

Commentary

August 22, 2005

Disaster Recovery Choices for Microsoft Exchange

Having to explain to management why their Exchange database went away and could not be recovered is not something that an Exchange administrator would like to do — ever. For CLARiiON shops, that nightmare need never occur. EMC offers a number of Microsoft-supported solutions to meet the specific disaster recovery (DR) needs of the enterprise. A simple management application in conjunction with functional software options can be used to build a layered DR solution. But the choice of how many layers is up to you.

DR Itself Is Not a Choice; the Only Choice is Which Exchange DR Solution

Living without Microsoft Exchange for an extended period of time is unacceptable for any business today. Consequently, savvy IT shops looking to bolster their Exchange environment in order to provide enhanced DR capabilities should consider their available options.

Disaster recovery requires a commitment and investment on the part of an enterprise to a second site. Disaster recovery allows continued operation for Exchange at a second site when the primary production site is temporarily or permanently left unusable.

By contrast, operational recovery deals with the ability to recover at the primary site from a service-impacting event such as database corruption or user errors. However, a disaster recovery solution leverages (and may

complement) an operational recovery solution.

Not all disaster recovery solutions are created equal. Time imperatives, budget consciousness, and manageability considerations affect the choice.

The choices available that leverage the CLARiiON CX platform can serve as a good illustration of the process that IT organizations go through when making a decision on a DR solution.

Building Your Exchange DR Solution

An IT organization should choose a DR solution that best balances three parameters — recovery point objective (RPO), recovery time objective (RTO), and manageability — with an affordable cost.

RPO is the maximum amount of data loss (in terms of time) that an IT organization feels that it can endure. RTO is the downtime before the Exchange application is again available to users. Manageability is a subjective measure of the IT

Commentary

administrative resources that a particular DR solution requires.

EMC offers a layered building block approach to DR for Microsoft Exchange on CLARiiON, where each layer offers a different combination of RPO, RTO, and manageability.

Fundamental to a coordinated DR solution is an overarching management environment that controls replication activities and orchestrates complex tasks to ensure recovery. All three solutions leverage EMC's Replication Manager/SE for simple recovery management capabilities. Users can build upon their investment to achieve different levels of advanced recoverability:

- *Layer 1* — SnapView local point-in-time copies for non-disruptive backup and operational recovery
- *Layer 2* — add SAN Copy to distribute local point-in-time copies to a secondary site for disaster recovery.
- *Layer 3* — add RepliStor for real-time replication of Exchange log files to significantly decrease RPO.

Exchange administrators should welcome the strategy of being able to start simple and add layers as necessary while continuing to use the knowledge and skills already learned with Replication Manager/SE.

Start with a SnapView and Replication Manager/SE Foundation

Replication Manager/SE is designed to work with Microsoft Windows applications (NTFS, Exchange and SQL) and is the overseer that automates and manages disk-based replications to help alleviate the otherwise-manual

burden. Replication Manager/SE performs a number of functions, including synchronization with Microsoft's Volume Shadow Copy Service (VSS), database integrity checking, as well as coordination of recovery process.

Replication Manager/SE runs on a Windows server as a mount host. Exchange-mountable replicas can be local via SnapView or remote via SAN Copy on Microsoft Windows 2003 servers that are attached to CLARiiON systems. Replication Manager/SE is the heart of a CLARiiON DR solution. SnapView is used to create clones — point-in-time copies — that house the Exchange replicas.

Replication Manager/SE and SnapView together deliver rapid operational recovery at the local site.

For a DR solution, a clone can be mounted to a backup server at any time for backup without any shutdown of databases or impact on the Exchange production server.

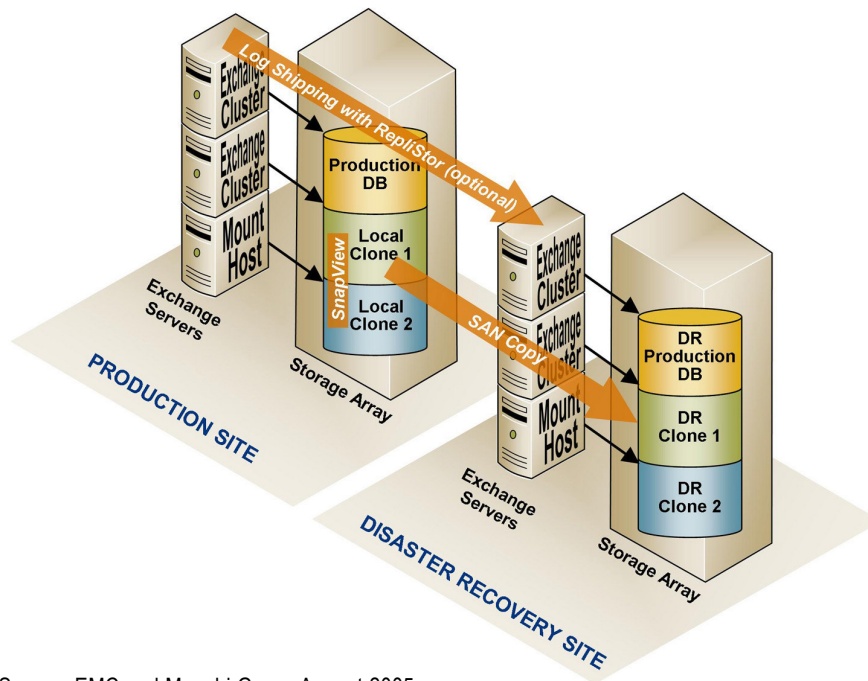
The DR solution in this case is to vault tapes at an offsite location. RPO could easily be 24 hours, but RTO could be days or even more if the production site had to be recreated at a third site. Manageability of day-to-day operations should be easy, but management of a disaster could be very difficult.

Blend in SAN Copy to a DR Site

Start by plugging in a remote site for disaster recovery that more or less mirrors the production site configuration, including servers, storage, and networking capabilities (Figure 1).

Add in SAN Copy, which enables the block-based copying of production site clones to the DR site. Replication Manager/SE with SAN Copy adheres to Microsoft supportability and VSS

Figure 1: CLARiiON Exchange DR Options



Source: EMC and Mesabi Group August 2005

guidelines. Although VSS guidelines are not DR-specific, the solution includes recovery only from Exchange replicas that are created in a VSS-compliant manner.

Send in the Clones

A “two clone” rotation, where each site has the most current Exchange replica as well as its previous full backup, is the recommended minimum. This best practice ensures that there is always a “gold” copy on both the local and remote sites in case of failure or database corruption (such as from viruses).

Replication Manager/SE can automatically start the remote replication

process with SAN Copy once Snap-View has finished the matching local replication job.

Having two defined restart points at each site creates double-double redundancy.

Recovery can be not only from a physical site disaster, but also from a logical data protection problem, such as a rolling virus or something else that can create database and log corruption.

In addition, the clone (a protected gold copy) is not

changed when it is written to a production database. Therefore, you can restart a failed recovery as often as you need to without affecting the clone.

If the Big One Happens

Replication Manager/SE manages the recovery process to turn the DR site into the working production site. The latest good clone that contains the Exchange database and logs replica will serve to create the DR site Exchange production database on demand. The whole process is estimated to have an RTO of less than an hour.

The RPO when using SAN Copy can be equivalent or better than tape since you have the ability to copy and distribute

data more frequently than typically is done as part of a standard backup process. Of potentially greater value is the improvement to RTO, since you eliminate the time consuming retrieving and reloading of tapes.

Top Off (As Desired) with RepliStor to Greatly Reduce Threat of Data Loss

The three layer approach can significantly improve the RPO level to minutes for organizations desiring the least exposure. RepliStor, host-based replication software, is the extra added ingredient enables the dramatic dropping of RPO to minutes. RepliStor ships closed Exchange transaction log files between the production and DR site. Since you are only shipping logs, the impact on the WAN bandwidth should be low. Moreover, since log files are only 5 MB, that becomes the maximum amount of data exposed. RepliStor manages the day-to-day movement of the logs while Replication Manager/SE can apply them if necessary at the DR site.

At a Glance

With Replication Manager/SE you have the simple-to-use management interface that effectively integrates with Microsoft Exchange. So the choice is yours (Table 1). Ask yourself. Can you live without a second site? If so, the SnapView local clone option is appropriate. If not,

you should consider the addition of SAN Copy to replicate clones for DR. And if you desire the lowest RPO, RepliStor will be needed for real-time log shipping capabilities.

Table 1: The Choice Is Yours — RPO, RTO, and Manageability

Option	Outcomes		
	RPO	RTO	Manageability
Local clone for backup with off-site tape vaulting	24 hours or less	Possibly days or even more	Easy setup but difficult managing tape rotations and disaster restart
Replicated clones (once per day)	24 hours plus bandwidth latency	Less than an hour.	More setup work, but easy DR restart
Replicated clones + Log shipping	Minutes	Less than one hour	A little more setup work, but easy DR restart

Source: Mesabi Group August 2005

Conclusion

Any Exchange administrator who wishes to get a good night's sleep should always be striving for the most effective and achievable DR solution. EMC has done a good job of delivering layers of desired functionality and best practices to map to your service level requirements.

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