



Enterprise Vault Whitepaper

Migrating and Consolidating File Servers with Enterprise Vault

This whitepaper discusses migrating and consolidating file servers that have content archived with Enterprise Vault

If you have any feedback or questions about this document please email them to IIG-TFE@symantec.com stating the document title.

This document applies to the following version(s) of Enterprise Vault:
9.0.x & 10.0.x

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Document Control

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1	February 2011	Initial release
2	May 2012	Updates for EV 9.0.4 and 10.0.2
3	February 2013	Minor updates
4	March 2013	High level steps for migrating placeholders from one platform to another

Related Documents

Document Title	Version / Date

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Introduction

New Consolidation Feature with Enterprise Vault 9.0

Enterprise Vault 9.0 offers a new feature with the FSAUtility.exe program, Placeholder Migration.

Placeholder Migration

The new Placeholder Migration option provides enhanced support for file server consolidation for when an old file server may be decommissioned or for when volumes need to be re-organized. With previous versions of Enterprise Vault, the Move option was the only method available which not only moved the placeholders, but also required the existing archived files to be moved to a new archive. Speed of migration was determined by the size of the archived files, not by the number of placeholders to migrate.

The Placeholder Migration option for FSAUtility provides an optimized version of the Move option. When using this new option, data is not migrated within the archive. Thus the speed of moving archived files with the Placeholder Migration compared to that of the Move option can be dramatically faster as there is no shuffling of data within Enterprise Vault and only placeholders on the file system are migrated from the source to the destination. To use the new Placeholder Migration option, both source and target volumes need to be managed by the same EV server and the same Vault Store. Internet shortcuts are not eligible for migration.

To use Placeholder Migrations, FSAUtility requires the following format:

```
FSAUtility -pm -s <source_folder> -d <destination_folder> [-f] [-cs] [-csf] [0|1] [-i]
```

Where:

- -pm – Indicates Placeholder Migration
- -s – Indicates source
- <source_folder> - The source folder that contains placeholders to be migrated
- -d – Indicates destination
- <destination_folder> - The destination folder for the migrated placeholders
- -f – Optional. Overwrites files or placeholders at the destination
- -cs – Optional. Copy folder security descriptors unless the folder already exists at the destination. Cannot be used with -csf
- -csf – Optional. Forcefully copy folder security descriptors, even for existing items. Cannot be used with -cs
- 0|1 – Optional. Log settings. 0 for successful and failed actions. 1 for only failed actions (default)

- -i (Starting with **EV 9.0.4** and **10.0.2** and later) – This will force FSAUtility to ignore errors when it attempts to move a placeholder to the new location. It is recommended that the **-i** switch **not be used initially** and only used on subsequent attempts if an error is encountered. These errors include:
 - Failure to determine whether a file is a placeholder
 - Failure to create a placeholder at the destination location (e.g. due to permissions issues)
 - Failure to delete a placeholder from the source location

Here is an example of running placeholder migrations. Before the migration (note the location as shown in Figure 1):

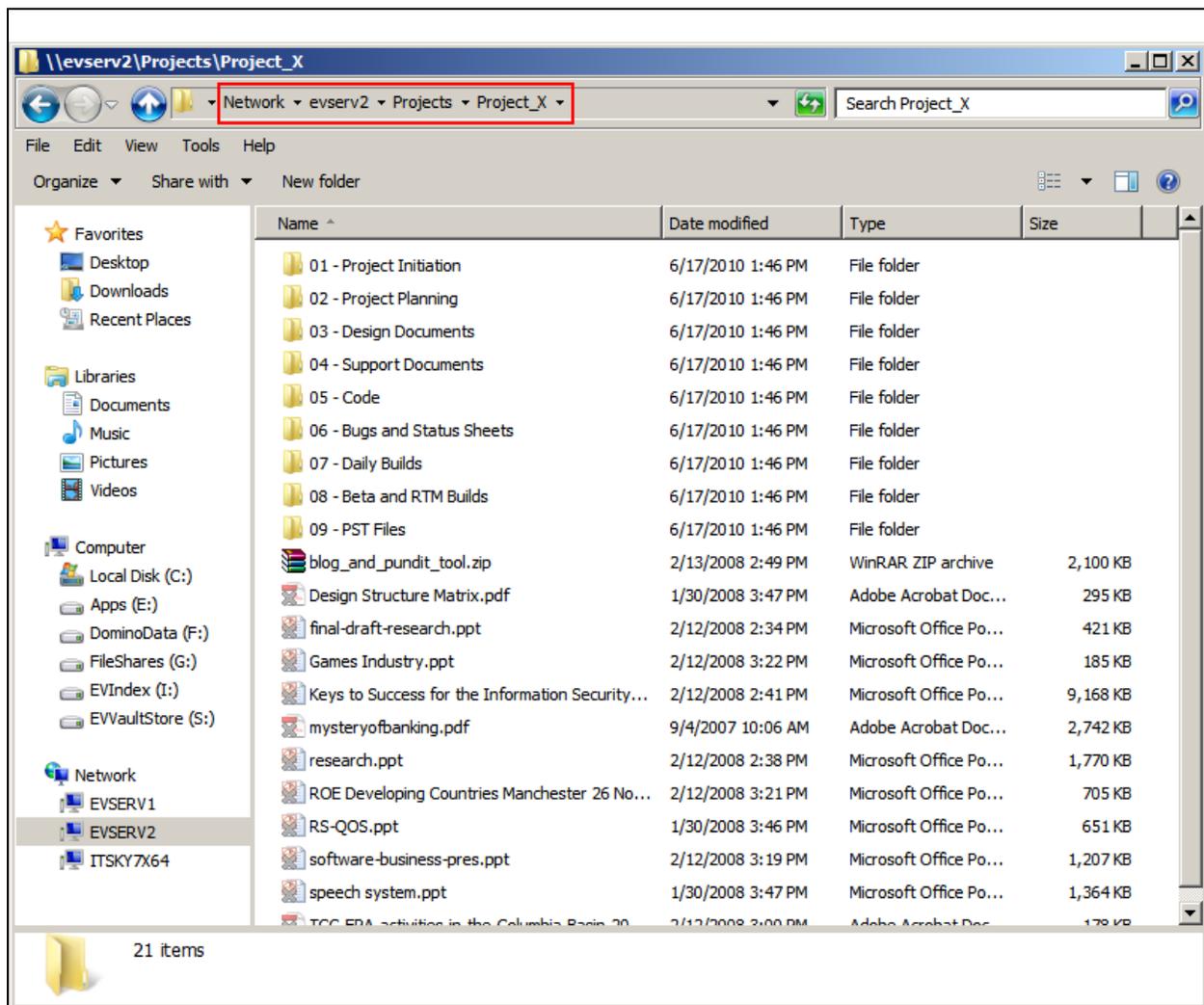


Figure 1 – Placeholders before migration

Run the command:

FSAUtility -pm -s \\EVSERV2\Projects\Project_X -d \\EVSERV2\Projects\Project_Z



Figure 2 - Running FSAUtility with the -pm parameter

After running the command (note how the placeholders are now in a new folder and how only placeholders were migrated as shown in Figure 3):

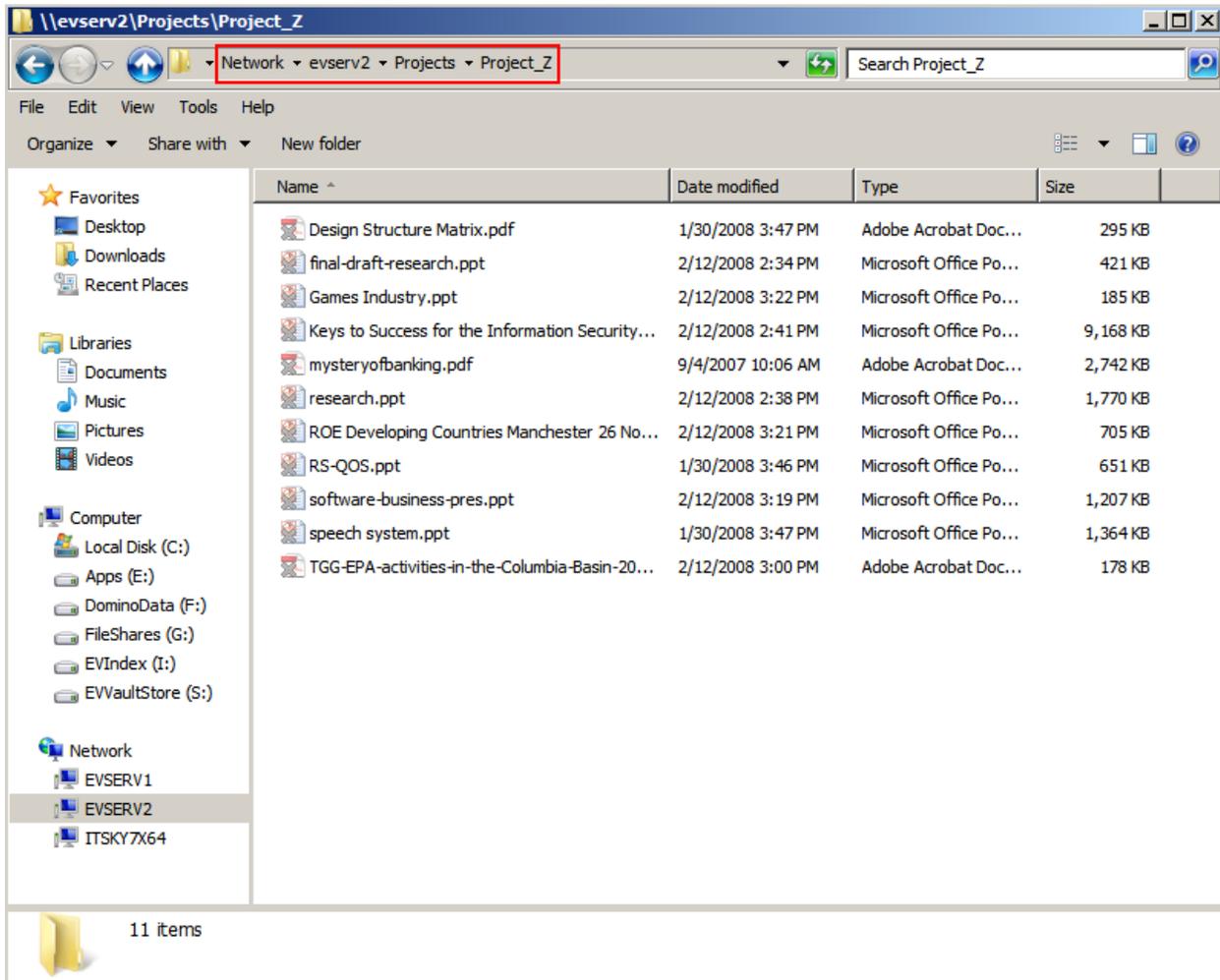


Figure 3 – Placeholders after migration

Performance

For Placeholder Migrations, the number of threads can be controlled by modifying the FSAUtilityFolderProcessThreads DWORD value located in HKLM\Software\KVS\Enterprise Vault\FSA

(32-bit operating systems) or HKLM\Software\Wow6432Node\KVS\Enterprise Vault\FSA (64-bit operating systems).

Increasing the thread count can speed up the processing of placeholder migrations, particularly when there are numerous amounts of subfolders, but does have its drawbacks. Keep in mind that this will also require additional resources on the Enterprise Vault server. If the Enterprise Vault server also performs other archiving functions (such as Exchange archiving), increasing the thread count can slow down the overall performance of the server especially if the server has a limited amount of processing cores. Proper timing of placeholder migrations should be done in order not to conflict with existing, scheduled archiving tasks.

Cross Platform Migrations and Moves

The FSAUtility `-m` and `-pm` functionality can be used to migrate or move archived data between supported platforms (such as Windows to NetApp, NetApp to Celera, Celera to Windows, or NAS devices with CIFS enabled to Windows). It should be noted that by simply copying Placeholders (using robocopy or Windows Explorer for example) between platforms will not work as these tools will recall archived files. FSAUtility `-m` or `-pm` will be required.

Methods for Migrating and Consolidating Data on File Servers

Using Enterprise Vault as a Mechanism to Reduce the Amount of Data to Consolidate or Migrate

Organizations looking to reduce the amount of time and data needed to consolidate or migrate existing data to new or existing hardware can implement Enterprise Vault File System Archiving. By archiving large, older, or less accessed data before proceeding with migration or consolidation operations, the amount of data can be greatly reduced and will result in a reduced amount of time needed to complete the consolidation or migration operation. As a bonus, less disk space will be required on the migration target volume compared to that of the source volume.

Archived data is compressed and single instanced. The result is a smaller storage footprint compared to not archiving data. Data is also indexed allowing end users to be able to search for files via Enterprise Vault search utilities or, in legal discovery situations, with Discovery Accelerator.

Using Volume Replication

When utilizing volume-level replication technology (such as Symantec's Veritas Volume Replicator or hardware replication), placeholders and non-archived data can be easily replicated as well as the

corresponding Archive Point information. Volume-level replication ignores file system structures and replicates at the volume block level and as such will not trigger placeholder recalls during replication.

If replication is configured well before the scheduled decommissioning of the source server, data will be instantly available on the destination server. Once the FSA Agent has been installed on the destination server and has been configured as an FSA target, a user can easily recall an archived file on the destination server without any further involvement from the system administrator.

With volume replication, the whole volume must be replicated. There may be some instances where an organization has more than one volume containing files on the source file server and wish to migrate all source volumes to one volume on the destination server. Thus, volume replication may not be the best method in this situation.

There are many file replication utilities available today. However, many of these solutions only replicate at the file level and not at the volume level. These solutions will not work when considering replication methodology for server consolidations. An example of such an application is Microsoft's DFS-R technology. Ensure that your replication application replicates at the *volume level*.

Using the FSAUtility Move Option

Using the FSAUtility `-m` (Move option) will copy all *archived* files from a source server (regardless if there is a Placeholder or not) and place them on the destination server. The Move option also has the ability to move data between different hardware platforms. For example, Placeholders can be migrated from a Windows server to a NetApp or Celerra device or vice versa. If there are large amounts of archived data, this process can take some time to complete as data is being moved between archives on the Enterprise Vault server (or servers). When using the FSAUtility Move option for file share consolidation, there are a few necessary prerequisites that need to be configured:

- The destination server must have the share and folder configured before the move operation
- The destination server must be set up as an Enterprise Vault FSA target
- The destination server must have the volume name configured as an FSA target with an Archive Point defined
- The destination system does not need to use the Vault Store as the source server
- The destination server (if Windows-based) must have the FSA Agent installed

One benefit of using the `-m` option is the ability to move data that was originally archived with an older version of Enterprise Vault (previous to version 8.0) where Optimized Single Instance Storage (OSIS) was not available or in an existing Enterprise Vault 8.0+ environment where OSIS was not enabled. By moving the archived data to a Vault Store that is part of a Vault Store Group where sharing is enabled, the size of the archived data on the Enterprise Vault server may be reduced due to the deduplication capabilities of OSIS. It should be noted that to recognize the benefits of OSIS on an existing archive will

require that the data be moved to a temporary location (using FSAUtility) and then copied back to its original location (using FSAUtility).

Keep in mind that the Move option will only move archived files (Placeholders). If there are still files on the source that have not been archived, another method will be required to move these files. The robocopy utility from Microsoft can be used to copy files on NTFS volumes and exclude copying Placeholder files by excluding files with the offline file attribute.

Running robocopy before using FSAUtility –m will recall all archived files during the copy process. This can increase the migration time dramatically, not to mention that the FSA recall limits may be experienced during the copy process. To exclude archived files when using robocopy, the following syntax should be followed:

```
robocopy <source_directory> <destination_directory> /e /XA:O
```

Running robocopy after using FSAUtility –m will avoid unnecessary file recalls as all placeholders would have already been moved. Thus, it is recommended to move placeholders first and then copy any remaining, non-archived files.

When deciding on which method to use, it is **highly** recommended that FSAUtility –m be used first before using robocopy. It is also **highly** recommended that archive points be deleted from the source directory before using robocopy to copy over remaining items. This will avoid dual archive point error messages from being logged in the event logs.

Using the FSAUtility Placeholder Migration Option

Using the FSAUtility –pm (Placeholder Migration option) will only migrate existing placeholders on the source volume to the destination volume. Placeholders that have been moved to another directory within the same archiving folder target will also be moved. This method of moving Placeholders will be much faster compared to that of the FSAUtility Move option as data is not moved from archive to archive on the Enterprise Vault server. When using the FSAUtility Placeholder Migration option, there are several prerequisites that need to be configured before the consolidation takes place:

- The destination server must be set up as an Enterprise Vault FSA target
- The destination server (if Windows-based) must have the FSA Agent installed
- The destination server must be managed by the same Enterprise Vault server
- The destination file path must be created before running FSAUtility

Keep in mind that the Placeholder Migration option will only move archived files (Placeholders). If there are still files on the source that have not been archived, another method will be required to move these files. The robocopy utility from Microsoft can be used to copy files on NTFS volumes and exclude copying Placeholder files by excluding files with the offline file attribute.

Running robocopy before using FSAUtility –pm will recall all archived files during the copy process. This can increase the migration time dramatically, not to mention that the FSA recall limits may be experienced during the copy process. To exclude archived files when using robocopy, the following syntax should be followed:

```
robocopy <source_directory> <destination_directory> /e /XA:O
```

Running robocopy after using FSAUtility –pm will avoid unnecessary file recalls as all placeholders would have already been migrated. Thus, it is recommended to migrate placeholders first and then copy any remaining, non-archived files.

In Summary

Table 1 compares the different migration options with pros and cons.

Method	Pros	Cons
Implement Enterprise Vault File System Archiving	Reduces the amount of data that will be migrated or consolidated. Archived data is compressed, single-instanced and indexed requiring less storage and the ability for users to search archived data.	
Using Volume Replication Technology	<p>All archived and non-archived files are replicated. Archive Point information is also replicated.</p> <p>If replication is configured well before the decommissioning of the source server, the archived data will be available instantly on the destination server.</p> <p>Users can easily recall Placeholders without further involvement on the part of the file server administrator.</p>	<p>For files to be continued to be archived, the file server rename procedure should be followed as outlined in Appendix A.</p> <p>Organizations that wish to migrate multiple volumes on the source server to one volume on the destination server may find that this option will not work.</p>
Using the FSAUtility Move Option	<p>The Move option can migrate data from one Vault Store to another Vault Store (even on a different Enterprise Vault server). The size of the archived data in the Vault Store can be reduced by utilizing OSIS.</p> <p>All archived files will be moved from the source to the destination (regardless if there is a Placeholder or not).</p>	<p>The Move option may take a long time to complete if there are numerous archived files as the data must also be moved within Enterprise Vault.</p> <p>Non-archived files are not moved. A third party utility must be used in order to move these files and should be utilized after the placeholder move process.</p>
Using the FSAUtility Placeholder Migration Option	<p>Only archived files that have a Placeholder on the source volume will be moved. Files that do not have a Placeholder will not be migrated.</p> <p>This option is faster than the Move option as data is not moved on the Enterprise Vault server.</p> <p>The Placeholder Migration option also works in scenarios where the source volume and folders use .url shortcuts instead of Placeholders. See Appendix B for more information.</p>	<p>The source and destination servers must be managed by the same Enterprise Vault server and must use the same Vault Store.</p> <p>The destination path must exist before the migration.</p> <p>Non-archived files are not moved. A third party utility must be used in order to move these files and should be utilized after the migration process.</p>

Table 1 - Comparing different migration methods

Consolidation and Migration Scenarios

Decommissioning Hardware

Organizations from time to time will replace older file server hardware with new hardware or move to a virtualized environment such as VMware. Thus these organizations may face difficulties when needing to move data from one server to another. What are some of the options that organizations utilizing Enterprise Vault File System Archiving have today to migrate data?

- Data replication – Organizations can use various data replication technologies such as software-based (e.g. Veritas Volume Replicator) or hardware-based (hardware snapshots) to replicate data at the disk volume level
- Using the FSAUtility Move option
- Using the FSAUtility Placeholder Migration option

Server Consolidation

There are several use cases for organizations when it comes to server consolidations and migrations. Organizations may have numerous file servers that actively being archived by Enterprise Vault. To save on hardware costs, these organizations may wish to consolidate many servers to one or two physical or virtual servers or even migrate from a Windows file share to another device such as a NetApp or EMC Celerra or vice versa. Other organizations may wish to consolidate the number of file shares on an existing server or simply move files around on an existing volume. While others may have one very heavily utilized file server and wish to split out files shares to two or more file servers.

In these events, the Enterprise Vault FSAUtility application can help facilitate the move by using one of the following methods:

- Move option
- Placeholder Migration option

Scenario #1 – Consolidating Branch Offices

Current Environment

This particular organization has three remote locations and one centralized office. Two of the remote locations have one file server and one Enterprise Vault server each. The third site has one file server which is archived by an Enterprise Vault server at the central location. File server data at all the remote locations is roughly 250GB. The central location has five file servers and three Enterprise Vault servers. File server data at the central location is roughly 9TB (with File Server 5 only having 1TB of data). The IT staff is looking to consolidate file and Enterprise Vault servers by removing all servers from the remote locations. Figure 4 illustrates the current environment.

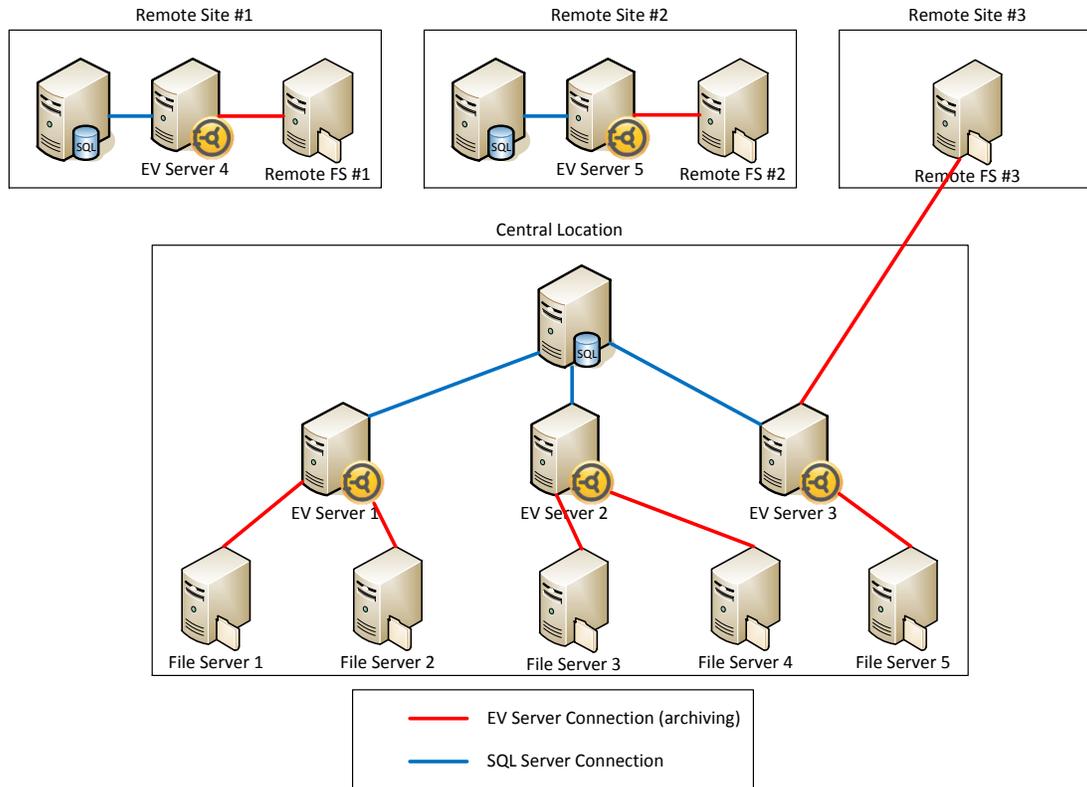


Figure 4 - Scenario #1 - Current Environment

Proposed Solution

Remote FS #1 and Remote FS #2 will have archived content migrated to File Server 5. The FSUtility Move option will be required as both of these remote sites have archived data stored on local Enterprise Vault Servers. Archived content will be moved from EV Server 4 and EV Server 5 to EV Server 3 in the central location during the move operation. Remote FS #3 will use the Placeholder Migration option to move placeholders to File Server 5. This remote site does not have its own Enterprise Vault server and is currently being archived by EV Server 3. Figure 5 provides an overview of the proposed solution.

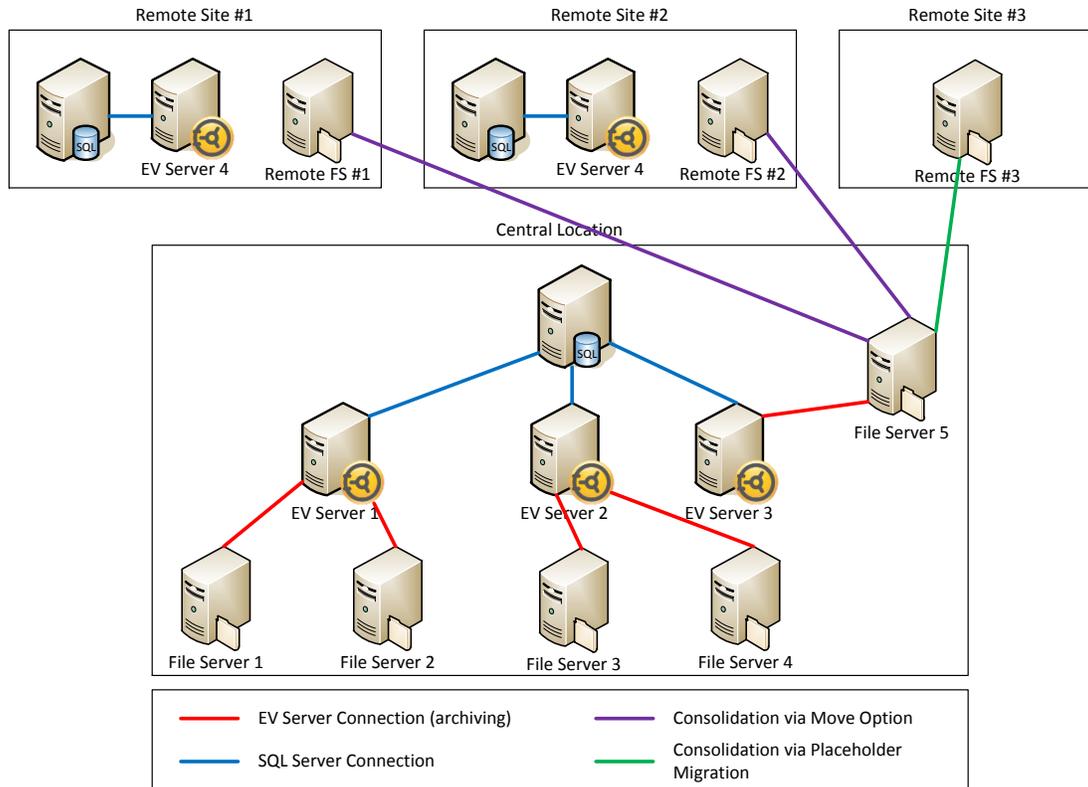


Figure 5 - Scenario #1 - Proposed Solution

After all moves and migrations of archived content have been completed, the two remote Enterprise Vault servers and the three remote file servers can be retired. The remote SQL servers can also be retired or reallocated for other database applications.

Scenario #2 – Easing Migration to New Hardware by Implementing Enterprise Vault

Current Environment

The organization currently has five Windows file servers in one datacenter and is looking to consolidate all file shares on to two new NetApp devices. Enterprise Vault is not installed.

Solution

The organization implements Enterprise Vault to archive the existing five Windows files servers using one Enterprise Vault server. After Enterprise Vault archives data, the amount of unarchived data has been greatly reduced. Figure 6 illustrates the environment after installing Enterprise Vault to archive existing data on the Windows file servers.

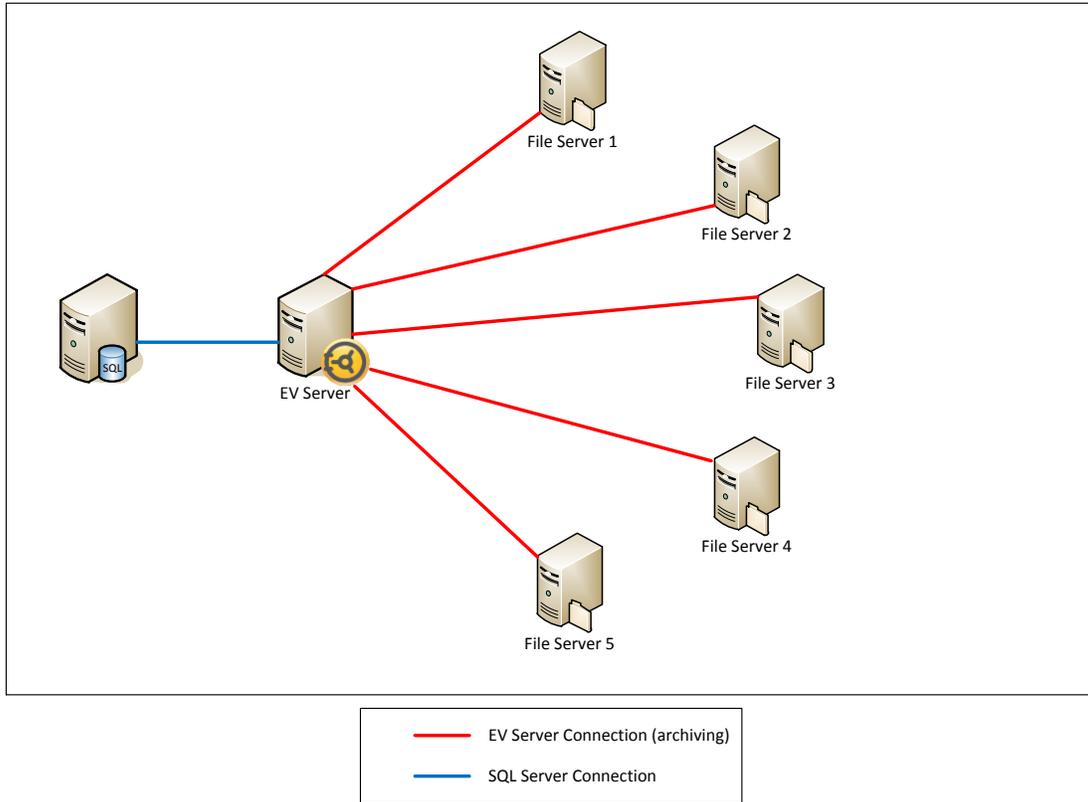


Figure 6 - Scenario #2 – Implementing Enterprise Vault before migration

The organization is now ready to migrate all file shares to the two new NetApp devices. As there is only one Enterprise Vault server in this particular environment, the quickest and fastest method to migrate archived content from the old Windows file servers to the new NetApp devices is to use the Placeholder Migration. Figure 7 details the migration.

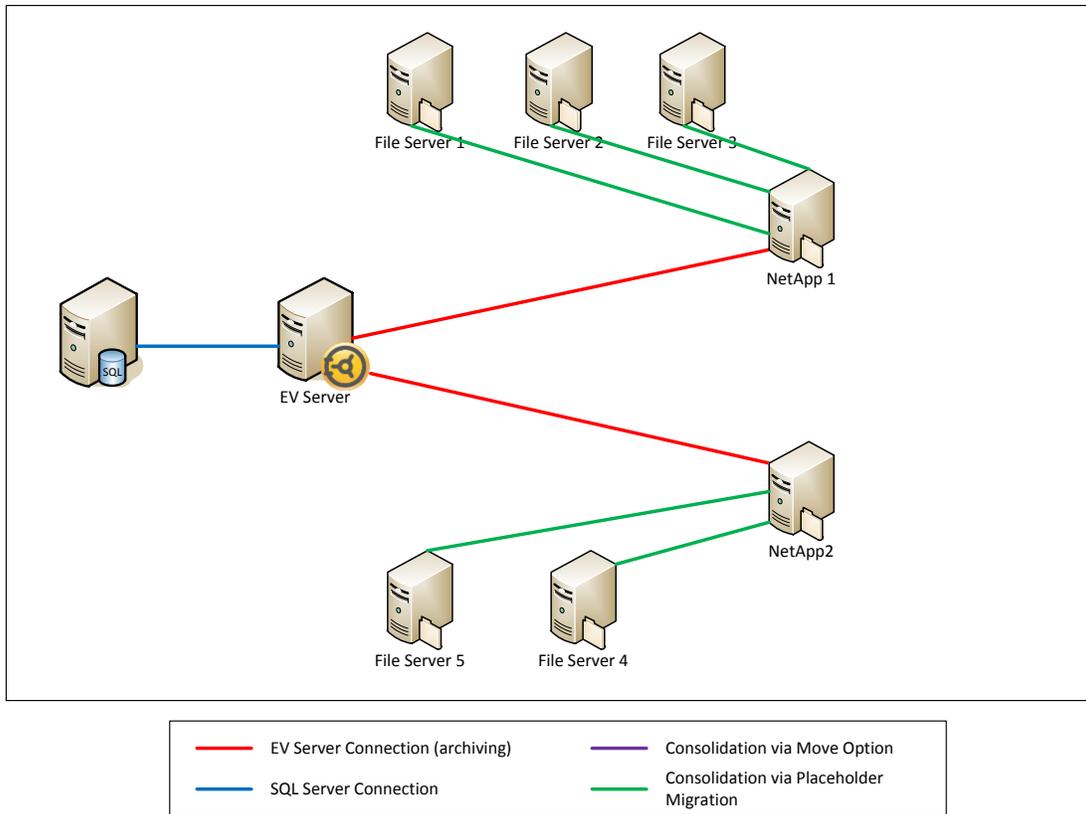


Figure 7 - Scenario #2 - Using Placeholder Migrations to migration content to NetApp

Once the migration has been completed, the five Windows files servers can be retired or reallocated for other duties.

Scenario #3 – Opening a New Branch Office

Current Environment

An engineering organization currently has two Windows file servers in their environment and is currently using Enterprise Vault to archive data from both servers. The company is expanding and has decided to open up a branch office on the other side of the country. This new branch office will only concentrate on certain projects. As project files can be quite large, the organization wishes to speed up access to archived files and reduce the amount of traffic across their WAN connection. Currently both existing file servers contain data that needs to be used by the new branch office. Figure 8 illustrates the environment prior to setting up the branch office.

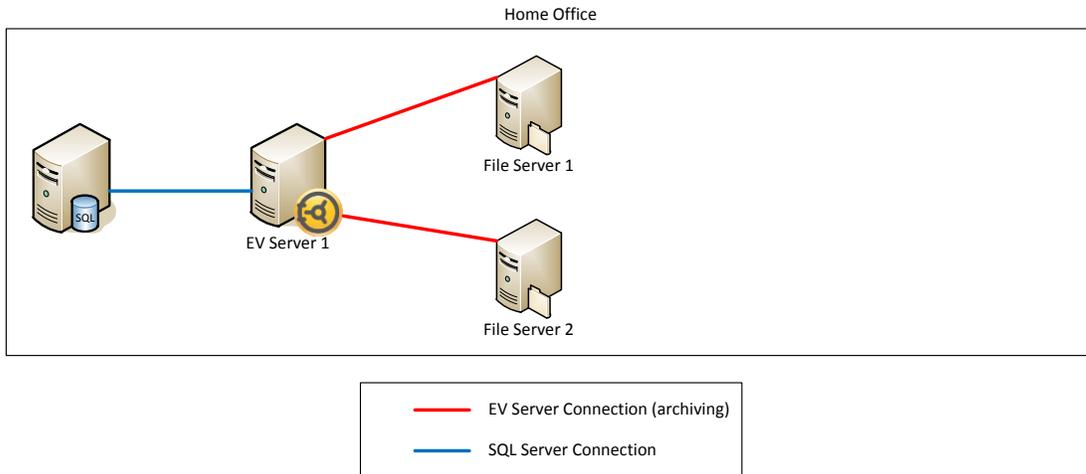


Figure 8 - Scenario #3 - Current environment

Solution

The first step in the solution is to create a new Enterprise Vault server, a Microsoft SQL Server, and a new Windows file server. Once these servers have been configured, the necessary file shares can be migrated from File Servers 1 & 2 to File Server 3 (using the FSAUtility Move option). File Server 3 is archived by the new Enterprise Vault server (EV Server 2) and the migrated archived data now resides on this server. The new SQL will only contain databases for a new Vault Store Group and Vault Stores for EV Server 2. Figure 9 illustrates the first step.

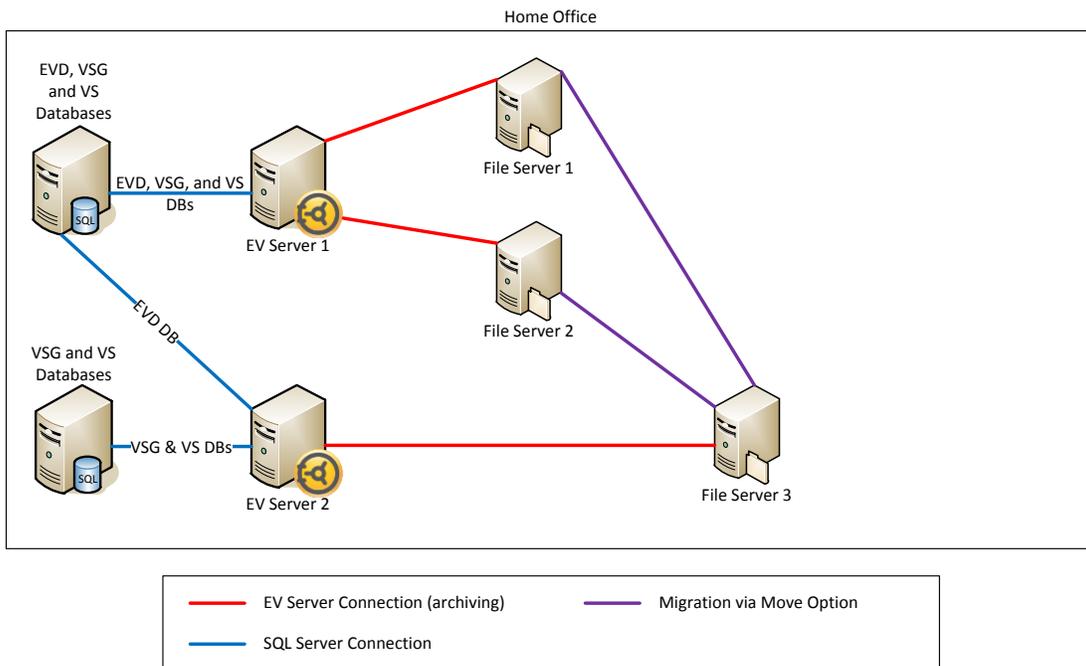


Figure 9 - Scenario #3 - Setting up the branch office environment

The next phase involves replicating the SQL server databases, EV Server 2's Vault Store partition(s), and the file shares on File Server 3 to servers at the new branch office. For SQL data, SQL Replication, file-level, or volume-level replication can be used. For the Enterprise Vault Vault Store partitions, volume-level replication can be used. For the file share data from File Server 3, volume-level replication must be used in order to replicate archive point information. Figure 10 illustrates this in more detail.

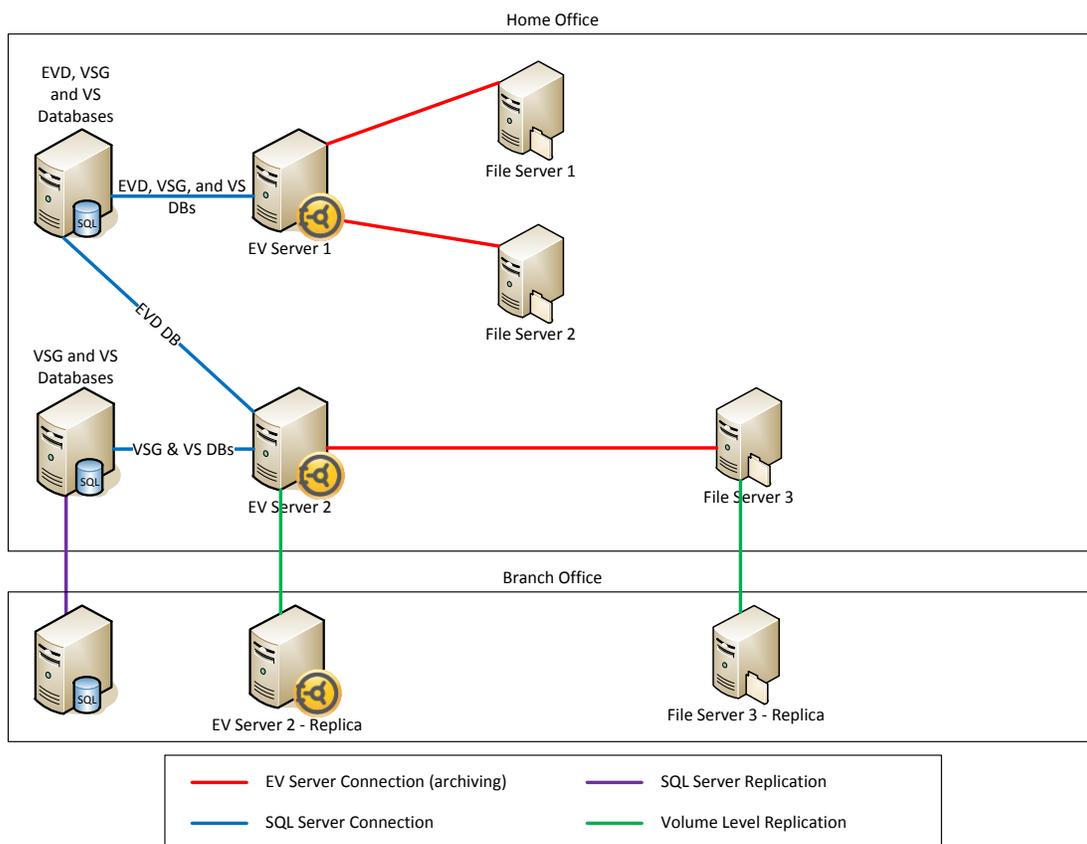


Figure 10 - Scenario #3 - Replicating SQL, EV, and file server data to the branch office

Another alternative is to ship out the new SQL server, EV Server 2, and File Server 3 to the new branch office.

If using replication, the last step of the process is to update the DNS alias of EV Server 2 to reflect the new server in the new branch office. For File Server 3 in the branch office, the Enterprise Vault Directory database may need to be updated to reflect the new name of the file server if clustering was not used. Refer to Appendix A for more information on how to perform this update.

If replication was not used, a simple IP address update is required. Ensure that all DNS host entries have been properly configured.

Figure 11 illustrates the completed solution.

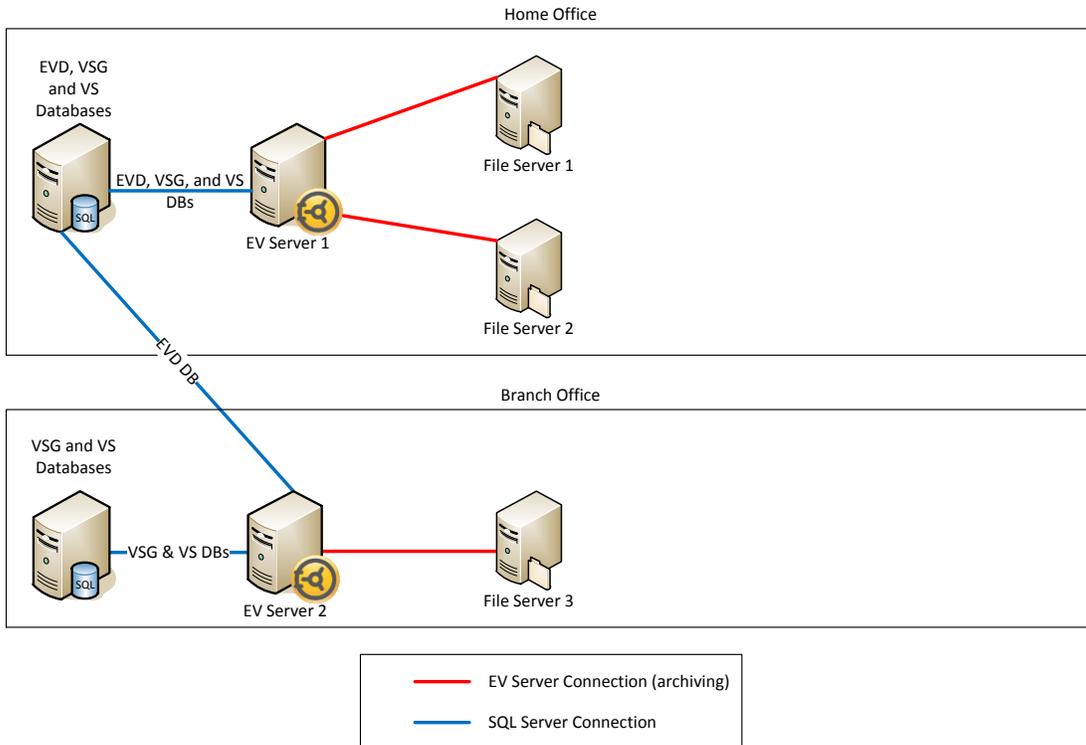


Figure 11 - Scenario #3 - After migration

Users in the branch office will now be able to access necessary archived files in a timely manner. Access to archived and non-archived files will not have to take place over the WAN connection. The only Enterprise Vault network activity on the WAN will be the access of the Enterprise Vault Directory database by EV Server 2 and the uploading of FSA Reporting data (if configured).

APPENDIX A – Renaming a File Server

If the fileserver needs to be renamed or if it needs to be moved to another domain, changes will be required within Enterprise Vault to allow archiving and placeholder access to continue.

1. Stop all Enterprise Vault Services on all EV servers.
2. Perform a backup of the Enterprise Vault Directory database (in case of issues you need to be able to restore to a previous good state)
3. Change values for the following columns in respective tables in the Directory Database:

Database	Table	Column	Old Value (example)	New Value (example)
Directory DB	ArchiveFolder	FolderPath	\\FSA1.test.com\Volume\Folder	\\FSA2.test.com\Volume\Folder
Directory DB	FileServerEntry	DnsName	\\FSA1	\\FSA2
Directory DB	FileServerEntry	UncName	\\FSA1.test.com	\\FSA2.test.com

Note that there may be more than one reference to the old file server in the ArchiveFolder table. All references to the old file server name need to be modified to that of the new file server.

4. Start all Enterprise Vault Services on all EV servers.
5. Open Enterprise Vault Administration Console
6. Run the File System Archiving synchronization task:
Site -> Enterprise Vault Servers -> Tasks -> File System Archiving Task -> Properties -> Synchronization -> Synchronize
7. If Reporting is enabled, follow the following steps:
 - a. In the Vault Administration Console, right click on the file server target and select properties. Then click on “Reporting Data Collection” tab.
 - b. Check “Enable data collection for FSA Reporting”
 - c. Select database for reporting
 - d. Run the reporting scan

Note that any old trending data for Trending Reports will still be recorded against the old file server name.

Appendix B – Migrating from Devices that Do Not Support Placeholders

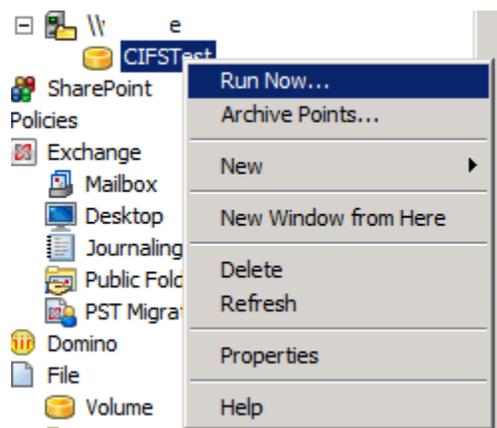
In the following scenario, a customer has archived content from a NAS device that supports CIFS, but does not support Placeholders. The customer has been able to archive files and leave behind Internet shortcuts (.url files). The customer now wishes to migrate from their NAS device to a Windows file server and enable Placeholders. The following steps can be used to migrate in this situation.

1. Ensure that the volume has been configured on the destination file server and configured for sharing (such as G\$ or Documents)
2. Log into the Enterprise Vault server as the Enterprise Vault Service Account (VSA)
3. Open the Enterprise Vault Administration Console (VAC)
4. Add the destination server as an FSA target
5. Ensure that a File System Archiving Volume policy exists that allows for the creation of Placeholders (versus Internet shortcuts)
6. Add the volume target for the destination server (such as `\\<dest_server>\<dest_volume>`) as configured in Step 1. **Do not** create folder targets at this time. Ensure to use assign an FSA Volume policy that allows Placeholders.
7. On the Enterprise Vault server, open a command line window
8. Navigate to the Enterprise Vault installation directory
9. Execute the following command:
`fsautility.exe -pm -s \\<source_server>\<source_volume>\<folder> -d \\<dest_server>\<dest_volume>\<folder>`

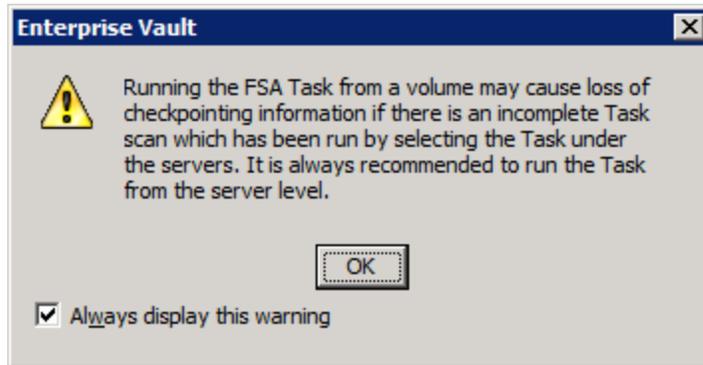
e.g.:

```
fsautility -pm -s \\oldserver\oldvolume\Accounting -d \\newserver\Documents\Accounting
```

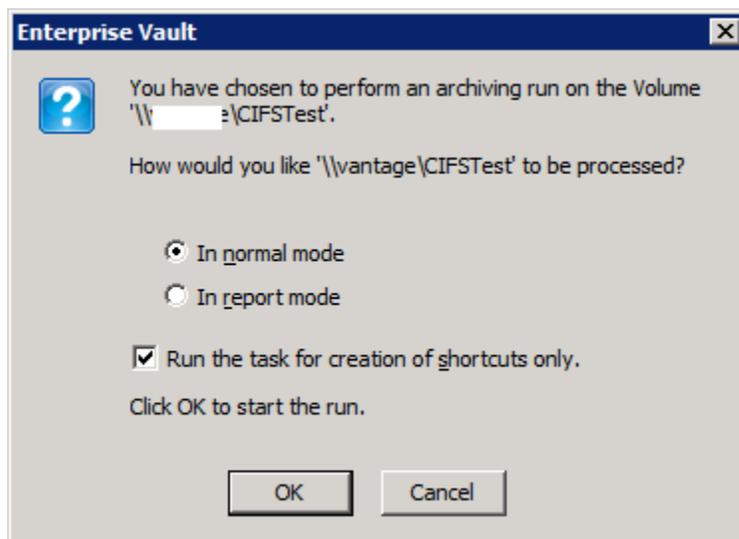
10. Manually archive the destination volume target using the VAC.
 - a. Right-clicking on the target
 - b. Selecting Run Now...



- c. Click on OK



- d. Ensure the checkbox for “Run the task for the creation of shortcuts only” is checked



- e. Click on OK

11. Once the archiving task has completed, go back to the command line session on the Enterprise Vault. Execute the following command which will create Placeholders:

```
fsautility -c -s \\<dest_server>\<dest_volume> -f
```

12. Create folder target in the VAC for the destination folder
13. Remove **source** folder target using the VAC. It will be necessary to stop the FSA task associated with the source volume/folder before deleting.
14. Copy any remaining unarchived files using robocopy:

```
robocopy \\<source_server>\<source_volume>\<source_folder>  
\\<dest_server>\<dest_volume>\<dest_folder> /e /XF *.url
```

The **/XF *.url** switch will exclude .url shortcuts.

15. Repeat steps 7-14 for any other remaining target folders.

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