



EMC Business Continuity for Microsoft Exchange 2007 Local and Remote Data Protection for Microsoft Exchange Server 2007

Enabled by EMC RecoverPoint CLR and
EMC Replication Manager

Reference Architecture



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Contents

Purpose	4
The business challenge	4
The technology solution	5
Solution components	6
Architectural overview	8
Conclusion	10

About this Solution

Purpose

The purpose of this reference architecture is to validate an EMC® solution that provides world-class data protection and disaster recovery (DR) for your Microsoft Exchange 2007 environment. This solution utilizes capabilities of EMC RecoverPoint to continuously replicate and create consistent local and remote replicas of Exchange 2007 databases and logs. EMC Replication Manager is used to orchestrate the automation of backup and recovery processes.

This document details an architectural overview of a solution providing data protection for your Microsoft Exchange 2007 environment on the EMC CLARiiON® storage system. This solution has been tested and validated by EMC Global Solutions Centers (GSC) in Hopkinton, MA.

The business challenge

Keeping e-mail running and protected is essential for today's businesses and presents a large challenge for IT departments. The explosive growth of e-mail databases makes it harder to fit nightly backups within shrinking windows. In the event data must be restored, it must be restored quickly and with minimal impact to users. In addition, to maintain operations in the event of site disasters, e-mail must be replicated to an offsite location that can be brought online quickly, with a minimum of data loss. Together, these challenges demand a solution that offers effective, affordable, and efficient protection of this critical business function.

The technology solution

This enterprise Microsoft Exchange 2007 solution was designed to provide an outstanding recovery point objective (RPO) and recovery time objective (RTO) for both local and remote recovery scenarios. In this solution, the replication and Microsoft Exchange 2007 backups are offloaded from the Exchange server providing exceptional performance for users.

This solution begins with providing details around Microsoft Exchange 2007 best practices layout methodology on the EMC CLARiiON storage system. It is essential that the production layout of Exchange provide the performance and space to lay a solid foundation for the solution.

In this solution, EMC RecoverPoint concurrent local and remote replication (CLR) is used to maintain continuous data protection (CDP) of local replicas and bookmarks, while simultaneously providing continuous remote replication (CRR) of replicas and bookmarks. Either the CDP or CRR replicas can be used to recover production data. Replication Manager is used to perform Exchange backups and to create periodic VSS bookmarks of the Exchange data.

The solution provides for no single point of failure from a server, storage, or replication standpoint. The solution supports the replication of Exchange at large distances while requiring minimal bandwidth and a very small data lag between production and DR sites.

The solution was fully validated from a functional and performance perspective. This enterprise Microsoft Exchange 2007 solution is built on EMC's unsurpassed hardware and software.

This solution includes information on:

- Implementing EMC RecoverPoint CLR as the replication technology, creating both local and remote block level replicas.
- Using EMC Replication Manager to create the VSS backups of Microsoft Exchange 2007 data, and to mount the replicas for consistency checks and recovery.
- Creating a well-performing storage design for Microsoft Exchange 2007 on an EMC CLARiiON CX3-80 storage system with large and very active databases.
- Implementing Exchange Clustered Mailbox Servers (CMS) on top of Windows Single Copy Clusters (SCC) running Microsoft Cluster Services (MSCS). This provides local server failover and remote site failover using the **RecoverCMS** command. Command details are available at the Microsoft Exchange website:
[http://technet.microsoft.com/en-us/library/bb124095\(EXCHG.80\).aspx](http://technet.microsoft.com/en-us/library/bb124095(EXCHG.80).aspx)
- Using the disaster recovery (DR) site array and Exchange clusters to offload the production array during the nightly replica validation process.

Solution components

Back end disk layout—A modular building block approach to optimize spindle allocation on the EMC CLARiiON CX3-80 storage system's back end has been developed and tested for your Microsoft Exchange 2007 environment. This provides maximum performance and reliability while using the minimum number of spindles. The building block is identical for both physical and virtual environments.

Microsoft Exchange Server 2007—Microsoft Exchange Server 2007 is designed to meet today's communication and collaboration challenges. It provides advanced e-mail and scheduling while delivering new methods of access for employees, greater productivity for IT administrators, and increased security and compliance capabilities.

EMC RecoverPoint CLR—EMC RecoverPoint is an enterprise-scale replication appliance (RPA) that provides out-of-band block level replication for both local, continuous data protection (CDP), and continuous remote replication (CRR).

When both CDP and CRR are combined against the same source it is referred to as continuous local and remote replication (CLR).

EMC's Global Solutions Centers (GSC) have designed and tested Microsoft Exchange 2007 with EMC RecoverPoint CLR for outstanding local and remote data protection. The design details, performance results, and limitations have been documented in an Integration Guide that provides the full capabilities of this solution.

EMC Replication Manager—EMC Replication Manager provides application-centric replication management for Windows, UNIX, Linux, and VMware environments. Replication Manager, with its graphical user interface (GUI), automates and simplifies management of disk-based replicas. It creates and manages replicas at the application level for a variety of purposes including operational recovery, backup, restore, development, simulation, and repurposing.

Replication Manager provides two types of backups for Microsoft Exchange data. These include the ability to run either a Full job or Copy job.

Choosing the Full job option enables you to perform backup of Exchange databases and logs, mount the data to a local or remote Replication Manager mount host, run an integrity check, and truncate the Exchange logs.

Choosing the Copy job option also enables you to create the VSS RecoverPoint bookmark without the integrity check and log truncation.

Additionally, Replication Manager provides instant recovery for exchange storage groups (ESG).

Exchange Failover/Failback—It is vital in any disaster recovery (DR) plan that the failover and failback processes are well-documented, fully tested, and easy to follow. This solution provides a well-defined set of procedures to recover Exchange data at a second site using EMC RecoverPoint technology coupled with Microsoft's Cluster mailbox recovery process.

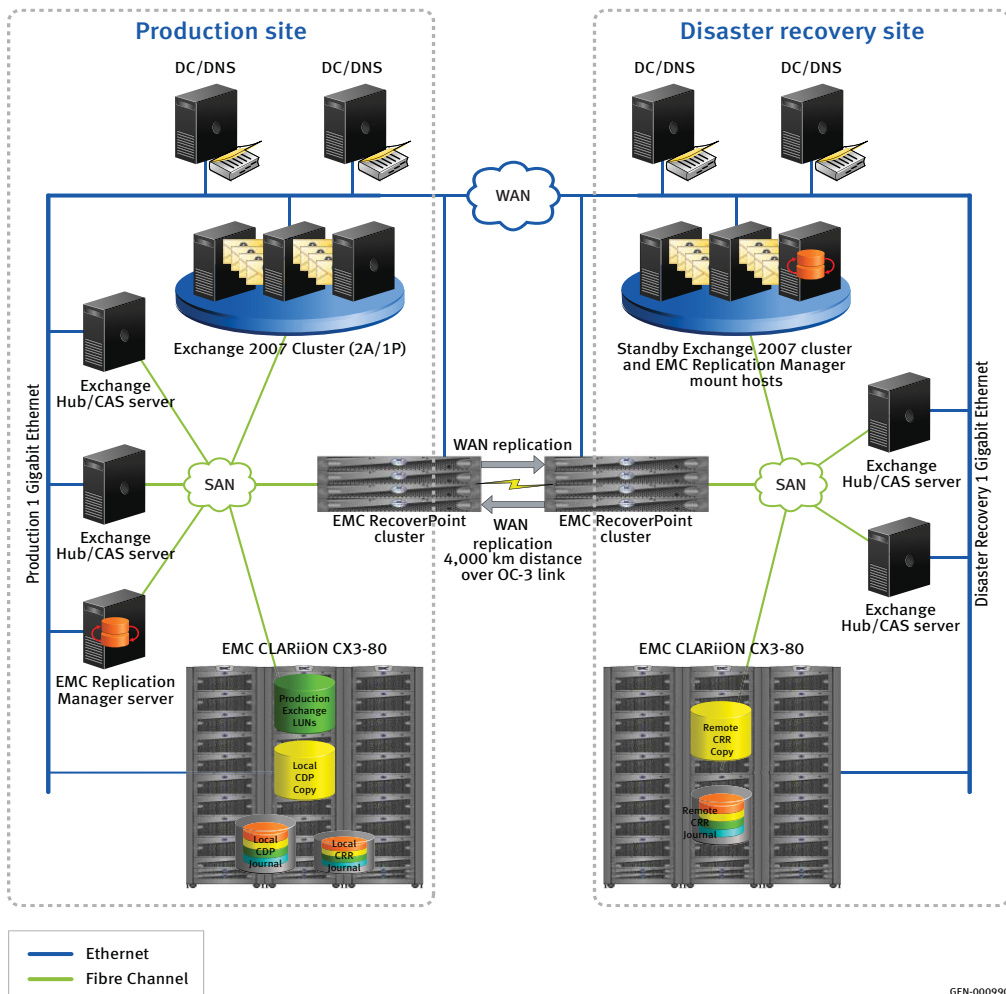
To help you define a service level agreement (SLA) for your Microsoft Exchange environment, this solution also provides recovery time and recovery point data.

Architectural overview

This section defines the architectural overview used to validate this solution. [Figure 1](#) details the physical layout of the hardware in relation to the production site and the disaster recovery site.

Physical architecture

[Figure 1](#) illustrates the architecture for this solution.



GEN-000990

Figure 1 Physical architecture

Hardware resources

Table 1 lists the hardware resources used to validate this solution.

Table 1 Hardware

Equipment	Quantity	Configuration
EMC CLARiiON CX3-80 storage system	Two (one per site)	8 GB cache FLARE® 26.20
Microsoft Exchange mailbox server	Six (three per site)	Dell PowerEdge 6850 Server: 4 CPU, 3 GHz, 32 GB RAM, 2 HBAs (QLA 2340)
Microsoft Exchange HUB/CAS server	Four (two per site)	Dell PowerEdge 6850 server: 4 CPU, 3 GHz, 8 GB RAM, 2 HBAs (QLA 2340)
Enterprise class Fibre Channel switch	Two (one per site)	Cisco MDS 9509
Enterprise class IP Network switch	Two (one per site)	Cisco Catalyst 6500 class
Active Directory servers	Four (two per site)	Dell PowerEdge 2850 server: 2 CPU, 3 GHz, 4 GB RAM
EMC RecoverPoint appliances	Eight (four per site)	GEN 3 (Version 3.0 SP1)

Software resources

Table 2 lists the software resources used to validate this solution.

Table 2 Software

Software	Version	Configuration
Microsoft Windows 2003 Enterprise Edition x64	SP2	Cluster (2 active and 1 passive)
Microsoft Exchange 2007 Enterprise Edition	SP1	Cluster (2 active and 1 passive)
EMC Solutions Enabler	6.5.1.9	
EMC PowerPath®	5.1	
EMC Replication Manager	5.1 SP3	

Table 2 Software (continued)

Software	Version	Configuration
EMC RecoverPoint CLR	3.0 SP1	
Performance and scalability validation tools		
Microsoft JetStress	8.2.50	
Microsoft Exchange Load Generation	8.2.45	

Conclusion

This reference architecture depicts a validated Microsoft Exchange 2007 data protection solution for simultaneous local and remote data replication enabled by EMC RecoverPoint CLR and EMC Replication Manager.

By choosing to integrate this carefully constructed data protection solution for your Microsoft Exchange environment, you will ensure outstanding performance and uptime for your Exchange users. EMC Global Solution Centers have provided you with the proven technologies, and tested procedures required to integrate a uniform backup and recovery plan second to none.

In summary, this local and remote data protection solution provides end-to-end redundancy for Exchange data recovery with validated performance results.

Summary of benefits

This solution provides the following benefits:

- **Simplified Mailbox server design:** Using a building-block approach, Microsoft Exchange environments can be deployed using a modular design resulting in predictable performance for all mailbox servers.
- **Reduced Backup window:** With EMC RecoverPoint and Replication Manager products, a backup window of less than seven hours was achieved while requiring minimal production resources.
- **Fast and simple failover and failback:** With the use of EMC RecoverPoint, and Microsoft's **RecoverCMS** command the failover and failback are executed with minimal steps, taking only minutes.
- **No single point of failure:** Clustered servers, and best-in-breed EMC storage as well as highly available appliance configurations ensure no single point of failure.

- **Point-in-time recovery:** Using RecoverPoint journaling technology with its bookmark, Exchange data can be recovered almost instantly to the closest available bookmark either locally or remotely.
- **Reduced bandwidth requirements:** With RecoverPoint's data compression features it is possible to see 3x to 6x data compression over the WAN.

EMC can help accelerate assessment, design, implementation, and management while lowering the implementation risks and costs of a backup and disaster recovery (DR) solution for a Microsoft Exchange server 2007 environment.

To learn more about this and other solutions contact an EMC representative or visit www.EMC.com/solutions/microsoft.