Realtime publishers

The Essentials Series: Configuring Microsoft Exchange for Fast Recovery

Exchange Recovery Recommendations

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Exchange Recovery Recommendations

Good hardware and configuration provide the foundation for fast recovery, and backup methods provide the how-to for fast recovery. However, all the configuration and backup means nothing if you cannot restore the Exchange Server system and meet your recovery time objectives (RTOs) and Service Level Agreement (SLA) requirements. Thus, the need to look at recovery scenarios and different methods of recovery, including restoring non-Mailbox roles and using database portability, and Recovery Storage Groups (RSGs). In addition, this article will look at VSS recovery compared with streaming (legacy) backups. Finally, we will close with a word on how virtualization can be used in fast recovery.

Database Recovery Scenarios

So what are some of the recovery scenarios you might face in an Exchange environment? They fall into three categories: hardware, software, and site. To begin with, you must consider what can be called database items, such as email that is permanently deleted or perhaps the loss of a mailbox in Exchange. Next, you have lost databases or storage groups on a server. Moving up from here, you can face a lost server where the database and log files are intact or a lost server where database and log files are also lost. If clustering is used, you might have the loss of a storage group, database, or servers in a cluster, loss of external services such as DNS or AD, or even the loss of an entire site. No matter how small or how big the problem, a loss of email from a single email up to an entire site is costly to any organization.

Recovering Non-Mailbox Roles

We will start with recovery of non-Mailbox roles in Exchange. These roles are in many ways easier to recover for several reasons. First, the configuration for these roles exists in Active Directory (AD). Simply using Setup /m: RecoverServer will care for most of the non-Mailbox servers. The Edge Transport server requires a little bit of a different recovery because it does not exist within the AD structure. Certain configurations will need to be restored manually, such as the voice recordings for the Unified Messaging role or metadata within IIS for the CAS role. When restoring the Hub Transport server, you should add the /DoNotStartTransport switch and check the configuration before putting it into production. To restore this server role, you need to export the configuration information with a script using EMS. Install Exchange, and use the same name for the Edge Transport server. Run a script to create an answer file from the information you exported. Adjust the answer file, and run the script again, applying the changes to the Edge server. Lastly, run the EdgeSync process to synchronize the Edge Transport and Hub Transport servers. Using the methods discussed in the second article of this series, you can provide resiliency and uninterrupted operation until the failed server is restored or re-created.

Restore Using Database Portability

If you are going to have a solution for fast recovery, you also need to have flexibility to achieve your goals. Exchange Server offers you that kind of flexibility in a few ways. One notable way is the ability to use database portability. In the past, recovering an Exchange Server meant that you needed to do one of the following:

- Recover to a server with the same name as the original server from which the database came
- Recover another server within the same Administrative group (Exchange Server 2003 and 2000 also had conditions that needed to be met in order to perform the move)
- Recover to a Recovery Storage Group

Database portability now makes it possible to recover to any server within the same organization. Database portability gives you the ability to relocate a database in the case of a server that is having maintenance performed or is being upgraded.

> **Note**
> Upgrading form Server 2003 to Server 2008 will cause the database to rebuild its secondary indexes and will delay mounting the database. The time is dependent on the size of the database.

Another use for database portability is to restore a database to a new server. Using this method, you would need to use either NTBackup or third-party backup/restore software to restore the database to the new server. This is achieved by creating a new database with the same name as the original on the target server (do not mount that database) on the next restore of the database and allow it to overwrite the existing database. Logs will replay after the restoration, and you can choose to mount the database after the restore.

Using RSGs

Not all recovery solutions call for full database restores. In situations in which you need to extract data rather than completely restore, you can use RSGs. RSGs allow you to mount a database and extract data from them while having the server remain in production. Common uses for RSGs:

- Same server dial-tone recovery

- Alternative server dial-tone recovery

- Recover a mailbox, database, or group of databases within a storage group

- Recover deleted items that are past the deleted items retention policy

Note

Do not look for the RSG inside the Exchange Management Console. Even after the database is mounted, RSGs are created and managed using the Exchange Management Shell (EMS) or the Exchange Server disaster recovery analyzer (ExDRA). Only one RSG can exist per server.

Using RSG, you can restore all visible and hidden folders. RSG gives the ability to restore all mail items within Exchange. On a mailbox restore, you can restore the extracted data into an existing mailbox (merge) or into a subfolder of the mailbox (copy). RSG cannot be used to mount Public Folders; neither can you mount mailbox databases from previous Exchange versions. You would not use RSG for a full-server restore or for restoring multiple storage groups. Once an RSG is created, you can then perform a dial-tone restore. You have the option of either performing the restore to the same server or to a different server.

Dial-Tone Restores

In an Exchange environment where being down even 30 minutes can be disastrous, there is a solution that can allow you to quickly recover email operations while you work on resolving the issues with the database. Simply put, dial-tone restores allow you to quickly recover email functionality without the need to wait for the mail database to restore. Mailboxes exist in AD, so you can use a dial-tone restore to quickly get users functioning.

Dial-tone restore provides users the ability to send and receive email and gives users limited access to email using the offline (.ost) file. Users that have Outlook set up to use Exchange in cached mode will have access to some historical data. For users with Outlook 2007, auto discovery allows the new mailbox to be found instantly when a dial-tone restore is done on an alternative server.

> **Warning**
> When you perform a dial-tone restore, messages are not the only thing missing. The new mailboxes will not have views, rules, forms, or any other metadata from the former mailbox. These are restored once the mailboxes are merged.

When a database restore has been completed, you can then 'merge' the data from both mailboxes to achieve congruency.

VSS vs. Streaming (Legacy) Restores

Just as Exchange supports both streaming (legacy) and VSS methodologies for backup, it uses both methods for restoration. Restoring databases using streaming (legacy) backups consists of creating a storage group and database with the same name as the original storage group and database. Streaming (legacy) incremental backups cannot be taken after a full VSS backup. With Windows Server 2008, there is no support for streaming backups. Therefore, you need to use VSS.

VSS offers additional options for restoring Exchange Server. With VSS, you can restore backups to the active copy of the database. You can perform restorations to the same storage group or an alternative storage group. You can restore to the same server or an alternative server. You even have the option to restore the database to a non-Exchange location using file-level restores.

Virtualization

When we talk about virtualization, we often look at it in terms of server consolidation. We often talk about reducing costs for servers and energy by implementing new servers in virtualized environments. However, when we talk about virtualization for fast recovery, we are taking a different tact.

Virtualization offers two advantages in the Exchange environment. First, in the area of restoring Exchange databases, virtualization allows you to stretch your available resources in an emergency. For example, if you lose the physical server that hosts the Mailbox role, you can use virtualization to provision an underutilized server in your network and perform a dial-tone restore. This would allow you to return email to users quickly while you wait for the server to be repaired or replaced.

Another good use for virtualization is to perform restores to the virtual server away from a production environment. This affords you the opportunity to test your backup and restore solutions to ensure they are working.

You can also use virtualization to test various restore solutions, such as dial-tone restores, database portability, and RSGs. Using the high-availability solutions such as LCR or SCR, you can work out configurations that meet your RPO and RTO plans.

Summary

So what is the ideal formula for fast recovery? There are probably quite a few ideal and even third-party solutions to help you configure the right environment for your organization. A best practice is to start by making sure you have a good hardware base. Then plan your deployments, or tweak an existing deployment if you already have Exchange 2007 in production, to maximize your uptime and recovery potential.

You can use the high-availability options of replication and clustering (if it fits within the budget) as great ways to create a fast recovery infrastructure. The near-time replica of your active data offers countless possibilities for recovering quickly from minor to somewhat serious issues. Coupling high-availability options with a backup plan that meets your RPO, RTO, and SLA requirements gives you the possibility to offload that replicated data quickly using either disk or tape backup along with VSS (remember the rules though; you need some additional help to do this right and get an Exchange–aware backup).

Next, you have several ways you can restore your Exchange environment. Again, you can get your users up quickly using these fast recovery methods. And, if necessary, you can return email functionality while you wait for the database to return to a usable state. Virtualization gives you some extra options for scenarios in which a physical replacement may not be available for a lost server or site.

Finally, test that backup and restore process (here's where that virtualization piece fits in nicely again). With virtualization, you have the ability to not only test restores but do so in a controlled environment and test every sort of imaginable event to determine in 'real time' the effects and responses. That is where the real fast recovery comes in, by being able to create, test, and manage infrastructure. Then using the things you have learned and the tools available, you have the ability to tweak the things that can make your infrastructure better and improve the metrics that matter to your organization.

When you plan your Exchange environment, you do so with the hope that you will never need to worry about recovering mailboxes, databases, or worse. By planning for such events and following the prescribed steps in this essentials series, you can create a solution for fast recovery in Exchange Server.