I/O Log Reads Average Latency.
2/24/2011 9:37:22 AM -- Instance5116.4 has 16.0 for I/O Database Reads Average Latency.
2/24/2011 9:37:22 AM -- Instance5116.4 has 0.8 for I/O Log Writes Average Latency.
2/24/2011 9:37:22 AM -- Instance5116.4 has 0.8 for I/O Log Reads Average Latency.
2/24/2011 9:37:22 AM -- Instance5116.5 has 15.8 for I/O Database Reads Average Latency.
2/24/2011 9:37:22 AM -- Instance5116.5 has 0.8 for I/O Log Writes Average Latency.
2/24/2011 9:37:22 AM -- Instance5116.5 has 0.8 for I/O Log Reads Average Latency.
2/24/2011 9:37:22 AM -- Test has 0 Maximum Database Page Fault Stalls/sec.
2/24/2011 9:37:22 AM -- Test has 0 Database Page Fault Stalls/sec samples higher than 0.
2/24/2011 9:37:22 AM -- C:\Program Files\Exchange Jetstress\ESRP_2HR_E5700 80TB_Server1_FINAL\Performance_2011_2_24_7_32_21.xml has 479 samples queried.

Database checksum – reliability testing

Checksum Statistics - All

Database	Seen pages	Bad pages	Correctable pages	Wrong page-number pages	File length / seconds taken
C:\ExchangeDatabases\VOL1\Jetstress001001.edb	26893122	0	0	0	840410 MBytes / 7628 sec
C:\ExchangeDatabases\VOL2\Jetstress002001.edb	26892610	0	0	0	840394 MBytes / 7424 sec
C:\ExchangeDatabases\VOL3\Jetstress003001.edb	26894146	0	0	0	840442 MBytes / 7324 sec
C:\ExchangeDatabases\VOL4\Jetstress004001.edb	26892866	0	0	0	840402 MBytes / 7422 sec
C:\ExchangeDatabases\VOL5\Jetstress005001.edb	26894402	0	0	0	840450 MBytes / 7480 sec
(Sum)	134467146	0	0	0	4202098 MBytes / 7628 sec

Disk Subsystem Performance (of checksum)

LogicalDisk	Avg. Disk sec/Read	Avg. Disk sec/Write	Disk Reads/sec	Disk Writes/sec	Avg. Disk Bytes/Read
C:\ExchangeDatabases\VOL1	0.029	0.000	1762.918	0.000	65536.000
C:\ExchangeDatabases\VOL2	0.029	0.000	1811.424	0.000	65536.000
C:\ExchangeDatabases\VOL3	0.029	0.000	1834.915	0.000	65536.000
C:\ExchangeDatabases\VOL4	0.030	0.000	1812.423	0.000	65536.000
C:\ExchangeDatabases\VOL5	0.030	0.000	1798.012	0.000	65536.000

Memory System Performance (of checksum)

Counter	Average	Minimum	Maximum
% Processor Time	2.695	0.571	3.206
Available MBytes	6254.685	6242.000	6272.000
Free System Page Table Entries	33555156.583	33555130.000	33555646.000
Transition Pages RePurposed/sec	0.000	0.000	0.000
Pool Nonpaged Bytes	300809336.945	300777472.000	300843008.000
Pool Paged Bytes	112524473.449	112463872.000	112615424.000

Test Log
2/24/2011 7:32:10 AM -- Jetstress testing begins ...
2/24/2011 7:32:10 AM -- Prepare testing begins ...
2/24/2011 7:32:15 AM -- Attaching databases ...
2/24/2011 7:32:15 AM -- Prepare testing ends.
2/24/2011 7:32:15 AM -- Dispatching transactions begins ...
2/24/2011 7:32:15 AM -- Database cache settings: (minimum: 160.0 MB, maximum: 1.2 GB)
2/24/2011 7:32:15 AM -- Database flush thresholds: (start: 12.8 MB, stop: 25.6 MB)
2/24/2011 7:32:21 AM -- Database read latency thresholds: (average: 20 msec/read, maximum: 100 msec/read).
2/24/2011 7:32:21 AM -- Log write latency thresholds: (average: 10 msec/write, maximum: 100 msec/write).
2/24/2011 7:32:29 AM -- Operation mix: Sessions 10, Inserts 40%, Deletes 20%, Replaces 5%, Reads 35%, Lazy Commits 70%.
2/24/2011 7:32:29 AM -- Performance logging begins (interval: 15000 ms).
2/24/2011 7:32:29 AM -- Attaining prerequisites:
2/24/2011 7:35:41 AM -- \MSExchange Database(JetstressWin)\Database Cache Size, Last: 1210065000.0 (lower bound: 1207960000.0, upper bound: none)
2/24/2011 9:35:41 AM -- Performance logging ends.
2/24/2011 9:37:07 AM -- JetInterop batch transaction stats: 28453, 28212, 28023, 28118 and 28167.
2/24/2011 9:37:07 AM -- Dispatching transactions ends.
2/24/2011 9:37:07 AM -- Shutting down databases ...
2/24/2011 9:37:18 AM -- Instance5116.1 (complete), Instance5116.2 (complete), Instance5116.3 (complete), Instance5116.4 (complete) and Instance5116.5 (complete)
2/24/2011 9:37:18 AM -- C:\Program Files\Exchange Jetstress\ESRP_2HR_E5700 80TB_Server1_FINAL\Performance_2011_2_24_7_32_21.blg has 492 samples.
2/24/2011 9:37:18 AM -- Creating test report ...
2/24/2011 9:37:22 AM -- Instance5116.1 has 15.9 for I/O Database Reads Average Latency.
2/24/2011 9:37:22 AM -- Instance5116.1 has 0.8 for I/O Log Writes Average Latency.
2/24/2011 9:37:22 AM -- Instance5116.1 has 0.8 for I/O Log Reads Average Latency.
2/24/2011 9:37:22 AM -- Instance5116.2 has 15.8 for I/O Database Reads Average Latency.
2/24/2011 9:37:22 AM -- Instance5116.2 has 0.8 for I/O Log Writes Average Latency.
2/24/2011 9:37:22 AM -- Instance5116.2 has 0.8 for I/O Log Reads Average Latency.
2/24/2011 9:37:22 AM -- Instance5116.3 has 15.6 for I/O Database Reads Average Latency.
2/24/2011 9:37:22 AM -- Instance5116.3 has 0.8 for I/O Log Writes Average Latency.
2/24/2011 9:37:22 AM -- Instance5116.3 has 0.8 for I/O Log Reads Average Latency.
2/24/2011 9:37:22 AM -- Instance5116.4 has 16.0 for I/O Database Reads Average Latency.
2/24/2011 9:37:22 AM -- Instance5116.4 has 0.8 for I/O Log Writes Average Latency.
2/24/2011 9:37:22 AM -- Instance5116.4 has 0.8 for I/O Log Reads Average Latency.
2/24/2011 9:37:22 AM -- Instance5116.5 has 15.8 for I/O Database Reads Average Latency.
2/24/2011 9:37:22 AM -- Instance5116.5 has 0.8 for I/O Log Writes Average Latency.
2/24/2011 9:37:22 AM -- Instance5116.5 has 0.8 for I/O Log Reads Average Latency.
2/24/2011 9:37:22 AM -- Test has 0 Maximum Database Page Fault Stalls/sec.
2/24/2011 9:37:22 AM -- Test has 0 Database Page Fault Stalls/sec samples higher than 0.
2/24/2011 9:37:22 AM -- C:\Program Files\Exchange Jetstress\ESRP_2HR_E5700 80TB_Server1_FINAL\Performance_2011_2_24_7_32_21.xml has 479 samples queried.
2/24/2011 9:37:22 AM -- C:\Program Files\Exchange Jetstress\ESRP_2HR_E5700 80TB_Server1_FINAL\Performance_2011_2_24_7_32_21.html is saved.
2/24/2011 9:37:23 AM -- Performance logging begins (interval: 30000 ms).
2/24/2011 9:37:23 AM -- Verifying database checksums ...

2/24/2011 11:44:31 AM -- C:\ExchangeDatabases\VOL1 (100% processed), C:\ExchangeDatabases\VOL2 (100% processed), C:\ExchangeDatabases\VOL3 (100% processed), C:\ExchangeDatabases\VOL4 (100% processed) and C:\ExchangeDatabases\VOL5 (100% processed)
2/24/2011 11:44:31 AM -- Performance logging ends.
2/24/2011 11:44:31 AM -- C:\Program Files\Exchange Jetstress\ESRP_2HR_E5700 80TB_Server1_FINAL\DBChecksum_2011_2_24_9_37_22.blg has 254 samples.

Server 2, (Normal load – 4 DB, 1333 users)

Test Summary

Overall Test Result	**Pass**
Machine Name	WIN-VCPDO0Q40UA
Test Description	E5700 80TB80TB_Server2
	ESRP Mercury 226
	2 Hr Perf
Test Start Time	2/24/2011 7:31:43 AM
Test End Time	2/24/2011 9:36:37 AM
Collection Start Time	2/24/2011 7:35:00 AM
Collection End Time	2/24/2011 9:34:55 AM
Jetstress Version	14.01.0180.003
Ese Version	14.01.0218.012
Operating System	Windows Server 2008 R2 Enterprise (6.1.7600.0)
Performance Log	C:\Program Files\Exchange Jetstress\ESRP_2HR_Final\Performance_2011_2_24_7_31_52.blg

Database Sizing and Throughput

Achieved Transactional I/O per Second	530.87
Target Transactional I/O per Second	319.92
Initial Database Size (bytes)	3501696745472
Final Database Size (bytes)	3503399632896
Database Files (Count)	4

Jetstress System Parameters

Thread Count	10 (per database)
Minimum Database Cache	128.0 MB
Maximum Database Cache	1024.0 MB
Insert Operations	40%
Delete Operations	20%
Replace Operations	5%
Read Operations	35%
Lazy Commits	70%
Run Background Database Maintenance	True
Number of Copies per Database	2

Database Configuration

Instance1984.1 Log Path: C:\ExchangeDatabases\VOL6\logs
Database: C:\ExchangeDatabases\VOL6\Jetstress001001.edb

Instance1984.2 Log Path: C:\ExchangeDatabases\VOL7\logs
Database: C:\ExchangeDatabases\VOL7\Jetstress002001.edb

Instance1984.3 Log Path: C:\ExchangeDatabases\VOL8\logs
Database: C:\ExchangeDatabases\VOL8\Jetstress003001.edb

Instance1984.4 Log Path: C:\ExchangeDatabases\VOL9\logs
Database: C:\ExchangeDatabases\VOL9\Jetstress004001.edb

Transactional I/O Performance

MSExchange Database ==> Instances	I/O Database Reads Average Latency (msec)	I/O Database Writes Average Latency (msec)	I/O Database Reads/sec	I/O Database Writes/sec	I/O Database Reads Average Bytes	I/O Database Writes Average Bytes	I/O Log Reads Average Latency (msec)	I/O Log Writes Average Latency (msec)	I/O Log Reads/sec	I/O Log Writes/sec	I/O Log Reads Average Bytes	I/O Log Writes Average Bytes
Instance1984.1	16.781	3.096	80.889	51.745	33673.223	35810.939	0.000	0.758	0.000	45.065	0.000	4572.540
Instance1984.2	15.457	3.180	81.341	52.086	33875.635	35868.484	0.000	0.736	0.000	45.474	0.000	4551.561
Instance1984.3	15.059	3.272	81.132	51.882	33941.450	35835.674	0.000	0.732	0.000	45.317	0.000	4584.025
Instance1984.4	15.327	3.236	80.369	51.425	33977.476	35825.322	0.000	0.732	0.000	45.164	0.000	4564.034

Background Database Maintenance I/O Performance

MSExchange Database ==> Instances	Database Maintenance IO Reads/sec	Database Maintenance IO Reads Average Bytes
Instance1984.1	26.535	261698.736
Instance1984.2	27.505	261671.594
Instance1984.3	27.757	261700.979
Instance1984.4	27.499	261586.404

Log Replication I/O Performance

MSExchange Database ==> Instances	I/O Log Reads/sec	I/O Log Reads Average Bytes
Instance1984.1	0.835	231088.997
Instance1984.2	0.837	230615.654
Instance1984.3	0.841	231076.601
Instance1984.4	0.833	231064.137

Total I/O Performance

MSExchange Database ==> Instances	I/O Database Reads Average Latency (msec)	I/O Database Writes Average Latency (msec)	I/O Database Reads/sec	I/O Database Writes/sec	I/O Database Reads Average Bytes	I/O Database Writes Average Bytes	I/O Log Reads Average Latency (msec)	I/O Log Writes Average Latency (msec)	I/O Log Reads/sec	I/O Log Writes/sec	I/O Log Reads Average Bytes	I/O Log Writes Average Bytes
Instance1984.1	16.781	3.096	107.425	51.745	89998.686	35810.939	10.834	0.758	0.835	45.065	231088.997	4572.540
Instance1984.2	15.457	3.180	108.846	52.086	91439.785	35868.484	7.338	0.736	0.837	45.474	230615.654	4551.561
Instance1984.3	15.059	3.272	108.889	51.882	91999.648	35835.674	7.538	0.732	0.841	45.317	231076.601	4584.025
Instance1984.4	15.327	3.236	107.869	51.425	92002.717	35825.322	7.813	0.732	0.833	45.164	231064.137	4564.034

Host System Performance

Counter	Average	Minimum	Maximum
% Processor Time	0.733	0.506	1.044
Available MBytes	5195.299	5191.000	5244.000
Free System Page Table Entries	33555150.605	33555131.000	33555646.000
Transition Pages RePurposed/sec	0.000	0.000	0.000
Pool Nonpaged Bytes	300861538.338	300785664.000	300892160.000
Pool Paged Bytes	108209667.207	108179456.000	108249088.000
Database Page Fault Stalls/sec	0.000	0.000	0.000

Test Log
2/24/2011 7:31:43 AM -- Jetstress testing begins ...
2/24/2011 7:31:43 AM -- Prepare testing begins ...
2/24/2011 7:31:48 AM -- Attaching databases ...
2/24/2011 7:31:48 AM -- Prepare testing ends.
2/24/2011 7:31:48 AM -- Dispatching transactions begins ...
2/24/2011 7:31:48 AM -- Database cache settings: (minimum: 128.0 MB, maximum: 1.0 GB)
2/24/2011 7:31:48 AM -- Database flush thresholds: (start: 10.2 MB, stop: 20.5 MB)
2/24/2011 7:31:52 AM -- Database read latency thresholds: (average: 20 msec/read, maximum: 100 msec/read).
2/24/2011 7:31:52 AM -- Log write latency thresholds: (average: 10 msec/write, maximum: 100 msec/write).
2/24/2011 7:31:59 AM -- Operation mix: Sessions 10, Inserts 40%, Deletes 20%, Replaces 5%, Reads 35%, Lazy Commits 70%.
2/24/2011 7:31:59 AM -- Performance logging begins (interval: 15000 ms).
2/24/2011 7:31:59 AM -- Attaining prerequisites:
2/24/2011 7:35:00 AM -- \MSExchange Database(JetstressWin)\Database Cache Size, Last: 968540200.0 (lower bound: 966367600.0, upper bound: none)
2/24/2011 9:35:01 AM -- Performance logging ends.
2/24/2011 9:36:30 AM -- JetInterop batch transaction stats: 30132, 30003, 30188 and 29988.
2/24/2011 9:36:30 AM -- Dispatching transactions ends.
2/24/2011 9:36:30 AM -- Shutting down databases ...
2/24/2011 9:36:37 AM -- Instance1984.1 (complete), Instance1984.2 (complete), Instance1984.3 (complete) and Instance1984.4 (complete)
2/24/2011 9:36:37 AM -- C:\Program Files\Exchange Jetstress\ESRP_2HR_Final\Performance_2011_2_24_7_31_52.blg has 491 samples.
2/24/2011 9:36:37 AM -- Creating test report ...
2/24/2011 9:36:40 AM -- Instance1984.1 has 16.8 for I/O Database Reads Average Latency.
2/24/2011 9:36:40 AM -- Instance1984.1 has 0.8 for I/O Log Writes Average Latency.
2/24/2011 9:36:40 AM -- Instance1984.1 has 0.8 for I/O Log Reads Average Latency.
2/24/2011 9:36:40 AM -- Instance1984.2 has 15.5 for I/O Database Reads Average Latency.

2/24/2011 9:36:40 AM -- Instance1984.2 has 0.7 for I/O Log Writes Average Latency.
2/24/2011 9:36:40 AM -- Instance1984.2 has 0.7 for I/O Log Reads Average Latency.
2/24/2011 9:36:40 AM -- Instance1984.3 has 15.1 for I/O Database Reads Average Latency.
2/24/2011 9:36:40 AM -- Instance1984.3 has 0.7 for I/O Log Writes Average Latency.
2/24/2011 9:36:40 AM -- Instance1984.3 has 0.7 for I/O Log Reads Average Latency.
2/24/2011 9:36:40 AM -- Instance1984.4 has 15.3 for I/O Database Reads Average Latency.
2/24/2011 9:36:40 AM -- Instance1984.4 has 0.7 for I/O Log Writes Average Latency.
2/24/2011 9:36:40 AM -- Instance1984.4 has 0.7 for I/O Log Reads Average Latency.
2/24/2011 9:36:41 AM -- Test has 0 Maximum Database Page Fault Stalls/sec.
2/24/2011 9:36:41 AM -- Test has 0 Database Page Fault Stalls/sec samples higher than 0.
2/24/2011 9:36:41 AM -- C:\Program Files\Exchange Jetstress\ESRP_2HR_Final\Performance_2011_2_24_7_31_52.xml has 478 samples queried.

Database checksum – reliability testing

Checksum Statistics - All

Database	Seen pages	Bad pages	Correctable pages	Wrong page-number pages	File length / seconds taken
C:\ExchangeDatabases\VOL6\Jetstress001001.edb	26728498	0	0	0	835265 MBytes / 6880 sec
C:\ExchangeDatabases\VOL7\Jetstress002001.edb	26729010	0	0	0	835281 MBytes / 6491 sec
C:\ExchangeDatabases\VOL8\Jetstress003001.edb	26729010	0	0	0	835281 MBytes / 6511 sec
C:\ExchangeDatabases\VOL9\Jetstress004001.edb	26728754	0	0	0	835273 MBytes / 6501 sec
(Sum)	106915272	0	0	0	3341102 MBytes / 6880 sec

Disk Subsystem Performance (of checksum)

LogicalDisk	Avg. Disk sec/Read	Avg. Disk sec/Write	Disk Reads/sec	Disk Writes/sec	Avg. Disk Bytes/Read
C:\ExchangeDatabases\VOL6	0.029	0.000	1943.262	0.000	65536.000
C:\ExchangeDatabases\VOL7	0.028	0.000	2058.634	0.000	65536.000
C:\ExchangeDatabases\VOL8	0.029	0.000	2053.296	0.000	65536.000
C:\ExchangeDatabases\VOL9	0.030	0.000	2055.949	0.000	65536.000

Memory System Performance (of checksum)

Counter	Average	Minimum	Maximum
% Processor Time	2.631	0.620	3.280
Available MBytes	6235.371	6221.000	6251.000
Free System Page Table Entries	33555141.476	33555132.000	33555644.000
Transition Pages RePurposed/sec	0.000	0.000	0.000
Pool Nonpaged Bytes	301378796.996	301297664.000	301461504.000
Pool Paged Bytes	108632072.943	108597248.000	108720128.000

Test Log
2/24/2011 7:31:43 AM -- Jetstress testing begins ...
2/24/2011 7:31:43 AM -- Prepare testing begins ...
2/24/2011 7:31:48 AM -- Attaching databases ...
2/24/2011 7:31:48 AM -- Prepare testing ends.
2/24/2011 7:31:48 AM -- Dispatching transactions begins ...
2/24/2011 7:31:48 AM -- Database cache settings: (minimum: 128.0 MB, maximum: 1.0 GB)

2/24/2011 7:31:48 AM -- Database flush thresholds: (start: 10.2 MB, stop: 20.5 MB)
2/24/2011 7:31:52 AM -- Database read latency thresholds: (average: 20 msec/read, maximum: 100 msec/read).
2/24/2011 7:31:52 AM -- Log write latency thresholds: (average: 10 msec/write, maximum: 100 msec/write).
2/24/2011 7:31:59 AM -- Operation mix: Sessions 10, Inserts 40%, Deletes 20%, Replaces 5%, Reads 35%, Lazy Commits 70%.
2/24/2011 7:31:59 AM -- Performance logging begins (interval: 15000 ms).
2/24/2011 7:31:59 AM -- Attaining prerequisites:
2/24/2011 7:35:00 AM -- \MSExchange Database(JetstressWin)\Database Cache Size, Last: 968540200.0 (lower bound: 966367600.0, upper bound: none)
2/24/2011 9:35:01 AM -- Performance logging ends.
2/24/2011 9:36:30 AM -- JetInterop batch transaction stats: 30132, 30003, 30188 and 29988.
2/24/2011 9:36:30 AM -- Dispatching transactions ends.
2/24/2011 9:36:30 AM -- Shutting down databases ...
2/24/2011 9:36:37 AM -- Instance1984.1 (complete), Instance1984.2 (complete), Instance1984.3 (complete) and Instance1984.4 (complete)
2/24/2011 9:36:37 AM -- C:\Program Files\Exchange Jetstress\ESRP_2HR_Final\Performance_2011_2_24_7_31_52.blg has 491 samples.
2/24/2011 9:36:37 AM -- Creating test report ...
2/24/2011 9:36:40 AM -- Instance1984.1 has 16.8 for I/O Database Reads Average Latency.
2/24/2011 9:36:40 AM -- Instance1984.1 has 0.8 for I/O Log Writes Average Latency.
2/24/2011 9:36:40 AM -- Instance1984.1 has 0.8 for I/O Log Reads Average Latency.
2/24/2011 9:36:40 AM -- Instance1984.2 has 15.5 for I/O Database Reads Average Latency.
2/24/2011 9:36:40 AM -- Instance1984.2 has 0.7 for I/O Log Writes Average Latency.
2/24/2011 9:36:40 AM -- Instance1984.2 has 0.7 for I/O Log Reads Average Latency.
2/24/2011 9:36:40 AM -- Instance1984.3 has 15.1 for I/O Database Reads Average Latency.
2/24/2011 9:36:40 AM -- Instance1984.3 has 0.7 for I/O Log Writes Average Latency.
2/24/2011 9:36:40 AM -- Instance1984.3 has 0.7 for I/O Log Reads Average Latency.
2/24/2011 9:36:40 AM -- Instance1984.4 has 15.3 for I/O Database Reads Average Latency.
2/24/2011 9:36:40 AM -- Instance1984.4 has 0.7 for I/O Log Writes Average Latency.
2/24/2011 9:36:40 AM -- Instance1984.4 has 0.7 for I/O Log Reads Average Latency.
2/24/2011 9:36:41 AM -- Test has 0 Maximum Database Page Fault Stalls/sec.
2/24/2011 9:36:41 AM -- Test has 0 Database Page Fault Stalls/sec samples higher than 0.
2/24/2011 9:36:41 AM -- C:\Program Files\Exchange Jetstress\ESRP_2HR_Final\Performance_2011_2_24_7_31_52.xml has 478 samples queried.
2/24/2011 9:36:42 AM -- C:\Program Files\Exchange Jetstress\ESRP_2HR_Final\Performance_2011_2_24_7_31_52.html is saved.
2/24/2011 9:36:43 AM -- Performance logging begins (interval: 30000 ms).
2/24/2011 9:36:43 AM -- Verifying database checksums ...
2/24/2011 11:31:24 AM -- C:\ExchangeDatabases\VOL6 (100% processed), C:\ExchangeDatabases\VOL7 (100% processed), C:\ExchangeDatabases\VOL8 (100% processed) and C:\ExchangeDatabases\VOL9 (100% processed)
2/24/2011 11:31:24 AM -- Performance logging ends.
2/24/2011 11:31:24 AM -- C:\Program Files\Exchange Jetstress\ESRP_2HR_Final\DBChecksum_2011_2_24_9_36_42.blg has 229 samples.

Performance test result report 2HR

Server 1, (Failover scenario – 9 DB, 3000 users)

Test Summary

Overall Test Result	**Pass**
Machine Name	WIN-K8SJ5B9QCAV
Test Description	ESRP 2HR 5700 80TB Server 1
Test Start Time	2/24/2011 12:29:01 PM
Test End Time	2/24/2011 3:35:48 PM
Collection Start Time	2/24/2011 12:33:37 PM
Collection End Time	2/24/2011 2:33:37 PM

Jetstress Version	14.01.0180.003
Ese Version	14.01.0218.012
Operating System	Windows Server 2008 R2 Enterprise (6.1.7600.0)
Performance Log	C:\Program Files\Exchange Jetstress\ESRP_2HR_E5700 80TB_Server1_FINAL\Performance_2011_2_24_12_29_21.blg

Database Sizing and Throughput

Achieved Transactional I/O per Second	1011.296
Target Transactional I/O per Second	720
Initial Database Size (bytes)	7922797576192
Final Database Size (bytes)	7927621025792
Database Files (Count)	9

Jetstress System Parameters

Thread Count	10 (per database)
Minimum Database Cache	288.0 MB
Maximum Database Cache	2304.0 MB
Insert Operations	40%
Delete Operations	20%
Replace Operations	5%
Read Operations	35%
Lazy Commits	70%
Run Background Database Maintenance	True
Number of Copies per Database	2

Database Configuration

Instance5116.1 Log Path: C:\ExchangeDatabases\VOL1\log
　　　　　　　Database: C:\ExchangeDatabases\VOL1\Jetstress001001.edb

Instance5116.2 Log Path: C:\ExchangeDatabases\VOL2\log
　　　　　　　Database: C:\ExchangeDatabases\VOL2\Jetstress002001.edb

Instance5116.3 Log Path: C:\ExchangeDatabases\VOL3\log
　　　　　　　Database: C:\ExchangeDatabases\VOL3\Jetstress003001.edb

Instance5116.4 Log Path: C:\ExchangeDatabases\VOL4\log
　　　　　　　Database: C:\ExchangeDatabases\VOL4\Jetstress004001.edb

Instance5116.5 Log Path: C:\ExchangeDatabases\VOL5\log
　　　　　　　Database: C:\ExchangeDatabases\VOL5\Jetstress005001.edb

Instance5116.6 Log Path: C:\ExchangeDatabases\VOL6\log
　　　　　　　Database: C:\ExchangeDatabases\VOL6\Jetstress006001.edb

Instance5116.7 Log Path: C:\ExchangeDatabases\VOL7\log
Database: C:\ExchangeDatabases\VOL7\Jetstress007001.edb

Instance5116.8 Log Path: C:\ExchangeDatabases\VOL8\log
Database: C:\ExchangeDatabases\VOL8\Jetstress008001.edb

Instance5116.9 Log Path: C:\ExchangeDatabases\VOL9\log
Database: C:\ExchangeDatabases\VOL9\Jetstress009001.edb

Transactional I/O Performance

MSExchange Database ==> Instances	I/O Database Reads Average Latency (msec)	I/O Database Writes Average Latency (msec)	I/O Database Reads/sec	I/O Database Writes/sec	I/O Database Reads Average Bytes	I/O Database Writes Average Bytes	I/O Log Reads Average Latency (msec)	I/O Log Writes Average Latency (msec)	I/O Log Reads/sec	I/O Log Writes/sec	I/O Log Reads Average Bytes	I/O Log Writes Average Bytes
Instance5116.1	15.433	5.954	67.530	44.803	34609.634	35382.865	0.000	0.866	0.000	37.841	0.000	4572.578
Instance5116.2	15.392	6.125	67.556	44.911	34497.690	35371.764	0.000	0.855	0.000	37.832	0.000	4548.602
Instance5116.3	15.122	6.155	68.015	45.177	34428.765	35378.645	0.000	0.842	0.000	38.476	0.000	4557.358
Instance5116.4	15.992	6.157	68.448	45.586	34212.639	35388.169	0.000	0.895	0.000	38.498	0.000	4564.864
Instance5116.5	15.379	6.130	67.394	44.738	34542.401	35443.881	0.000	0.857	0.000	38.291	0.000	4566.112
Instance5116.6	15.536	6.068	67.792	44.726	34323.806	35305.813	0.000	0.902	0.000	37.980	0.000	4576.449
Instance5116.7	15.609	6.032	67.751	44.822	34123.541	35353.382	0.000	0.901	0.000	38.246	0.000	4550.159
Instance5116.8	15.194	6.011	66.712	43.984	34544.489	35368.818	0.000	0.888	0.000	37.476	0.000	4618.582
Instance5116.9	15.418	5.993	67.053	44.298	34402.832	35369.721	0.000	0.881	0.000	38.103	0.000	4615.453

Background Database Maintenance I/O Performance

MSExchange Database ==> Instances	Database Maintenance IO Reads/sec	Database Maintenance IO Reads Average Bytes
Instance5116.1	27.433	260793.684
Instance5116.2	27.494	260836.861
Instance5116.3	27.672	260847.107
Instance5116.4	27.051	260734.844
Instance5116.5	27.459	260814.905
Instance5116.6	26.966	261676.971
Instance5116.7	27.217	261725.855
Instance5116.8	27.250	261723.146
Instance5116.9	27.166	261720.837

Log Replication I/O Performance

MSExchange Database ==> Instances	I/O Log Reads/sec	I/O Log Reads Average Bytes
Instance5116.1	0.697	223423.293
Instance5116.2	0.696	223806.417
Instance5116.3	0.709	228673.039
Instance5116.4	0.710	227625.216
Instance5116.5	0.706	229106.817
Instance5116.6	0.702	227514.436
Instance5116.7	0.705	226129.271
Instance5116.8	0.702	230111.400
Instance5116.9	0.711	229154.728

Total I/O Performance

MSExchange Database ==> Instances	I/O Database Reads Average Latency (msec)	I/O Database Writes Average Latency (msec)	I/O Database Reads/sec	I/O Database Writes/sec	I/O Database Reads Average Bytes	I/O Database Writes Average Bytes	I/O Log Reads Average Latency (msec)	I/O Log Writes Average Latency (msec)	I/O Log Reads/sec	I/O Log Writes/sec	I/O Log Reads Average Bytes	I/O Log Writes Average Bytes
Instance5116.1	15.433	5.954	94.963	44.803	99949.961	35382.865	10.480	0.866	0.697	37.841	223423.293	4572.578
Instance5116.2	15.392	6.125	95.050	44.911	99968.460	35371.764	8.834	0.855	0.696	37.832	223806.417	4548.602
Instance5116.3	15.122	6.155	95.687	45.177	99906.971	35378.645	7.912	0.842	0.709	38.476	228673.039	4557.358
Instance5116.4	15.992	6.157	95.499	45.586	98377.684	35388.169	11.159	0.895	0.710	38.498	227625.216	4564.864
Instance5116.5	15.379	6.130	94.853	44.738	100046.438	35443.881	9.529	0.857	0.706	38.291	229106.817	4566.112
Instance5116.6	15.536	6.068	94.757	44.726	99023.028	35305.813	11.460	0.902	0.702	37.980	227514.436	4576.449
Instance5116.7	15.609	6.032	94.968	44.822	99352.783	35353.382	12.485	0.901	0.705	38.246	226129.271	4550.159
Instance5116.8	15.194	6.011	93.961	43.984	100428.380	35368.818	11.035	0.888	0.702	37.476	230111.400	4618.582
Instance5116.9	15.418	5.993	94.219	44.298	99946.113	35369.721	11.623	0.881	0.711	38.103	229154.728	4615.453

Host System Performance

Counter	Average	Minimum	Maximum
% Processor Time	1.177	0.862	1.523
Available MBytes	3883.184	3879.000	4009.000
Free System Page Table Entries	33555167.714	33555128.000	33555646.000
Transition Pages RePurposed/sec	1.442	0.000	522.213
Pool Nonpaged Bytes	300870859.090	300744704.000	301023232.000
Pool Paged Bytes	112838779.992	112791552.000	113000448.000
Database Page Fault Stalls/sec	0.000	0.000	0.000

Test Log

2/24/2011 7:32:10 AM -- Jetstress testing begins ...
2/24/2011 7:32:10 AM -- Prepare testing begins ...
2/24/2011 7:32:15 AM -- Attaching databases ...
2/24/2011 7:32:15 AM -- Prepare testing ends.
2/24/2011 7:32:15 AM -- Dispatching transactions begins ...
2/24/2011 7:32:15 AM -- Database cache settings: (minimum: 160.0 MB, maximum: 1.2 GB)
2/24/2011 7:32:15 AM -- Database flush thresholds: (start: 12.8 MB, stop: 25.6 MB)
2/24/2011 7:32:21 AM -- Database read latency thresholds: (average: 20 msec/read, maximum: 100 msec/read).
2/24/2011 7:32:21 AM -- Log write latency thresholds: (average: 10 msec/write, maximum: 100 msec/write).
2/24/2011 7:32:29 AM -- Operation mix: Sessions 10, Inserts 40%, Deletes 20%, Replaces 5%, Reads 35%, Lazy Commits 70%.
2/24/2011 7:32:29 AM -- Performance logging begins (interval: 15000 ms).
2/24/2011 7:32:29 AM -- Attaining prerequisites:
2/24/2011 7:35:41 AM -- \MSExchange Database(JetstressWin)\Database Cache Size, Last: 1210065000.0 (lower bound: 1207960000.0, upper bound: none)
2/24/2011 9:35:41 AM -- Performance logging ends.
2/24/2011 9:37:07 AM -- JetInterop batch transaction stats: 28453, 28212, 28023, 28118 and 28167.
2/24/2011 9:37:07 AM -- Dispatching transactions ends.
2/24/2011 9:37:07 AM -- Shutting down databases ...
2/24/2011 9:37:18 AM -- Instance5116.1 (complete), Instance5116.2 (complete), Instance5116.3 (complete), Instance5116.4 (complete) and Instance5116.5 (complete)
2/24/2011 9:37:18 AM -- C:\Program Files\Exchange Jetstress\ESRP_2HR_E5700 80TB_Server1_FINAL\Performance_2011_2_24_7_32_21.blg has 492 samples.
2/24/2011 9:37:18 AM -- Creating test report ...
2/24/2011 9:37:22 AM -- Instance5116.1 has 15.9 for I/O Database Reads Average Latency.
2/24/2011 9:37:22 AM -- Instance5116.1 has 0.8 for I/O Log Writes Average Latency.
2/24/2011 9:37:22 AM -- Instance5116.1 has 0.8 for I/O Log Reads Average Latency.
2/24/2011 9:37:22 AM -- Instance5116.2 has 15.8 for I/O Database Reads Average Latency.
2/24/2011 9:37:22 AM -- Instance5116.2 has 0.8 for I/O Log Writes Average Latency.
2/24/2011 9:37:22 AM -- Instance5116.2 has 0.8 for I/O Log Reads Average Latency.
2/24/2011 9:37:22 AM -- Instance5116.3 has 15.6 for I/O Database Reads Average Latency.
2/24/2011 9:37:22 AM -- Instance5116.3 has 0.8 for I/O Log Writes Average Latency.
2/24/2011 9:37:22 AM -- Instance5116.3 has 0.8 for I/O Log Reads Average Latency.
2/24/2011 9:37:22 AM -- Instance5116.4 has 16.0 for I/O Database Reads Average Latency.
2/24/2011 9:37:22 AM -- Instance5116.4 has 0.8 for I/O Log Writes Average Latency.
2/24/2011 9:37:22 AM -- Instance5116.4 has 0.8 for I/O Log Reads Average Latency.
2/24/2011 9:37:22 AM -- Instance5116.5 has 15.8 for I/O Database Reads Average Latency.
2/24/2011 9:37:22 AM -- Instance5116.5 has 0.8 for I/O Log Writes Average Latency.
2/24/2011 9:37:22 AM -- Instance5116.5 has 0.8 for I/O Log Reads Average Latency.
2/24/2011 9:37:22 AM -- Test has 0 Maximum Database Page Fault Stalls/sec.
2/24/2011 9:37:22 AM -- Test has 0 Database Page Fault Stalls/sec samples higher than 0.
2/24/2011 9:37:22 AM -- C:\Program Files\Exchange Jetstress\ESRP_2HR_E5700 80TB_Server1_FINAL\Performance_2011_2_24_7_32_21.xml has 479 samples queried.
2/24/2011 9:37:22 AM -- C:\Program Files\Exchange Jetstress\ESRP_2HR_E5700 80TB_Server1_FINAL\Performance_2011_2_24_7_32_21.html is saved.
2/24/2011 9:37:23 AM -- Performance logging begins (interval: 30000 ms).
2/24/2011 9:37:23 AM -- Verifying database checksums ...
2/24/2011 11:44:31 AM -- C:\ExchangeDatabases\VOL1 (100% processed), C:\ExchangeDatabases\VOL2 (100% processed), C:\ExchangeDatabases\VOL3 (100% processed), C:\ExchangeDatabases\VOL4 (100% processed) and C:\ExchangeDatabases\VOL5 (100% processed)
2/24/2011 11:44:31 AM -- Performance logging ends.
2/24/2011 11:44:31 AM -- C:\Program Files\Exchange Jetstress\ESRP_2HR_E5700 80TB_Server1_FINAL\DBChecksum_2011_2_24_9_37_22.blg has 254 samples.
2/24/2011 11:44:34 AM -- C:\Program Files\Exchange Jetstress\ESRP_2HR_E5700 80TB_Server1_FINAL\DBChecksum_2011_2_24_9_37_22.html is saved.
2/24/2011 11:44:34 AM -- Verifying log checksums ...
2/24/2011 11:44:35 AM -- C:\ExchangeDatabases\VOL1\log (10 log(s) processed), C:\ExchangeDatabases\VOL2\log (10 log(s) processed), C:\ExchangeDatabases\VOL3\log (12 log(s) processed), C:\ExchangeDatabases\VOL4\log (10 log(s) processed) and C:\ExchangeDatabases\VOL5\log (11 log(s) processed)
2/24/2011 11:44:35 AM -- C:\Program Files\Exchange Jetstress\ESRP_2HR_E5700 80TB_Server1_FINAL\Application_2011_2_24_11_44_35.evt is saved.
2/24/2011 11:44:35 AM -- C:\Program Files\Exchange Jetstress\ESRP_2HR_E5700 80TB_Server1_FINAL\System_2011_2_24_11_44_35.evt is saved.
2/24/2011 11:44:35 AM -- C:\Program Files\Exchange Jetstress\ESRP_2HR_E5700 80TB_Server1_FINAL\XmlConfig_2011_2_24_11_44_35.xml is saved.
2/24/2011 11:44:35 AM -- Jetstress testing ends.

2/24/2011 12:29:01 PM -- Jetstress testing begins ...
2/24/2011 12:29:01 PM -- Prepare testing begins ...
2/24/2011 12:29:11 PM -- Attaching databases ...
2/24/2011 12:29:11 PM -- Prepare testing ends.
2/24/2011 12:29:11 PM -- Dispatching transactions begins ...
2/24/2011 12:29:11 PM -- Database cache settings: (minimum: 288.0 MB, maximum: 2.2 GB)
2/24/2011 12:29:11 PM -- Database flush thresholds: (start: 23.0 MB, stop: 46.1 MB)
2/24/2011 12:29:21 PM -- Database read latency thresholds: (average: 20 msec/read, maximum: 100 msec/read).
2/24/2011 12:29:21 PM -- Log write latency thresholds: (average: 10 msec/write, maximum: 100 msec/write).
2/24/2011 12:29:33 PM -- Operation mix: Sessions 10, Inserts 40%, Deletes 20%, Replaces 5%, Reads 35%, Lazy Commits 70%.
2/24/2011 12:29:33 PM -- Performance logging begins (interval: 15000 ms).
2/24/2011 12:29:33 PM -- Attaining prerequisites:
2/24/2011 12:33:37 PM -- \MSExchange Database(JetstressWin)\Database Cache Size, Last: 2175996000.0 (lower bound: 2174327000.0, upper bound: none)
2/24/2011 2:33:38 PM -- Performance logging ends.
2/24/2011 3:35:29 PM -- JetInterop batch transaction stats: 37813, 37942, 38052, 38254, 38409, 37947, 37843, 37696 and 37891.
2/24/2011 3:35:29 PM -- Dispatching transactions ends.
2/24/2011 3:35:29 PM -- Shutting down databases ...
2/24/2011 3:35:48 PM -- Instance5116.1 (complete), Instance5116.2 (complete), Instance5116.3 (complete), Instance5116.4 (complete), Instance5116.5 (complete), Instance5116.6 (complete), Instance5116.7 (complete), Instance5116.8 (complete) and Instance5116.9 (complete)
2/24/2011 3:35:48 PM -- C:\Program Files\Exchange Jetstress\ESRP_2HR_E5700 80TB_Server1_FINAL\Performance_2011_2_24_12_29_21.blg has 495 samples.
2/24/2011 3:35:48 PM -- Creating test report ...
2/24/2011 3:35:53 PM -- Instance5116.1 has 15.4 for I/O Database Reads Average Latency.
2/24/2011 3:35:53 PM -- Instance5116.1 has 0.9 for I/O Log Writes Average Latency.
2/24/2011 3:35:53 PM -- Instance5116.1 has 0.9 for I/O Log Reads Average Latency.
2/24/2011 3:35:53 PM -- Instance5116.2 has 15.4 for I/O Database Reads Average Latency.
2/24/2011 3:35:53 PM -- Instance5116.2 has 0.9 for I/O Log Writes Average Latency.
2/24/2011 3:35:53 PM -- Instance5116.2 has 0.9 for I/O Log Reads Average Latency.
2/24/2011 3:35:53 PM -- Instance5116.3 has 15.1 for I/O Database Reads Average Latency.
2/24/2011 3:35:53 PM -- Instance5116.3 has 0.8 for I/O Log Writes Average Latency.
2/24/2011 3:35:53 PM -- Instance5116.3 has 0.8 for I/O Log Reads Average Latency.
2/24/2011 3:35:53 PM -- Instance5116.4 has 16.0 for I/O Database Reads Average Latency.
2/24/2011 3:35:53 PM -- Instance5116.4 has 0.9 for I/O Log Writes Average Latency.
2/24/2011 3:35:53 PM -- Instance5116.4 has 0.9 for I/O Log Reads Average Latency.
2/24/2011 3:35:53 PM -- Instance5116.5 has 15.4 for I/O Database Reads Average Latency.
2/24/2011 3:35:53 PM -- Instance5116.5 has 0.9 for I/O Log Writes Average Latency.
2/24/2011 3:35:53 PM -- Instance5116.5 has 0.9 for I/O Log Reads Average Latency.
2/24/2011 3:35:53 PM -- Instance5116.6 has 15.5 for I/O Database Reads Average Latency.
2/24/2011 3:35:53 PM -- Instance5116.6 has 0.9 for I/O Log Writes Average Latency.
2/24/2011 3:35:53 PM -- Instance5116.6 has 0.9 for I/O Log Reads Average Latency.
2/24/2011 3:35:53 PM -- Instance5116.7 has 15.6 for I/O Database Reads Average Latency.
2/24/2011 3:35:53 PM -- Instance5116.7 has 0.9 for I/O Log Writes Average Latency.
2/24/2011 3:35:53 PM -- Instance5116.7 has 0.9 for I/O Log Reads Average Latency.
2/24/2011 3:35:54 PM -- Instance5116.8 has 15.2 for I/O Database Reads Average Latency.
2/24/2011 3:35:54 PM -- Instance5116.8 has 0.9 for I/O Log Writes Average Latency.
2/24/2011 3:35:54 PM -- Instance5116.8 has 0.9 for I/O Log Reads Average Latency.
2/24/2011 3:35:54 PM -- Instance5116.9 has 15.4 for I/O Database Reads Average Latency.
2/24/2011 3:35:54 PM -- Instance5116.9 has 0.9 for I/O Log Writes Average Latency.
2/24/2011 3:35:54 PM -- Instance5116.9 has 0.9 for I/O Log Reads Average Latency.
2/24/2011 3:35:54 PM -- Test has 0 Maximum Database Page Fault Stalls/sec.
2/24/2011 3:35:54 PM -- Test has 0 Database Page Fault Stalls/sec samples higher than 0.
2/24/2011 3:35:54 PM -- C:\Program Files\Exchange Jetstress\ESRP_2HR_E5700 80TB_Server1_FINAL\Performance_2011_2_24_12_29_21.xml has 478 samples queried.

24 Hour stress test

Server 1, (Normal load – 5 DB, 1667 users)

Test Summary

Overall Test Result	**Pass**
Machine Name	WIN-K8SJ5B9QCAV
Test Description	ESRP 24hr
	5700 80TB Server 1
Test Start Time	2/26/2011 11:25:04 PM
Test End Time	2/28/2011 7:38:46 AM
Collection Start Time	2/26/2011 11:28:34 PM
Collection End Time	2/27/2011 11:28:21 PM
Jetstress Version	14.01.0180.003
Ese Version	14.01.0218.012
Operating System	Windows Server 2008 R2 Enterprise (6.1.7600.0)
Performance Log	C:\Program Files\Exchange Jetstress\ESRP_24hr\Stress_2011_2_26_23_25_15.blg

Database Sizing and Throughput

Achieved Transactional I/O per Second	604.666
Target Transactional I/O per Second	400.08
Initial Database Size (bytes)	4408903794688
Final Database Size (bytes)	4438482026496
Database Files (Count)	5

Jetstress System Parameters

Thread Count	10 (per database)
Minimum Database Cache	160.0 MB
Maximum Database Cache	1280.0 MB
Insert Operations	40%
Delete Operations	20%
Replace Operations	5%
Read Operations	35%
Lazy Commits	70%
Run Background Database Maintenance	True
Number of Copies per Database	2

Database Configuration

Instance5116.1 Log Path: C:\ExchangeDatabases\VOL1\log
                     Database: C:\ExchangeDatabases\VOL1\Jetstress001001.edb

Instance5116.2 Log Path: C:\ExchangeDatabases\VOL2\log
Database: C:\ExchangeDatabases\VOL2\Jetstress002001.edb

Instance5116.3 Log Path: C:\ExchangeDatabases\VOL3\log
Database: C:\ExchangeDatabases\VOL3\Jetstress003001.edb

Instance5116.4 Log Path: C:\ExchangeDatabases\VOL4\log
Database: C:\ExchangeDatabases\VOL4\Jetstress004001.edb

Instance5116.5 Log Path: C:\ExchangeDatabases\VOL5\log
Database: C:\ExchangeDatabases\VOL5\Jetstress005001.edb

Transactional I/O Performance

MSExchange Database ==> Instances	I/O Database Reads Average Latency (msec)	I/O Database Writes Average Latency (msec)	I/O Database Reads/sec	I/O Database Writes/sec	I/O Database Reads Average Bytes	I/O Database Writes Average Bytes	I/O Log Reads Average Latency (msec)	I/O Log Writes Average Latency (msec)	I/O Log Reads/sec	I/O Log Writes/sec	I/O Log Reads Average Bytes	I/O Log Writes Average Bytes
Instance5116.1	16.578	3.848	73.068	47.586	34170.741	35158.339	0.000	0.854	0.000	40.303	0.000	4559.779
Instance5116.2	16.809	3.949	73.297	47.769	34119.320	35154.546	0.000	0.847	0.000	40.498	0.000	4555.941
Instance5116.3	15.881	3.982	72.990	47.582	34244.662	35167.862	0.000	0.836	0.000	40.406	0.000	4565.433
Instance5116.4	16.564	3.996	73.399	47.855	34129.960	35153.822	0.000	0.842	0.000	40.525	0.000	4558.367
Instance5116.5	16.011	4.021	73.305	47.815	34185.857	35157.884	0.000	0.839	0.000	40.626	0.000	4560.690

Background Database Maintenance I/O Performance

MSExchange Database ==> Instances	Database Maintenance IO Reads/sec	Database Maintenance IO Reads Average Bytes
Instance5116.1	26.567	261696.884
Instance5116.2	26.476	261689.659
Instance5116.3	27.090	261673.907
Instance5116.4	26.688	261674.676
Instance5116.5	27.072	261685.081

Log Replication I/O Performance

MSExchange Database ==> Instances	I/O Log Reads/sec	I/O Log Reads Average Bytes
Instance5116.1	0.743	228097.537
Instance5116.2	0.746	228321.328
Instance5116.3	0.746	228000.090
Instance5116.4	0.747	228542.578
Instance5116.5	0.749	228641.888

Total I/O Performance

MSExchange Database ==> Instances	I/O Database Reads Average Latency (msec)	I/O Database Writes Average Latency (msec)	I/O Database Reads/sec	I/O Database Writes/sec	I/O Database Reads Average Bytes	I/O Database Writes Average Bytes	I/O Log Reads Average Latency (msec)	I/O Log Writes Average Latency (msec)	I/O Log Reads/sec	I/O Log Writes/sec	I/O Log Reads Average Bytes	I/O Log Writes Average Bytes
Instance5116.1	16.578	3.848	99.634	47.586	94838.675	35158.339	11.870	0.854	0.743	40.303	228097.537	4559.779
Instance5116.2	16.809	3.949	99.772	47.769	94507.147	35154.546	11.174	0.847	0.746	40.498	228321.328	4555.941
Instance5116.3	15.881	3.982	100.080	47.582	95806.811	35167.862	10.809	0.836	0.746	40.406	228000.090	4565.433
Instance5116.4	16.564	3.996	100.087	47.855	94804.679	35153.822	11.614	0.842	0.747	40.525	228542.578	4558.367
Instance5116.5	16.011	4.021	100.377	47.815	95542.433	35157.884	11.155	0.839	0.749	40.626	228641.888	4560.690

Host System Performance

Counter	Average	Minimum	Maximum
% Processor Time	0.750	0.395	2.472
Available MBytes	4914.051	4904.000	5025.000
Free System Page Table Entries	33555148.053	33555127.000	33555646.000
Transition Pages RePurposed/sec	0.000	0.000	0.000
Pool Nonpaged Bytes	300756697.852	300744704.000	300838912.000
Pool Paged Bytes	112491333.219	112095232.000	115216384.000
Database Page Fault Stalls/sec	0.000	0.000	0.000

Test Log
2/26/2011 11:25:04 PM -- Jetstress testing begins ...
2/26/2011 11:25:04 PM -- Prepare testing begins ...
2/26/2011 11:25:09 PM -- Attaching databases ...
2/26/2011 11:25:09 PM -- Prepare testing ends.
2/26/2011 11:25:10 PM -- Dispatching transactions begins ...
2/26/2011 11:25:10 PM -- Database cache settings: (minimum: 160.0 MB, maximum: 1.2 GB)
2/26/2011 11:25:10 PM -- Database flush thresholds: (start: 12.8 MB, stop: 25.6 MB)
2/26/2011 11:25:15 PM -- Database read latency thresholds: (average: 20 msec/read, maximum: 200 msec/read).
2/26/2011 11:25:15 PM -- Log write latency thresholds: (average: 10 msec/write, maximum: 200 msec/write).
2/26/2011 11:25:23 PM -- Operation mix: Sessions 10, Inserts 40%, Deletes 20%, Replaces 5%, Reads 35%, Lazy Commits 70%.
2/26/2011 11:25:23 PM -- Performance logging begins (interval: 15000 ms).
2/26/2011 11:25:23 PM -- Attaining prerequisites:
2/26/2011 11:28:34 PM -- \MSExchange Database(JetstressWin)\Database Cache Size, Last: 1217192000.0 (lower bound: 1207960000.0, upper bound: none)
2/27/2011 11:28:34 PM -- Performance logging ends.
2/28/2011 7:38:36 AM -- JetInterop batch transaction stats: 414633, 414827, 414872, 415437 and 415992.
2/28/2011 7:38:36 AM -- Dispatching transactions ends.
2/28/2011 7:38:36 AM -- Shutting down databases ...
2/28/2011 7:38:46 AM -- Instance5116.1 (complete), Instance5116.2 (complete), Instance5116.3 (complete), Instance5116.4 (complete) and Instance5116.5 (complete)
2/28/2011 7:38:46 AM -- C:\Program Files\Exchange Jetstress\ESRP_24hr\Stress_2011_2_26_23_25_15.blg has 5763 samples.
2/28/2011 7:38:46 AM -- Creating test report ...
2/28/2011 7:39:49 AM -- Instance5116.1 has 16.6 for I/O Database Reads Average Latency.
2/28/2011 7:39:49 AM -- Instance5116.1 has 0.9 for I/O Log Writes Average Latency.
2/28/2011 7:39:49 AM -- Instance5116.1 has 0.9 for I/O Log Reads Average Latency.

2/28/2011 7:39:49 AM -- Instance5116.2 has 16.8 for I/O Database Reads Average Latency.
2/28/2011 7:39:49 AM -- Instance5116.2 has 0.8 for I/O Log Writes Average Latency.
2/28/2011 7:39:49 AM -- Instance5116.2 has 0.8 for I/O Log Reads Average Latency.
2/28/2011 7:39:49 AM -- Instance5116.3 has 15.9 for I/O Database Reads Average Latency.
2/28/2011 7:39:49 AM -- Instance5116.3 has 0.8 for I/O Log Writes Average Latency.
2/28/2011 7:39:49 AM -- Instance5116.3 has 0.8 for I/O Log Reads Average Latency.
2/28/2011 7:39:49 AM -- Instance5116.4 has 16.6 for I/O Database Reads Average Latency.
2/28/2011 7:39:49 AM -- Instance5116.4 has 0.8 for I/O Log Writes Average Latency.
2/28/2011 7:39:49 AM -- Instance5116.4 has 0.8 for I/O Log Reads Average Latency.
2/28/2011 7:39:49 AM -- Instance5116.5 has 16.0 for I/O Database Reads Average Latency.
2/28/2011 7:39:49 AM -- Instance5116.5 has 0.8 for I/O Log Writes Average Latency.
2/28/2011 7:39:49 AM -- Instance5116.5 has 0.8 for I/O Log Reads Average Latency.
2/28/2011 7:39:49 AM -- Test has 0 Maximum Database Page Fault Stalls/sec.
2/28/2011 7:39:49 AM -- Test has 0 Database Page Fault Stalls/sec samples higher than 0.
2/28/2011 7:39:49 AM -- C:\Program Files\Exchange Jetstress\ESRP_24hr\Stress_2011_2_26_23_25_15.xml has 5750 samples queried.

Server 2, (Normal load – 4 DB, 1333 users)

Test Summary

Overall Test Result	**Pass**
Machine Name	WIN-VCPDO0Q40UA
Test Description	E5700 80TB80TB_Server2 ESRP Mercury 226 24 Hr Perf
Test Start Time	2/26/2011 11:24:39 PM
Test End Time	2/28/2011 7:38:42 AM
Collection Start Time	2/26/2011 11:27:59 PM
Collection End Time	2/27/2011 11:27:52 PM
Jetstress Version	14.01.0180.003
Ese Version	14.01.0218.012
Operating System	Windows Server 2008 R2 Enterprise (6.1.7600.0)
Performance Log	C:\Program Files\Exchange Jetstress\ESRP_24hr\Stress_2011_2_26_23_24_49.blg

Database Sizing and Throughput

Achieved Transactional I/O per Second	509.066
Target Transactional I/O per Second	319.92
Initial Database Size (bytes)	3503399632896
Final Database Size (bytes)	3528030683136
Database Files (Count)	4

Jetstress System Parameters

Thread Count	10 (per database)
Minimum Database Cache	128.0 MB
Maximum Database Cache	1024.0 MB
Insert Operations	40%
Delete Operations	20%

Replace Operations 5%
Read Operations 35%
Lazy Commits 70%
Run Background Database Maintenance True
Number of Copies per Database 2

Database Configuration
Instance4752.1 Log Path: C:\ExchangeDatabases\VOL6\logs
Database: C:\ExchangeDatabases\VOL6\Jetstress001001.edb

Instance4752.2 Log Path: C:\ExchangeDatabases\VOL7\logs
Database: C:\ExchangeDatabases\VOL7\Jetstress002001.edb

Instance4752.3 Log Path: C:\ExchangeDatabases\VOL8\logs
Database: C:\ExchangeDatabases\VOL8\Jetstress003001.edb

Instance4752.4 Log Path: C:\ExchangeDatabases\VOL9\logs
Database: C:\ExchangeDatabases\VOL9\Jetstress004001.edb

Transactional I/O Performance

MSExchange Database ==> Instances	I/O Database Reads Average Latency (msec)	I/O Database Writes Average Latency (msec)	I/O Database Reads/sec	I/O Database Writes/sec	I/O Database Reads Average Bytes	I/O Database Writes Average Bytes	I/O Log Reads Average Latency (msec)	I/O Log Writes Average Latency (msec)	I/O Log Reads/sec	I/O Log Writes/sec	I/O Log Reads Average Bytes	I/O Log Writes Average Bytes
Instance4752.1	17.563	3.036	77.071	49.852	33788.653	35424.737	0.000	0.825	0.000	42.823	0.000	4558.397
Instance4752.2	15.975	3.128	77.304	50.036	34108.387	35408.555	0.000	0.808	0.000	42.869	0.000	4539.949
Instance4752.3	15.807	3.207	77.431	50.138	34114.255	35427.128	0.000	0.803	0.000	42.992	0.000	4552.871
Instance4752.4	16.052	3.177	77.244	49.991	34127.837	35428.383	0.000	0.810	0.000	42.886	0.000	4555.856

Background Database Maintenance I/O Performance

MSExchange Database ==> Instances	Database Maintenance IO Reads/sec	Database Maintenance IO Reads Average Bytes
Instance4752.1	26.083	261705.504
Instance4752.2	26.984	261674.774
Instance4752.3	27.030	261662.803
Instance4752.4	26.912	261678.744

Log Replication I/O Performance

MSExchange Database ==> Instances	I/O Log Reads/sec	I/O Log Reads Average Bytes
Instance4752.1	0.790	230348.462
Instance4752.2	0.787	229959.336
Instance4752.3	0.792	229827.763
Instance4752.4	0.790	230387.060

Total I/O Performance

MSExchange Database ==> Instances	I/O Database Reads Average Latency (msec)	I/O Database Writes Average Latency (msec)	I/O Database Reads/sec	I/O Database Writes/sec	I/O Database Reads Average Bytes	I/O Database Writes Average Bytes	I/O Log Reads Average Latency (msec)	I/O Log Writes Average Latency (msec)	I/O Log Reads/sec	I/O Log Writes/sec	I/O Log Reads Average Bytes	I/O Log Writes Average Bytes
Instance4752.1	17.563	3.036	103.155	49.852	91419.032	35424.737	12.481	0.825	0.790	42.823	230348.462	4558.397
Instance4752.2	15.975	3.128	104.288	50.036	92990.740	35408.555	11.970	0.808	0.787	42.869	229959.336	4539.949
Instance4752.3	15.807	3.207	104.461	50.138	92994.503	35427.128	11.419	0.803	0.792	42.992	229827.763	4552.871
Instance4752.4	16.052	3.177	104.155	49.991	92922.504	35428.383	11.674	0.810	0.790	42.886	230387.060	4555.856

Host System Performance

Counter	Average	Minimum	Maximum
% Processor Time	0.647	0.324	2.485
Available MBytes	5199.676	5189.000	5244.000
Free System Page Table Entries	33555150.570	33555126.000	33555646.000
Transition Pages RePurposed/sec	0.000	0.000	0.000
Pool Nonpaged Bytes	300945147.326	300920832.000	301027328.000
Pool Paged Bytes	106142664.981	105897984.000	137519104.000
Database Page Fault Stalls/sec	0.000	0.000	0.000

Test Log
2/26/2011 11:24:39 PM -- Jetstress testing begins ...
2/26/2011 11:24:39 PM -- Prepare testing begins ...
2/26/2011 11:24:44 PM -- Attaching databases ...
2/26/2011 11:24:44 PM -- Prepare testing ends.
2/26/2011 11:24:44 PM -- Dispatching transactions begins ...
2/26/2011 11:24:44 PM -- Database cache settings: (minimum: 128.0 MB, maximum: 1.0 GB)
2/26/2011 11:24:44 PM -- Database flush thresholds: (start: 10.2 MB, stop: 20.5 MB)
2/26/2011 11:24:49 PM -- Database read latency thresholds: (average: 20 msec/read, maximum: 200 msec/read).
2/26/2011 11:24:49 PM -- Log write latency thresholds: (average: 10 msec/write, maximum: 200 msec/write).
2/26/2011 11:24:56 PM -- Operation mix: Sessions 10, Inserts 40%, Deletes 20%, Replaces 5%, Reads 35%, Lazy Commits 70%.
2/26/2011 11:24:56 PM -- Performance logging begins (interval: 15000 ms).
2/26/2011 11:24:56 PM -- Attaining prerequisites:
2/26/2011 11:27:59 PM -- \MSExchange Database(JetstressWin)\Database Cache Size, Last: 972963800.0 (lower bound: 966367600.0, upper bound: none)
2/27/2011 11:27:59 PM -- Performance logging ends.
2/28/2011 7:38:30 AM -- JetInterop batch transaction stats: 437508, 438384, 438513 and 438088.
2/28/2011 7:38:30 AM -- Dispatching transactions ends.

2/28/2011 7:38:30 AM -- Shutting down databases ...
2/28/2011 7:38:42 AM -- Instance4752.1 (complete), Instance4752.2 (complete), Instance4752.3 (complete) and Instance4752.4 (complete)
2/28/2011 7:38:42 AM -- C:\Program Files\Exchange Jetstress\ESRP_24hr\Stress_2011_2_26_23_24_49.blg has 5763 samples.
2/28/2011 7:38:42 AM -- Creating test report ...
2/28/2011 7:39:13 AM -- Instance4752.1 has 17.6 for I/O Database Reads Average Latency.
2/28/2011 7:39:13 AM -- Instance4752.1 has 0.8 for I/O Log Writes Average Latency.
2/28/2011 7:39:13 AM -- Instance4752.1 has 0.8 for I/O Log Reads Average Latency.
2/28/2011 7:39:13 AM -- Instance4752.2 has 16.0 for I/O Database Reads Average Latency.
2/28/2011 7:39:13 AM -- Instance4752.2 has 0.8 for I/O Log Writes Average Latency.
2/28/2011 7:39:13 AM -- Instance4752.2 has 0.8 for I/O Log Reads Average Latency.
2/28/2011 7:39:13 AM -- Instance4752.3 has 15.8 for I/O Database Reads Average Latency.
2/28/2011 7:39:13 AM -- Instance4752.3 has 0.8 for I/O Log Writes Average Latency.
2/28/2011 7:39:13 AM -- Instance4752.3 has 0.8 for I/O Log Reads Average Latency.
2/28/2011 7:39:13 AM -- Instance4752.4 has 16.1 for I/O Database Reads Average Latency.
2/28/2011 7:39:13 AM -- Instance4752.4 has 0.8 for I/O Log Writes Average Latency.
2/28/2011 7:39:13 AM -- Instance4752.4 has 0.8 for I/O Log Reads Average Latency.
2/28/2011 7:39:13 AM -- Test has 0 Maximum Database Page Fault Stalls/sec.
2/28/2011 7:39:13 AM -- Test has 0 Database Page Fault Stalls/sec samples higher than 0.
2/28/2011 7:39:13 AM -- C:\Program Files\Exchange Jetstress\ESRP_24hr\Stress_2011_2_26_23_24_49.xml has 5750 samples queried.

Streaming backup test result report

(Both DBs backup on one blade, other blade powered on with no load)

Database Backup Statistics - All

Database Instance	Database Size (MBytes)	Elapsed Backup Time	MBytes Transferred/sec
Instance5116.1	840914.09	02:16:31	102.66
Instance5116.2	840890.09	02:19:54	100.18
Instance5116.3	840946.09	02:19:24	100.54
Instance5116.4	840914.09	02:20:20	99.86
Instance5116.5	840954.09	02:17:08	102.21
Instance5116.6	838905.59	02:17:07	101.97
Instance5116.7	838913.59	02:17:48	101.45
Instance5116.8	838921.59	02:19:05	100.52
Instance5116.9	838937.59	02:19:39	100.12

Jetstress System Parameters

Thread Count	10 (per database)
Minimum Database Cache	288.0 MB
Maximum Database Cache	2304.0 MB
Insert Operations	40%
Delete Operations	20%
Replace Operations	5%
Read Operations	35%
Lazy Commits	70%

Database Configuration

Instance5116.1 Log Path: C:\ExchangeDatabases\VOL1\log
Database: C:\ExchangeDatabases\VOL1\Jetstress001001.edb

Instance5116.2 Log Path: C:\ExchangeDatabases\VOL2\log
Database: C:\ExchangeDatabases\VOL2\Jetstress002001.edb

Instance5116.3 Log Path: C:\ExchangeDatabases\VOL3\log
Database: C:\ExchangeDatabases\VOL3\Jetstress003001.edb

Instance5116.4 Log Path: C:\ExchangeDatabases\VOL4\log
Database: C:\ExchangeDatabases\VOL4\Jetstress004001.edb

Instance5116.5 Log Path: C:\ExchangeDatabases\VOL5\log
Database: C:\ExchangeDatabases\VOL5\Jetstress005001.edb

Instance5116.6 Log Path: C:\ExchangeDatabases\VOL6\log
Database: C:\ExchangeDatabases\VOL6\Jetstress006001.edb

Instance5116.7 Log Path: C:\ExchangeDatabases\VOL7\log
Database: C:\ExchangeDatabases\VOL7\Jetstress007001.edb

Instance5116.8 Log Path: C:\ExchangeDatabases\VOL8\log
Database: C:\ExchangeDatabases\VOL8\Jetstress008001.edb

Instance5116.9 Log Path: C:\ExchangeDatabases\VOL9\log
Database: C:\ExchangeDatabases\VOL9\Jetstress009001.edb

Transactional I/O Performance

MSExchange Database ==> Instances	I/O Database Reads Average Latency (msec)	I/O Database Writes Average Latency (msec)	I/O Database Reads/sec	I/O Database Writes/sec	I/O Database Reads Average Bytes	I/O Database Writes Average Bytes	I/O Log Reads Average Latency (msec)	I/O Log Writes Average Latency (msec)	I/O Log Reads/sec	I/O Log Writes/sec	I/O Log Reads Average Bytes	I/O Log Writes Average Bytes
Instance5116.1	4.158	0.000	410.668	0.000	262144.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000
Instance5116.2	4.247	0.000	400.576	0.000	262144.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000
Instance5116.3	4.227	0.000	402.043	0.000	262144.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000
Instance5116.4	4.258	0.000	399.376	0.000	262144.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000
Instance5116.5	4.179	0.000	408.682	0.000	262144.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000
Instance5116.6	4.186	0.000	407.815	0.000	262144.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000
Instance5116.7	4.202	0.000	405.755	0.000	262144.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000
Instance5116.8	4.239	0.000	401.849	0.000	262144.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000
Instance5116.9	4.243	0.000	400.566	0.000	262144.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000

Host System Performance

Counter	Average	Minimum	Maximum
% Processor Time	2.179	0.545	2.500
Available MBytes	6274.421	6265.000	6276.000
Free System Page Table Entries	33555147.150	33555132.000	33555646.000
Transition Pages RePurposed/sec	0.000	0.000	0.000
Pool Nonpaged Bytes	300887683.657	300875776.000	300937216.000
Pool Paged Bytes	113761631.086	113700864.000	113852416.000
Database Page Fault Stalls/sec	0.000	0.000	0.000

Test Log

2/25/2011 9:13:33 AM -- Jetstress testing begins ...
2/25/2011 9:13:33 AM -- Prepare testing begins ...
2/25/2011 9:13:42 AM -- Attaching databases ...
2/25/2011 9:13:42 AM -- Prepare testing ends.
2/25/2011 9:13:59 AM -- Performance logging begins (interval: 30000 ms).
2/25/2011 9:13:59 AM -- Backing up databases ...
2/25/2011 11:34:19 AM -- Performance logging ends.
2/25/2011 11:34:19 AM -- Instance5116.1 (100% processed), Instance5116.2 (100% processed), Instance5116.3 (100% processed), Instance5116.4 (100% processed), Instance5116.5 (100% processed), Instance5116.6 (100% processed), Instance5116.7 (100% processed), Instance5116.8 (100% processed) and Instance5116.9 (100% processed)
2/25/2011 11:34:19 AM -- C:\Program Files\Exchange Jetstress\ESRP_Backup\DatabaseBackup_2011_2_25_9_13_42.blg has 280 samples.
2/25/2011 11:34:20 AM -- Creating test report ...

Soft-Recovery test result report

Database Instance	Log files replayed	Elapsed seconds
Instance5116.1	509	1981.0474795
Instance5116.2	506	1941.2674097
Instance5116.3	503	1913.4213608
Instance5116.4	501	2007.8327266
Instance5116.5	512	1929.8637896
Instance5116.6	507	1803.3631675
Instance5116.7	511	1819.2751954
Instance5116.8	513	1790.6335451
Instance5116.9	509	1827.4964098

Database Configuration

Instance5116.1 Log Path: C:\ExchangeDatabases\VOL1\log
Database: C:\ExchangeDatabases\VOL1\Jetstress001001.edb

Instance5116.2 Log Path: C:\ExchangeDatabases\VOL2\log
Database: C:\ExchangeDatabases\VOL2\Jetstress002001.edb

Instance5116.3 Log Path: C:\ExchangeDatabases\VOL3\log
Database: C:\ExchangeDatabases\VOL3\Jetstress003001.edb

Instance5116.4 Log Path: C:\ExchangeDatabases\VOL4\log
Database: C:\ExchangeDatabases\VOL4\Jetstress004001.edb

Instance5116.5 Log Path: C:\ExchangeDatabases\VOL5\log
Database: C:\ExchangeDatabases\VOL5\Jetstress005001.edb

Instance5116.6 Log Path: C:\ExchangeDatabases\VOL6\log
Database: C:\ExchangeDatabases\VOL6\Jetstress006001.edb

Instance5116.7 Log Path: C:\ExchangeDatabases\VOL7\log
Database: C:\ExchangeDatabases\VOL7\Jetstress007001.edb

Instance5116.8 Log Path: C:\ExchangeDatabases\VOL8\log
Database: C:\ExchangeDatabases\VOL8\Jetstress008001.edb

Instance5116.9 Log Path: C:\ExchangeDatabases\VOL9\log
Database: C:\ExchangeDatabases\VOL9\Jetstress009001.edb

Transactional I/O Performance

MSExchange Database ==> Instances	I/O Database Reads Average Latency (msec)	I/O Database Writes Average Latency (msec)	I/O Database Reads/sec	I/O Database Writes/sec	I/O Database Reads Average Bytes	I/O Database Writes Average Bytes	I/O Log Reads Average Latency (msec)	I/O Log Writes Average Latency (msec)	I/O Log Reads/sec	I/O Log Writes/sec	I/O Log Reads Average Bytes	I/O Log Writes Average Bytes
Instance5116.1	33.345	1.091	217.627	1.539	39903.480	30231.984	5.533	0.001	2.309	0.002	213910.261	1.043
Instance5116.2	32.658	1.110	218.454	1.562	39912.219	30383.634	5.657	0.001	2.343	0.002	214714.174	1.064
Instance5116.3	32.110	1.127	222.621	1.573	39937.415	31316.253	5.846	0.000	2.359	0.000	221615.184	0.000
Instance5116.4	33.995	1.082	213.378	1.491	40003.749	29932.942	5.838	0.000	2.236	0.000	211880.424	0.000
Instance5116.5	32.416	1.111	220.214	1.591	39917.804	30779.983	5.776	0.001	2.386	0.002	218001.533	1.071
Instance5116.6	29.952	1.417	236.859	1.684	40327.761	31448.483	5.379	0.004	2.526	0.002	222721.683	1.145
Instance5116.7	30.240	1.385	234.833	1.684	40359.753	31242.217	5.501	0.003	2.529	0.007	221016.359	1.135
Instance5116.8	29.588	1.431	240.301	1.716	40430.126	31732.442	5.418	0.000	2.574	0.000	224141.020	0.000
Instance5116.9	30.354	1.387	234.031	1.670	40384.487	31538.296	5.534	0.002	2.508	0.007	223785.126	1.130

Background Database Maintenance I/O Performance

MSExchange Database ==> Instances	Database Maintenance IO Reads/sec	Database Maintenance IO Reads Average Bytes
Instance5116.1	22.999	261700.828
Instance5116.2	23.403	261738.322
Instance5116.3	23.659	261693.423
Instance5116.4	22.956	261772.062
Instance5116.5	23.440	261699.392
Instance5116.6	24.321	261742.393
Instance5116.7	24.055	261775.940
Instance5116.8	24.476	261743.241
Instance5116.9	24.127	261773.202

Total I/O Performance

MSExchange Database ==> Instances	I/O Database Reads Average Latency (msec)	I/O Database Writes Average Latency (msec)	I/O Database Reads/sec	I/O Database Writes/sec	I/O Database Reads Average Bytes	I/O Database Writes Average Bytes	I/O Log Reads Average Latency (msec)	I/O Log Writes Average Latency (msec)	I/O Log Reads/sec	I/O Log Writes/sec	I/O Log Reads Average Bytes	I/O Log Writes Average Bytes
Instance5116.1	33.345	1.091	240.626	1.539	61102.748	30231.984	5.533	0.001	2.309	0.002	213910.261	1.043
Instance5116.2	32.658	1.110	241.857	1.562	61376.667	30383.634	5.657	0.001	2.343	0.002	214714.174	1.064
Instance5116.3	32.110	1.127	246.280	1.573	61240.682	31316.253	5.846	0.000	2.359	0.000	221615.184	0.000
Instance5116.4	33.995	1.082	236.334	1.491	61545.138	29932.942	5.838	0.000	2.236	0.000	211880.424	0.000
Instance5116.5	32.416	1.111	243.654	1.591	61253.487	30779.983	5.776	0.001	2.386	0.002	218001.533	1.071
Instance5116.6	29.952	1.417	261.180	1.684	60945.965	31448.483	5.379	0.004	2.526	0.002	222721.683	1.145
Instance5116.7	30.240	1.385	258.889	1.684	60933.227	31242.217	5.501	0.003	2.529	0.007	221016.359	1.135
Instance5116.8	29.588	1.431	264.777	1.716	60888.288	31732.442	5.418	0.000	2.574	0.000	224141.020	0.000
Instance5116.9	30.354	1.387	258.158	1.670	61075.394	31538.296	5.534	0.002	2.508	0.007	223785.126	1.130

Host System Performance

Counter	Average	Minimum	Maximum
% Processor Time	1.356	0.000	2.422
Available MBytes	3891.865	3834.000	5908.000
Free System Page Table Entries	33555146.968	33555127.000	33555644.000
Transition Pages RePurposed/sec	9.534	0.000	2665.476
Pool Nonpaged Bytes	301027541.847	301015040.000	301080576.000
Pool Paged Bytes	113617479.968	113602560.000	113692672.000
Database Page Fault Stalls/sec	0.000	0.000	0.000

Test Log

2/28/2011 10:41:36 AM -- Jetstress testing begins ...
2/28/2011 10:41:36 AM -- Prepare testing begins ...
2/28/2011 10:41:45 AM -- Attaching databases ...
2/28/2011 10:41:45 AM -- Prepare testing ends.
2/28/2011 10:41:45 AM -- Dispatching transactions begins ...
2/28/2011 10:41:45 AM -- Database cache settings: (minimum: 288.0 MB, maximum: 2.2 GB)
2/28/2011 10:41:45 AM -- Database flush thresholds: (start: 23.0 MB, stop: 46.1 MB)
2/28/2011 10:41:56 AM -- Database read latency thresholds: (average: 20 msec/read, maximum: 100 msec/read).
2/28/2011 10:41:56 AM -- Log write latency thresholds: (average: 10 msec/write, maximum: 100 msec/write).
2/28/2011 10:42:03 AM -- Operation mix: Sessions 10, Inserts 40%, Deletes 20%, Replaces 5%, Reads 35%, Lazy Commits 70%.
2/28/2011 10:42:03 AM -- Performance logging begins (interval: 15000 ms).
2/28/2011 10:42:03 AM -- Generating log files ...
2/28/2011 11:51:39 AM -- C:\ExchangeDatabases\VOL1\log (101.8% generated), C:\ExchangeDatabases\VOL2\log (101.2% generated), C:\ExchangeDatabases\VOL3\log (100.4% generated), C:\ExchangeDatabases\VOL4\log (100.2% generated), C:\ExchangeDatabases\VOL5\log (102.4% generated), C:\ExchangeDatabases\VOL6\log (101.4% generated), C:\ExchangeDatabases\VOL7\log (102.2% generated), C:\ExchangeDatabases\VOL8\log (102.6% generated) and C:\ExchangeDatabases\VOL9\log (101.8% generated)
2/28/2011 11:51:39 AM -- Performance logging ends.
2/28/2011 11:51:39 AM -- JetInterop batch transaction stats: 22221, 22016, 22070, 22085, 22194, 22158, 22221, 22188 and 22008.
2/28/2011 11:51:41 AM -- Dispatching transactions ends.
2/28/2011 11:51:41 AM -- Shutting down databases ...
2/28/2011 11:52:05 AM -- Instance5116.1 (complete), Instance5116.2 (complete), Instance5116.3 (complete), Instance5116.4 (complete), Instance5116.5 (complete), Instance5116.6 (complete), Instance5116.7 (complete), Instance5116.8 (complete) and Instance5116.9 (complete)
2/28/2011 11:52:05 AM -- C:\Program Files\Exchange Jetstress\ESRP_Recovery\Performance_2011_2_28_10_41_56.blg has 277 samples.
2/28/2011 11:52:05 AM -- Creating test report ...
2/28/2011 11:52:07 AM -- Instance5116.1 has 30.5 for I/O Database Reads Average Latency.
2/28/2011 11:52:07 AM -- Instance5116.1 has 1.4 for I/O Log Writes Average Latency.
2/28/2011 11:52:07 AM -- Instance5116.1 has 1.4 for I/O Log Reads Average Latency.
2/28/2011 11:52:07 AM -- Instance5116.2 has 29.4 for I/O Database Reads Average Latency.
2/28/2011 11:52:07 AM -- Instance5116.2 has 1.5 for I/O Log Writes Average Latency.
2/28/2011 11:52:07 AM -- Instance5116.2 has 1.5 for I/O Log Reads Average Latency.
2/28/2011 11:52:07 AM -- Instance5116.3 has 27.6 for I/O Database Reads Average Latency.
2/28/2011 11:52:07 AM -- Instance5116.3 has 1.4 for I/O Log Writes Average Latency.
2/28/2011 11:52:07 AM -- Instance5116.3 has 1.4 for I/O Log Reads Average Latency.
2/28/2011 11:52:07 AM -- Instance5116.4 has 32.0 for I/O Database Reads Average Latency.
2/28/2011 11:52:07 AM -- Instance5116.4 has 1.6 for I/O Log Writes Average Latency.
2/28/2011 11:52:07 AM -- Instance5116.4 has 1.6 for I/O Log Reads Average Latency.
2/28/2011 11:52:07 AM -- Instance5116.5 has 29.6 for I/O Database Reads Average Latency.
2/28/2011 11:52:07 AM -- Instance5116.5 has 1.6 for I/O Log Writes Average Latency.
2/28/2011 11:52:07 AM -- Instance5116.5 has 1.6 for I/O Log Reads Average Latency.
2/28/2011 11:52:07 AM -- Instance5116.6 has 22.8 for I/O Database Reads Average Latency.
2/28/2011 11:52:07 AM -- Instance5116.6 has 1.4 for I/O Log Writes Average Latency.
2/28/2011 11:52:07 AM -- Instance5116.6 has 1.4 for I/O Log Reads Average Latency.
2/28/2011 11:52:07 AM -- Instance5116.7 has 24.1 for I/O Database Reads Average Latency.
2/28/2011 11:52:07 AM -- Instance5116.7 has 1.4 for I/O Log Writes Average Latency.
2/28/2011 11:52:07 AM -- Instance5116.7 has 1.4 for I/O Log Reads Average Latency.
2/28/2011 11:52:07 AM -- Instance5116.8 has 22.8 for I/O Database Reads Average Latency.
2/28/2011 11:52:07 AM -- Instance5116.8 has 1.4 for I/O Log Writes Average Latency.
2/28/2011 11:52:07 AM -- Instance5116.8 has 1.4 for I/O Log Reads Average Latency.
2/28/2011 11:52:07 AM -- Instance5116.9 has 23.3 for I/O Database Reads Average Latency.
2/28/2011 11:52:07 AM -- Instance5116.9 has 1.3 for I/O Log Writes Average Latency.
2/28/2011 11:52:07 AM -- Instance5116.9 has 1.3 for I/O Log Reads Average Latency.

2/28/2011 11:52:07 AM -- Test has 0 Maximum Database Page Fault Stalls/sec.
2/28/2011 11:52:07 AM -- Test has 0 Database Page Fault Stalls/sec samples higher than 0.
2/28/2011 11:52:07 AM -- C:\Program Files\Exchange Jetstress\ESRP_Recovery\Performance_2011_2_28_10_41_56.xml has 276 samples queried.
2/28/2011 11:52:07 AM -- C:\Program Files\Exchange Jetstress\ESRP_Recovery\Performance_2011_2_28_10_41_56.html is saved.
2/28/2011 12:13:57 PM -- Performance logging begins (interval: 4000 ms).
2/28/2011 12:13:57 PM -- Recovering databases ...
2/28/2011 12:47:25 PM -- Performance logging ends.
2/28/2011 12:47:25 PM -- Instance5116.1 (1981.0474795), Instance5116.2 (1941.2674097), Instance5116.3 (1913.4213608), Instance5116.4 (2007.8327266), Instance5116.5 (1929.8637896), Instance5116.6 (1803.3631675), Instance5116.7 (1819.2751954), Instance5116.8 (1790.6335451) and Instance5116.9 (1827.4964098)
2/28/2011 12:47:25 PM -- C:\Program Files\Exchange Jetstress\ESRP_Recovery\SoftRecovery_2011_2_28_12_13_50.blg has 498 samples.
2/28/2011 12:47:25 PM -- Creating test report ...

For more information

For further information on HP Exchange solutions including best practices, sizing tools, and additional testing of HP Storage or ProLiant products with Exchange, please see:
http://www.hp.com/solutions/exchange

More information about the E5000 family is available at http://www.hp.com/go/E5000

To help us improve our documents, please provide feedback at
http://h71019.www7.hp.com/ActiveAnswers/us/en/solutions/technical_tools_feedback.html.

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