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Your Data Visualization Game Is Strong—Take It to Level 8.2

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ABSTRACT

Your organization already uses SAS® Visual Analytics, and you have designed reports that show compelling data stories. The newest version of SAS Visual Analytics can give those stories a facelift through its clean, modern HTML5 interface and exciting new visualization features. Learn how to make the transition seamless while using the move as an opportunity to focus on the most compelling reports. We walk through the methodology and the automation techniques that we, SAS IT, used when we moved our own internal SAS Visual Analytics environment from 7.3 to 8.2.

INTRODUCTION

SAS Visual Analytics has gone through several upgrades and versions since its inception. No previous upgrade is as drastic and exciting as SAS Visual Analytics 8.2 on SAS® Viya®. However, you and your report builders have spent countless hours building a suite of reports that are important and, in some cases, complex. Quite often, rebuilding reports just because you have moved to a newer version of the software is not ideal.

This paper focuses on the content conversion from SAS Visual Analytics 7.3 to SAS Visual Analytics 8.2. At the onset, you need to be aware that just because content conversion is the focus point, there are other aspects such as data and security that you need to consider during this time of transition.

Security can impact both content and data. SAS Visual Analytics 8.2 is somewhat different when it comes to securing data. One major change is that data is no longer stored in metadata folders. Therefore, you cannot use folder-level security on data. Other facets of content security remain similar to SAS Visual Analytics 7.3.
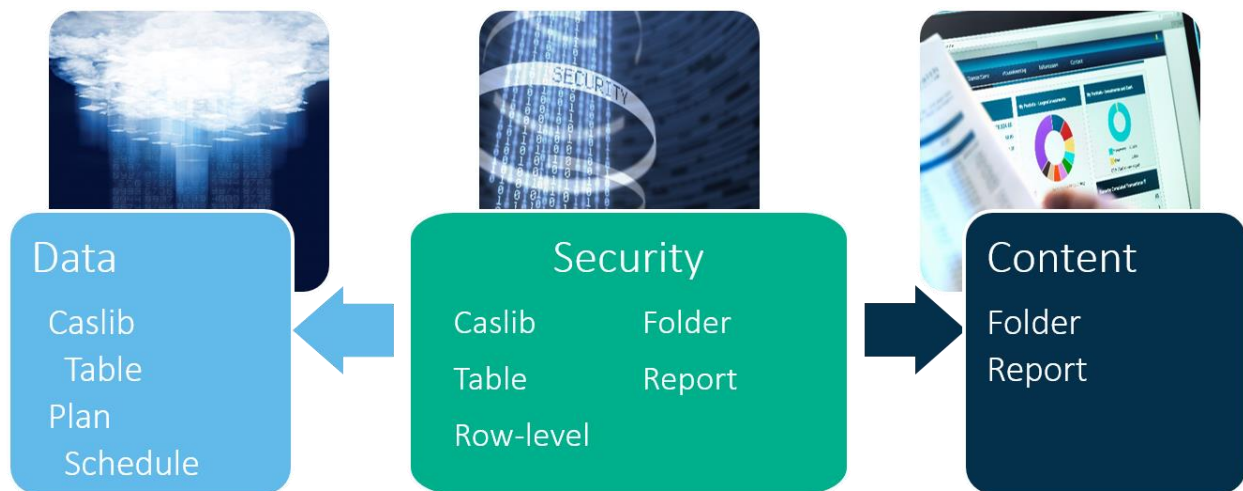
Figure 1. Pillars of data, security and content

It is recommended that you define data on SAS Visual Analytics 8.2 before starting the content conversion process. By doing so, the content conversion process will be cleaner, and the reports will render immediately after completion. Once the data has been defined and content has been converted, security can be applied to data, content, and content folders.

With the provided step-by-step **Content Conversion** section and sample scripts, you should be able to navigate the content conversion process successfully.

IDENTIFYING OBJECTS TO CONVERT

There are two methods to consider when converting content from SAS Visual Analytics 7.3 to 8.2.

Method #1: Convert all objects in the SAS Visual Analytics 7.3 environment. This method works in a smaller environment with a small number of reports. However, in a large-scale environment, this method is difficult.

Method #2: Use a targeted approach where the most commonly used objects are identified and converted from SAS Visual Analytics 7.3. This is an ideal time to perform housekeeping on data and content. For example, your environment might have thousands of reports, but only a small percentage of those reports have been used in the past year. Using the out-of-the-box predefined administrative usage reports in SAS Visual Analytics 7.3, you can identify commonly used data, reports, and explorations, including lineage between objects.

The methods can be implemented in a hybrid approach. In certain areas, content can be lifted and converted as is. In other areas, content can be selectively identified before conversion. For example, the internal SAS Visual Analytics environment (12,000+ reports from many business units) hosted by SAS IT found this best-of-both-worlds approach to be the most effective way to get from SAS Visual Analytics 7.3 to 8.2.

Regardless of the method that you choose, the audit information available in SAS Visual Analytics 7.3 is extremely valuable. In fact, taking the time to research this information beforehand might help you determine the right approach for your environment. The administrative usage reports can be found in the `SAS Folders/Products/SAS Visual Analytics Administrator/Reports/Usage` folder or accessed by selecting **View** > **Usage Reports** from the SAS Visual Analytics Administrator. Information about the administrative usage reports can be found in **Chapter 6, Reports for Administrators**, in the *SAS Visual Analytics 7.3: Administration Guide*. Information about enabling auditing can be found in **Chapter 3, Security**, in the *SAS Visual Analytics 7.3: Administration Guide*. The following table lists the administrative usage reports that are predefined:

Administrator overview	Provides usage information by application, user, and object. Uses data from the middle-tier audit service.
Relationship report	Provides lineage and dependency information for selected object types. Uses data from the middle-tier relationship service.

WHICH OBJECTS CAN BE CONVERTED

Now that content to be converted has been identified, you need to understand that not all objects will convert from SAS Visual Analytics 7.3 to 8.2 in its current state. However, most objects will promote and remain functional after the SAS Visual Analytics 8.2 conversion. The following objects promote through the content transfer method:

- Reports: The report conversion process is covered in detail by accessing the **Promotion** link in the **Recommended Reading** section.

- Explorations: SAS® Visual Analytics Explorer is no longer a separate application. Therefore, explorations are converted to report objects during the conversion process.

- Custom Graphs: Because SAS Visual Analytics 8.2 offers more graph types and editable properties in standard graphs, there is currently no SAS Graph Builder to create or modify custom graph templates. Therefore, custom graphs are converted, but they are not modifiable in SAS Visual Analytics 8.2. New and existing reports can leverage these custom graphs after they have been imported from SAS Visual Analytics 7.3.

- Custom Report Themes: Themes that are converted from SAS Visual Analytics 7.3 to 8.2 are not editable in SAS Theme Designer. However, they are still available (temporarily) in the individual

reports that leveraged a custom theme. These themes are listed in the **Report theme** drop-down list under the **Theme** heading in the Options pane. Understand that when you select a different theme and save the report, the temporary theme is removed from the report.

- Stored Processes: The concept of a stored process in SAS Viya does not exist. Therefore, to reference a stored process in a SAS Visual Analytics report, the stored process needs to be executed on a SAS Stored Process Server or SAS Workspace Server in a SAS 9.*x* environment. This is addressed later by accessing the **Promotion** link in the **Recommended Reading** section.

As previously mentioned, there are objects that do not promote through the content transfer method. Some objects need to be set up in the SAS Visual Analytics 8.2 environment to complete the promotion process. Remember, the change from the SAS LASR Analytic Server to the CAS server is a major change. As a result, the approach to data management changes in SAS Visual Analytics 8.2.

- Data: Registering data to SAS Viya is performed by adding CASlibs to the source data. Registering data in SAS Viya and understanding how the CAS server uses data are discussed in more detail in the *SAS Visual Analytics 8.2: Administration Guide*.

- SAS Visual Data Builder Queries and Jobs: Data queries and LASR star schemas are not promoted. SAS Data Studio provides capabilities to transform and prepare data for reporting.

- User-Defined Formats: Custom formats are not promoted. User-defined formats can be created and managed in SAS Environment Manager.

- Permissions: Metadata permissions on folders and objects and any conditional grants need to be set up in the target environment.

- Report Elements: Comments, alerts, and distributions are not promoted. These report elements can be set up in reports in the target SAS Visual Analytics 8.2 environment after content is promoted.

CONTENT CONVERSION

There are five steps to convert content from SAS Visual Analytics 7.3 to 8.2.

1. *Export* content from SAS Visual Analytics 7.3 into a SAS Package (SPK) file.

2. *Upload* the SPK file to the SAS Viya transfer repository and generate the mapping file.

3. *Modify* the mapping file to map the old SAS LASR Analytic Server folder or table to the new Caslib and CAS server definitions.

4. *Import* the SPK file into the SAS Viya environment.

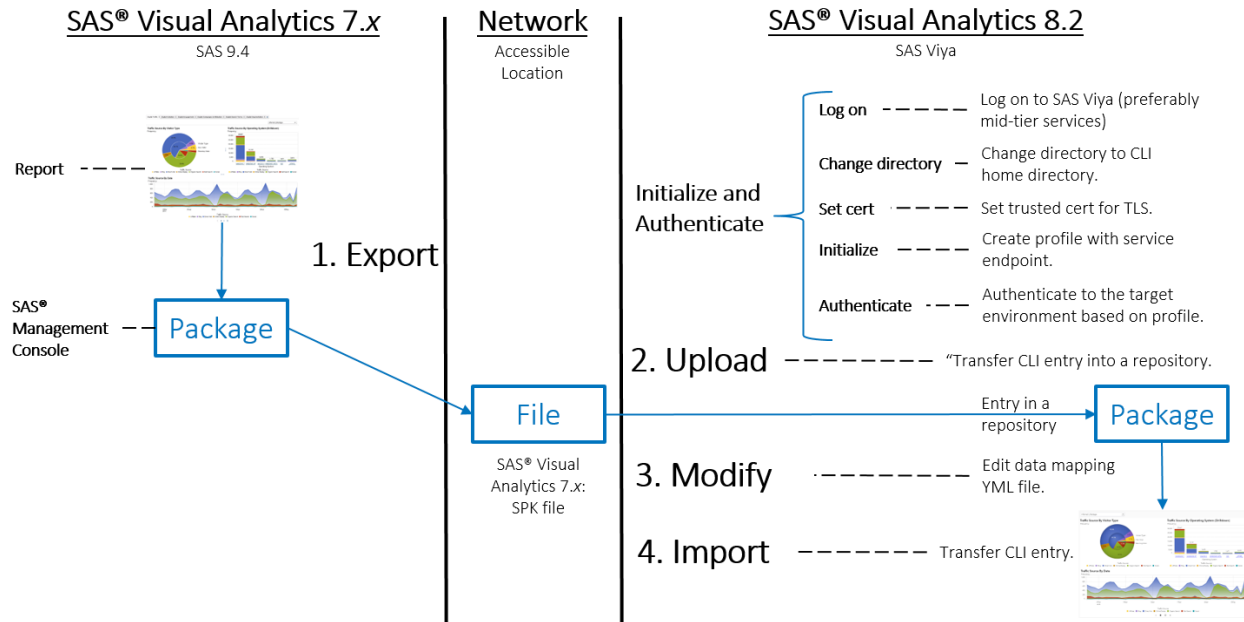5. *Validate* the import process by reviewing logs and opening reports.

Figure 2. Content promotion steps

EXPORT

To start the export process, log on to the SAS Visual Analytics 7.3 SAS Metadata Server using SAS Management Console. Make sure the credentials that you are using provide access to everything you need (unrestricted access, in most cases). In the **Folders** view, select **Export SAS Package** from the **Actions** menu. This opens the Export SAS Package wizard. The wizard enables you to select objects to include in the SAS Package file. You can include multiple objects in a single SAS Package file. Notice the **Dependencies** tab in the window's bottom pane. Although you do not need to include all dependent objects (for example, libraries and tables), it is beneficial to review this information. Images and other objects convert and are needed for the reports to render correctly once they are imported into SAS Visual Analytics 8.2.
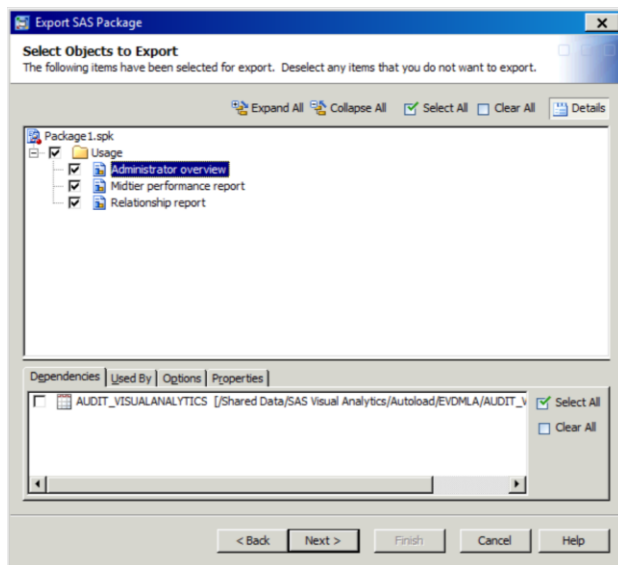

Figure 3. SAS Management Console export wizard with an example report selected to highlight dependencies

It is helpful to store the SAS Package file in a network location so that both the SAS Visual Analytics 7.3 environment and the SAS Visual Analytics 8.2 environment can reference it. If you are re-installing on the same hardware, be sure to save the package file to a safe area that can be referenced later.

If you are familiar with the SAS 9.*x* batch export tool, it could be leveraged instead of using SAS Management Console to create the SAS Package file.

UPLOAD

Once the SAS Package file has been created, you can now start the upload script. There are a few initialization steps required the first time you go through this process. Here are the steps:

1. Set the cert file for TLS. (The cert file is temporary and needs to be regenerated each session.)

2. Initialize the environment profile. (This happens one time per environment.)

Here is a sample script for the initialization steps:

```
# Get into the CLI home directory
cd /opt/sas/viya/home/bin


# Set the cert file for a happy TLS
export
SSL_CERT_FILE=/opt/sas/viya/config/etc/SASSecurityCertificateFramework/cacerts/trustedcerts.pem


# Initialize environment profile
./sas-admin --profile dev profile init
# The config file is stored in your unix home directory in .sas/config.json, which could be
edited
## Service endpoint:        https://<server-name>:<port-number>
```

In the above example we initialized a profile named *dev*. Here is the information that is stored in the json file about this profile:

```
{
  "dev": {
    "ansi-colors-enabled": "true",
    "output": "json",
    "sas-endpoint": "https://<server-name.com>:<port-number>"
  }
}
```

After you complete these initialization steps, you can upload the SAS Package file.

Here is a sample script for the upload process:

```
# Authenticate to the desired environment/profile
./sas-admin --profile dev auth login


# Upload the SPK file and create the YML file
./sas-admin --profile dev transfer upload -s /<network file path>/<sas package name>.spk -m
/<network file path>/<mapping filename>.yml
```

The output of the TRANSFER call generates a mapping file (YML) and a package ID (for example, c703dee5-1931-49a3-9f95-e64e77c85144). These are needed in the import process.

During the upload step, part of the command (the $-m$ parameter) identifies a network path and a mapping filename. During the upload, you get the following confirmation that the mapping file is created:

```
INFO: The mapping file "/<network file path>/<mapping file name>.yml" was created.
```

MODIFY

The mapping file serves as the roadmap for data moving from the SAS LASR Analytic Server to the CAS server. The mapping file guides the import step in changing the LASR table location to the CAS table location. Here is an example of the line that is changed within the report definition:

LASR:<InMemoryResource resourceName="SBIP://METASERVER/*<metadata folder>*/*<table name>*(Table)" label="*<LASR tag>*"/>

CAS:<CasResource server="cas-shared-default" library="*<Caslib>*" table="*<table name>*"/>

When the mapping file is generated, it generates the target table name in the CAS server to be the same as the LASR table name. If any table names change from SAS Visual Analytics 7.3 to 8.2, this is the step where you would change the target table to the new name to capture the change.

In the mapping file, you can set the default Caslib and CAS server target location. All subsequent mapping lines use that Caslib and CAS server unless you override the default location at the table level.

The default mapping element is the first section of the YML file. It looks like this:

```
  Table:
 - resourcename: ""
   source: default
   target: ""
…
```

As a shortcut, you can modify the TARGET attribute to include the Caslib and CAS server for mapping. The TARGET attribute accepts three comma-delimited values. These values are the table name, Caslib name, and CAS server name. Here is a completed example:

```
  Table:
 - resourcename: ""
   source: default
   target: ",<Caslib>,cas-shared-default"
…
```

In the example, you need to substitute the value for $<Caslib>$ with a valid Caslib on your system (for example, Public).

Now that you have set the default values for the YML file, you can verify that each table mapping is correct. All subsequent sections in the YML file are table specific. If the default Caslib and CAS server are valid for each table, you need only to verify that the target table name is correct. Here is an example:

```
  Table:
 - resourcename: ""
   source: default
   target: ",<Caslib>,cas-shared-default"
 - resourcename: ""
   source: /<lasr metadata folder path>/<example_table>(Table)
   target: <example_table>
  substitutions: []
options: {}
```

Furthermore, you can override the defaults at the table level if needed. Keep in mind the three parts that are required in the TARGET attribute. They are the `<table-name>`, `<library-name>`, and `<cas-server-name>`. `<locale>` is optional.

For example, if you have 10 tables to map, and you want eight to go to Caslib A and the remaining two to go to Caslib B, you would set the default location to Caslib A, and then override the subsequent lines to map to Caslib B. This would look like `<table-name>`, `Caslib B`, `cas-shared-default`.

If there are any stored processes, the SAS® Stored Process Server needs to be set on the OPTIONS line in the YML file. This option will provide the SAS Stored Process server URL. This will be used during the conversion of the SAS Visual Analytics 7.3 Stored Process object to a Web Content object in SAS Visual Analytics 8.2. Here is an example:

```
…
  substitutions: []
options:
     storedProcessBaseUrl: " http://serverA.demo.com:7980/SASStoredProcess/do"
```

More technical information about the conversion of reports with stored processes can be found in the *SAS Viya 3.3 Administration: Promotion (Import and Export)* guide. Once the mapping file has been modified to align the source to target, save the file for use during the import step.

IMPORT

Once the mapping file has been modified, you are ready to import the SAS Package file.

Here is a sample script for the import process:

```
# Import the package file to the desired environment
./sas-admin --profile dev transfer import -m /<network file path>/<mapping file name>.yml --id <ID>
```

The ID of the package can be found in the output of the upload script. It can also be found by issuing the **list** command.

```
./sas-admin -profile dev transfer list
```

The output of the upload script provides a summary of objects that imported successfully, failed, completed with errors, and completed with warnings. The completion of the import process results in a prompt that asks whether you want to see task details. The task details should be reviewed if there were any failures, errors, or warnings. Here is a sample of task details:

```
 Summary results of import:
       Total tasks: 3

Succeeded: 2

Failed: 0

Completed with errors: 0

Completed with warnings: 1


Do you want to see the task details? (y or n): y

Name       State/Result   Location                      Message

Report1   Completed      /reports/reports/42027263-3572-4189-899e-9ba82d46594a   <LASR metadata
folder path> >> Report1  Report imported successfully.

Report2   Completed      /reports/reports/42027263-3572-4189-899e-9ba82d46594a   <LASR metadata
folder path> >> Report2  Report imported but conversion contained warnings.

Report3   Completed      /reports/reports/42027263-3572-4189-899e-9ba82d46594a   <LASR metadata
folder path> >> Report3  Report imported successfully.
```
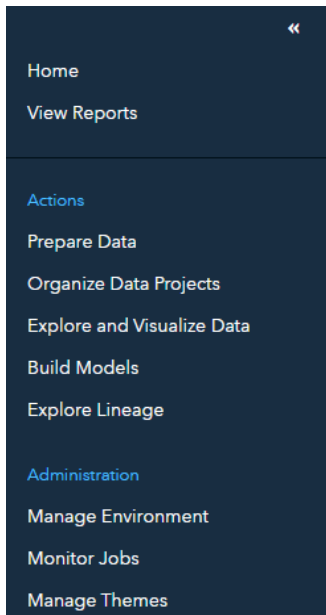
The task details tell you how successful each object converted. From this information, you can start the validation step.

VALIDATE

Validation can be as simple as clicking through the report or as detailed as turning on advanced logging to review the conversion process. The output of the import process indicates whether there were any conversion issues. The task details guide you to specific reports that encountered issues during conversion. The reports can be reviewed through SAS Visual Analytics 8.2. You should look at the reports through both **View Reports** and **Explore and Visualize Data**.
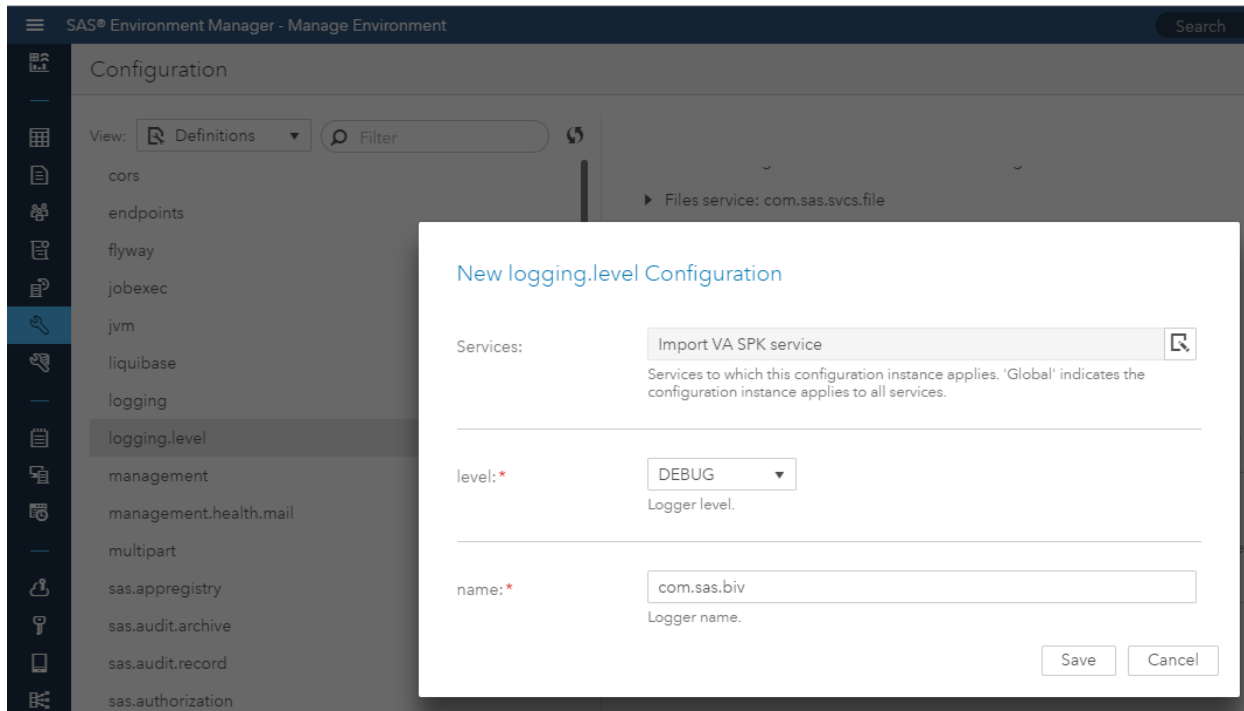

Figure 4. Drop down menu for available applications highlighting View Reports and Explore and Visualize Data

For more advanced validation to determine what warnings or errors were encountered, you can increase the logging level of the Import VA SPK service. To increase the logging for this service to debug, you

need authorization to Manage Environment. Create a new logging.level configuration definition for the service and for each logger where you need increased visibility.

Figure 5. New logging level configuration prompt from SAS® Environment Manager

Here is a list of the loggers within the Import VA SPK service:

- com.sas.experimental.archives – Service logging

- com.sas.bicommon.update – VA report conversation logging

- com.sas.fromarchives – VA report conversion logging

- com.sas.biv – VAE exploration conversion logging

- com.sas.va - VAE exploration conversion logging

- com.sas.visstat - VAE exploration conversion logging

Once visibility is increased, you can access the ImportSPK log in the following default location:

```
/var/log/sas/viya/importvaspk/default/
```

The information in the log points to the report object and any issues encountered during conversion. In the following example, the required roles were not found for the report object:

```
<datetime> DEBUG <PID> --- [ Thread-294] c.s.b.u.i.report.V74toR11.GTMLProcessor : service
[ac45ae2898e37c73] <Report Name>: unable to find role ROLE1 for <Report Object>
```

CONCLUSION

SAS Visual Analytics 8.2 is an exciting upgrade that provides a fresh look to your current reports, along with some new functionality and added stability. From the information provided in this paper, we hope you have successfully been able to convert your SAS Visual Analytics 7.3 objects.

RECOMMENDED READING

- SAS® Viya® 3.3 Administration
- SAS® Viya® 3.3 Administration: Promotion (Import and Export)
- SAS® Viya® 3.3 Administration: Command-Line Interfaces
- *SAS® Intelligence Platform: Security Administration Guide*
- *SAS® Visual Analytics 7.3: Administration Guide*

    Licensed customers can request the user ID and password from SAS Technical Support.

CONTACT INFORMATION

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