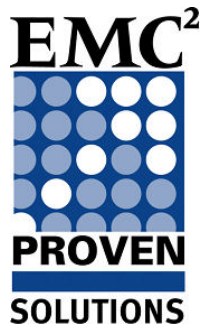




EMC Solutions for Microsoft Exchange 2007 Archiving E-mail using EMC EmailXtender with Unicode Support

Reference Architecture



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All performance data contained in this report was obtained in a rigorously controlled environment. Results obtained in other operating environments may vary significantly.

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Reference Architecture

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About this Document

This document provides an architectural overview of using EMC EmailXtender with Unicode support to archive Microsoft Exchange e-mail. This document was developed by the EMC Global Solutions Group.

Purpose

The purpose of this solution is to illustrate how to use EMC EmailXtender to safely archive e-mail and reduce customers' user mailbox size, server database footprint, and backup and restore times. This document can also be used as a reference on EMC EmailXtender's ability to support Unicode message formats.

Audience

This document is intended for internal EMC personnel, EMC partners, and customers.

The business challenge

Microsoft Exchange messaging environments support a vital part of your company's operation. Your users expect e-mail to be always available. These messaging environments must be efficiently and effectively maintained, as any outage or interruption in service can affect employee productivity, collaboration, business operations, and revenue. As a result, it is imperative to maintain performance, through high availability (HA) of your Microsoft Exchange application and data.

Without it, your company could face:

- ◆ Loss of revenue
- ◆ Missed opportunities
- ◆ Compliance-related fines
- ◆ Business increased risk of data loss

Exchange messaging environments are also growing in complexity and user requirements are more demanding. The number of users relying on Exchange is growing, as is the amount of data growth associated with their activities. Additionally, the manner in which Exchange is used to support business operations has changed, and it is now even more critical to your business.

Related documents

The following document provides additional, relevant information. Access to the document is based on EMC login credentials. If access to the content is not available, contact your EMC representative.

- ◆ *EMC EmailXtender Version 4.8 GA Release Notes*

Chapter 1 Solution Overview

This chapter presents the following topic:

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Technology solution

With the foundation reference architecture validated by EMC for MS Exchange 2007, organizations have the building blocks to take collaboration to the next level. Exchange e-mail messaging, voice, and groupware all have the resiliency to meet the growing demands of today's rapidly changing business.

VMware's ESX Server 3.5 hosting Windows 2008 Exchange 2007 SP1 and the EMC® EmailXtender® Server (connected through iSCSI to EMC's CLARiiON® CX3-20 array, in addition to dependency domain controllers and Hub/CAS servers), is an integrated, low-cost, lifecycle solution that delivers availability and performance for today, while also scaling for tomorrow.

By using the EMC Centera® four-node cluster to archive e-mail, the solution eliminates the need for .PST (Personal Storage) files and automates the movement of older e-mail by archiving it to lower-cost devices. The solution offers guaranteed and verifiable authenticity of e-mail with optimized search, retrieval, and management of e-mail archives.

In addition, EmailXtender's support for Unicode provides customers with the ability to successfully archive e-mail messages with characters and code pages converted.

Chapter 2 Solution Architecture

This chapter presents the following topics:

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Physical architecture

The solution has four stackable modules:

- ◆ Store
- ◆ Backup
- ◆ Archive
- ◆ Protect

Store and Archive are the core modules. The Backup and Protect modules can be added as needed. The VMware ESX Server 3.5 was configured in a high availability (HA) cluster hosting six guests, one Windows server for the virtual infrastructure server, a CLARiiON CX3-20, and an EMC Centra four-node cluster.

Figure 1 shows the overall physical architecture of the solution.

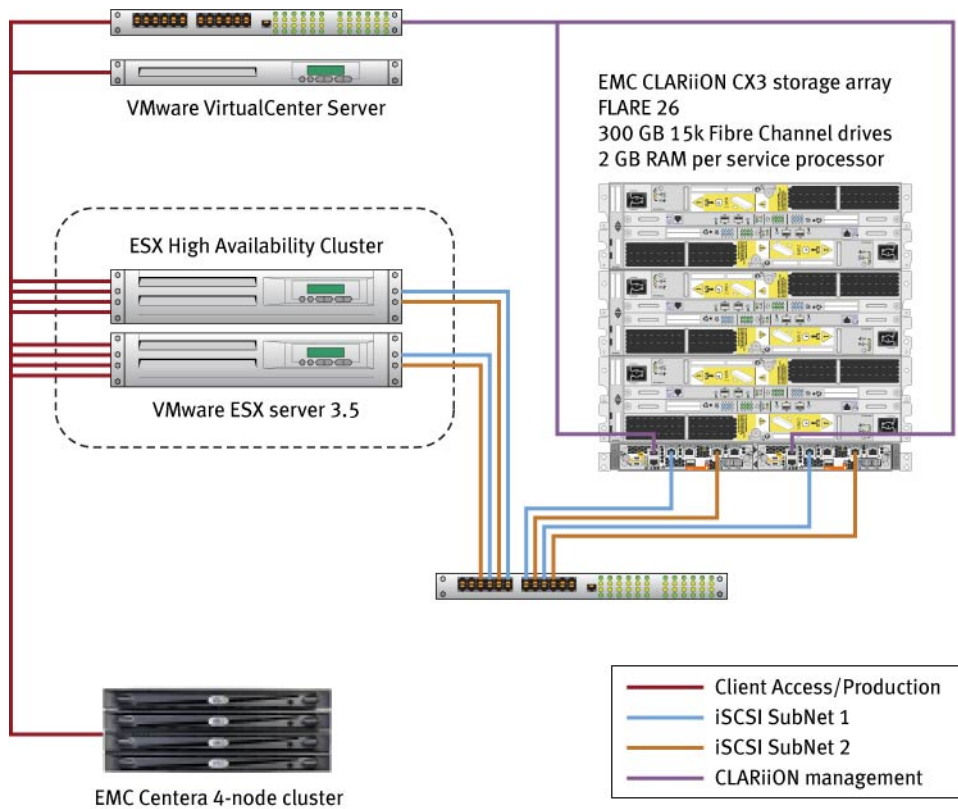


Figure 1 Physical architecture of the EMC EmailXtender to archive e-mail solution

Table 1 provides a list of configuration information for this solution.

Table 1 Configuration information

Server type	Components
2 Windows 2008 Domain Controllers	Windows 2008 Enterprise Edition 2 VCPUs 1 VNIC
Exchange 2007 Mailbox Role	4 VCPUs 16 GB RAM 3 VNICs Windows 2008 Enterprise Edition Microsoft Exchange 2007 Service Pack 1 EMC PowerPath® 5.2
Exchange 2007 Hub/CAS Combined Role	2 VCPUs 8 GB RAM 3 VNICs Windows 2008 Enterprise Edition Microsoft Exchange 2007 Service Pack 1 EMC PowerPath 5.2
EmailXtender/DiskXtender	2 VCPUs 16 GB RAM 3 VNICs Windows 2003 Service Pack 1 x32 Enterprise Edition EMC EmailXtender 4.8 EMC DiskXtender® 6.3 EMC PowerPath 5.2
Virtual Infrastructure Server	Windows 2003 Enterprise Edition 2 quad-core 16 GB RAM NetXtreme IBCM5708C Gigabit controller Intel Pro/1000 PT dual-port VirtualCenter 2.5 build 119598
ESX Server	ESX 3.5 build 110268 4 dual-core 64 GB RAM Intel Pro/1000 PT quad-port controller NetXtreme BCM5704 Gigabit controller

Figure 2 outlines the drive configuration for Exchange using the first disk-array enclosure (DAE), while placing the EmailXtender drives, according to best practices, on a separate DAE for the first phase of archiving. EMC Centera and DiskXtender are used for long-term e-mail archiving.

Note: The second tray is left empty if there are two building blocks.

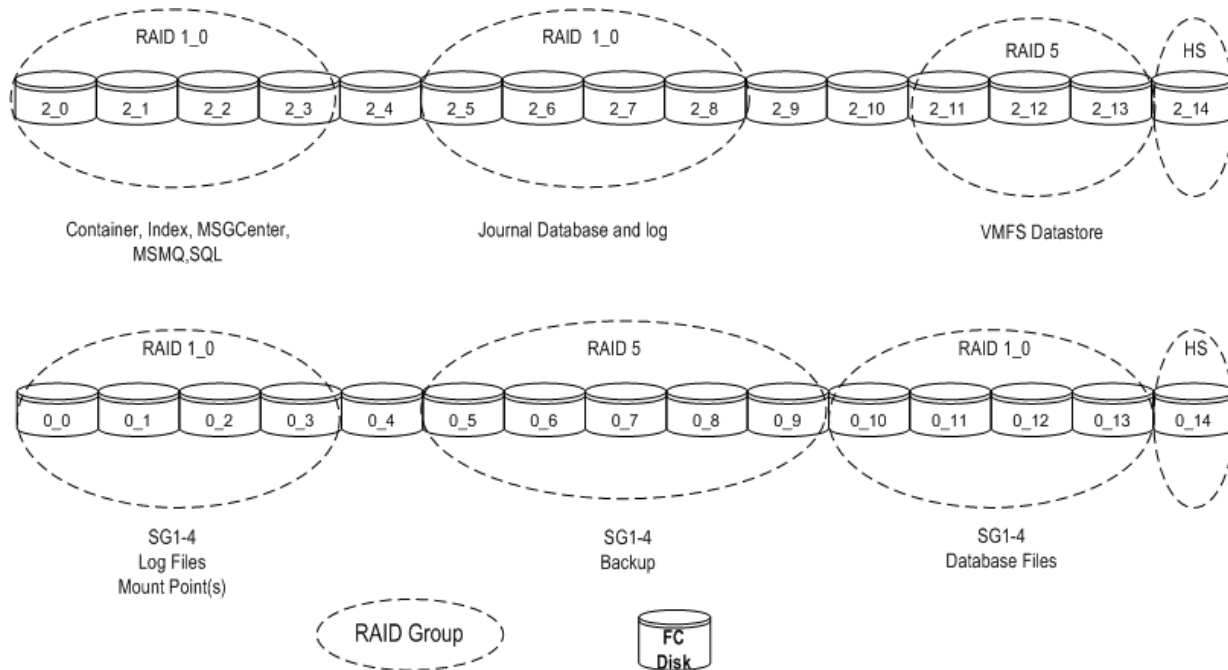


Figure 2 Drive configuration

Network architecture

The network architecture discussed in this Reference Architecture document focuses on iSCSI technology.

iSCSI technology allows customers to connect to storage arrays that use existing Ethernet networks. iSCSI works best with low bandwidth and high I/O. The small I/O size of 8 k for Exchange 2007 means that iSCSI can scale to tens of thousands of users by using Gigabit Ethernet NICs and the Microsoft iSCSI Software Initiator.

The EMC CLARiiON CX3-20 uses the Microsoft iSCSI Software Initiator on the hosts. Together with EMC's PowerPath software (in an interconnected SP design), this allows for multiple paths and fault tolerance in the event of an SP failure.

Microsoft Exchange Server architecture

The Windows 2008 Microsoft Exchange 2007 SP1 server in Figure 1 represents a standalone configuration that uses PowerPath 5.2 64-bit, native Windows 2008 Microsoft iSCSI Initiator version 6.0 (build 6000), and Navisphere[®] Agent/CLI .26 64-bit (installed for storage array access using iSCSI).

After the Exchange installation process, it is highly recommended that the Microsoft Best Practices Analyzer is run, which follows all recommendations for performance tuning and hotfix installation. The Microsoft Best Practices Analyzer is installed with Exchange 2007 and can be found in the Exchange Management Console (EMC).

The Exchange server has external storage assigned, which it is linked to through iSCSI connections. These connections are created using the Microsoft iSCSI Software Initiator.

For instructions on the configuration and setup of the iSCSI targets, read the *EMC Solutions for Microsoft Exchange 2007 CLARiiON CX3 Series iSCSI - Best Practices Planning* document on EMC Powerlink.

Storage architecture

EMC's CLARiiON CX3-20 provides external storage to the Exchange server. Exchange messages, stores, and logs are accessed through the assigned ports logged in to through the Microsoft iSCSI Software Initiator. Service processor failover of the LUNs is available via PowerPath 5.2.

The storage architecture for this solution is based on a design that uses a *building block* approach, which repeatedly builds upon itself as customers' requirements grow and additional space and fault tolerance are required.

The building block approach guarantees performance and minimizes design and operations' complexity, which is achieved through increments of four-disk RAID 10 building blocks.

The solution is provisioned for a user I/O profile of 0.5 and a maximum mailbox size of 250 MB.

RAID 10 provides high fault tolerance and performance by requiring the least amount of disks with the most amounts of users. Detailed testing has found this building block approach provides exceptional performance results.

Building blocks

Store

The solution uses a *Building Block 1* design, which uses two Exchange storage groups, with one database per storage group.

For the databases, a four-drive (300 GB / 15,000 rpm Fibre Channel (FC)) RAID 1_0 group will be created.

For the log files, a four-drive (300 GB / 15,000 rpm FC) RAID 1_0 group will be created, with one LUN per storage group log files.

Archive

- ◆ First stage archiving was achieved using EMC EmailXtender 4.8 with Unicode support.
- ◆ Second stage archiving was achieved using EMC DiskXtender 6.2 (to the EMC Centera array).

Chapter 3 Hardware and Software Resources

This chapter presents the following topics:

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Hardware resources

Table 2 lists the hardware resources used in this solution.

Table 2 Hardware specification

Hardware	Quantity	Configuration
CLARiiON CX3-20	1	FLARE® 26
DAE3	1	25 – 300 GB 15k rpm FC drives
Windows server	1	4 x dual-core EM64T Family 6 Model 15 Stepping 7 Genuine Intel 2328 MHz 16 GB RAM
ESX servers	2	4 x dual-core EM64T Family 6 Model 15 Stepping 7 Genuine Intel 2328 MHz 64 GB RAM 4 x Intel PRO/1000 MT network connection 2 x Broadcom BCM5708C II Gigabit Ethernet (NDIS VBD Client)
Gigabit Ethernet switch	2	1 Production 1 iSCSI 2 VLANs
EMC Centera	1	Version 3.1.3-1929-868-20317

Software resources

Table 3 and Table 4 list the software resources used in this solution.

Table 3 Software specification

Software	Version	Count
VMware ESX	3.5 build 110268	2
Microsoft Windows 2003 Enterprise Edition	x64 SP2	2
Microsoft iSCSI Initiator	6.0 build 6000	1
EMC PowerPath	5.2	3
Navisphere Agent/CLI	.26	3
Windows Server 2008 Enterprise	RTM	3
Microsoft Windows 2003 Enterprise Edition	X32	1
EMC EmailXtender	4.8	1
EMC DiskXtender	6.2	1

Table 4 Software resources for the virtual infrastructure server

Software	Version	Purpose
Microsoft Windows 2003 Enterprise 32-bit	5.2.3790 Service Pack 2 build 3790	Operating system
Microsoft .Net	2.0 SP1	Required for the virtual infrastructure server
Microsoft SQL desktop engine	N/A	Required to store information about the virtual infrastructure
VMware virtual infrastructure server	2.5	Required to centrally manage the ESX Server
VMware virtual infrastructure client	2.5	Required to access the virtual infrastructure server features

Chapter 4 Conclusion

This chapter presents this topic:

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Conclusion

In conclusion, the reference architecture described in this document utilizing EMC EmailXtender with DiskXtender in a virtual environment, and using VMware ESX 3.5 u2 in a VMHA configuration for increased fault tolerance with Windows 2008 and Windows 2003 SP2, was capable of handling the normal e-mail load while also supporting the increased load of archived e-mail.