SSAS.

SAS/ASSIST® Software:

Changes and Enhancements,

Release 8.2

Contents

C H A P T E R

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Changes to the Workflow and User Interface

Overview

In SAS/ASSIST software, Release 8.2, you can access your data in quicker, more efficient ways. Your administrator can set up batch programs to create metadata and make it available from within a SAS/ASSIST session. This can be customized globally for an entire site, or locally for a particular division or user. You can then control which data is accessible to your session when you use SAS/ASSIST. The existence of locally stored metadata now makes it possible for SAS/ASSIST to instantly display comprehensive selection lists, enabling users to search across all tables or columns.

SAS/ASSIST Now Metadata Driven

In order to improve performance, SAS/ASSIST Software is now *metadata driven*. This means that, instead of examining each data source and extracting information each time you invoke SAS/ASSIST software, the software examines permanently saved, locally stored files that contain this information. This information, which includes table names, number of observations, column names and attributes, and more, is called *metadata*.

The advantages of the new method are
☐ An organized view of your data is always instantly available.
☐ All available tables or columns can be shown in a selection list.

  □ You can search for a table using a column name that is contained in the table.
  □ Performance when creating tasks based on remote data is improved.
  □ Performance when creating tasks based on data sources with many tables is improved.
  □ Irrelevant data sources can be excluded when creating metadata.

Batch-Generated Metadata

Information about data sources you frequently use can be prepared for you through a batch job in advance, and made available to you when you invoke SAS/ASSIST. This enables your administrator to define a data environment that is custom built for your needs.

Startup Sequence for a New User

Data Sources Window

When you invoke SAS/ASSIST for the first time, the Welcome window is displayed. When you select Continue , the program searches in libraries that are declared for the current session for all available data sources. The results of this search are displayed in the Data Sources window, as shown in the following display. This window can be accessed in subsequent sessions from the Start window, described in "Start Window" on page 4, or from within a session by selecting

Tools ▶ Examine Data Sources

Display 1.1 Data Sources Window
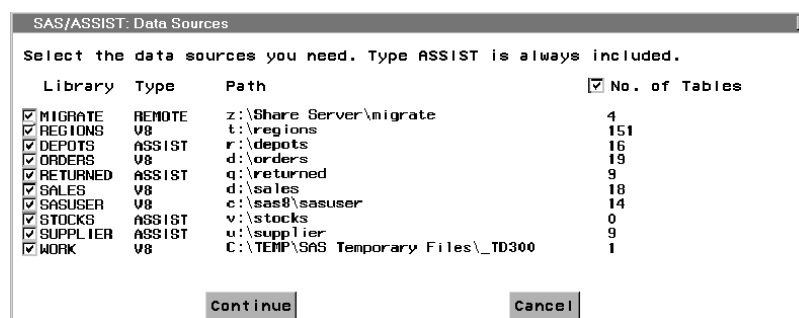
By default, all the data source checkboxes are selected in the Data Sources window. When you select Continue , SAS/ASSIST examines these data sources and establishes metadata for all data it finds. Selecting only the data sources relevant to your project improves performance and helps you to better understand the data.

Data Source Types

Data sources can contain metadata that was created for you in batch mode. The data source type **ASSIST** indicates that the metadata is batch generated. Not all data sources have batch-generated metadata.

Data sources can be the following types:

ASSIST
Metadata was generated in batch for these data sources. The actual sources could be on any number of engines.

REMOTE
Library has been assigned using a libname statement with a Remote attribute. The source could be a SAS data source or any engine that SAS is able to access on a server.

Other
Any SAS/ACCESS engine type may appear as a data type. This includes **V8**, **V6**, **Oracle**, **DB2**, **Sybase**, and **ODBC**.

The WORK library

The **Library** list includes the **WORK** library. The metadata is automatically updated when you create temporary tables in the **WORK** library, even if you have cleared the check box for **WORK** in the Data Sources window.

Optimizing Performance

The Data Sources window also contains a **No.of Tables** check box. Selecting this check box causes the Data Sources window to display the number of tables that are present in the data source. This gives you an indication of how long the process of metadata creation will take. Metadata creation time increases as the number of tables in a data source increases. Calculating the number of tables in a data source is a dynamic operation and can be time consuming.

Creating Metadata

When you select Continue, SAS/ASSIST software examines the selected data sources and gathers information about the data, including table names, column names, and the location of the data. This information is saved in two tables, _ASTDCOL and _ASTDTAB, in the SASUSER library. The batch-generated metadata associated with the **ASSIST**-type data sources is also stored in the SASUSER library. See "Generating Metadata in Batch" on page 10 for more information on generating metadata in batch mode.

Updating Metadata

Stored metadata can be reused in its current configuration, modified, updated at the beginning of a session, or refreshed from within a session. The parameters for these options can be set in the User Profile window, which is described in "Changing the Settings for Metadata Creation in the User Profile" on page 4.

When you select Continue in the Data Sources window, metadata is created and the Start window appears. For a description of the Start window, see "Start Window" on page 4.

Startup Sequence for an Existing User

Start Window

When you invoke SAS/ASSIST software, the Start window is displayed, as shown in the following display.

Display 1.2 Start Window
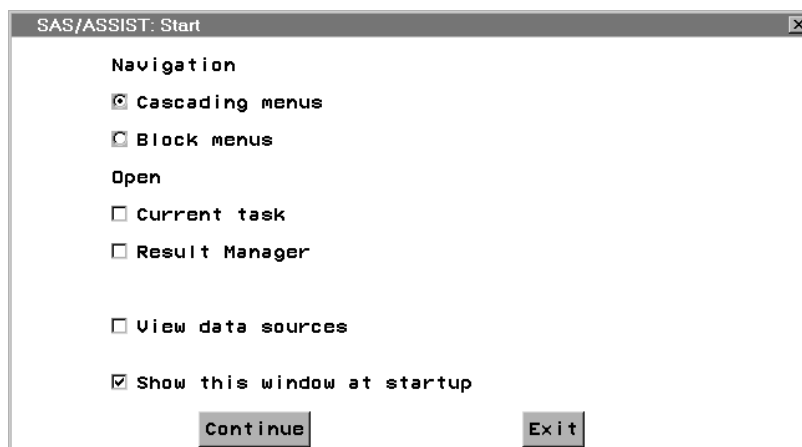
You can choose between the cascading or block menus to navigate the software. If you select `Cascading menus`, select the `Current task` check box to open the task you were working with when you ended the previous session. Select the `Result Manager` check box to view the `Result Manager`. If you select `Block menus`, these two options are not available.

If you select the `View data sources` check box, the Data Sources window is displayed after you select Continue . See "Data Sources Window" on page 2 for more information.

If you do not want the Start window to appear every time you invoke SAS/ASSIST software, clear the check box `Show this window at startup`. You can change the `Show startup dialog` option to `Yes` in the User Profile window. For more information about the User Profile window, see "Changing the Settings for Metadata Creation in the User Profile" on page 4.

Select Continue to start your SAS/ASSIST session.

Changing the Settings for Metadata Creation in the User Profile

You can open the User Profile window by selecting `User Profile` from the `Tools` menu on the main menu bar. The User Profile window appears as shown in the following display.

Display 1.3 User Profile Window
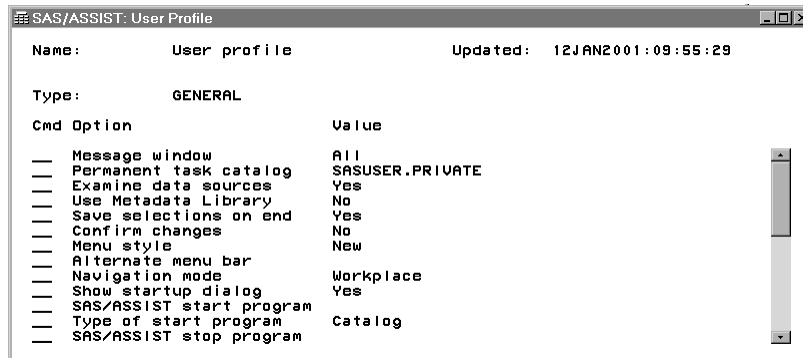
In the User Profile window, you can change the value for different options that affect how you navigate and manage SAS/ASSIST software. The following is a description of selected options that relate to metadata management:

Examine data sources:

☐ **Yes**: Data sources are automatically examined each time you invoke SAS/ASSIST software. This is advantageous if your data structure is dynamic.

☐ **No**: Metadata that is saved in your SASUSER library is reused. This is advantageous to users whose data structure remains static.

Note: The raw data is not accessed at this stage, so any changes to the data itself are irrelevant for this process. △

Use Metadata Library:

☐ **Yes**: Metadata prepared in batch mode is copied and appended to metadata created at startup. The data sources associated with the batch-generated metadata are displayed in the Data Sources window as data type **ASSIST**. A library named METADATA must be assigned for the individual user, and it must point to the location where the metadata generated in the batch process is stored.

☐ **No**: Batch-generated metadata is not included. This option may be restricted to **Yes**, depending on the settings your administrator specifies.

Show startup dialog:

☐ **Yes**: The Start window displays when you invoke SAS/ASSIST software.

☐ **No**: The Start window does not display when you invoke SAS/ASSIST software.

Note: If this option is set to **No**, you can still view your data sources and update your metadata from within a session. To do so, select **Examine Data Sources** from the **Tools** menu. Modify the list of data sources, and select Continue to update your metadata. △

For information on other options listed in the User Profile window, see *SAS/ASSIST Software: Changes and Enhancements, Version 6.*

Selecting a Table

To create a task, select the table that you want to use. For example, you can create a table listing by selecting

Tasks ▶ Report Writing ▶ Listing

The List a Table window appears. When you select Table , the Select Table window is
displayed, as shown in the following display.

Display 1.4 Select Table Window
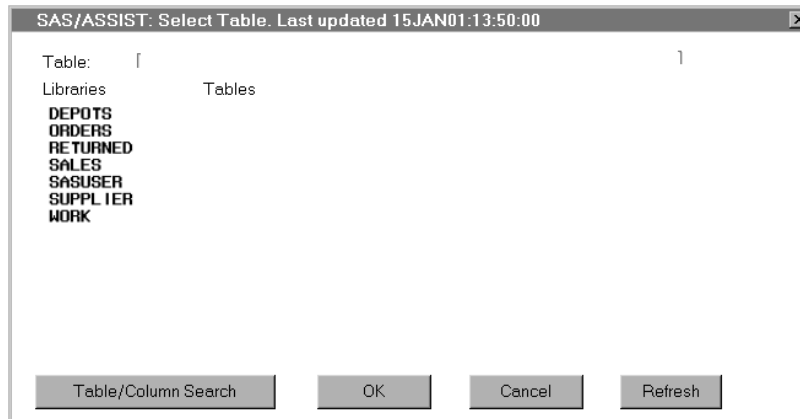
By default, the **Table** field and **Tables** list in this window are empty. Select one of
the libraries on the **Libraries** list to populate the **Tables** list. When you select a table,
the table name is displayed in the **Table** field. When you select OK , the Select Table
window closes and the selected table name appears in the List a Table window.

Select Refresh to open the Data Sources window. In this window, you can update
your view of available data.

Searching for Data

Searches are carried out using metadata stored locally in the SASUSER library. In
SAS/ASSIST Software Release 8.2, searches using column names are also possible.

Search Using Table or Column Names

In the Select Table window, select Table/Column Search to search using table or
column names.

If you select **Table** in the Table/Column Search window, the window shown in the
following display appears.

Display 1.5 Table/Column Search Window
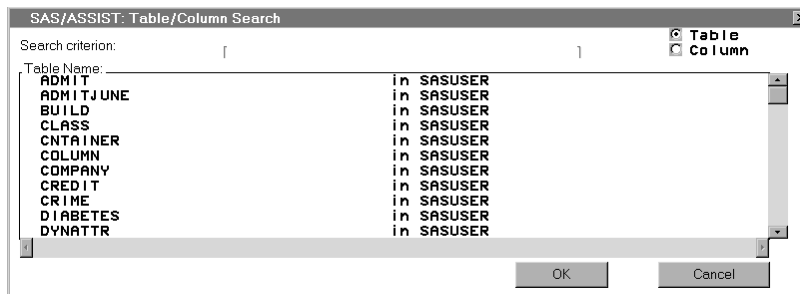
If you select the ⬚Column radio button in the Table/Column Search window, the window shown in the following display appears. The `Column Name` list contains a list of all the available columns and the table in which they are located.

Display 1.6   Table/Column Search Window
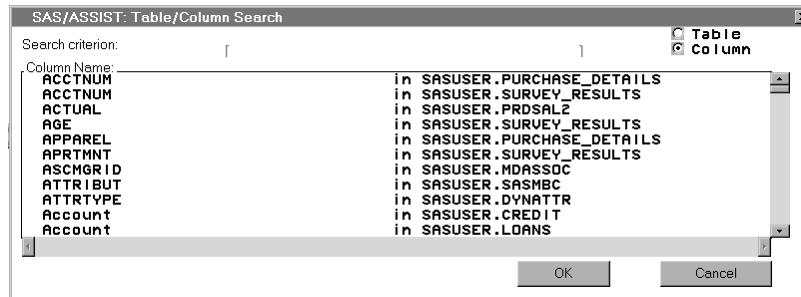
The Table/Column Search window displays an alphabetical list of all the available tables or columns. Both table and column names starting with an uppercase character take a higher alphabetical precedence than those starting with a lowercase character, so **z** has a higher precedence than **a**.

You can subset the `Table Name` and `Column Name` lists by entering a character (or string of characters) in the `Search Criterion` field. Subsetting results in a list of tables or columns whose initial characters match the search criterion characters. At this time, wildcard searches are not supported.

Note: You must select a table or column from the subset list, even if only one table or column is found. △

After you have selected a table or column, select ⬚OK. The Select Table window appears and, if you selected a table, the table name is displayed in the `Table` field.
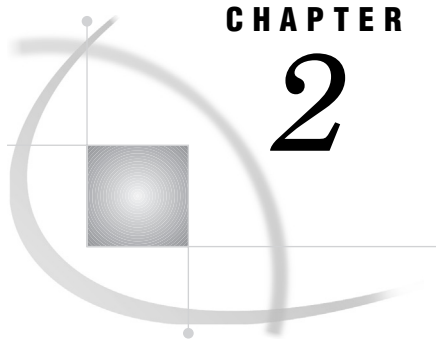
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Administrator Tasks — Creating Metadata

Overview

The way in which SAS/ASSIST software generates metadata and the way in which the metadata is made available to the user has been changed in order to optimize performance at runtime.

Metadata Feature

In SAS/ASSIST software, Release 8.2, metadata is either generated at startup or generated prior to startup in batch mode. When users invoke the software, the batch-generated metadata is immediately available and can be appended to the metadata generated at startup by the user.

Metadata is created in batch mode by using an SQL program. A sample program is provided with SAS/ASSIST software, Release 8.2. It is located in the SASHELP library at SASHELP.QASSIST.METADICT.SOURCE. The batch program must also contain a list of LIBNAME statements. When a library is both defined in the batch program and assigned in a user session, metadata for data sources located in this library is made available to the user. Conversely, if a library is defined in the batch program but not assigned in an individual user session, data sources located in this library are not visible to this particular user.

The batch-generated metadata and the user-generated metadata are stored together in two SAS tables, _ASTDCOL and _ASTDTAB, which are automatically created in the SASUSER library the first time a user invokes the software.

The advantages of creating metadata in batch mode are
- Use of resources is reduced when users invoke SAS/ASSIST software: If metadata is created at startup by the individual user, the software accesses all available data in order to gather information. Creating metadata in batch mode avoids the need for each user to access remote hosts in order to examine the data.
- Metadata can be customized to suit the needs of individual users and groups: You can subset metadata generation in the sample program provided with Release 8.2 so that users only see metadata for the information they normally work with. This simplifies the process of searching for tables or columns.

□ Processing time is significantly reduced when users update metadata during a
session: Creating metadata at startup can be time consuming, especially when a
large number of tables are accessed or when data resides on remote hosts.
Batch-generated metadata, however, is stored in two tables in a shared location.
These tables are appended to the user-generated metadata.

Generating Metadata in Batch

The sample SQL metadata-generating program supplied with this release can be
modified to suit the needs of individual organizations. This section explains how to
modify the original program to suit your needs. The original program is included in
"Sample Metadata-Generating Program" on page 11 of this document.

To create metadata:

1 Invoke SAS. Create a program defining the library in which metadata will be
stored and the libraries that point to the underlying data sources. The
METADATA library must be assigned the name METADATA.

```
libname metadata <shared location>;
libname library1 <data source 1>;
libname library2 <data source 2>;
...
```

Depending on which DBMS you are assigning libraries to, you may want to
define additional LIBNAME options that are specific to that system.

2 Copy the sample metadata-generating program to your text editor in SAS. Issue
the following command in the command line:

```
copy sashelp.qassist.metadict.source
```

3 Define the libraries to be included in the metadata. In the program code, you will
find this line:

```
%let sellib=('INFORMIX', SASDATA);
```

Change the libraries in the brackets to the libraries you defined in the
LIBNAME statements in step 1. For example, in the following code, the program
is modified to include four libnames: DEPOTS, RETURNED, STOCKS, and
SUPPLIER.

```
%let sellib=('DEPOTS,RETURNED,STOCKS,SUPPLIER);
```

4 Further modify the code to customize the task of metadata creation, as shown in
the following code:

```
create table _astdcol as
  select *
  from dictionary.columns
  where (libname=DEPOTS and memname in (ROSSLAIGHRE,SHANNON,COVENTRY,LUTON))
  or (libname=SUPPLIER and memname in(MATERIALS,UTILITIES,PACKAGING)) or
  libname in (RETURNED,STOCKS)
  order by libname, memname, name;

  create table _astdtab as
  select *
  from dictionary.tables
  where (libname=DEPOTS and memname in (ROSSLAIGHRE,SHANNON,COVENTRY,LUTON&))
  or (libname=SUPPLIER and memname in(MATERIALS,UTILITIES,PACKAGING)) or
  libname in (RETURNED,STOCKS)
```

```
order by libname, memname;
```

In the above code, the program is modified so that only a subset of tables in the DEPOTS and SUPPLIER libraries are included in metadata creation. The rest of the program, which does not require any further modifications, is shown below.

5 Save the file using the following command:

```
save metadata.create.metadict.source
```

6 Create the metadata using the following command in SAS:

```
af cat=sashelp.qassist.metadict.scl
```

When the SAS code you edited above is executed, two SAS tables, _ASTDCOL and _ASTDTAB, will be created in the METADATA library. Remember to check the log when this is finished.

7 Run this in a batch job. If this is the first time you are running it in batch, create a SAS program that includes the following code:

```
libname metadata <shared location>;
libname library1 <data source 1>;
libname library2 <data source 2>;
dm af c=sashelp.qassist.metadict.scl;
```

Save the program and execute it in a batch job.

In subsequent batch jobs, add the following macro to ensure that table and column name aliases in the created metadata do not conflict with aliases that have been saved in previous tasks by SAS/ASSIST software. The macro code should be inserted after the libname statements in the code and reads as follows:

```
%let update=Y;
```

Run the batch job each time that the data structure changes. You may want to run it as a scheduled job.

Sample Metadata-Generating Program

The following program is included with SAS/ASSIST software Release 8.2 and can be modified as explained in "Generating Metadata in Batch" on page 10.

```
/*+-----------------------------------------------------------+
  | Name    : SASHELP.QASSIST.METADICT.SOURCE                  |
  | Purpose: Create ASSIST dictionary tables                   |
  | Product: SAS/ASSIST:                                       |
  |                                                            |
  | Note    : This program creates dictionary tables with      |
  |           long names and their alias.                      |
  |           To define the library for Dictinary tables       |
  |           set the macro variable: dictlib                  |
  |           To select libraries in the query manager tables  |
  |           set the macro variable: sellib                   |
  |                                                            |
  |                                                            |
  +-----------------------------------------------------------+*/

%let dictlib=Metadata;
```

```
   /* Output library for query manager tables              */

  %let sellib=('INFORMIX','SASDATA');      /* <--- THIS MUST BE
 CHANGED TO THE ACTUAL LIBNAMES */
  /* Libraries to be excluded in Dictionary tables        */
  /* To select all:                                       */
  /*  %let sellib=('*');                                  */

  %macro upc(macvar,value);
   %global &macvar
   %let &macvar=%upcase(&value);
  %mend;

  /* upcase the value of selllib */
  %upc(sellib,&sellib);
 proc sql;
    create table work.__log
         (db2rc   char(5)  label='Return Code',
          db2msg1 char(70) label='Message-1',
          db2msg2 char(70) label='Message-2',
          db2msg3 char(70) label='Message-3',
          db2msg4 char(70) label='Message-4');
    quit;

 proc sql;
   drop table _astdcol;
   drop table _astdtab;

   create table _astdcol as
   select *
   from dictionary.columns
   where libname in &sellib
   order by libname, memname, name;

   create table _astdtab as
   select *
   from dictionary.tables
   where libname in &sellib
   order by libname, memname;

   alter table _astdtab
    modify crdate format=DATETIME19.,
           modate format=DATETIME19.
    ;

/*  data &dictlib.._astdtab(index=(libname memname) */
   data &dictlib.._astdtab(label="ASSIST Dictionary tables: Table info");

    set _astdtab;
   run;

/*data &dictlib.._astdcol(index=(libname memname name f_lib f_mem) compress=NO */
   data &dictlib.._astdcol(compress=NO label="ASSIST Dictionary tables: Column info");
```

```
      set _astdcol;
      attrib
      index length= $1 format=$1. label="Index"
      f_lib length= $1 format=$1. label="First library"
      f_mem length= $1 format=$1. label="First member"
      ;
      by libname memname;
      f_lib=put(first.libname,1.);
      f_mem=put(first.memname,1.);
      if idxusage eq ' ' then index=' ';
      else index='*';
      if label=' ' then label=name;
   run;
```

Your Turn

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