SAS Content Assessment

SAS Viya Migration Planning

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Objectives

- Discuss the planning step of the content migration process
- Introduce the Content Assessment Utility
- Review the features of Content Assessment Applications
- Create and review Content Assessment Reports
  - CodeCheck
  - Inventory
  - Profile

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Planning

Understanding the Source Environment

In order to plan for a successful migration from SAS 9.4 you need to understand the source environment.

- Content
  - Type
  - Volume
  - Details
- Security model
- Key configuration

Content Assessment helps provide information to create a plan.

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How does it work?

Documentation located in the doc folder

- Tasks 1-13 – Linux and AIX
  - Because the apps can take hours to run, consider running the apps with nohup

1. nohup sudo ./systemEvaluation &
2. nohup sudo ./inventoryContent &
3. nohup sudo ./profileContent &
4. nohup sudo ./gatherSASCode --all &nohup sudo ./codeCheck --scan-tag SASCode --sources-file pathslist.txt &

5. nohup sudo ./i18nCodeCheck --scan-tag i18n --sources-file pathslist.txt --encoding latin1 &
6. nohup sudo ./summarizeSASLogSteps --scan-tag SASLogs --sources-file pathslogs.txt &
7. nohup sudo ./applicationUsage --config-dir /opt/sas/config/Lev1 --details &

8. nohup sudo ./publishAssessedContent --create-uploads --encrypt-aes --datamart-type i18n &
9. nohup sudo ./publishAssessedContent --create-uploads --encrypt-aes --datamart-type codecheck &
10. nohup sudo ./publishAssessedContent --create-uploads --encrypt-aes --datamart-type inventory &
11. nohup sudo ./publishAssessedContent --create-uploads --encrypt-aes --datamart-type profile &
12. nohup sudo ./publishAssessedContent --create-uploads --encrypt-aes --datamart-type summarizelogs &
13. nohup sudo ./publishAssessedContent --create-uploads --encrypt-aes --datamart-type appusage &

  - To monitor the progress, use the tail command

tail -f nohup.out

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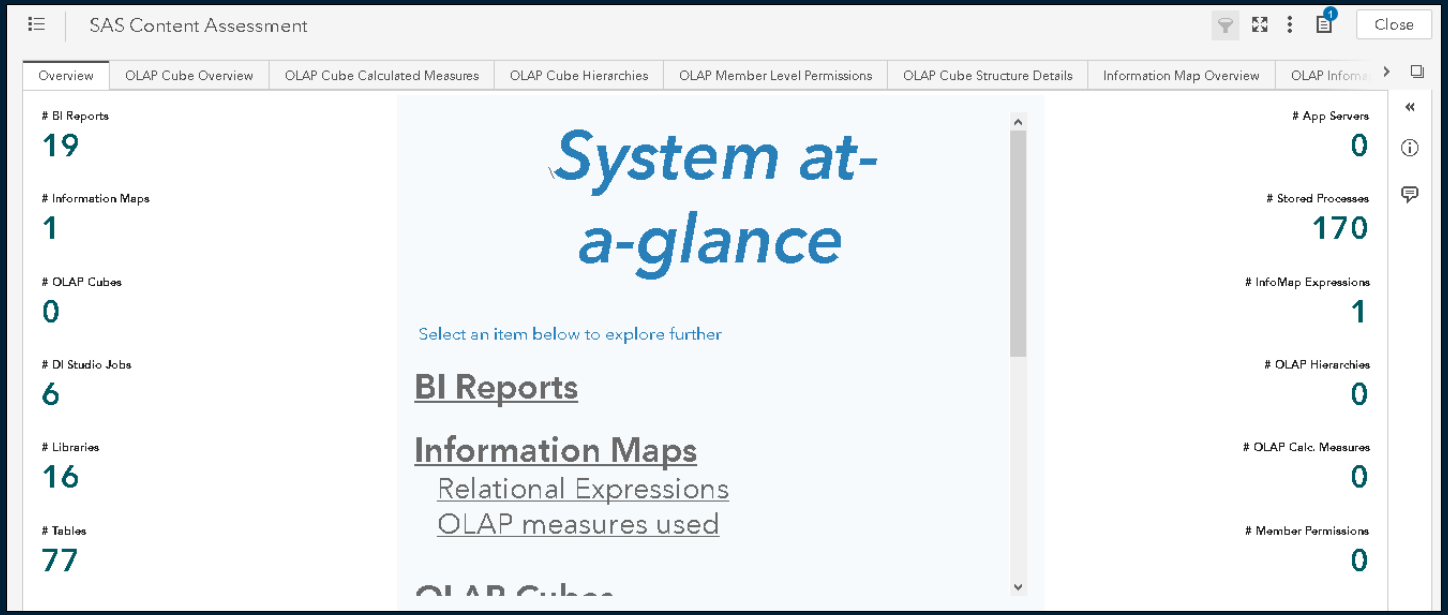
Content Assessment Utility

SAS 9 Content Assessment is a collection of applications designed to help you understand various characteristics of your SAS 9.4 system. The utility is intended to help customers plan for a transition to Viya.



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Content Assessment Utility

Usage

A set of command-line applications:

- Assessment run against SAS 9.4 creates SAS datasets
- SAS Data sets loaded to CAS or LASR
- Visual Analytics Reports to surface the results

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SAS 9 Content Assessment

Migration Applications

SAS 9 Code Check Internationalization

attempts to find known internationalization issues in programs

SAS 9 Inventory

Counts and collects data about what exists on the SAS 9 system.

SAS 9 Publish

Prepares results for reporting.

SAS 9 Profile

Provides details about selected SAS artifacts.

SAS 9 Code Check

Validates that code will migrate to SAS Viya.

SAS 9 Gather SAS Code

Collects and organizes SAS Code from artifacts for Code Check.

Requires SAS 9 Profile

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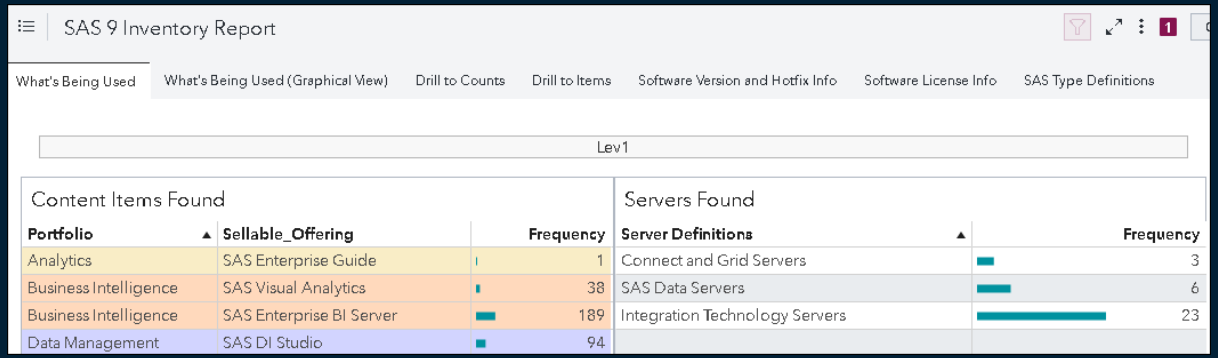
Content Assessment

Inventory

Inventory scans SAS 9 systems and documents type and volume of content.

- Metadata Server
- Filesystem areas
- SAS Content Server
- Deployment and License info



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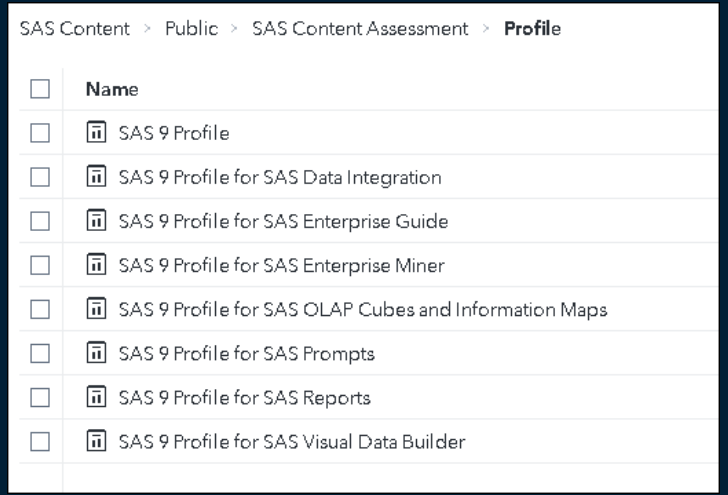
Content Assessment

Profile

SAS 9 Profile drills deeper into the specific characteristics of each type of object including:

- OLAP cubes
- Information Maps
- Di Studio Jobs
- Visual Data Builder jobs
- VA and EBI Reports
- Enterprise Miner & Enterprise Guide Projects
- Prompts



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Content Assessment

Gather SAS Code

Generates SAS Code from artifacts and outputs to the file system supporting assessment of the code with CodeCheck.

- SAS Catalogs
- SAS Stored Processes
- SAS Enterprise Guide Projects
- User-written Code in DI Studio Jobs.

```
cd /drives/d/workshop/SAS9ContentAssessment/assessment/
./gatherSASCode.exe --eg-projects
```

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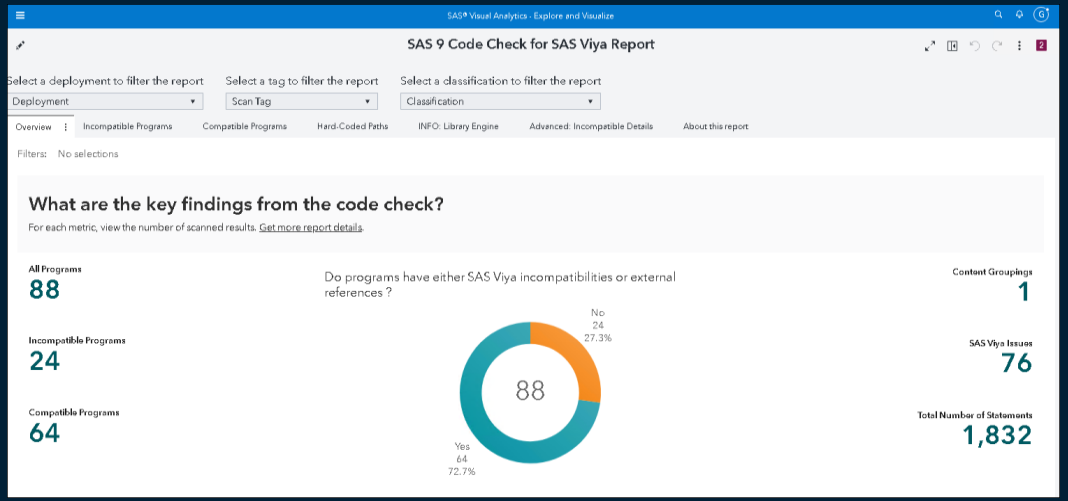
Content Assessment

Code Check

Examines SAS programs to determine compatibility with SAS Viya, including:

- Elements not supported
- Location of physical paths



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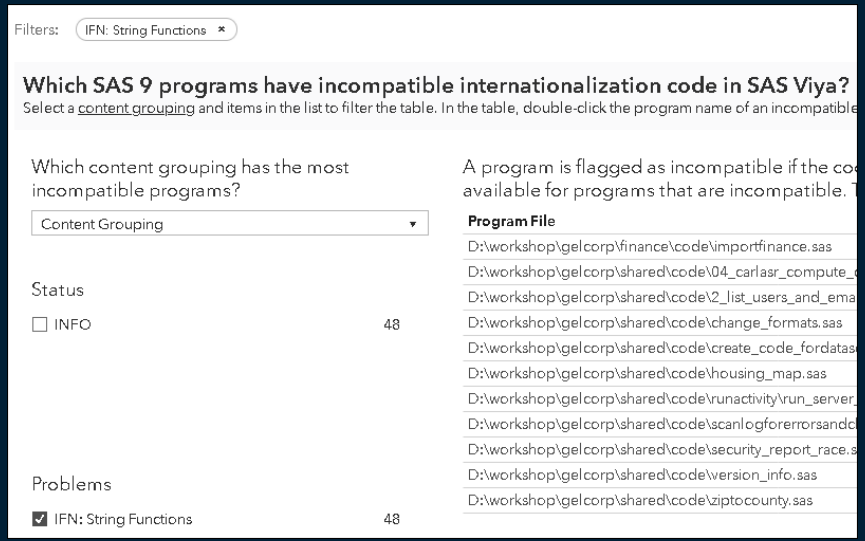
Content Assessment

SAS 9 Code Check Internationalization

Finds known internationalization issues in SAS programs.

It searches files for patterns that have been identified as not i18n-compatible in SAS Viya:

- embedded strings
- concatenated text strings
- locale-sensitive SAS formats/informats
- SAS string functions
- SAS string macros
- column pointer



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Content Assessment Utility

Supporting Applications

- PublishAssessedContent: aggregates results for deployments into a single datamart.
- importEGProjects: imports multiple SAS Enterprise Guide projects on the file system to SAS Viya 4
- importPackages imports multiple .spk files projects on the file system to SAS Viya 4
- createSASPackages: creates SAS packages for the specified SAS metadata objects.

```
./importEGProjects.exe --sas-viya-path "D:\\ViyaHome\\CLI\\sas-viya.exe" --source-file "C:\Users\student\Downloads\List - Compatible EGP Names.csv"
```

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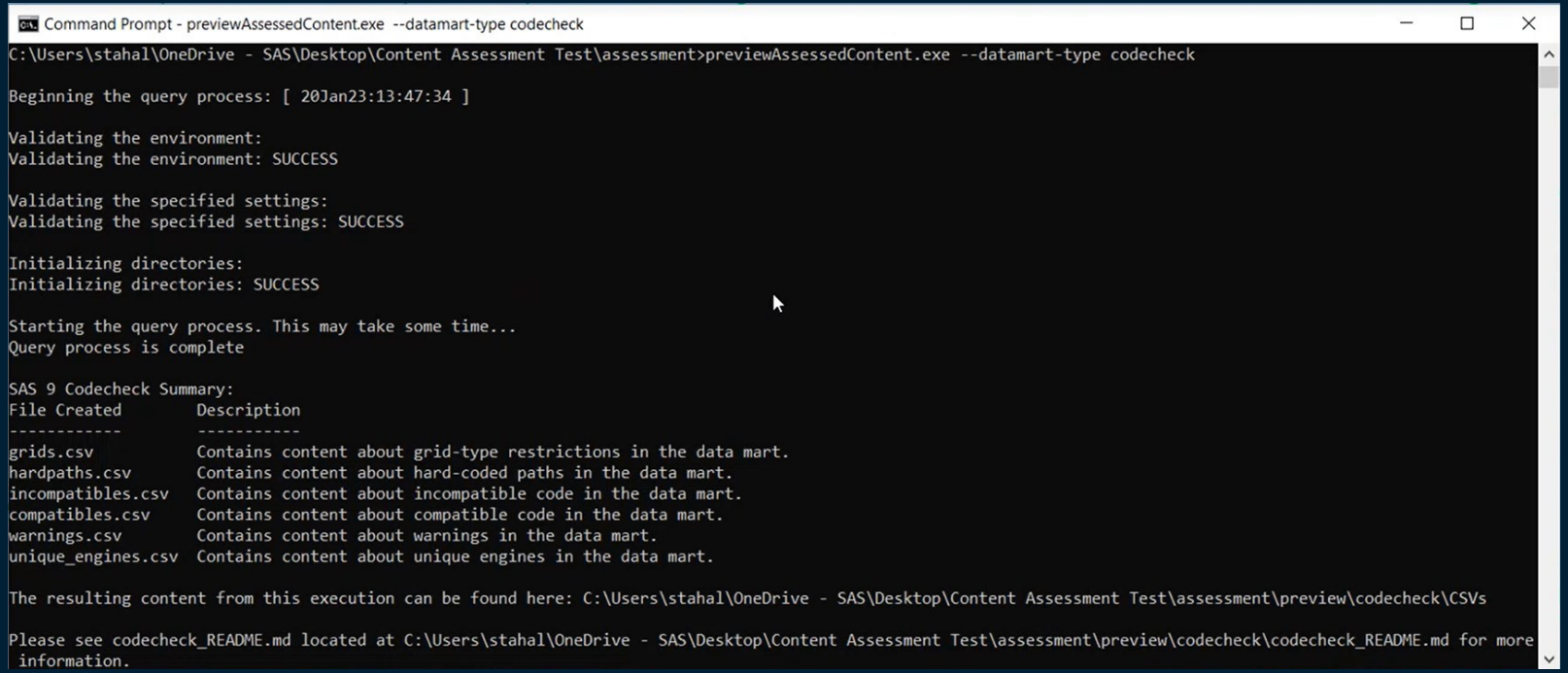
New CA Application

previewAssessedContent.exe



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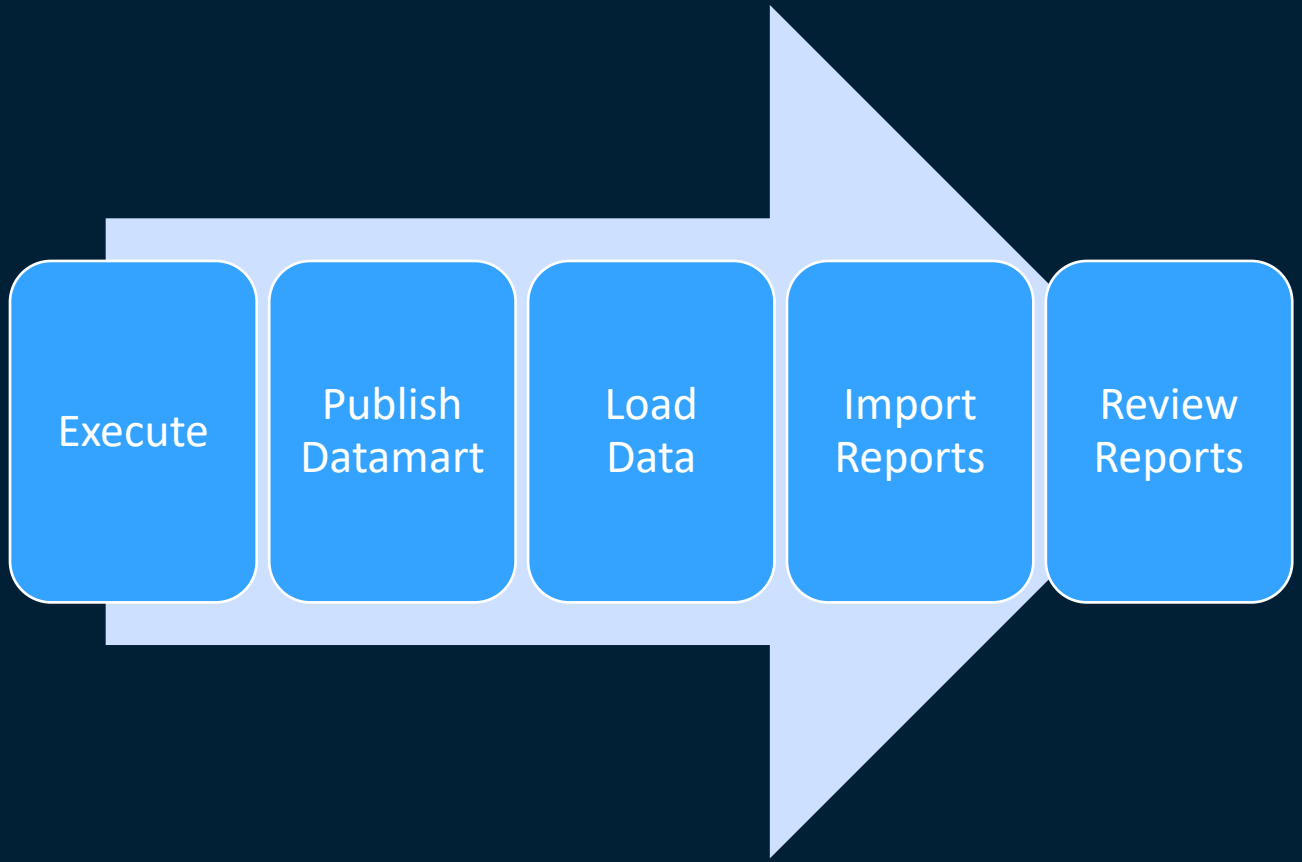
Content Assessment Process



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Content Migration from SAS 9.4: Participating Resources

Viya4: Migration Resources

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What is supported

Platform

SAS Version 9 Object	SAS Viya Object(s)
Folders	Folders
Identity Groups	Custom Groups
Direct Access Control Entries	CAS Access Control Entries General Authorization Rules
SAS Libraries	CAS Library
LASR Analytic Server	LASR CAS Library

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What is supported

Visual Analytics

SAS Version 9 Object	SAS Viya Object(s)
VA Report	Report
VA Exploration	Report
VDB Query: SQL	SAS Studio Query
VDB Query: Star Schema	Data Plan
VDB Query: Append	Data Plan
Graph Template	Graph Template
Image	Image
VDB Query: Save to HDFS	Not Supported

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What is supported

Analytic, EBI and EDI

SAS V9 Object	SAS Viya Object(s)
Stored Processes	Job Definition
Stored Process Prompts	Task Prompts
Cube: Star Schema	Job Definition, Job Request and Report Data View
Cube: Detailed	CAS Table and Report Data View
Information Map: Relational	Job Definition and Job Request
Enterprise Guide Projects	SAS Studio Flow
DI Studio Jobs	SAS Studio Flow
Enterprise Miner Projects	Not Supported
Information Map: OLAP	Not Supported
Web Report Studio Report	Not Supported

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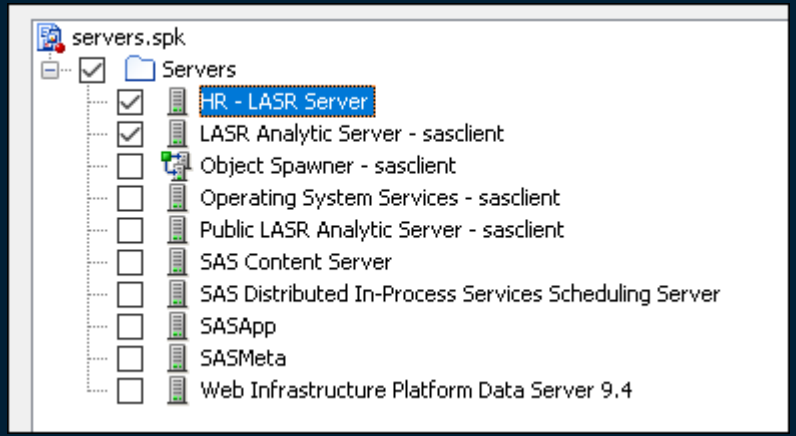
Servers

LASR servers can be exported to support accessing LASR data from Viya through a LASR based CASLIB



Note: the servers package is used as an input to create mappings, it is never imported to Viya.

LASR based caslibs require an authentication domain be created in the target environment.

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Data

- Physical **data is not migrated** by the tools
- LASR libraries and servers can be migrated to LASR based CASLIB’s
- Base SAS Libraries
  - ---> path-based CASLIB’s
  - ---> libraries in the Viya Compute Server
- Database Libraries ---> database CASLIB's
- LASR and/or Base table metadata is exported to support migration of authorization.

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EBI/ED/Analytic Content

References to Data in SAS Libraries

When migrated content like Stored Processes, DI Jobs or EG Project reference data.

- The library and tables must be made accessible to the Viya compute server
- Any libnames in code may need to be edited to point to the location of the data
- Any other SAS 9 metadata related code must be removed.

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New Functionality

Content Migration

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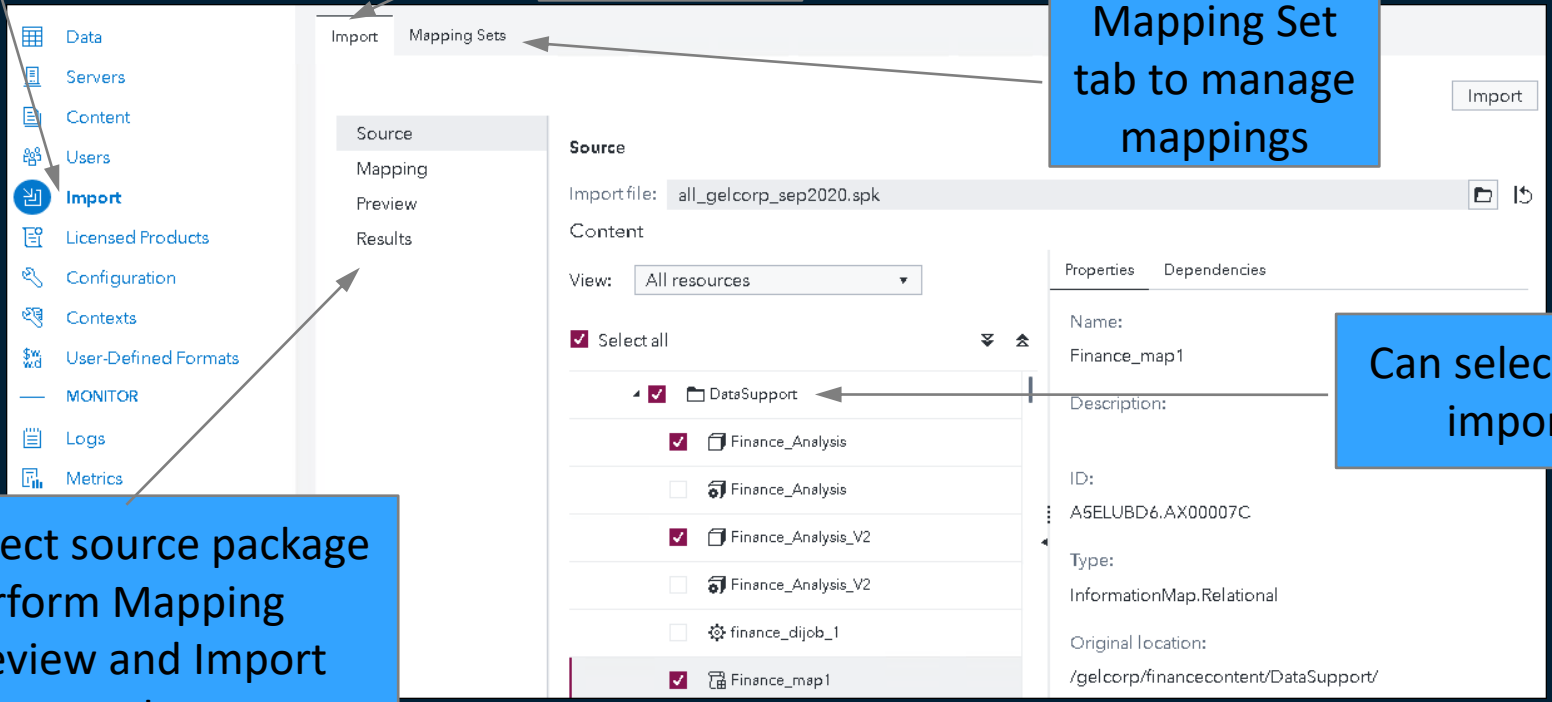
New Import Interface

Import Interface

Import tab for import.

Mapping Set tab to manage mappings



Can selectively import

- Select source package
- Perform Mapping
- Preview and Import
- View Results

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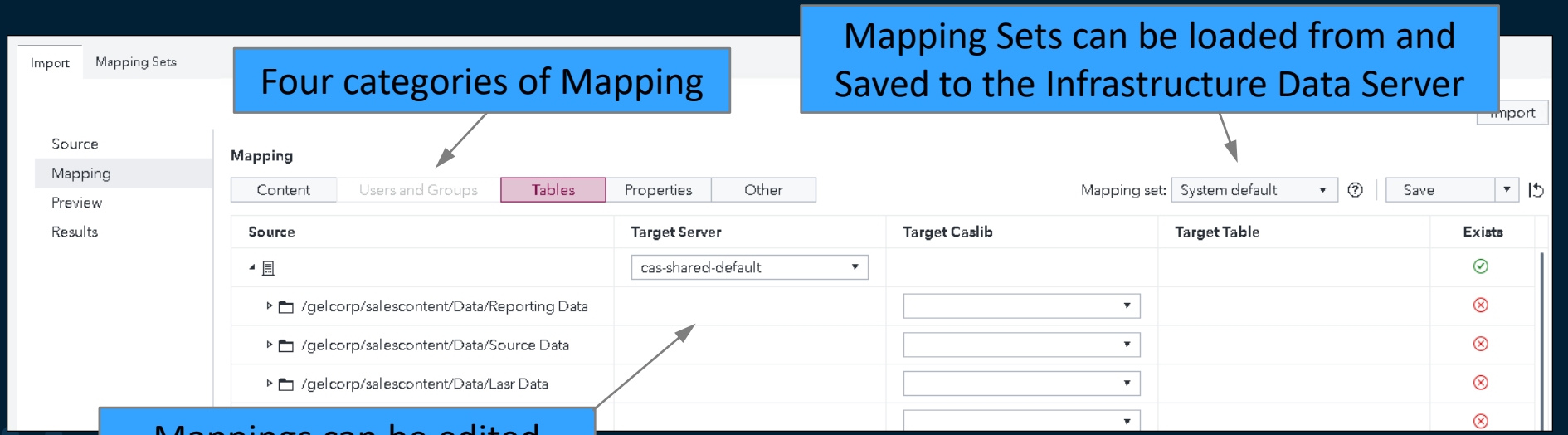
Mapping Interface

A central aspect of importing is the creation, refinement, and application of mappings. Mappings govern the transformation of exported resources for use in the target environment.



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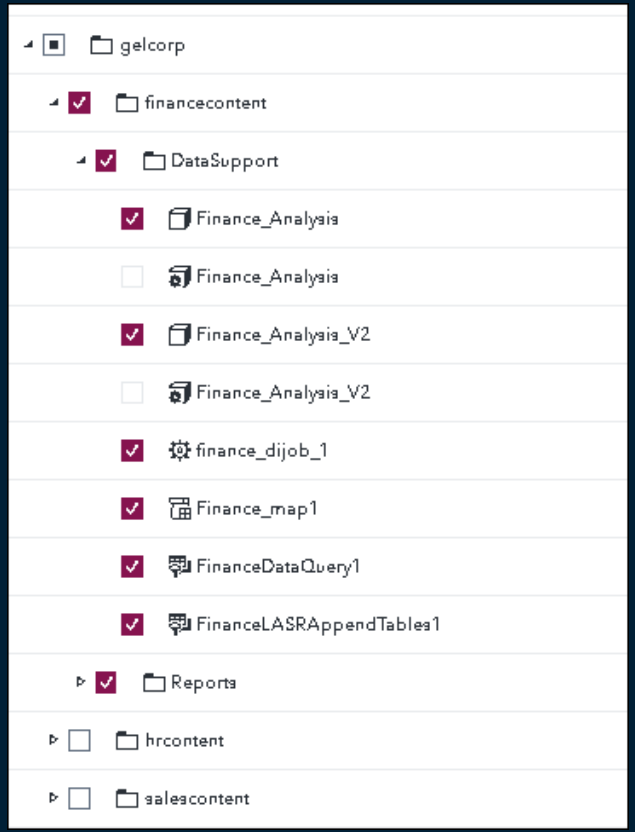
Selective Import of Content



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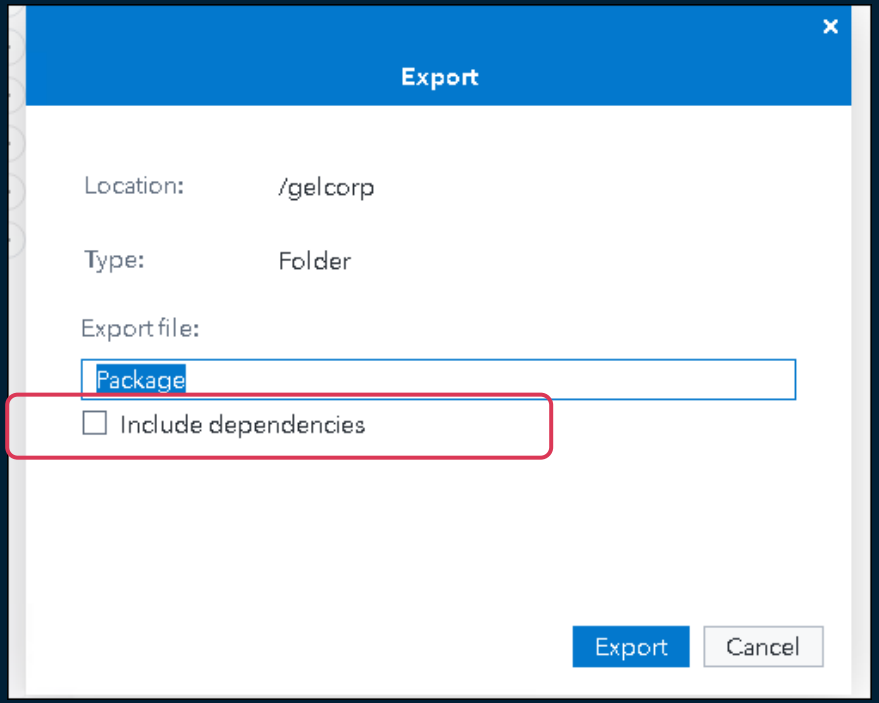
2021.2.1 Include Dependencies




```
sas-viya transfer export
-u /folders/folders/82e2f89b-a53e-4c74-b8d0-de5ab3049acc
  --include-dependencies
```

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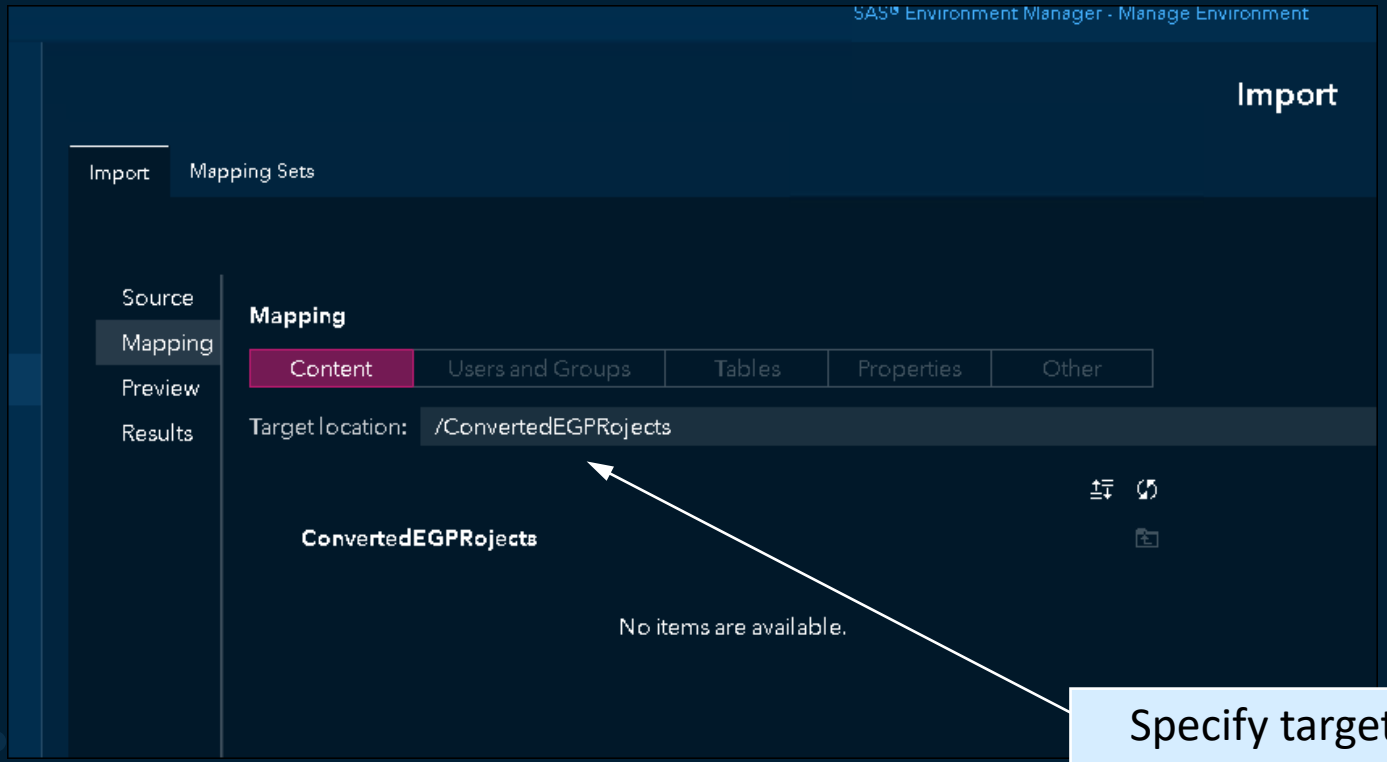
Relocate Content During Import



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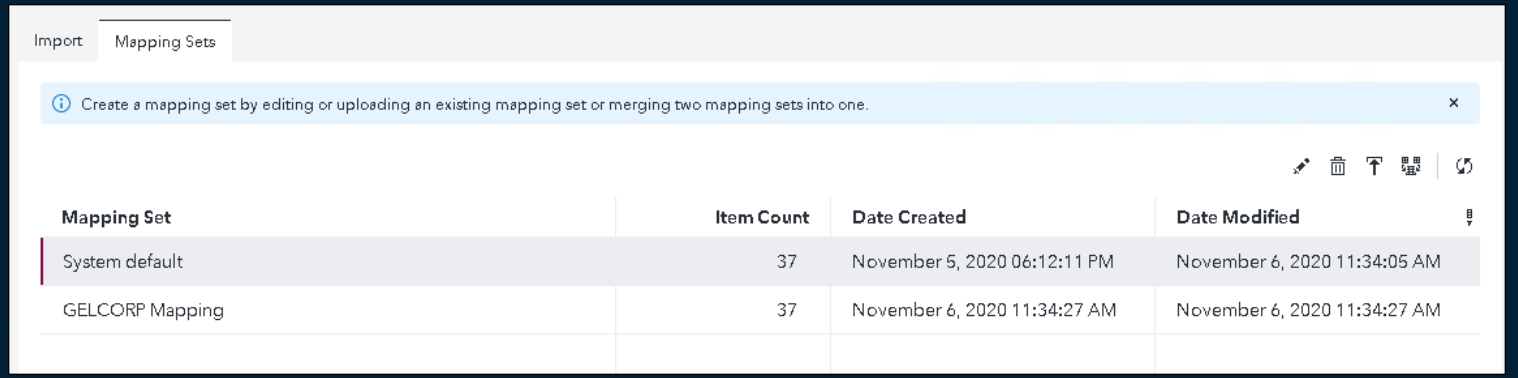
Mapping Set Interface

Mapping Sets can be managed separately from the import process:

- Loaded and Saved from/to the Infrastructure Data Server
- Uploaded from a JSON File
- Edited
- Merged
- Deleted



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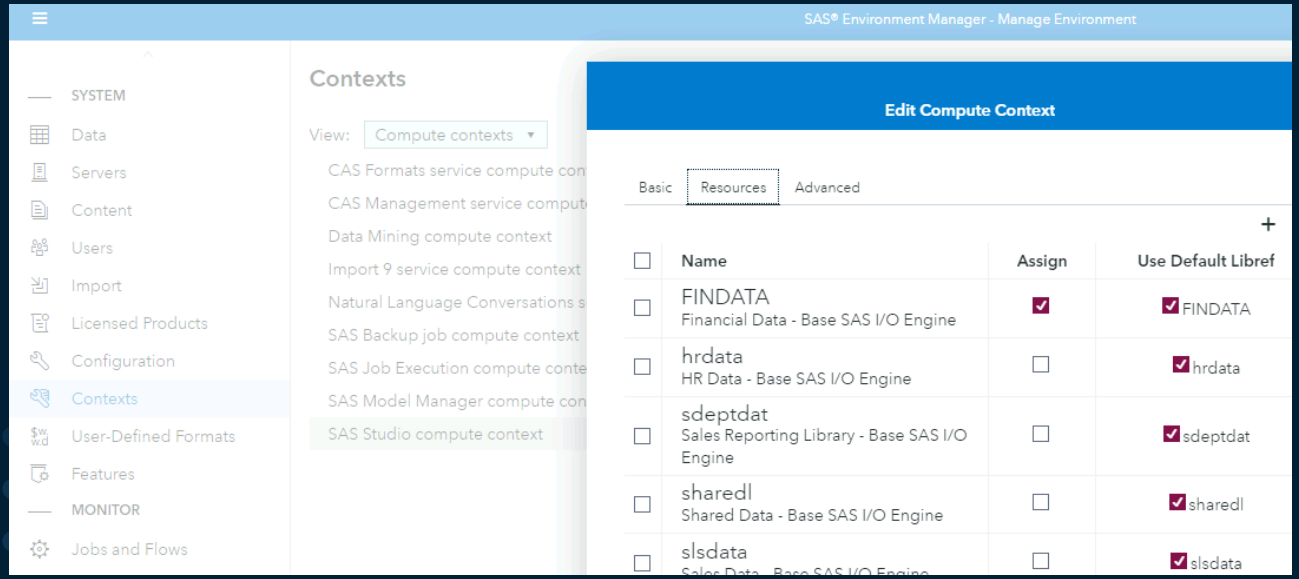
SAS Libraries

Viya Compute libraries can now be:

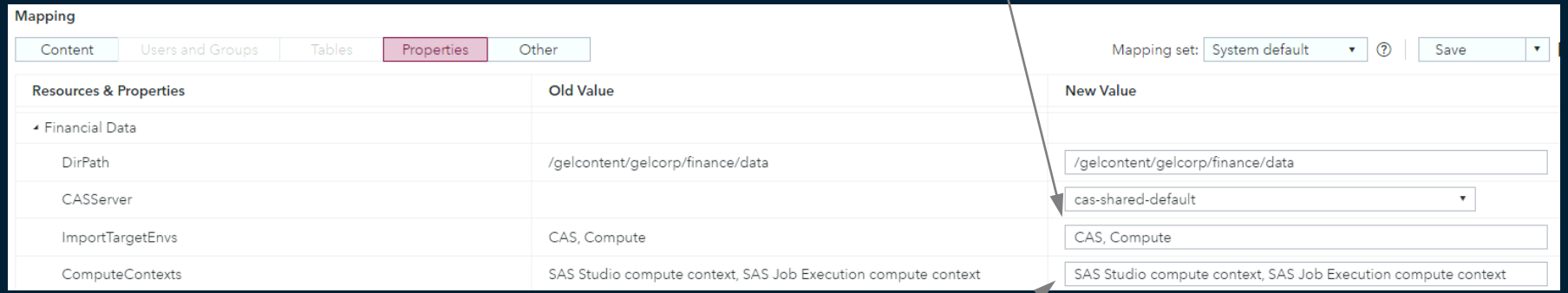
- Defined in the resources section of Viya Compute Contexts
- Managed in SAS Studio
- Assigned automatically when compute sessions start.
- Created when importing V9 path-based SAS libraries.



SAS Libraries

On Import V9 SAS Libraries can now create both a CAS Library and a Compute Library

Import to CAS and Compute



Select Compute Contexts to Create Library

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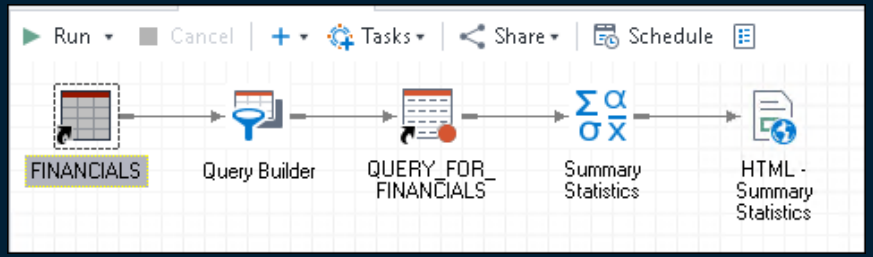
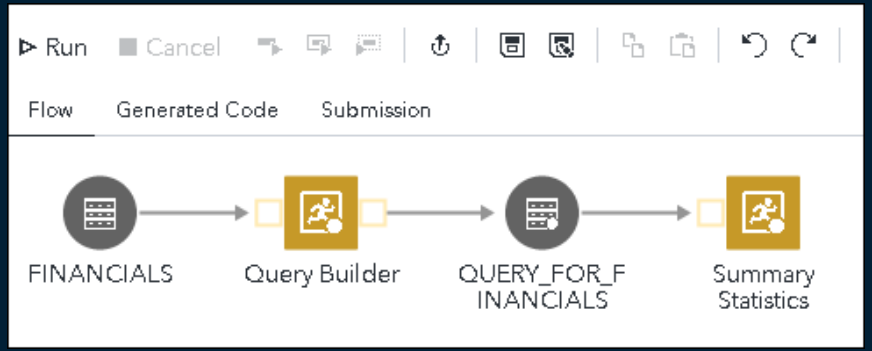
Enterprise Guide Project to Studio Flow

What Happens

Each process flow is converted to a SAS Studio Flow





Resultant studio flows may often require some changes to be fully functional.

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Enterprise Guide Tasks

- Many Enterprise Guide tasks are migrated to SAS Program Nodes in SAS Studio.
- Some EG tasks
  - Are migrated to the equivalent node in Studio e.g., Query, Data, Append, Filter, Sort etc.
  - are not supported because there is no equivalent in Viya e.g., Update Library Metadata
  - require manual updates of the resulting program node e.g., Create Format from Dataset

Future development will add support for migration of tasks to nodes with equivalent functionality.

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Enterprise Guide Projects

Projects from Enterprise Guide 7 and 8 are supported.

- Individual Projects can be imported directly using Environment Manager or the transfer plugin of the sas-viya CLI.
- Multiple projects can be imported in batch with a CLI delivered with Content Assessment
  - Use Content Assessment csv output and imports all Projects in a csv file
  - OR all Projects in a directory path.

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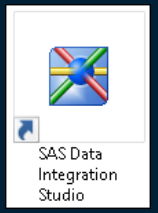
Data Integration Studio Jobs

SAS Data Integration Studio jobs are migrated to SAS Studio Flows in SAS Viya

- Data Integration Studio Transforms become a SAS Studio Steps
- Always include all dependent metadata objects in the package when you export DI Studio Jobs
- Libname statements are commented out
- Metadata server code is commented out
- Manual updates to the code created will most likely be required
- Future development will add support for migration of tasks to nodes with equivalent functionality.
- **Support for custom steps for customer generated transforms – Viya 2022.12; Generated Transform > Custom Step (The system creates a new custom step, or migrates to an existing custom step**



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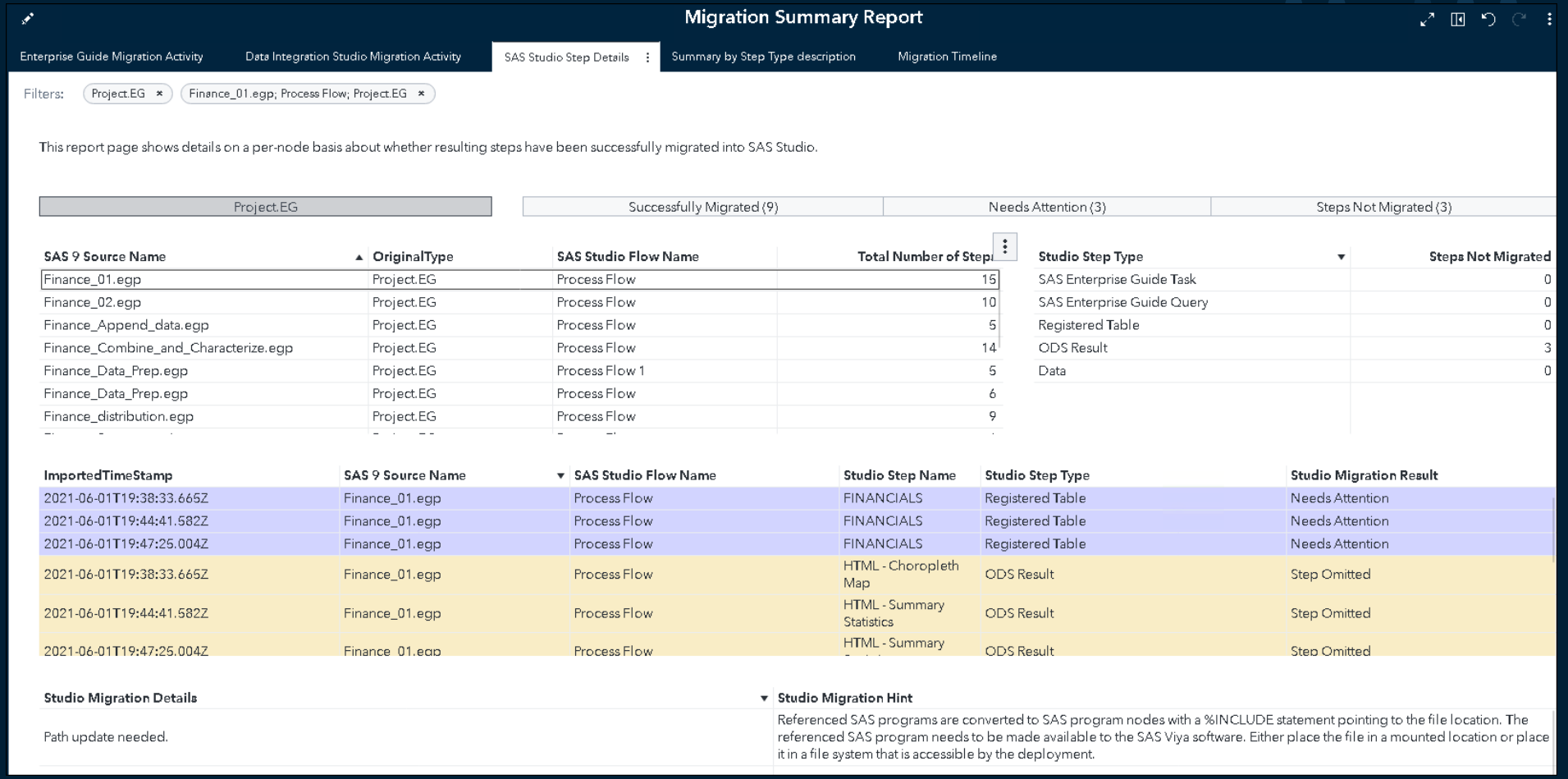
Migration Summary Report



Summary

- SAS 9 content is migrated to Viya objects on import.
- Development work to support migration of SAS 9 content to Viya 4 is ongoing
- Review the Migration Status document for up-to-date status information on migration of SAS 9.4 content.

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