QUEST Dec2006

Tips and Tricks with MetaData

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Introduction

- Extracting Metadata
- Old way versus new way
- SAS8 v SAS9

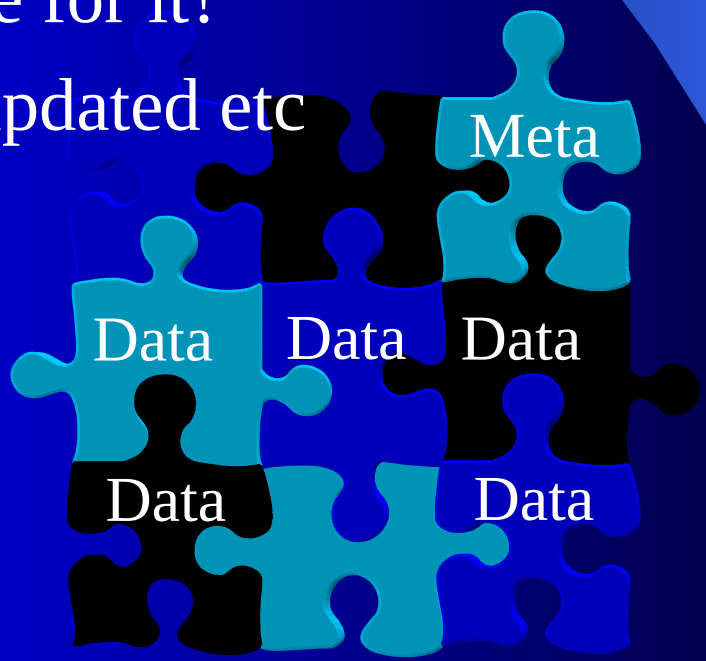
  Or
- Proc Contents v Proc Metadata

Agenda

- Proc Contents
- Proc Metadata

Overview

- We need to know about:
  - What columns does it contain?
  - Who is responsible for it?
  - When was it last updated etc



Vocabulary

- Proc Contents [every SAS programmer should know this one ;-)]
- Metadata
- Metadata Server
- Repository
- XML
- Proc Metadata

Proc Contents

- In basic terms, the only metadata SAS used to store was information on the data itself.
- How many columns, how many rows, type of variable i.e. Numeric or character and what format or label was associated with the column.
- There's more of course but not as much as in SAS9 Metadata.

Proc Contents

```
proc content data = sashelp.class
             nodetails noprint
             out=work.class
             ;
run;
```

Proc Contents

```
ods html;
proc print data=work.class noobs;
           var libname memname
                name type format
                informat
                ;
run;
ods _all_ close;
```

Proc Contents

LIBNAME	MEMNAME	NAME	TYPE	FORMAT	INFORMAT
SASHELP	CLASS	Age	1		
SASHELP	CLASS	Height	1		
SASHELP	CLASS	Name	2		
SASHELP	CLASS	Sex	2		
SASHELP	CLASS	Weight	1		

Alternative to Proc Contents?

```
PROC DATASETS NOLIST NODETAILS;
     CONTENTS DATA=SASHELP.CLASS
     out=work.class
     ;
RUN;
```

Dictionary tables in SAS help via

1. **SQL**
2. **Data step**

Proc Metadata

```
proc metadata in =request
                 out=response;
run;
```

Proc Metadata

- Is it really that easy?
- Well you do need a Metadata Server and the following info:

1. The Metadata machine name ie "server1"
2. The Metadata port number default is 8561
3. A Metadata user id i.e. "sasdemo"
4. A Metadata user password
5. A Metadata repository i.e. "Foundation"

Proc Metadata

```
options
metaserver="server1"
metaport=8561
metauser="sasdemo"
metapass="*******"
metarepository="Foundation"
;

proc metadata in =request
                 out=response;
run;
```

Proc Metadata

- But what is this request thing?
- It’s a SAS filename and we need two (a request and a response)

```
filename request  "request.xml";
filename response "response.xml";
```

Proc Metadata

- But what does request contain?
- It’s an XML request to the SAS Open Metadata Interface (OMI)

Proc Metadata

```
<GetMetadataObjects>
 <!-- repository picked up from option metarepository -->
<Reposid>$METAREPOSITORY</Reposid>
<!-- specify the initial object set -->
<Type>PhysicalTable</Type>
<Ns>SAS</Ns>
<!-- set the OMI_XMLSELECT flag 128 -->
<Flags>128</Flags>
<Options>
<!-- specify a search string in the <XMLSelect> element -->
<XMLSelect search="*[@Name =: 'CLASS']"/>
</Options>
</GetMetadataObjects>
```

Proc Metadata

- So what does it return?
- Not surprisingly, XML, written to the response file.
- Easiest way to read this in SAS is by using the SAS XML mapper by using a libname.

```
filename response "response.xml";
filename SXLEMAP  'SXLEMAP.map';
libname  response  xml xmlmap=SXLEMAP;
```

Proc Metadata

- The XML request looks really cryptic… what's the key?
- Its all down to the IOM flag. In the example above a template is used and a query returns a list of all tables that have 'class' in the name

Proc Metadata

- OMI_ALL (1) -- Gets all of the properties of the requested object and general, identifying information about any objects that are associated with the requested objects.
- OMI_ALL_SIMPLE (8) -- Gets all of the attributes of the requested objects.
- OMI_SUCCINCT (2048) -- Suppresses retrieval of properties that do not contain values or that contain a null value.
- OMI_TEMPLATES (4) -- Instructs the metadata server to look in the <Options> element for one or more user-defined templates that specify which metadata properties to return. The templates are specified in a <Templates> element.

Proc Metadata

To specify a flag in a request add the flag's values together i.e.
if OMI_XMLSELECT (128) is already set and you need:
OMI_GET_METADATA (256)
OMI_ALL_SIMPLE (8)
to retrieve all attribute ssimple add them (128+256+8=392) easy as 123!

Summary

- Proc Metadata can be used to query your Metadata server returns XML that can then be treated as a traditional SAS Dataset for reporting.
- Know what's in your Metadata and even do exception reporting on key fields !

Where to Get More Information

- SAS OnlineDoc
  http://support.sas.com/onlinedoc/913/docMainpage.jsp
- XML Mapper
  http://www2.sas.com/proceedings/sugi29/119-29.pdf