

Paper 394-2008

**A Framework for Using the
SAS® Metadata Server from
SAS® Foundation**

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<i>Introduction</i>	3
<i>Background</i>	3
<i>Framework scenario 1:</i>	4
<i>Running SAS code from the Citrix SAS Foundation client:</i>	4
Metadata server password - maintenance	4
Autoexec.sas in Citrix SAS Foundation Client	4
Metadata libname assignment.....	5
SAS Program and libname utilisation example	6
Conclusion	6
<i>Framework scenario 2.</i>	7
Running Batch jobs in the AIX Platform.	7
Metadata server password - maintenance	7
Autoexec.sas in AIX Foundation.....	7
Metadata libname assignment.....	7
SAS Program and libname utilisation example	8
Conclusion	9
<i>Framework scenario 3.</i>	10
Running in Citrix SAS Enterprise Guide.	10
Appendix	11
Citrix solution:	11
Batch Solution:	12

Introduction

The Customer wants to use the Metadata Server to enable single signon when running sas programs from SAS Foundation. Either the system is running batch jobs, running interactive sas programs from Citrix Metaframe or when using scripts. Single signon means that no passwords are stored in the running code. Using the Metadata Server option in SAS Foundation enables this.

This framework shows how it is accomplished in the current SAS Platform environment at The Customer and through the UNISAS project.

Background

UNISAS project is a project that is moving the processing of SAS from the mainframe to AIX. In mainframe the RACF security is handling the username and password based on the credentials supplied when accessing the system. This means that in the different SAS jobs that are running on the Mainframe there are no passwords stored in the code. When moving the system from Mainframe to AIX the security system is different and username and password need to be presented in the SAS code running.

Utilising the SAS Metadata Server and the metadata data option in the SAS code however will enable submitting and running SAS jobs without presenting the username and password as wanted from the project.

This framework has three scenarios for how to accomplish the described solution. One framework is when a user is utilising Citrix and the SAS Foundation client. Another is when The Customer are running batch jobs in production, and the last is when users are running SAS Code from SAS Enterprise Guide.

Framework scenario 1:

Running SAS code from the Citrix SAS Foundation client:

The framework describes what to do when we a user has moved his Mainframe SAS Code to run interactive within SAS in Citrix:

In Citrix we need to establish an application based on SAS Foundation with an autoexec as outlined below.

Along with this common autoexec file users need to maintain the metadata password so that it matches the password in the Active Directory

Metadata server password - maintenance

The password in the SAS Metadata Server and the AIX servers must be the same. This to enable signon to the metadata server, wich authenticates to the Active Directory server (DNS) in The Customers domain. I have not tested this with different passwords. The userid should also be the same

When a user changes his password in one platform he should change it in both AIX and in the AD. The user must use the SAS Personal Login Manager to update the metadata server with the right password for the different domains.

Autoexec.sas in Citrix SAS Foundation Client

1. The autoexec in the Citrix session does a connection to the AIX server and SAS Server tier through a script file. The user is supplying a username and password for the AIX server. This is necessary to enable the processing capabilities of the host.

There are noe username or password stored anywhere here.

```
/* autoexec start */
/* Signon to SAS Server Tier */

%let server1=10.10.10.10 7553 ;
filename rlink "D:\Program Files\SAS\SAS 9.1\connect\saslink\tcpunix.scr";
options comamid=TCP remote=server1;
signon server1;
```

2. The sciptfile starts sas in the same manner as the SAS Metadata server does it from one of the BI clients. It set up a connection to the metadata server and uses the supplied username and password for authentication and authorisation.

Authorisation is used to decide which resources defined in the metadata server that are accessible for the specific users.

3. As we are to run the SAS code in the AIX SAS Server Tier we need to do a remote submit to the AIX server to do the options metaserver to assign a connection to the SAS Metadata Server.

```

/* We need to run a remote submit to the remote host that the sas code is
to */
/* be executed on. This host is the host that you have logged on when
starting */
/* SAS from Citrix */
/* Along with this we need to make a connection to the metadata host that
stores */
/* metadata about libname and userrights. This is accomplished by using the
options */
/* metadataserver statement */

```

4. Running the code in the AIX has the following prerequisites:

- To gain access you need to have access to the SAS Foundation client in the Citrix Presentation Server.
- You need to have userid and password to logon to the AIX SAS Server Tier machine.

Metadata libname assignment

5. In SAS programs for each users there are some necessary changes needed in the SAS programs:

As the demand is to use the SAS Metadata Server assigned libname because we need to enable Single Sign On. This means that users need to change how they assign libname in the SAS code. We need to change the engine to META and point to the registered library name in the SAS Metadata Server. Along with this a repository name is needed if – there are more than the Foundation repository represented in the metadata.

The registration of libname in SAS Metadata Server should follow a certain standard so that The Customer doesn't need to register several libnames for the same physical location in the AIX SAS Server Tier.

```

rsubmit;

/* SAS Program assigns libname with meta engine */
/* Using the SAS Metadata Engine in the libname means that we can */
/* assign libnames */
/* without sending username and password along with the libname */
/* statement */
/* The username and password is fetched from the metadata server */
/* You will not gain access to anything that you have don't */
/* have authorization to */
/* within the metadata server */
/* You need to assign the library with the name that is */
/* available in the SAS Metadata Server */
/* Remember that case sensitivity could be an issue in AIX */

/* DB2 Tables in Mainframe and DB2 */
libname prod meta library="prod" reaname=Foundation;

/* SQL Server SWR10634 */
libname wp meta library="WP_DW" reaname=Foundation;

endrsubmit;

```

6. If you want to browse the data in the assigned libnames from AIX SAS Server Tier you must assign a local slibref.

```
/*If you want the libname available to access the data to */  
/* view content you need too assing a slibref */  
libname prod slibref=prod server=server1;  
libname wp slibref=wp server=server1;
```

SAS Program and libname utilisation example

7. The sas prog just references the libname assigned above.

```
/* SASPROG */  
rsubmit;  
data test;  
  set wp.dimClaimAge;  
run;
```

Conclusion

This framework will work for many users who are doing analytics and are developers working with SAS.

Framework scenario 2.

Running Batch jobs in the AIX Platform.

The framework describes what to do when The Customer are running batch jobs in the AIX server after the move of SAS programs from the Mainframe SAS Code to run in batch within SAS in AIX server using Control M as batch module:

The solution is similar to the one in Citrix, we need to establish an application based on SAS Foundation with an autoexec as outlined below.

Along with this common autoexec file users need to maintain the metadata password so that it matches the password in the Active Directory

Metadata server password - maintenance

The password in the SAS Metadata Server and the AIX servers must be the same. This to enable signon to the metadata server, which authenticates to the Active Directory server (DNS) at The Customer's domain. I have not tested this with different passwords. The userid should also be the same

When a user changes his password in one platform he should change it in both AIX and in the AD. The user must use the SAS Personal Login Manager to update the metadata server with the right password for the different domains.

Autoexec.sas in AIX Foundation

1. The SAS Session running in the AIX does not need a connection to the AIX server and SAS Server tier because it is already processing in the AIX server. There are no username or password stored anywhere here.

2. As we are processing the batch program in the AIX all we need to do is to establish a SAS session using the following start command. It set up a connection to the metadata server and uses the supplied username and password for authentication and authorisation.

Authorisation is used to decide which resources defined in the metadata server that are accessible for the specific users.

3. Start command in control-M:

```
/usr/local/Config/Lev3/SASApp/sas.sh with some additional sysin parameters
```

4. Running the code in the AIX has the following prerequisites:

- You need to have userid and password to logon to the SAS Metadata Server. The technical userid for batch jobs must be registered in the metadata server.

Metadata libname assignment

5. In SAS programs for each users there are some necessary changes needed in the SAS programs:

As the demand is to use the SAS Metadata Server assigned libname because we need to enable Single Sign On. This means that users need to change how they assign libname in the SAS code. We need to change the engine to META and point to the registered library name in the SAS Metadata Server. Along with this a repository name is needed if – there are more than the Foundation repository represented in the metadata.

The registration of libname in SAS Metadata Server should follow a certain standard so that The Customer doesn't need to register several libnames for the same physical location in the AIX SAS Server Tier.

```
/* SAS Program assigns libname with meta engine */
/* Using the SAS Metadata Engine in the libname means that we can */
/* assign libnames without sending username and password along with */
/* the libname statement */
/* The username and password is fetched from the metadata server */
/* You will not gain access to anything that you have don't */
/* have authorization to within the metadata server */
/* You need to assign the library with the name that is available */
/* in the SAS Metadata Server */
/* Remember that case sensitivity could be an issue in AIX */

/* DB2 Tables in Mainframe and DB2 */
libname prod meta library="prod" rename=Foundation;

/* SQL Server SQLSERV1 */
libname wp meta library="WP_DW" rename=Foundation;
```

SAS Program and libname utilisation example

6. The sas prog just references the libname assigned above.

```
/* SASPROG */
rsubmit;
data test;
  set wp.dimClaimAge;
run;
endrsubmit;
```


Conclusion

This framework will work for batch use.

There must be some investigation on how control-M and SAS works together and how the solution is to be implemented. I believe that this is accomplished through testing.

The project showed that this worked very fine, though there are some return codes from SAS that must be allowed so that control-M doesn't report an error. Typically this is WARNINGS from SAS.

Framework scenario 3.

Running in Citrix SAS Enterprise Guide.

As SAS Enterprise Guide in it self is supporting the use of the SAS Metadata Server this is the recommended way of developing projects and SAS code in the new era of SAS9 platform.

The system in it self knows which hosts that it must submit code to to perform the necessary processing of data and the user can either use the code editor as in SAS Foundation client or use the point and click interface with several wizards available for common tasks.

Getting started with SAS Enterprise Guide will be tremendous regarding not needing to do education twice for end users.

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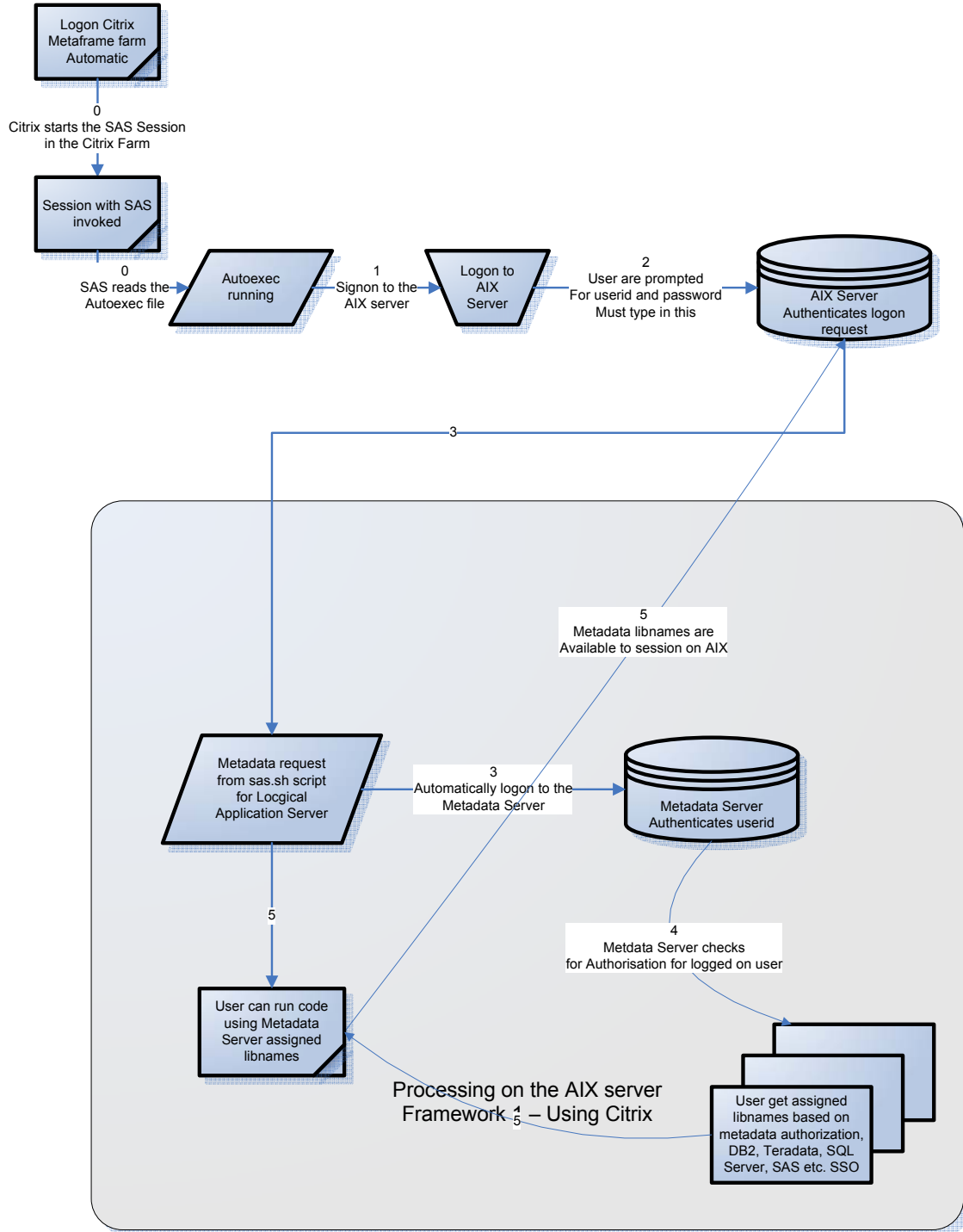
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Appendix

Information flow figure:

Citrix solution:



Batch Solution:

