

Protecting Microsoft® Exchange Servers

with IBM System Storage™ DS3000 series and Microsoft System Center Data Protection Manager 2007



Highlights:

- ***Extend the proven functionality and value of DPM 2007 by integrating IBM's array-based Copy Services to further reduce Exchange backup & recovery times***
- ***Address day-to-day backup and recovery challenges by implementing the cost-effective IBM System Storage™ DS3000 series with DPM 2007***
- ***Near-continuous data protection eliminates backup window restrictions while providing simple administration through wizards and task-driven menus***

In today's competitive global business environment, email has emerged as one of the most critical business applications required for success. Email is used both internally and externally to conduct business, frequently in a 24x7 environment. When email is not available, business can virtually come to a halt.

Keeping email available around the clock is now a critical priority for many businesses. Downtime cannot be tolerated for more than a few minutes, if at all. It is no longer sufficient just to shorten backup windows for email—recovery windows must be reduced as well.

But keeping email highly available is only one consideration. At some time or another, a recovery scenario may be required, ranging from low-impact — i.e. a user deleted an email or file that is needed, to catastrophic — i.e. a bare-metal recovery is needed. Thus another, equally important goal is the ability to recover data not only accurately, but in a manner that minimizes downtime. Recovery time can be one of the largest contributors to the duration of the overall outage. Thus, the ability to recover/restore data is quickly becoming a requirement, instead of just a 'nice to have'.

Implementing DPM 2007 solutions with DS3000 series arrays helps to address these challenges. By moving data via array-based replication versus moving data over the network for replica creation, overall backup and recovery times may be reduced from days to hours or even less.

Customers are struggling to manage:

- Growth of email including messages, attachments, mobile devices and voice messaging
- Traditional backup and recovery windows in a 24 x 7 global environment
- Service level agreements for end-user response times and performance
- Improving recovery point objectives (RPO) and recovery time objectives (RTO)
- Costs—total cost of ownership including administrative and downtime costs.

To help address these issues, Microsoft® has developed System Center Data Protection Manager 2007. As part of the Microsoft System Center family of management products designed to help IT Professionals manage their Windows Server® infrastructure, Data Protection Manager 2007 is designed to deliver continuous data protection for Microsoft® applications and file servers through a seamlessly integrated secondary disk and tape solution on the DPM server, allowing for disk-to-disk, disk-to-tape, and disk-to-disk-to-tape backups and

recoveries. IBM complements these solutions with IBM System Storage™ DS3000 storage solutions well-suited for both DPM and Exchange environments.

System Center Data Protection Manager 2007

Focused on the primary Microsoft® server workloads, DPM 2007 was specifically designed to help protect and recover Exchange Server, as well as Microsoft® SQL Server™, SharePoint® products and technologies, Virtual Server and Windows file servers and desktops.

For Microsoft Exchange, DPM 2007 offers wizards and workflows to help ensure that administrators can protect email data — without requiring specialized training, or certification in storage and backup technologies.

Because DPM was designed specifically for Exchange Server, DPM supports the advanced configurations of Exchange Server that include Microsoft Cluster Services support for Exchange 2003 and 2007, as well as provides support for new Exchange 2007 features such as Local Continuous Replication (LCR), Clustered Continuous Replication (CCR), and Standby Continuous Replication (SCR).

DPM uses a combination of transaction log replication and block-level synchronization in conjunction with the Exchange VSS Writer to help ensure the ability to recover Exchange Server databases. DPM 2007 is also focused on “restore” instead of just “backup,” which is why Microsoft blended continuous data protection (CDP) and backup, disk and tape, synchronizations and log shipping— all to enable the best possible recovery experience.

With only a few mouse clicks and DPM 2007, administrators can restore an Exchange storage group, database, or an individual mailbox, either restoring data directly back to the original server, or copying database files to an alternate server. Additionally, DPM 2007 is designed to employ a “lossless recovery” of Exchange Server data, meaning that after DPM 2007 restores mail database(s) to the latest recovery point, it can automatically reapply the surviving logs from the production server to the very last transaction.

Key features of System Center DPM 2007 include:

- Host based backup of Windows Virtual Server guests
- Shortened tape recovery time
- Self-service user recovery without administrative interference
- Seamless media integration
- Remote backup from branch offices to centralized data center
- Advanced functionality with existing Windows tools

Providing Unique Solutions for your Microsoft environment

IBM works closely with Microsoft® to develop storage solutions for your Microsoft® environment. In addition to System Center Data Protection Manager 2007, IBM System Storage offerings support interoperability with Microsoft solutions for:

- Exchange Server 2003 & 2007
- SQL Server 2005 & 2008*
- Windows Server® 2003 & 2008
- Windows XP and Windows Vista desktops
- Microsoft Office SharePoint® Server 2007
- Microsoft Virtual Server 2005 and Hyper-V 2008*

* At product RTM

These solutions can help address your information management needs, enabling you to improve your IT infrastructure, leverage your business data effectively to innovate and create value, mitigate IT risk, and enable business flexibility.

IBM System Storage DS3000 series and DPM

There are several reasons to choose the DS3000 family as storage solutions for DPM:

- Using IBM's array-based Copy Services adds value to DPM by reducing the time required to perform backup/recovery of Exchange Server databases. IBM will be releasing a Technical Solution Guide detailing this solution shortly, which has been reviewed by the Microsoft® DPM team.
- DS3000 performance is well-suited for demanding transaction-oriented workloads such as email, and is designed to help accelerate end-user response times with near-linear performance block-level storage that scales with Exchange. Additionally, IBM participates in the Microsoft® ESRP (Exchange Solution Reviewed Program) demonstrating outstanding performance for its storage systems, as well as the Microsoft® Simple SAN program, with products designed for simple implementation and focused on product ease-of-use.
- The DS3000 offers the customer their choice of host-attach interface SAS, iSCSI and Fibre-channel attachment. Customers can start off with affordable, easy-to-use DAS solutions and later move up to networked storage
- One of the lowest TCOs (Total Cost of Ownership) in the industry — derived from one-time software licensing fees, flexible and simple storage management and fast time-to-provision — DS3000 storage management software is always included and there is only one charge for overall hardware

maintenance, not separate recurring maintenance charges.

- The IBM DS3200 provides an affordable, reliable and robust storage solution that's designed to improve productivity through higher performance, availability, scalability, and functionality. The DS3200 disk system also provides a level of data availability not possible with internal storage. Redundant components, redundant I/O paths, automated path failover and online administration enable the DS3200 disk system to help ensure data access is maintained at all times.

The solution – how the IBM System Storage DS3000 series adds value to DPM

DPM 2007 manages data backup and recovery via agents installed on the servers where protection is desired. Once installed and configured, these agents send data to a dedicated repository on a separate DPM 2007 server. Storage configured for DPM use contains a full copy of the protected data, as well as snapshots or deltas of changes at given increments, thus allowing users to retain multiple logical point-in-time copies.

Data movement from the protected source servers to the DPM server is conducted over the network. While snapshots reduce the bits sent over the wire, they do not eliminate them, and for the initial backup, a full replica must be created. In Exchange configurations with large databases and/or large numbers of storage groups, this replica creation can be a very time-consuming process that will impact other users and applications that share the same network. At the same time the Exchange server itself is burdened with the additional task of sending data across the wire. Imagine copying multiple databases in the high gigabit/terabit range over a 100MB Ethernet link.

The same process must be repeated during a DPM restore scenario. The entire volume of protected data must be replicated back to the source server over the wire, followed by specific point-in-time snapshots, which are sent and applied. Depending upon the size of the protected data, this process may add hours to the recovery time.

Allowing administrators to eliminate the initial over-the-wire replica creation required during a backup/restore process demonstrates the significant benefits of implementing DPM 2007 environment on a SAN*. By using array-based replication, there is minimal impact on the protected server, the DPM server, and the network. The simple DS3000 Storage Manage GUI enables administrators to simply create a FlashCopy of the protected volumes, and present those volumes to the DPM server. All data movement is contained within the external array, and replica creation time is reduced. The reverse data movement pattern offers the same benefits during restores, without negating any of DPM's granular restore functionality. The solution layout is diagrammed in Figure 1 below.

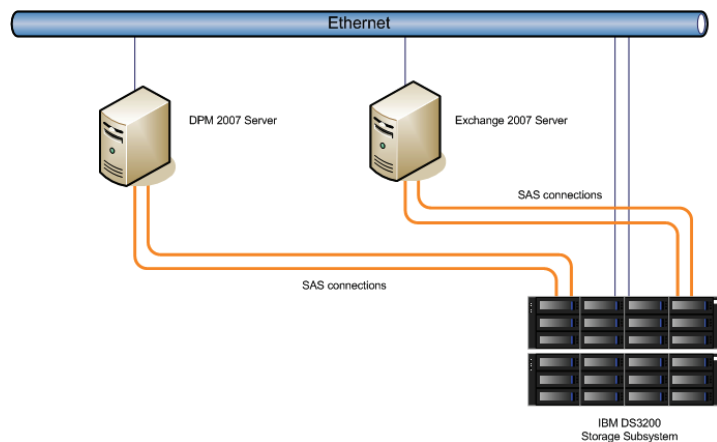


Figure 1: In this configuration, DS3200's Copy Services move data to and from the protected Exchange server and to and from the DPM server

Though not fully 'SAN-savvy' in leveraging SAN capabilities natively, DPM 2007 has sufficient SAN functionality & logic to make it 'SAN-aware'; dialog boxes and wizards are provided to move data in this manner, as outlined in our soon-to-be-released technical solution guide, which outlines this described solution in a simple, step-by-step manner.

Implementing DPM in a SAN environment and moving data in the prescribed manner helps to extend the value and functionality of DPM 2007, by allowing replica management to be contained within the SAN. Implementing DPM with DS3000 is designed to be a simple and elegant solution that blends the technologies of both products.

* Note that for this solution, we chose to implement it on the IBM System Storage DS3200, which is a DAS device using SAS host interconnects. A "pure" SAN is not required, but may help provide additional scalability.

Tested solutions; more than the sum of their parts

Every IT professional knows the intrinsic value of a tested, well-documented solution. After all, the most difficult processes in a project implementation usually center on correctly identifying the right technology to use and from which vendors, followed by implementing them in a manner that is based upon proven knowledge and experience.



IBM's Redbooks and Redpapers are among the most commonly accessed technical documents for helping customers select and implement appropriate technology for their environments. These technical guides help take the 'guesswork' and uncertainty out of implementing solutions, since they provide real-world deployment information in a step-by-step manner.

Working together with Microsoft, IBM System x and our partner ISVs, IBM System Storage™ identifies key Microsoft technology areas that apply most readily to storage solutions that can help improve Microsoft IT environments. The IBM DS3000 series and Microsoft DPM are a good example of this partnership — providing customers with leading edge solutions that provide tangible business benefits.

Why IBM?

The performance and availability of your storage environment can enhance your business processes and improve your total cost of ownership. IBM can help you address the IT challenges that your storage network or company as a whole encounters. When considering who you will choose for your next storage investment, be sure to compare:

- The breadth of our storage software, hardware, and solutions offerings
- Our technology
- Our relationship and commitment to Microsoft® and supporting ISVs
- Our IT service and support offerings
- Our financing options
- Our quality, reliability, and dependability

What is the IBM advantage? You get some of the best storage products, technologies, services, and solutions for your Microsoft® environments.

For more information

For more information about IBM System Storage™ products for Microsoft® environments, contact your IBM representative or visit the following websites:

IBM System Storage:

<http://www-03.ibm.com/systems/storage>

IBM System Storage Microsoft solution guides and White Papers:

<http://www-03.ibm.com/systems/storage/solutions/isv/index.html#microsoft>

Microsoft Data Protection Manager 2007

<http://www.microsoft.com/DPM>

Microsoft Storage Partner Extranet:

<http://www.microsoftstoragepartners.com/>

Microsoft ESRP v1.2 (Exchange Server 2003)

<http://technet.microsoft.com/en-us/exchange/bb412165.aspx>

Microsoft ESRP v2.0 (Exchange Server 2007)

<http://technet.microsoft.com/en-us/exchange/bb412164.aspx>

Microsoft Simple SAN

<http://www.microsoft.com/windowsserver-system/storage/simplesan.mspx>

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