## Implementing a SAS<sup>®</sup> Metadata Server Configuration for Use with SAS<sup>®</sup> Enterprise Guide<sup>®</sup>

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SAS Enterprise Guide can access two types of backend SAS servers:

- a server administered by a SAS Enterprise Guide repository. This server uses an Object Spawner and a SAS Workspace Server. The server itself is used for all administrative tasks (for example, defining libraries, users, and servers) that are performed in the SAS Enterprise Guide Administrator.
- a server administered by a SAS<sup>®</sup> Metadata Repository. This server uses a SAS Metadata Server to define and configure supporting servers, users, and libraries.

This document explains how to install a server administered by a SAS Metadata Repository as a backend server for your SAS Enterprise Guide client machines. The installation information in this document is taken from the <u>SAS® 9.1.3 Intelligence</u> <u>Platform: Installation Guide, Fifth Edition.</u>

If you plan to use a server administered by a SAS Enterprise Guide repository, see <u>Quick Start: Object Spawner and Workspace Server with a Basic SAS®9 Foundation</u> <u>Install</u> (TS-721) for instructions on how to configure the SAS Object Spawner.

### Step 1: Setting Up Required Users and Groups

Before you install and configure your software, you must create a set of required user accounts. These accounts perform specialized functions and help maintain the server. The user accounts (Table 1) are normally local to the server, although domain accounts are allowed in a Windows environment.

Required Accounts	Recommended Account ID
SAS Administrator	SASADM
SAS Trusted User	SASTRUST
SAS Demo User	SASDEMO
SAS General Server	SASSRV
SAS Guest User	SASGUEST
SAS Installer (for UNIX hosts only)	SAS

Table 1. User Accounts Required for Installing and Configuring the Software

#### Windows Operating Systems Only

You need to create a group called SAS Server Users and add the accounts listed previously in Table 1. Then follow these steps to assign the user right **Log on as a batch** job to that group:

- Select Start ► Settings ► Control Panel ► Administrative Tools ► Local Security Policy.
- 2. In the Local Security Settings window, expand Local Policies in the left pane and click User Rights Assignment.

F Local Security Sett	ings			<u> </u>
File Action View Help				
Security Settings	Policy A	Security Setting		
	Access this computer from t	Everyone ACENE		
	Access this computer from t	Everyone, ASPINE		
🚊 词 Audit Policy	Add workstations to domain			
- 📬 User Rights Assignt	Adjust memory guotas for a	LOCAL SERVICE		
🗊 词 Security Options	Allow logon through Termina	Administrators.R		
I Public Key Policies	Back up files and directories	Administrators, B		
E Software Restriction Pu	Bypass traverse checking	Everyone,Admini		
🕀 🎩 IP. Security Policies on	BChange the system time	Administrators,P		
	👪 Create a pagefile	Administrators		
	👪 Create a token object			
	💐 Create global objects	Administrators,I		
	Create permanent shared ob			
	Bebug programs	Administrators		
	Deny access to this compute	SUPPORT_3889		
	Beny logon as a batch job			
	Beny logon as a service			
	Beny logon locally	SUPPORT_3889		
	Beny logon through Terminal	ASPINET		
	Enable Computer and user a	Administrators		
	Conce shuttown from a rem			
	molecular security adults	ASPNET Adminis		
	Contraction and a cherical additional additional and a cherical additional additadditional additional additional additional addition	Administrators		
	load and unload device drivers	Administrators		
	Cock pages in memory			
	Log on as a batch job	SUPPORT_3889		
	BLog on as a service	NETWORK SERV		
	🕮 Log on locally	Guest,Administr		-

Display 1. Selecting User Rights Assignment in the Local Security Settings Window

3. Click **Log on as a batch job** in the right pane to display the Log on as a batch job Properties dialog box.

Log on as a batch job Properties	? ×
Local Security Setting	
Log on as a batch job	
ASPNET SUPPORT_388945a0	
Add User or Group Remove	
OK Cancel	Apply

Display 2. Log on as a batch job Properties Dialog Box

4. On the **Local Security Setting** tab, click **Add User or Group** to display the Select Users or Groups dialog box. Enter your information in the fields and click **OK** to return to the Log on as a batch job Properties dialog box.

Select Users or Groups	<u>? ×</u>
Select this object type:	2010 - 2013
Users or Built-in security principals	Object Types
From this location:	
path-name	Locations
Enter the object names to select ( <u>examples</u> ):	
[DMT] SASADM ID (sasadm@SAS.COM)	Check Names
1	
Advanced	OK Cancel

Display 3. Adding User Information in the Select Users or Groups Dialog Box

5. Make sure your new group appears in the box on the Local Security Setting tab and click OK.

Log on as a batch job Properties	<u>? ×</u>
Local Security Setting	
Log on as a batch job	
ASPNET domain\sasadm SUPPORT_388945a0	
Add User or Group Remove	
OK Cance	el Apply

*Display 4.* Checking Your Group Information on the Local Security Setting Tab Copyright © 2007, SAS Institute Inc. All rights reserved.

# Step 2: Installing Software Using the SAS<sup>®</sup> Software Navigator

To install your software, you must have your SAS Installation Data (SID) file. The SID was sent in an e-mail to your site representative. Once you have the SID, you can begin installation, as follows:

- Log on to the machine as a member of the Administrators group if you are working on a Windows machine and as the SAS Installer (SAS) if you are working on a UNIX machine. (Note: We strongly recommend that you do not log on as ROOT in order to install platform components on a UNIX system.)
- 2. Start the SAS<sup>®</sup> Software Navigator from the CD in the *Deployment Tools* chapter of your binder or from the highest-level directory in your software depot. (A *depot* is a network location of CD copies that you may have instead of physical CDs.) Invoke SETUP.EXE in Windows and ./SETUP.SH in UNIX.
- 3. Select the language that you want SAS Software Navigator to use to display text.

G Choose Language	X
Select a language for the SAS Software Navigator.	
English	-
OK Cancel	

*Display 5.* Choosing a Language

4. Select **Personal** for the type of installation you want to perform.



Display 6. Selecting the Type of Installation to Perform

5. Specify the location of the SID file that contains information about the software that you have licensed for the current machine.

SAS Software Navigator		×
	Retrieve your SAS Installation Data	
	Specify the file location for your SAS Installation Data:	
	M:\shipped\SAS_9.1.3_TS1M3_SE17_SP3\sas91_100755_everything.txt Browse	
$N = V \square$		
Help	Cancel < Back Next > Finish	1

Display 7. Specifying the Location of the SAS Installation Data

6. Click **Next** to accept the SID information.

- 7. Select the SAS Enterprise Guide sample plan by
  - a. choosing the **Select a standard plan** radio button.
  - b. selecting the plan named SAS Foundation and Enterprise Guide
  - one machine. Then click Next.

SAS Software Navigator		×
	Select a deployment plan	
	SAS Foundation and Enterprise Guide, one machine	
	Details of the selected plan:	
	Enterprise Guide and Metadata Server and Workspace Server and Stored Process Server	
	SingleMachine	
	Software to Install	
	1. SAS 9.1 Foundation     2. SAS Management Console     3. SAS Foundation Services     4. SAS Enterprise Guide     Software to Configure     1. SAS Metadata Server     2. SAS Workspace Server     2. SAS Workspace Server	
	3. SAS Stored Process Server 4. SAS Object Spawner	
Help	Cancel < Back Next > Finish	

Display 8. Selecting the SAS Enterprise Guide Sample Plan

Continue with the rest of the installation prompts (pages 56-60 in <u>SAS® 9.1.3</u> <u>Intelligence Platform: Installation Guide, Fifth Edition</u>; default options are sufficient) until you get to the SAS Configuration Wizard.

## Step 3: Configuring Software Using the SAS Configuration Wizard

Before you continue, see the following table for the default ports that are used by your SAS servers. You need to verify that these default ports are free for use on your system.

Server or Spawner	Default Port
SAS Metadata Server	8561
SAS Object Spawner: operator port	8581
SAS Object Spawner: load balancing port	8571
SAS Workspace Server	8591
SAS Stored Process Server: connection	
	8601
SAS Stored Process Server: load balancing	
connection 1	8611
SAS Stored Process Server: load balancing	0004
connection 2	8621
SAS Stored Process Server: load balancing	9624
connection 3	0031

Table 2. Default Port Numbers Used by SAS Servers

Then you can continue with the configuration, as follows. **Note:** If the wizard prompts you with a choice between **Single Account** and **Multiple Accounts**, choose **Multiple Accounts**.

- 1. The SAS Configuration Wizard first prompts you for the location of a configuration directory. As the wizard explains, in the location that you specify, the wizard will create a set of directories and files that you will use in the management of the system. The default value, C:\SAS\EGSERVERS, is fine.
- On Windows systems, you must specify whether you want to run servers such as the Metadata Server and Object Spawner as Windows services. In the SAS Server Configuration Options dialog box, select Run as services (recommended).



Display 9. Specifying the Servers to Run as Services

3. Then click **Next** to display the Enter SAS Metadata Server Information dialog box (Display 10). In the **SAS Metadata Server Host Name** field, enter the **full name** of the machine that is hosting the Metadata Server and the port on which the server will listen for requests.

🗑 SAS Configuration Wizar	
	Enter SAS Metadata Server Information
Sas. The Power to Know,	Enter the host name and port number of the SAS Metadata Server.
	SAS Metadata Server Host Name
	sas-hostname
$-f \wedge f \neq f$	SAS Metadata Server Port Number
	8561
and the second se	
InstallAnywhere by Zero G	
Cancel	Back Next

Display 10. Entering the SAS Metadata Host Name and Port Number

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4. The default value **should** be the machine on which you are installing. Keep this default value and click **Next**, which displays a screen where you enter the SAS Application Server name. In general, it is best to use the default name **SASMain**.

🐙 SAS Configuration Wizard	
· · · · · · · · · · · · · · · · · · ·	Enter SAS Application Server Information
<b>S</b> SAS. The Power to Know,	Enter the name of your existing SAS Application Server. This name must match an existing SAS Application Server definition.
	SAS Application Server Name
	SASMain
InstallAnywhere by Zero G	
Cancel	Previous

Display 11. Entering the Application Server Name

5. The next set of dialog boxes that appear prompts you for the credentials for the accounts that you created in Step 1. (You get a new screen for each account that you created.) Please type carefully to ensure proper account name and password values because it is difficult to change them after they are entered and the installation is complete. For Windows, supply the name as *domain\userid* if the account is on a domain server or *machinename\userid* if the account is local. The wizard provides default values and descriptions to help you understand which account is needed for each prompt.

👫 Repositor	y Manager			_ 🗆 🗙
Repositories	Repositories			
Updates	Name 🛆	Туре	Machine	Add
	ITConfig Metadata Repo	SAS Metadata Repository	machine-name	
	Local	Enterprise Guide Repository	localhost	Modify
				Delete
				Set active
				A
				<b>v</b>
				Cancel

*Display 12.* First Dialog Box for Entering Credentials for the Accounts Created in Step 1

6. Click **Next** in the Advanced Properties dialog box and complete the Configuration Wizard interview.

### Step 4: Using Scripts to Complete Configuration

The fastest (and safest) way to finish your configuration of the system is to run the scripts referred to in the INSTRUCTIONS.HTML file.

**Note:** Be sure to follow any instructions that precede the first reference to a script. For example, on your Metadata Server machine, you need to define your metadata repository manually before running the first script.

Perform the following steps until you reach the end of the file:

1. Execute the script referred to in the instructions. On Windows systems, you execute each script by clicking on a link. The following display shows a portion of the INSTRUCTIONS.HTML document with a script link:

#### Defining Users to the Metadata

You can run this step automatically by selecting this link: <u>c:\SAS\EGServers\LevI\Utilities\MetadataDeployment\bin\loadUsers.bat Once</u> the step completes successfully, <u>proceed to the next step</u>.

In the SAS Management Console, you must define the initial set of users to the metadata. To do this, use the User Manager <u>Plugin</u>.

The following list provides a high level overview of the steps. For detailed information about creating Users and Groups, see the User Manager plugin help, by highlighting the User Manager node in the SAS Management Console, and then selecting Help -> Help on User Manager from the toolbar.

Figure 1. A Portion of the INSTRUCTIONS.HTML File that Contains the Configuration Scripts

On UNIX systems, you must submit each script from a prompt in a terminal window. **Be sure that you do not run a script more than once.** 

- 2. Immediately following the reference to the script is a link that says **proceed** to **the next step** (see Figure 1). Click this link, which takes you to the step that follows the last step performed by the script.
- If the next item in the instructions is a script, return to Step 1. Otherwise, manually perform any instructions that precede the next script; then return to Step 1.

SAS<sup>®</sup> Management Console is invoked at the same time that INSTRUCTIONS.HTML is displayed in your Web browser. Use SAS Management Console to verify the work you performed with the scripts from INSTRUCTIONS.HTML. Expand **User Manager**, **Server Manager**, **SASMain**, and so on to make sure that the metadata was created. Also be sure to test your SAS Workspace Server and the Stored Process Server using the steps described at the end of the INSTRUCTIONS.HTML file.

### Step 5: Adding Users to the System

Next, add to the system any other users from your site who will be using SAS Enterprise Guide.

- If the user does not already have an operating system account that will enable the SAS Metadata Server host to authenticate that person, you must create an account. This account enables the user to connect to the Metadata Server. On Windows, add these accounts to the SAS Server Users group that you created in the operating system. Adding these accounts automatically assigns the required user right (Logon as a batch job).
- 2. If the user needs a metadata identity so that the Metadata Server can grant or deny the user access to metadata objects, you must create a metadata object that represents this user. One required piece of information that you store is the user ID that this person will use to connect to the Metadata Server.

**Note:** If a user needs to access servers other than the Metadata Server, you might want to specify both a user ID and a password in the metadata so the user will not be prompted every time a server session is needed.

## Step 6: Configuring Servers for SAS<sup>®</sup> Enterprise Guide<sup>®</sup> on Any Client Machines

If your machine runs a Windows operating system, the previous steps installed SAS Enterprise Guide on that machine. In that case, you can use this installation as your first client and then configure it to ensure proper connectivity. The following sections explain how to configure your servers for connectivity with SAS Enterprise Guide on any client Windows machine.

#### Configuring SAS® Enterprise Guide® 4.1

Follow these steps to configure your servers for SAS Enterprise Guide 4.1:

- 1. Open SAS Enterprise Guide.
- Select Tools ► Options ► Administration ► Repository and Server.

Options		×
General	Administration > Repository and Server	
Project Views Results General Viewer HTML RTF PDF	Automatically add local SAS server to server list if available     Automatically update repository configuration     Repository     UTConfig Metadata Repository	
SAS Report Graph Stored Process	Default SAS server: SASMain	_
Data Data General Performance Query OLAP Cube Query Data Table and Graph Tasks Tasks General Custom Code Output Library SAS Programs	SAS Server Description SASMain test1 test2	
Security Administration Repository and Server Transfer Mode E-mail Settings	More (F1)	
Reset All	OK Cance	

Display 13. Selecting the Repository and Server Screen from the Options Dialog Box

In the Repository and Server dialog box (Display 13), click **Manage** to display the Repository Manager.

3. In the Repository Manager, select the **ITConfig Metadata Repository** listing.

odates	Name 🛆		Machine	bbA
	ITConfig Metadata Repo	SAS Metadata Repository	machine-name	
	Local	Enterprise Guide Repository	localhost	Modify Delete
				Set activ

Display 14. Selecting the ITConfig Metadata Repository Listing

Then click **Modify** to display the Modify Repository dialog box.

- 4. In the Modify Repository dialog box, verify that the repository is defined as follows:
  - Machine: The Remote radio button is checked and the Metadata Server's machine name has been typed in.
  - **Port:** 8561
  - User ID: Use SASDEMO for testing or the valid user ID of a production client.
  - **Password:** Use the password for the user ID (**SASDEMO** or a valid production client user ID) that you use.

🚺 Modify Repository	
Name:	
ITConfig Metadata Repository	
Description:	
Туре:	
SAS Metadata Repository	v
Machine	
Remote     O Local	Port
machine-name	8561
User:	Password:
SASDEMO	*****
SAS Metadata Repository Name:	
Foundation	Browse
Clear	Save Cancel

Display 15. Verifying Information in the Modify Repository Dialog Box

Then click **Browse** to connect to the Select Repository dialog box.

5. In the Select Repository dialog box, select **Foundation** and click **OK** to return to the Modify Repository dialog box.

Select R	epos	sitory	/		×
Foundation					
	_		_		
		OK		Cance	

*Display 16.* Selecting the Foundation Repository

- 6. In the Modify Repository dialog box, click **Save**, which takes you back to the Repository Manager dialog box.
- 7. In the Repository Manager, click **Set Active**. Then close both the Repository Manager and the Options dialog boxes.

Now you can test your connection in SAS Enterprise Guide by selecting **View** ► Servers and attempting to expand the SASMain Server list. You can also test it by opening a new code node and submitting a simple program, such as the following PRINT procedure:

```
proc print data=sashelp.class;
run;
```

Then, run the code on the SASMain Server. If there is a problem with the connection, you will receive an error message.

#### Configuring SAS® Enterprise Guide® 3.0

Follow these steps to configure your servers for SAS Enterprise Guide 3.0:

1. Open the SAS Enterprise Guide Administrator.

📕 Enterprise Guide Administrator [Loca	al]					
File View Edit Mode Tools Help						
1 🛱 🚅   X 🖻 🖻 🗎 🗎 🔿 🔶   X	2 12					
		[	1-	[- · · ·	[	
Enders	Name	Description	Туре	Protocol	Hostname	UACC
⊕ inders Channels ⊕ û Users ⊕ û Groups		User's local machine	Exec	Local	Local	Yes
	1					
No object colocted						udmin Mode
INO ODJECT SEIECTED					A	amin Mode //

Display 17. Opening the SAS Enterprise Guide Administrator

- 2. Select **File** ► **Manage Repositories** to display the Repository Manager.
- 3. In the Repository Manager, select the **ITConfig Metadata Repository** listing.

🔓 Reposito	ry Manager			<u> </u>
Repositories	Repositories			
Updates	Name 🛆	Туре	Machine	Add
~	ITConfig Metadata Repo	SAS Metadata Repository	machine-name	
	Local	Enterprise Guide Repository	localhost	Modify
				Delete
				Set active
				- -
				Cancel

Display 18. Selecting the ITConfig Metadata Repository Listing

Then click **Modify** to display the Modify Repository dialog box.

- 4. In the Modify Repository dialog box, verify that the repository is defined as follows:
  - Machine: The Remote radio button is checked and the Metadata Server's machine name has been typed in.
  - **Port:** 8561
  - User ID: Use SASDEMO for testing or the valid user ID of a production client.
  - **Password:** Use the password for the user ID (**SASDEMO** or a valid production client user ID) that you use.

🚺 Modify Repository	<u>- 🗆 ×</u>
Name:	
ITConfig Metadata Repository	
Description:	
Туре:	
SAS Metadata Repository	Υ.
_ Machine	
Remote     C Local	Port:
machine-name	8561
User:	Password:
SASDEMO	*****
SAS Metadata Repository Name:	
Foundation	Browse
Clear S	ave Cancel

Display 19. Verifying Information in the Modify Repository

Then click **Browse** to connect to the Select Repository dialog box.

5. In the Select Repository dialog box, select **Foundation** and click **OK** to return to the Modify Repository dialog box.

Select R	epository	×
Foundation		
	04	Canad

Display 20. Selecting the Foundation Repository

- 6. In the Modify Repository dialog box, click **Save**, which takes you back to the Repository Manager dialog box.
- 7. In the Repository Manager, click **Set Active**. Then close both the Repository Manager and the SAS Enterprise Guide Administrator dialog boxes.

Now you can test your connection in SAS Enterprise Guide by selecting **View** ► Servers and attempting to expand the SASMain Server list. You can also test it by opening a new code node and submitting a simple program, such as the following PRINT procedure:

```
proc print data=sashelp.class;
run;
```

Then, run the code on the SASMain Server. If there is a problem with the connection, you will receive an error message.

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