

Paper 369-2012

Leveraging an Upgrade to Improve Metadata

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ABSTRACT

Upgrading to new hardware gives SAS® administrators the rare opportunity to reorganize and clean up the SAS Folders metadata structure. For Highmark, partial promotion techniques were key to restructuring the metadata into a more secure and usable structure. This paper details the partial promotion process and the design considerations taken to ensure the reorganization maintained all the dependencies between objects.

INTRODUCTION

Implementations of SAS solutions sometimes get started quickly without considering the organization and security requirements. At other organizations these requirements have changed as the usage of SAS changes. Many objects in the metadata are referenced by other objects, for example web reports built in SAS Web Report Studio almost always have an information map associated with it. Moving one object without moving the other could cause the dependency to break, resulting in a broken report. One object (in 9.2 forward) can be fixed using the repair report function, but what if we are moving hundreds of reports?

The answer is to leverage the partial promotion techniques that SAS Management Console provides through the import/export wizard. SAS administrators can use this to move content into new folders while maintaining the dependencies.

Included are some definitions of terms we will use throughout the rest of the paper.

Promotion	Promotion is used to describe the process of moving objects between one system and another already configured and installed system.
Migration	SAS uses the term migration to signify moving content between SAS versions during the installation process (such as from 9.2 to 9.3). This paper will not use this term any further.
Source System	This is the initial server environment, where we are moving content from.
Target System	This is the target server environment, where we are moving content to.

PARTIAL PROMOTION PROCESS

From SAS Management Console, administrators can export content into SAS packages (or .spk files). These can then be imported into the target environment using the import wizard. The import/export wizard is available by right clicking on a folder.

When exporting an entire folder, all the subfolder structures will remain. When reorganizing the content further administrators will need to export either the lowest level folder or individual objects. When exporting individual objects, admins can right click and choose the **Export SAS Package** menu item.

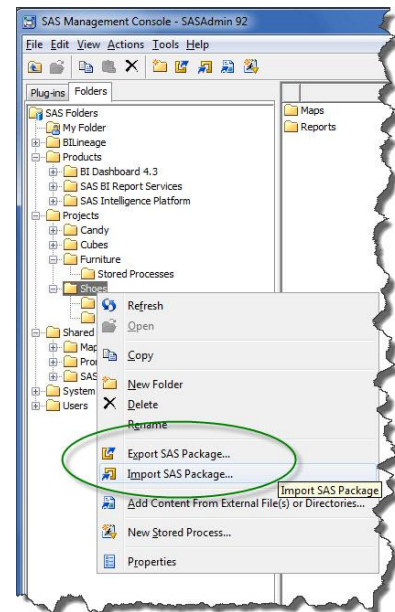


Figure 1. Import/Export Wizard

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Included is an example export list of objects that Highmark packaged & how the reorganization was designed in the target environment.

Package Type	Source Environment Folder	Target Environment Folder
Data Library	/Divisional Metadata/Informatics/Libraries	/DevTeam04INFM/UC02_SASSupport/A01_EIPT/Libraries
Data Table	/Divisional Metadata/Informatics/Tables	/DevTeam04INFM/UC02_SASSupport/A01_EIPT/Tables
OLAP Cube	/Divisional Metadata/Actuarial/Cubes	/DevTeam01ACTL/UC01_ACTL_TREND/A01_StdExt/Cubes
Information Map	/Divisional Metadata/Actuarial/Maps	/DevTeam01ACTL/UC01_ACTL_TREND/A01_StdExt/Maps
Web Reports	/Divisional Metadata/HPO/Reports	/DevTeam03HPOP/UC01_eBAM_Highmark/A01_App/Reports

MOVING EVERYTHING TO THE TARGET SYSTEM - PLANNING

Before packaging up the source environment files, there are a few options and items to note.

OBJECTS NOT INCLUDED

It is important to note that the SAS Portal objects can not currently be promoted from one system to the next using the import/export wizard. This includes pages, portlets, user permission trees and portal applications.

EXPORT OPTION 1 – DEPENDENT OBJECTS

One of the wonderful functions of the export wizard is the ability to include the dependent objects. The checkbox appears on the first screen of the export, as seen below.

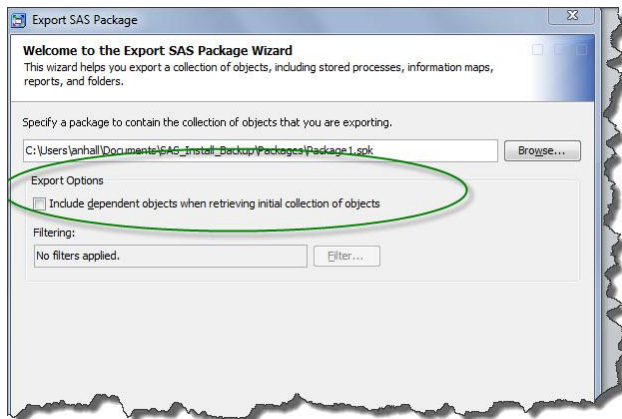


Figure 2. Dependent Object Checkbox

This causes the export wizard to go out in search for those other objects it uses and then include them in the package. Upon import into the target system however the import moves these dependent objects into the same folder structure that was in the source system.

When using this functionality in our upgrade, we are **unable** to use this option because the dependent objects will reside in completely different folders than they did in the source system.

EXPORT OPTION 2 – ASSOCIATED CONTENT

Some metadata elements have associated files on the file server or packages within WebDav that must also be moved (or regenerated) into the target system in order to work. For each of these object types, there is a check box in the Options tab (viewed when selecting a single object) that allows you to choose whether to include this separate file within the package.

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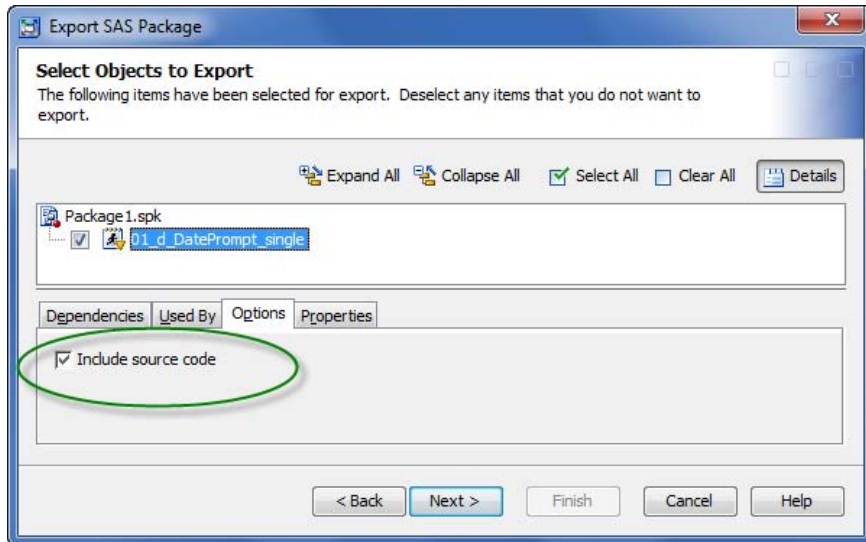


Figure 3. Options to include associated content

HIGHMARK EXPORT STRATEGY

Included is the list of objects that can have their associated content included within the SAS package, the default setting and what Highmark decided to do in their promotion.

Object Type	Default Setting	Highmark's Approach
Channel	Unchecked	Unchecked
Cube	Checked	Decided to change the setting to unchecked and recreate the cube in the target system.
External File	Unchecked	Unchecked Any DI Studio jobs that are referencing external files must be promoted separately into the new folder structure.
Stored Process	Checked	Unchecked this option to manually move the .sas files between the source and target system.
Tables	Unchecked	Unchecked

For Highmark, it was decided to move the associated content separately or recreate it in the target system so this option was unchecked for all elements promoted. **Promotion of this content was done first, prior to moving forward with the .spk package promotion.**

HIGHMARK IMPORT STRATEGY- MAINTAINING DEPENDENCIES

Since we were **not** selecting the 'include dependent objects' option we needed to carefully plan the upgrade process to successfully maintain the dependencies between objects.

We utilized the following recommended import order for the .spk package files created in the export step.

- a. Data Tables
- b. DI Studio Jobs & Deployed Jobs
- c. OLAP Cubes
- d. Stored Processes
- e. Information Maps
- f. Web Report Studio Reports

During the import process, prompts appear to reestablish the dependencies.

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MOVING EVERYTHING TO THE TARGET SYSTEM - PERFORMING

PROMOTING NON-METADATA OBJECTS

Again, since this is so important, prior to importing the .spk packages into the target system all of the source files referenced by metadata are promoted first. This includes:

1. SAS datasets/views
2. SAS Stored Process .sas files
3. SAS Cubes
4. DI Studio External Files

IMPORTING PACKAGES

After exporting each of the folders (or objects) into individual packages, you then need to individually import these packages into the new folder structure on the target system.

From SAS Management Console connected to the target system, we first created the new organized folder structure. Then on each target folder we right clicked and chose the **Import SAS Package** menu item.

While importing the packages and depending on what objects are being brought into the system, the SAS import wizard automatically determines what associations to review with you. The prompts can include one or more of the following items.

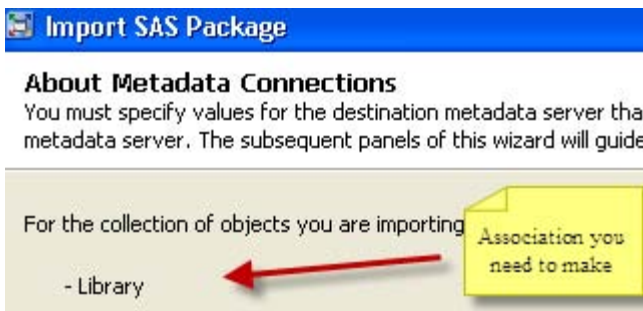
1. A SAS Application Server
2. A SAS Content Server
3. Base path on a SAS Content Server
4. Libraries
5. Tables
6. External files
7. Physical Locations for external files or for libraries
8. Physical locations for custom code that is associated with jobs, if the code is stored outside of the metadata
9. OLAP schemas
10. Mining results
11. A source code repository (for stored processes)

SAMPLE IMPORT SCREENS

During each import, SAS Administrators must manually correct the missing values specified in the target column of each import screen. This is because the dependencies were not automatically located given the new file structure and naming convention standards that Highmark designed. Included are a set of sample screen shots to demonstrate how these were modified.

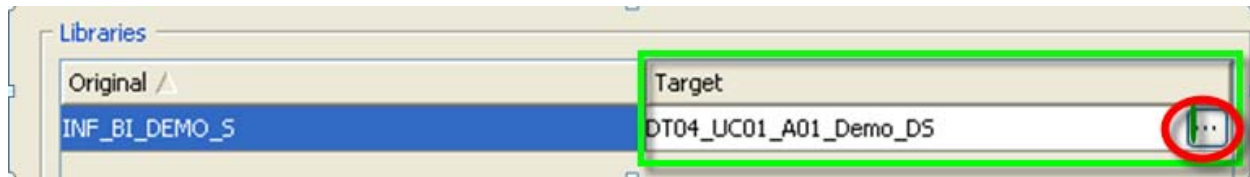
DATA TABLE IMPORT SCREENS

After the library has been created with the new naming convention, when data tables are imported into the library a message appears stating that the library cannot be located.



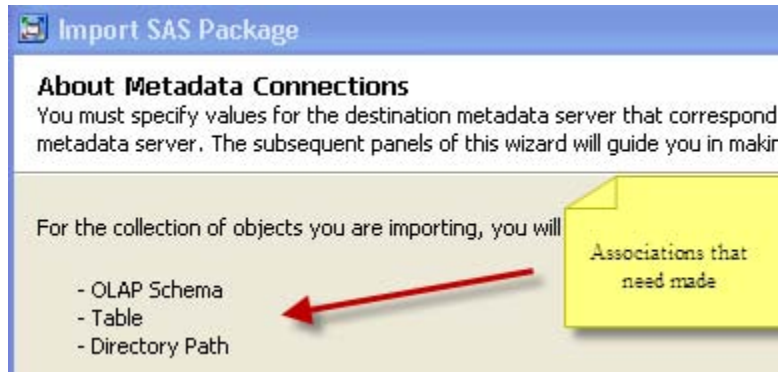
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Click on the [...] button circled in the below image to select the new target library.

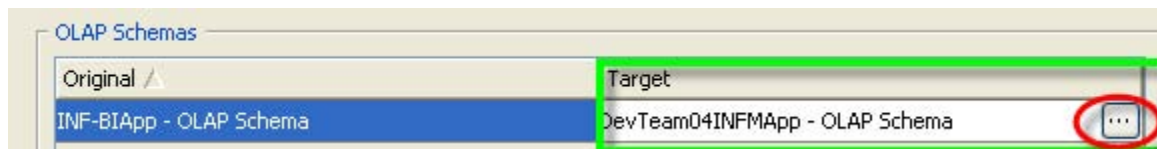


OLAP CUBE IMPORT SCREENS

When importing OLAP cubes, multiple target associations must be selected manually by the SAS Administrators.

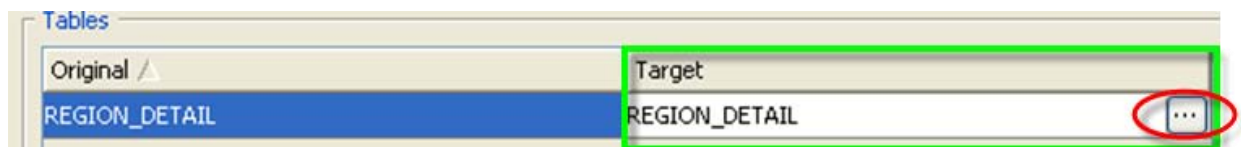


1. OLAP Schema



2. The source data tables

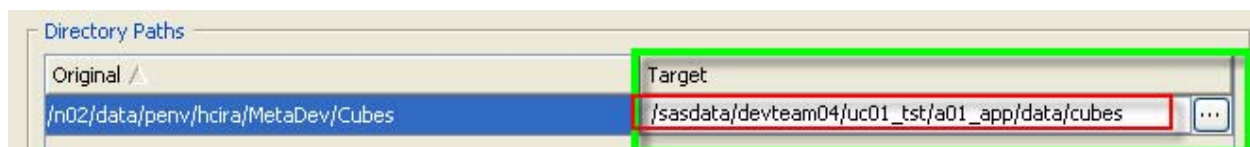
Highmark didn't change the naming convention of the tables but we still did have to navigate to the correct location of the table.



3. The path of the OLAP files

Since the physical file structure on the target environment is completely different we had to modify the target file path manually by typing (cutting and pasting) the location (highlighted in the red box below).

The select button only shows windows directories and not UNIX paths for us.

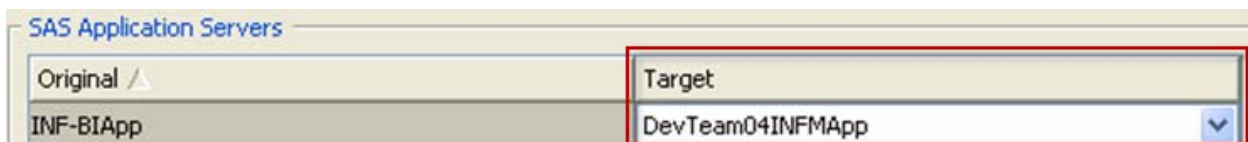
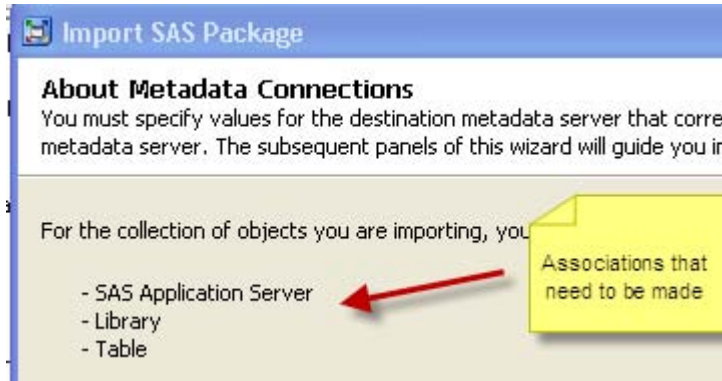


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INFORMATION MAP SCREENS

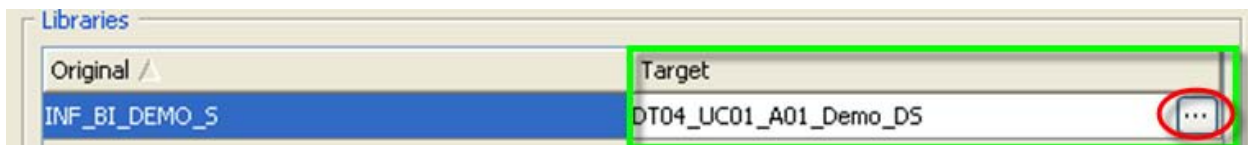
The application server context, libraries and tables must be modified manually during importing information map packages at Highmark.

1. Application Server Context



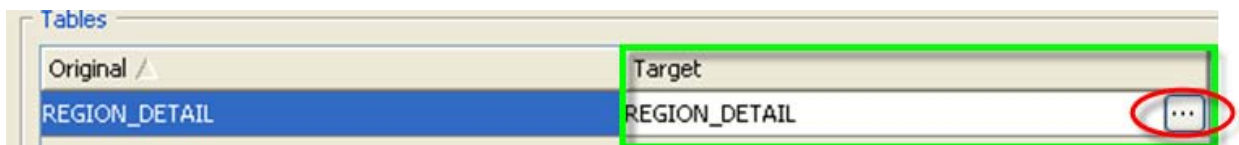
2. Libraries

Highmark's naming convention changed so again we had to select the Target library



3. Data Tables

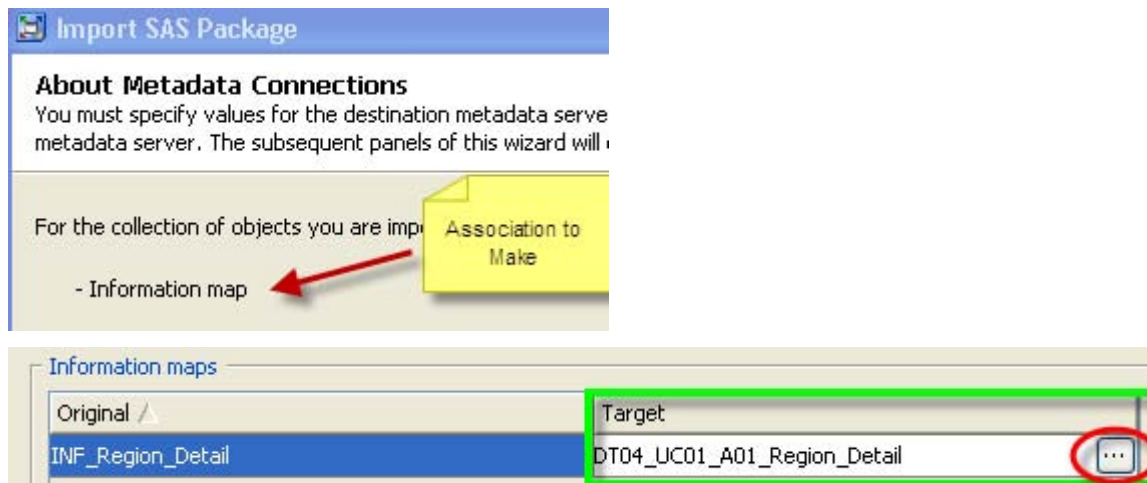
We then didn't need to change the name of the table because the association to the server and library were identified in the above two steps.



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WEB REPORT SCREENS

Again we changed our naming standard so the target was not populated and we had to navigate and select the target map



CONCLUSION

Taking the opportunity to change the metadata folder structure requires careful consideration and planning. An understanding of what options should and should not be used allows for full reorganization in the target system.

RECOMMENDED READING

- SAS® 9.2 Intelligence Platform System Administration Guide, 'Using the Promotion Tools'

CONTACT INFORMATION

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