WHITE PAPER: TECHNICAL

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How Enterprise Vault Supports Exchange 2007 High Availability Options

Niels Van Ingen, Product Manager
Andy Joyce, Technical Field Enablement

Version 2.0 (March 2009)
Applicable to Symantec Enterprise Vault 8.0 and 2007

Contents

Purpose of this Document

This document outlines the high availability options introduced in Exchange 2007, namely LCR, CCR and SCR, and discusses how Enterprise Vault supports them. This document is intended only to position these technologies with respect to Enterprise Vault and is not intended to be a deep-level technical discussion or a detailed guide to implementation of configuration.

Target Audience

This document is aimed at a primarily technical audience, with some background knowledge of Microsoft Exchange and Enterprise Vault.

Contact Us

If you have any comments on this Whitepaper please email EV-TFE-Feedback@Symantec.com

Overview of Exchange 2007 High Availability

While minimum uptime requirements vary among organizations, every organization would like to achieve a high level of uptime. Organizations for which messaging is business-critical often choose to design a highly available messaging system to provide this uptime.

High availability for Mailbox servers comes in two forms: *service availability* and *data availability*. Service availability is provided through the use of a Windows Server failover cluster. Data availability is provided through a built-in feature called *continuous replication*.

Continuous replication, also known as *log shipping*, is the process of automating the replication of closed transaction log files from a production storage group to a copy of that storage group that is located on a second set of disks on the local computer or on another server altogether. After being copied to the second location, the log files are then replayed into the copy of the database, thereby keeping the storage groups synchronized with a slight time lag.

Continuous replication is available in two forms in Exchange 2007 RTM (*LCR* and *CCR*) and three forms in Exchange 2007 SP1 (*LCR*, *CCR*, and *SCR*). Additionally, the more traditional clustered model, where a single copy of the data is maintained on shared storage but the services can be failed over between nodes, is still available with Exchange 2007 but now called a *Single copy cluster (SCC)*

These technologies are explained below.

Local continuous replication (LCR)

LCR is a single-server solution that uses built-in asynchronous log shipping technology to create and maintain a copy of a storage group on a second set of disks that are connected to the same server as the production storage group. LCR provides log shipping, log replay, and a quick manual switch to a secondary copy of the data.

Cluster continuous replication (CCR)

CCR, which is a non-shared storage failover cluster solution, is one of two types of clustered mailbox server (CMS) deployments available in Exchange 2007 (the other being SCC). CCR is a clustered solution (referred to as a *CCR environment*) that uses built-in asynchronous log shipping technology to create and maintain a copy of each storage group on a second server in a failover cluster. CCR is designed to be either a one or two data center solution, providing both high availability and site resilience. CCR is very different from clustering in previous versions of Exchange Server (that used either Microsoft Cluster Server of VERITAS Cluster Server).

Standby continuous replication (SCR)

SCR is a feature introduced in Exchange 2007 SP1. As its name implies, SCR is designed for scenarios that use or enable the use of standby recovery servers. SCR extends the existing continuous replication features and enables new data availability scenarios for Exchange 2007 Mailbox servers. SCR uses the same log shipping and replay technology used by LCR and CCR to provide added deployment options and configurations by providing the administrator with the ability to create additional storage group copies. SCR can be used to replicate data from stand-alone Mailbox servers and from clustered mailbox servers.

Single copy clusters (SCC)

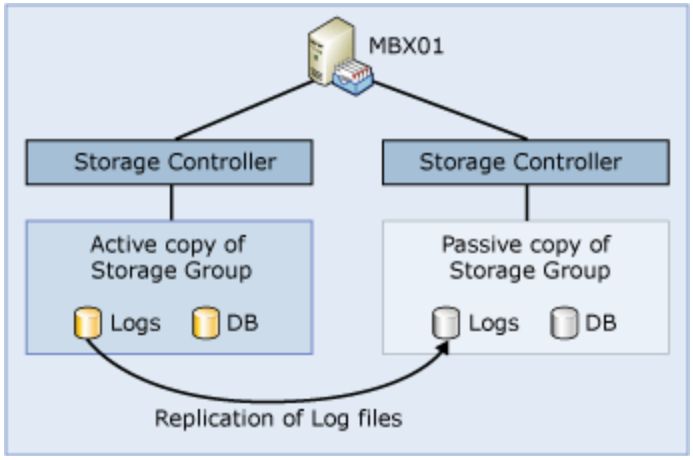
SCC, which is a shared storage failover cluster solution, is the mother of two types of clustered mailbox server deployments available in Exchange 2007. SCC is a clustered solution that uses a single copy of a storage group on storage that is shared between the nodes in the cluster. SCC is somewhat similar to clustering in previous versions of Exchange Server; however, along with numerous improvements, there are also some significant changes.

Enterprise Vault and Exchange 2007 continuous replication

The key to understanding how Enterprise Vault supports the various Exchange 2007 continuous replication technologies is the fact that we use the MAPI protocol, enabled via an Outlook installation on the Enterprise Vault server, to connect to the target mailboxes. This is true for both mailbox archiving and journaling. For this reason, support of these continuous replication technologies is almost a "given". However, this section of this document explains how Enterprise Vault interacts with Exchange 2007 LCR, CCR and SCR in a bit more detail.

Enterprise Vault and Exchange 2007 LCR

As previously explained, local continuous replication (LCR) is a single-server solution that uses built-in asynchronous log shipping and log replay technology to create and maintain a copy of a storage group on a second set of disks that are connected to the same server as the production storage group. The production storage group is referred to as the *active* copy, and the copy of the storage group maintained on the separate set of disks is referred to as the *passive* copy. The following figure illustrates a basic deployment of LCR.



LCR enables the configuration, operation, verification, removal, and activation of a storage group copy. When necessary, a passive copy can be activated as a production database, and then mounted and made available to clients. Typically, you can do this task as a configuration change either by changing the active storage group and database paths or by a lower-level operating system action (for example, changing the mount points associated with the log or database volumes).

What is important as far as Enterprise Vault support for LCR is concerned is that, in a failover scenario, the passive copy (which is an exact replica of the active copy) is mounted and because of

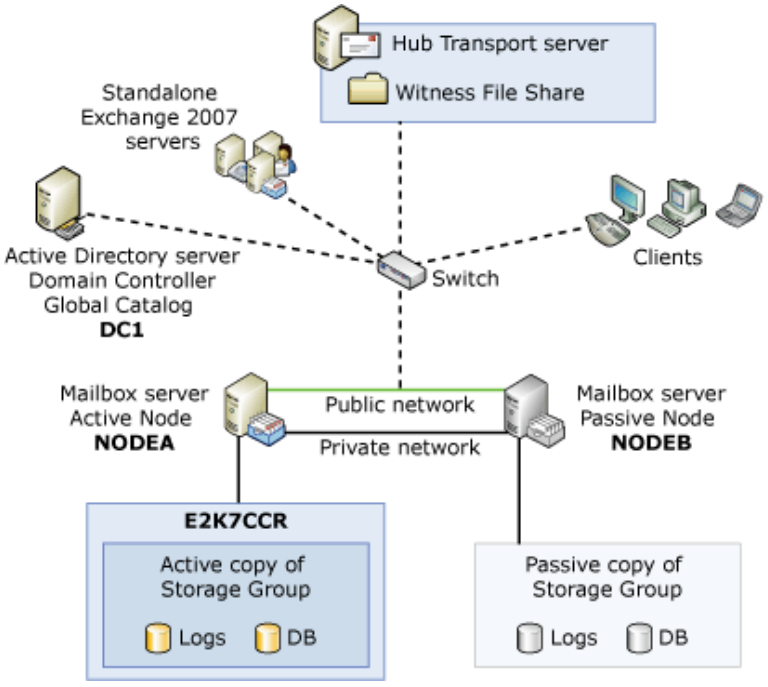
that from an Enterprise Vault perspective nothing changes as the failover is transparent to Enterprise Vault.

This means that Enterprise Vault fully supports Exchange LCR configurations. When a failover occurs and the passive copy is mounted Enterprise Vault continues to function without the need for additional configuration steps.

Enterprise Vault and Exchange 2007 CCR

CCR uses the database failure recovery functionality in Exchange 2007 to enable the continuous and asynchronous updating of a second copy of a database with the changes that have been made to the active copy of the database. During installation of the passive node in a CCR environment, each storage group and its database is copied from the active node to the passive node. This operation is called *seeding*, and it provides a baseline of the database for replication. After the initial seeding is performed, log copying and replay are performed continuously.

In a CCR environment, the replication capabilities are integrated with the Cluster service to deliver a high availability solution. In addition to providing data and service availability, CCR also provides for scheduled outages. When updates need to be installed or when maintenance needs to be performed, an administrator can move a *clustered mailbox server* (called an Exchange Virtual Server in previous versions of Exchange Server) manually to a passive node. After the move operation is complete, the administrator can then perform the needed maintenance.



As with Exchange 2007 LCR failover, failover to the passive copy using Exchange 2007 CCR is "transparent" to Enterprise Vault and as such from an Enterprise Vault perspective functionality continues to function as expected without the need for additional configuration steps when failover has occurred. This means that Enterprise Vault supports Exchange 2007 CCR.

Enterprise Vault and Exchange 2007 SCR

Standby continuous replication (SCR) is a feature introduced in Microsoft Exchange Server 2007 Service Pack 1 (SP1). As its name implies, SCR is designed for scenarios that use or enable the use of standby recovery servers. SCR extends the existing continuous replication features found in Exchange Server 2007 and enables new data availability scenarios for Mailbox servers running SP1. SCR uses the same log shipping and replay technology used by local continuous replication (LCR) and cluster continuous replication (CCR) to provide added deployment options and configurations.

SCR enables a separation of high availability (comprised of service and data availability) and site resilience. For example, SCR can be combined with CCR to replicate storage groups locally in a primary datacenter (using CCR for high availability) and remotely in a secondary or backup datacenter (using SCR for site resilience). The secondary datacenter could contain a passive node in a failover cluster that hosts the SCR targets. This type of cluster is called a standby cluster because it does not contain any clustered mailbox servers, but it can be quickly provisioned with a replacement clustered mailbox server in a recovery scenario. If the primary datacenter fails or is otherwise lost, the SCR targets hosted in this standby cluster can be quickly activated on the standby cluster.

SCR can be configured in a number of different ways and through testing we found that, due to this, sometimes additional configuration steps are required to make Enterprise Vault fully operational again after an SCR failover. So what does that actually mean when it comes to the commonly asked question as to whether SCR is supported by Enterprise Vault?

What needs to be understood is that Enterprise Vault may not recover automatically after a SCR failover and, as mentioned above, some manual configuration may be required. As it is possible to setup SCR in so many different ways, the steps required for Enterprise Vault to become functional again after SCR failover will differ from customer to customer. To ascertain the required steps, customers should run through a test failover scenario specific to their messaging environment.

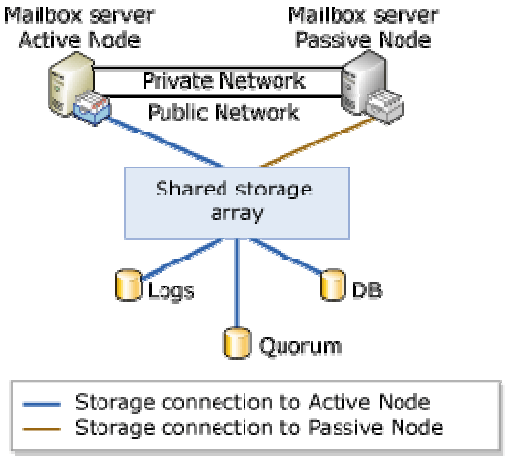
It is this requirement that some manual intervention may be required that leads us to be cautious about claiming "full support" for SCR; as that would carry some implication of automatic failover. Equally, it is difficult for us to prescribe and test the required manual reconfiguration steps for every SCR configuration.

However, this does not mean that SCR is not supported from an Enterprise Vault perspective. All it means is that you need to be aware that, depending on the configuration of SCR, additional and unspecified manual configuration of Enterprise Vault may be required when failover occurs. If a customer has issues with Enterprise Vault after an SCR failover has taken place, we will certainly try to assist them to the best of our ability to overcome any issues found.

Therefore, Enterprise Vault does support Exchange 2007 Standby Continuous Replication (SCR) with the caveat that some manual configuration of Enterprise Vault may be required after SCR failover.

Enterprise Vault and Exchange 2007 SCC

Exchange 2007 Single Copy Clusters do not include data replication. As mentioned earlier, an Exchange 2007 Single Copy Cluster is really just a new name for the traditional shared storage cluster model we are familiar with, albeit with some improved configuration and management features. In the case of an SCC, there is one copy of each Mailbox Store database, held on shared storage, and each is only accessed by a single "virtual server" running on the active node of the cluster. If the server hardware fails then the virtual server fails over to the passive node, which then accesses the Mailbox Store database(s) held on the shared storage.



As a result it is "business as usual" for Enterprise Vault; we configure our Mailbox Archiving Tasks to target the Exchange Virtual Servers (now called a Clustered Mailbox Servers) and in the event of a failover, we automatically "reconnect" to the now active server.

Therefore, Enterprise Vault does support Exchange 2007 Single Copy Clusters (SCC).

Conclusion

The following table summarizes Enterprise Vault support for Exchange 2007 High Availability Options.

Exchange 2007 High Availability Option	Supported by Enterprise Vault
Local Continuous Replication (LCR)	ü
Cluster Continuous Replication (CCR)	ü
Standby Continuous Replication (SCR)	ü [1]
Single Copy Cluster (SCC)	ü

[1] Some manual configuration of Enterprise Vault may be required after SCR failover

Further Information

For more detailed information on the Microsoft Exchange high availability options, see the following TechNet article:

http://technet.microsoft.com/en-us/library/bb124721(EXCHG.80).aspx

For more information on Enterprise Vault compatibility with Microsoft Exchange versions, and other software, see the Enterprise Vault Compatibility Charts at the following location:

ftp://exftpp.symantec.com/pub/support/products/Exchange_Mailbox_Archiving_Unit/276547.pdf

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Symantec Corporation
World Headquarters
20330 Stevens Creek Boulevard
Cupertino, CA 95014 USA
+1 (408) 517 8000
1 (800) 721 3934
www.symantec.com