

Formats beyond SAS

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ABSTRACT

SAS is offering Cloud Analytic Services (CAS) with high-performance processing power. CAS is a server that provides the run-time environment for data management and analytics with SAS. In the era of Cloud services when we migrate from conventional SAS to CAS, all will migrate smoothly but the formats. The CAS server organizes user-defined formats in format libraries. We can use the FORMAT procedure to specify a CAS format library to store a new user-defined format. The CAS server does not support SAS catalogs.

SAS 9.4 offers one method to overcome this. The FMTC2ITM procedure converts one or more format catalogs into a single item store that can be made available to CAS.

In this paper I will discuss about the procedure FMTC2ITM and its benefits.

INTRODUCTION

When integrating SAS CAS into production processes, compatibility is the key to minimize impact and aid adoption of the platform. Therefore, SAS Institute has ensured your SAS 9 programs will run as is. For this, we need to start a CAS session and tell our programs to make use of CAS libraries. CAS, SESSIONS and LIBRARIES consider CAS a logical server where processing is performed in memory on one or more machines. Those machines can be in the cloud or on-premise. CAS is designed to exploit the scalability of cluster computing and solve analytical problems with very large volumes of data and is more suited to cloud than SAS 9. When a user signs into SAS Studio (the client), they do not yet have a CAS session running. The CAS statement invokes a session, from where CAS libraries (caslibs) and traditional resources are created and used. To use the SAS format into a CAS session we need to make it compatible with the data being accessed with any analytics application and its item store. This paper is based on exploring basic functionality of PROC FMTC2ITM by giving some examples and application of its various options and functionality.

CLOUD ANALYTIC SERVICES (CAS)

SAS Viya is a cloud-enabled, in-memory analytics engine that provides quick, accurate and reliable analytical insights. Elastic, scalable and fault-tolerant processing addresses the complex analytical challenges of today, while effortlessly scaling for the future. As an integrated part of the SAS Platform, SAS Viya provides:

- Faster processing for huge amounts of data and the most complex analytics, including machine learning, deep learning and artificial intelligence.
- A standardized code base that supports programming in SAS and other languages, like Python, R, Java and Lua.
- Support for cloud, on-site or hybrid environments. It deploys seamlessly to any infrastructure or application ecosystem

WHAT IT DOES?

The FMTC2ITM procedure converts one or more format catalogs into a single item store that can be made available to CAS. PROC FMTC2ITM enables you to create an item store that has the following contents:

- all the formats from one catalog
- a subset of the formats from one catalog
- all the formats from multiple catalogs
- a subset of the formats from each of multiple catalogs.

After an item store is created with PROC FMTC2ITM, this can be used with the CAS statement with the addFmtLib action to make the item store available to CAS.

Syntax

```
FMTC2ITM <options>;
```

```
proc fmtc2itm catalog=(a b)  
itemstore='itemstoreA'; run;
```

Required Arguments

```
CATALOG= memname | libname.memname ( |  
list)  
ITEMSTORE= fileref | 'filename'  
ENCODING=encoding-name
```

Optional Arguments

```
PRINT  
LOCALE
```

REQUIRED ARGUMENTS

CATALOG=, specifies a catalog that is to be converted to an item store. If you do not specify the CATALOG option, the default catalog is WORK.FORMATS.

ITEMSTORE=, specifies the name of the item store. You can specify a fileref, or you can specify a pathname in quotation marks.

ENCODING=encoding-name
specifies an encoding for a catalog or for all of the catalogs in a list.

OPTIONAL ARGUMENTS

PRINT
displays information about each catalog member that is written.

LOCALE
adds locale-sensitive prefixes to the names of members of an item store.

MIGRATE USER-DEFINED FORMATS USING THE FORMAT PROCEDURE

Following steps will show the implementation of PROC FMTC2ITM to transport user defined formats.

- Create user defined formats in SAS using PROC FORMAT.
- The CAS statement starts session Casauto.
- The FMTC2ITM procedure writes the formats in format catalogs Work.Formats and istore.cat_lvl to an item store file.
- The CAS statement ADDFMLIB option adds the formats in the item-store file that was created by the FMTC2ITM procedure into CAS format library. The PATH= option specifies the path to the item-store file.
- The CAS statement LISTFORMAT option lists the formats in format library Myfmtlib to the SAS log for verification.

```
/*Creating a sample format in SAS*/
proc format;
    value SEVERITY
        1 = "Mild"
        2 = "Moderate"
        3 = "Severe"
        4 = "No response";
run;

proc format
library=istore.CAT_LVL;
value ANEMIA_LVL
    10 - HIGH = "Grade 1"
    8 -< 10 = "Grade 2"
    6.5 -< 8 = "Grade 3"
    LOW -< 6.5 = "Grade 4";
run;

cas casauto; /*1*/

proc fmtc2itm /*2*/
    catalog=(work.FORMATS
    istore.CAT_LVL)
    itemstore="path-to-item-store-
    file";
run;

cas casauto addfmtlib /*3*/
fmtlibname=myfmtlib
path="path-to-item-store-file"
replacefmtlib;

cas casauto listformat /*4*/
fmtlibname=myfmtlib
members;
```

CONCLUSION

PROC FMTC2ITM is a very comprehensive tool to migrate the SAS user defined formats in SAS CAS. It does allow the use of encoding while migrating the formats which is not possible when we use conventional proc format to migrate the user defined formats. In future, the use of PROC FMTC2ITM will become common with the use of many cloud-based application where legacy SAS data need to be accessed.

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RECOMMENDED READING

PROC FMTC2ITM can help us control and improve the migration of SAS catalogs in a systematic manner across platforms. There are many other different statements and options available which are not included here in this paper. Please find below link for detailed information on PROC FMTC2ITM.

<https://documentation.sas.com/?docsetId=proc&docsetTarget=n18o84q5p30017n1ikddh7fsrt3n.htm&docsetVersion=9.4&locale=en>

https://documentation.sas.com/FMTC2ITM_Procedure

REFERENCES

Base SAS® 9.4 Procedures Guide, Seventh Edition (<https://documentation.sas.com/>)

SAS® Cloud Analytic Services 3.5: User-Defined Formats

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