



THE  
POWER  
TO KNOW.

# **SAS® Model Manager 2.3**

## **Administrator's Guide**



The correct bibliographic citation for this manual is as follows: SAS Institute Inc. 2010. *SAS® Model Manager 2.3: Administrator's Guide*. Cary, NC: SAS Institute Inc.

**SAS® Model Manager 2.3: Administrator's Guide**

Copyright © 2010, SAS Institute Inc., Cary, NC, USA

All rights reserved. Produced in the United States of America.

**For a hardcopy book:** No part of this publication may be reproduced, stored in a retrieval system, or transmitted, in any form or by any means, electronic, mechanical, photocopying, or otherwise, without the prior written permission of the publisher, SAS Institute Inc.

**For a Web download or e-book:** Your use of this publication shall be governed by the terms established by the vendor at the time you acquire this publication.

**U.S. Government Restricted Rights Notice:** Use, duplication, or disclosure of this software and related documentation by the U.S. government is subject to the Agreement with SAS Institute and the restrictions set forth in FAR 52.227–19 Commercial Computer Software-Restricted Rights (June 1987).

SAS Institute Inc., SAS Campus Drive, Cary, North Carolina 27513.

1st electronic book, August 2010

SAS® Publishing provides a complete selection of books and electronic products to help customers use SAS software to its fullest potential. For more information about our e-books, e-learning products, CDs, and hard-copy books, visit the SAS Publishing Web site at [support.sas.com/publishing](http://support.sas.com/publishing) or call 1-800-727-3228.

SAS® and all other SAS Institute Inc. product or service names are registered trademarks or trademarks of SAS Institute Inc. in the USA and other countries. ® indicates USA registration.

Other brand and product names are registered trademarks or trademarks of their respective companies.

---

# Contents

<i>About This Book</i> . . . . .	<i>v</i>
<i>What's New in SAS Model Manager 2.3</i> . . . . .	<i>vii</i>
<i>Recommended Reading</i> . . . . .	<i>ix</i>
<b>Chapter 1 • Introduction to SAS Model Manager Administrator's Guide</b> . . . . .	<b>1</b>
Overview of SAS Model Manager Administration . . . . .	1
Accessibility Features of SAS Model Manager . . . . .	1
<b>Chapter 2 • Preparing SAS Model Manager for Use</b> . . . . .	<b>3</b>
Overview of Preparing SAS Model Manager for Use . . . . .	3
Post-Installation Verification and Configuration of SAS Model Manager . . . . .	3
Configuring the Dashboard Reports Directory . . . . .	5
Preparing a Database to Use with SAS Model Manager . . . . .	5
<b>Chapter 3 • Setting Up SAS Management Console for Use</b> . . . . .	<b>9</b>
Overview of Setting Up SAS Management Console for Use with SAS Model Manager . . . . .	9
Configuring a SAS Model Manager Connection Profile for the SAS Metadata Repository . . . . .	10
Configuring Users, Groups, and Roles . . . . .	14
Create Model Manager Libraries in SAS Management Console . . . . .	25
Creating a New Table Using SAS . . . . .	29
Registering a Table Using SAS Management Console . . . . .	29
Verify Accessibility of Data Tables in SAS Model Manager . . . . .	32
<b>Chapter 4 • Creating and Configuring Publication Channels</b> . . . . .	<b>35</b>
Overview of Creating and Configuring Publication Channels . . . . .	35
Define an HTTP or HTTPS Server . . . . .	37
Define Publish Locations for the SAS Content Server . . . . .	41
Configuring Channels and Subscribers for SAS Model Manager . . . . .	43
Create a Channel Folder . . . . .	44
Create a New Channel . . . . .	46
Create a New Subscriber . . . . .	49
<b>Chapter 5 • Managing Data Tables, Users, Groups, and Roles in SAS Management Console</b> <b>55</b>	
Overview of Managing Data Tables, Users, Groups, and Roles in SAS Management Console . . . . .	55
Modifying a Data Table . . . . .	55
Deleting a Data Table . . . . .	56
Managing Users, Groups, and Roles . . . . .	57
<b>Chapter 6 • Administering User Templates</b> . . . . .	<b>59</b>
Overview of Administering User Templates . . . . .	59
Creating or Modifying XML Template Files . . . . .	60
Deploying User Templates . . . . .	64
<b>Appendix 1 • Properties</b> . . . . .	<b>65</b>
Life Cycle Template Properties . . . . .	65
Model Template Properties . . . . .	68

<b>Glossary</b> .....	<b>73</b>
<b>Index</b> .....	<b>77</b>

# About This Book

---

## Audience

SAS Model Manager Administration is for the following users:

- Those who are responsible for administering SAS Model Manager.
- Those who are responsible for administering the SAS Metadata Repository for use with SAS Model Manager.

You might be assigned to a specific user group or role. That assignment determines which tasks you can perform. For more information, see [“Configuring Users, Groups, and Roles” on page 14](#).

---

## Prerequisites

Here are the prerequisites for administering SAS Model Manager:

- The following software must be installed on your computer:
  - SAS Management Console 9.2
  - SAS Model Manager Client 2.3
  - Java Runtime Environment v1.5.0\_12
- You must have a user ID and password for logging in to SAS Management Console and SAS Content Server Administration Console.

---

## Conventions Used in This Document

The following typographical conventions are used for all text in this document except for syntax:

**bold**

identifies an item in the SAS Model Manager window or a menu item.

*italics*

identifies a book title or a value that is supplied by the user.

**monospace**

identifies SAS code.

UPPERCASE

identifies a SAS language element, such as the SAS statements KEEP or DROP.

The following typographical conventions are used in syntax:

**bold**

identifies the name of a macro.

*italic*

identifies an argument that must be supplied by the user.

< >

identifies an optional macro argument.

| (vertical bar)

indicates that you can choose one value from a group. Values that are separated by the vertical bar are mutually exclusive.

UPPERCASE

indicates a keyword that can be used as a value for an argument.

# What's New in SAS Model Manager 2.3

---

## Overview

The *SAS Model Manager: Administrator's Guide* contains new and updated administrative tasks that are associated with SAS Model Manager.

SAS Model Manager administrative tasks have the following new features and enhancements:

- additional support for SAS Model Manager In-Database Scoring
- configuration of the dashboard reports directory

---

## Additional Support for SAS Model Manager In-Database Scoring

SAS Model Manager now provides additional support for publishing projects to DB2 and Netezza databases, as well as for executing the published project's score code. Information about how to prepare a database for use with SAS Model Manager is included in the guide.

---

## Configuration of the Dashboard Reports Directory

Before you can use SAS Model Manager Dashboard Reports, you must configure a dashboard reports directory on the SAS Workspace Server. Information about how to configure a dashboard reports directory is included in the guide.





# Recommended Reading

---

- *SAS Model Manager 2.3: User's Guide*
- *Administrator's Guide for SAS Analytics Platform*
- *SAS 9.2 Publishing Framework: Developer's Guide*
- *SAS 9.2 Intelligence Platform: Desktop Application Administration Guide*
- *SAS 9.2 Intelligence Platform: System Application Administration Guide*
- *SAS 9.2 Intelligence Platform: Web Application Administration Guide*

For a complete list of SAS publications, go to [support.sas.com/bookstore](http://support.sas.com/bookstore). If you have questions about which titles you need, please contact a SAS Publishing Sales Representative at:

SAS Publishing Sales  
SAS Campus Drive  
Cary, NC 27513  
Telephone: 1-800-727-3228  
Fax: 1-919-531-9439  
E-mail: [sasbook@sas.com](mailto:sasbook@sas.com)  
Web address: [support.sas.com/bookstore](http://support.sas.com/bookstore)

**x** *Recommended Reading*

## Chapter 1

# Introduction to SAS Model Manager Administrator's Guide

---

<b>Overview of SAS Model Manager Administration</b> . . . . .	<b>1</b>
<b>Accessibility Features of SAS Model Manager</b> . . . . .	<b>1</b>

---

## Overview of SAS Model Manager Administration

The *SAS Model Manager: Administrator's Guide* explains how to prepare SAS Model Manager for use and how to manage information that is associated with SAS Model Manager. The administrator uses SAS Management Console to access metadata repositories that store information about SAS Model Manager users, libraries, data tables, and the Publishing Framework. Frequently used administrative and configuration tasks are included in this guide to provide guidance after the SAS Model Manager installation process is completed. The high-level tasks include the following:

- Completing installation and configuration verification steps for SAS Model Manager
- Preparing Teradata for use with SAS Model Manager
- Setting up SAS Management Console for use with SAS Model Manager
- Creating and configuring published channels
- Managing data tables, users, groups and roles
- Administering user templates

---

## Accessibility Features of SAS Model Manager

This product has not been tested for compliance with U.S. Section 508 standards. If you have specific questions about the accessibility of SAS products, send them to [accessibility@sas.com](mailto:accessibility@sas.com) or call SAS Technical Support.



## Chapter 2

# Preparing SAS Model Manager for Use

---

<b>Overview of Preparing SAS Model Manager for Use . . . . .</b>	<b>3</b>
<b>Post-Installation Verification and Configuration of SAS Model Manager . . . . .</b>	<b>3</b>
<b>Configuring the Dashboard Reports Directory . . . . .</b>	<b>5</b>
<b>Preparing a Database to Use with SAS Model Manager . . . . .</b>	<b>5</b>
Overview of Preparing a Database to Use with SAS Model Manager . . . . .	5
Locating the Installation Directory . . . . .	6
Configuring a Database . . . . .	6
Finding the JDBC JAR Files . . . . .	7
Providing the Java Scoring API to Developers . . . . .	7

---

## Overview of Preparing SAS Model Manager for Use

After installing and configuring SAS Model Manager, additional tasks must be performed to prepare SAS Model Manager for use.

- Verify that all installation and configuration steps have been completed. Perform any required additional configuration steps for the installed SAS solutions.
- If necessary, prepare a database to use with SAS Model Manager.

*Note:* This task needs to be performed only if you have the SAS Scoring Accelerator installed.

For more information about installation and configuration, see the SAS Knowledge Base/Install Center at <http://support.sas.com/documentation/installcenter/>.

---

## Post-Installation Verification and Configuration of SAS Model Manager

After you install SAS 9.2 and SAS Model Manager 2.3 using SAS Software Depot, additional configuration steps must be performed before you can use SAS Model Manager.

1. Verify that all installation and configuration steps in the instructions.html file have been completed. The instructions.html file is located in `\sasconfigdir\Lev#\Documents\`.

2. Verify that all users who were created during the installation process to use SAS Model Manager are granted the appropriate permissions to the SAS Workspace Server. In a Windows environment, the user right assignment is **Log on as a batch job** for local security policies. The default user who is created during the installation is the SAS Model Manager Administrator (**mdlmgadmin**).
3. If you are installing with DB2, configure the SSH client software for use with SFTP. For more information, see [TS-800](#).
4. Configure a dashboard reports directory on the SAS Workspace Server. For more information, see “[Configuring the Dashboard Reports Directory](#)” on page 5.
5. If you have installed SAS Model Manager to use with SAS Enterprise Miner, you must access the SAS Content Server and create a public directory for SAS Enterprise Miner to register a model SAS package (SPK) file. To create a SAS Content Server public directory, follow these steps:
  - a. Access the SAS Content Server Administration Console by entering **http://hostname:port/SASContentServer/dircontents.jsp**. An example of **hostname:port** is **localhost:8080**. Log in using the SAS Administrator account (for example, **sasadm**) that you defined during the SAS installation process.
  - b. In the **Add folder** field, enter a folder name such as *Models*.
  - c. Click **Add folder**.
  - d. The *Models* folder is displayed in the **Item name** column.
  - e. Click the **Permissions** icon that is associated with the *Models* folder.
  - f. In the **Add principal** field, enter the value **jcr:a11**. Change all of the permissions to **Yes**.
  - g. Click **Save Changes**.
  - h. Log off of the SAS Content Server Administration Console.
6. If you have installed SAS Model Manager to use with SAS Enterprise Miner, you must configure the SAS Metadata Repository to use the SAS Content Server public directory that you created previously. Follow these steps:
  - a. In SAS Management Console, expand **Application Management** on the **Plug-ins** tab. SAS Enterprise Miner should be listed and should contain sub-folders.
  - b. Expand the **Projects** folder.
  - c. Right-click the SAS Workspace Server that is associated with your SAS Enterprise Miner installation, and select **Properties**. An example is **SASApp - Logical Workspace Server**.
  - d. Click on the **Options** tab.
  - e. In the **WebDAV URL** field, enter **http://hostname:port/SASContentServer/repository/default/Models/**.  
*Note:* WebDAV is used to register a model SPK file from SAS Enterprise Miner.
  - f. Click **OK**.

For more information about post-installation tasks, see the SAS 9.2 installation documentation.

---

## Configuring the Dashboard Reports Directory

To configure a directory to store the SAS Model Manager dashboard reports, follow these steps:

1. Connect to the SAS Workspace Server.
2. Create a new directory (for example, `C:\Dashboard`).

*Note:* Do not include special characters or spaces in the name of the directory.

3. Grant user permissions for the new directory. For example, perform the following tasks:
  - Grant Full Control permission to users who need to create subdirectories, write content, or delete content. This type of user includes a user who you will be adding (using SAS Management Console) to the Model Manager Administrator Users group or a user who is a SAS Administrator.
  - Grant Read, Write, and Execute permissions to users who need to create performance indicators and execute dashboard reports. This type of user includes a user who you will be adding (using SAS Management Console) to the Model Manager Advanced Users group.
  - Grant Read and Execute permissions to users who only need to view the dashboard reports. This type of user includes a user who you will be adding (using SAS Management Console) to the Model Manager Users group.

*Note:* For more information, see [“Configuring Users, Groups, and Roles” on page 14](#).

---

## Preparing a Database to Use with SAS Model Manager

### ***Overview of Preparing a Database to Use with SAS Model Manager***

The SAS Model Manager Scoring Utility requires additional configuration steps to prepare a database. Specifically, these configuration steps set up publishing and scoring in SAS Model Manager. The SAS Administrator should provide the information to complete the configuration steps to the database administrator (DBA) after installing the SAS Model Manager Scoring Utility. For more information, see SAS 9.2 installation documentation.

Here is a high-level look at the process to enable users to publish scoring functions to a database from SAS Model Manager, and to enable users to use the Java Scoring API.

1. The DBA creates a user for the database. The DBA ensures that the user has appropriate permissions.

For more information, see [“Configuring a Database” on page 6](#).

2. The DBA creates the SAS Model Manager metadata tables in the database.

For more information, see [“Configuring a Database” on page 6](#).

3. The DBA installs the SAS 9.2 Formats Library in the database. The SAS Formats Library contains many of the formats that are available in Base SAS.

For information about how to install and configure the SAS 9.2 Formats Library, see information about post-installation configuration for the SAS Accelerator Publishing Agent in the *Configuration Guide for SAS 9.2 Foundation* for your operating environment.

4. The DBA or a SAS administrator downloads the JDBC driver JAR files. The administrator places the JAR files in the `\sasconfigdir\Lev#\AnalyticsPlatform\apps\ModelManager\lib` directory. For more information, see [“Finding the JDBC JAR Files” on page 7](#).

*Note:* The SAS Analytics Platform must be restarted to finish the installation of the JDBC JAR files. For more information, see the *Administrator's Guide for SAS Analytics Platform*.

5. The administrator provides the developer with the Java Scoring API JAR file.

For more information, see [“Providing the Java Scoring API to Developers” on page 7](#).

## Locating the Installation Directory

During the installation and configuration of SAS 9.2 products, the SAS Model Manager Scoring Utility is installed on the middle-tier server.

*Note:* The middle-tier server is the location where the SAS Analytics Platform and SAS Model Manager Application Programming Interface products are installed.

The location of each installation directory is specified by the user. However, here are default locations for a Microsoft Windows server:

- Java Scoring API installation directory: `C:\Program Files\SAS\SASModelManagerInDatabaseScoringAPI`
- Script installation directory: `C:\Program Files\SAS\SASModelManagerInDatabaseScoringScripts`

In an installation directory, you will find the directory that specifies the version of SAS Model Manager, which is currently 2.3. The files and subdirectories that are needed to prepare a database for use by SAS Model Manager are located in the version directory.

## Configuring a Database

The **Utilities** subdirectory of the script installation directory contains two SQL scripts for each type of database, a Create Tables script and a Drop Tables script. The DBA needs these SQL scripts to create the tables needed by the Publish Scoring Function and the Java Scoring API.

*Note:* The database tables store SAS Model Manager metadata about scoring functions.

The DBA performs the following steps:

1. Creates a separate database where the tables can be stored.
2. Sets the user access permissions for the database.
  - a. Grant Create, Drop, Execute, and Alter permissions for functions and procedures.
  - b. Grant Select, Insert, Update, and Delete permissions for SAS Model Manager metadata tables.

*Note:* If scoring input tables, scoring output tables or views exist in another database, then the user needs appropriate permissions to those tables or views.



3. Verifies the statements that are specified in the Create Tables script. Here are the names of the scripts for each type of database:
  - Teradata SQL scripts: createTablesTD.sql and dropTablesTD.sql
  - DB2 SQL scripts: createTablesDB2.sql and dropTablesDB2.sql
  - Netezza SQL scripts: createTablesNetezza.sql and dropTablesNetezza.sql
4. Execute the Create Tables script for a specific type of database.

### ***Finding the JDBC JAR Files***

The Teradata JDBC JAR files are `terajdbc4.jar` and `tdgssconfig.jar`. The Teradata JDBC JAR files can be found on the Teradata Web site at <http://www.teradata.com>. Select **Support & Downloads** ⇒ **Downloads** ⇒ **Teradata JDBC Driver**.

The DB2 JDBC JAR files are `db2jcc.jar` and `db2jcc_license_cu.jar`. The DB2 JDBC JAR files can be found on the server on which the database client was installed. For example, the default location for Windows is `C:\Program Files\IBM\SQLLIB\java`.

The Netezza JDBC JAR file is `nzjdbc.jar`. The Netezza JDBC JAR file can be found on the server on which the database client was installed. For example, the default location for Windows is `C:\JDBC`.

For more information about the database versions that are supported, see the [SAS Scoring Accelerator System Requirements](#).

### ***Providing the Java Scoring API to Developers***

SAS stores all JAR files in an Eclipse plug-in format. The Windows top-level directory for the SAS Versioned JAR Repository is `C:\Program Files\SAS\SASVersionedJarRepository`. This directory contains the subdirectory `\9.2\eclipse\plugins` `\sas.modelmanager.iscore_<buildDate>_<track>`.

Multiple versions of the Eclipse plug-in might exist. The `<buildDate>` and `<track>` distinguish the version of the plug-in. Select the `sas.modelmanager.iscore` plug-in subdirectory that has the most recent build date.

The `sas.modelmanager.iscore.jar` is located in the plug-in subdirectory. A developer must have this file to use the Java Scoring API.

For more information about using the Java Scoring API, see the *SAS Model Manager: User's Guide*.



## Chapter 3

# Setting Up SAS Management Console for Use

---

<b>Overview of Setting Up SAS Management Console for Use with SAS Model Manager</b> .....	<b>9</b>
<b>Configuring a SAS Model Manager Connection Profile for the SAS Metadata Repository</b> .....	<b>10</b>
Overview of Configuring a Connection Profile .....	10
Creating a New Metadata Profile .....	10
Connect to an Existing Metadata Profile .....	13
<b>Configuring Users, Groups, and Roles</b> .....	<b>14</b>
Overview of Configuring Users, Groups, and Roles .....	14
SAS Model Manager Users, Groups, and Roles .....	14
Create a New User .....	16
Create a New User Group .....	19
Create a New Role .....	21
<b>Create Model Manager Libraries in SAS Management Console</b> .....	<b>25</b>
<b>Creating a New Table Using SAS</b> .....	<b>29</b>
<b>Registering a Table Using SAS Management Console</b> .....	<b>29</b>
Overview of Registering a Table .....	29
How to Register a Table .....	29
<b>Verify Accessibility of Data Tables in SAS Model Manager</b> .....	<b>32</b>

---

## Overview of Setting Up SAS Management Console for Use with SAS Model Manager

SAS Management Console acts as the user interface to the SAS Metadata Repository. In order for SAS Model Manager to read data tables, the metadata for those tables must also exist within the SAS Metadata Repository. The metadata for the data tables is stored in libraries within the SAS Metadata Repository. SAS Management Console also enables administrators to configure users, groups, roles and to create publication channels.

You can determine how you want to organize your SAS libraries. For example, you can put all of the tables that are needed by a given project, version, model, scoring task, and report in one library. Or, you can create seven libraries that correspond to the structure of the Data Sources folders that SAS Model Manager uses. In most cases, users already have model tables grouped in project-related SAS libraries. Most of the time, your SAS Model Manager Data Sources folders contain tables from different SAS libraries.

---

## Configuring a SAS Model Manager Connection Profile for the SAS Metadata Repository

### Overview of Configuring a Connection Profile

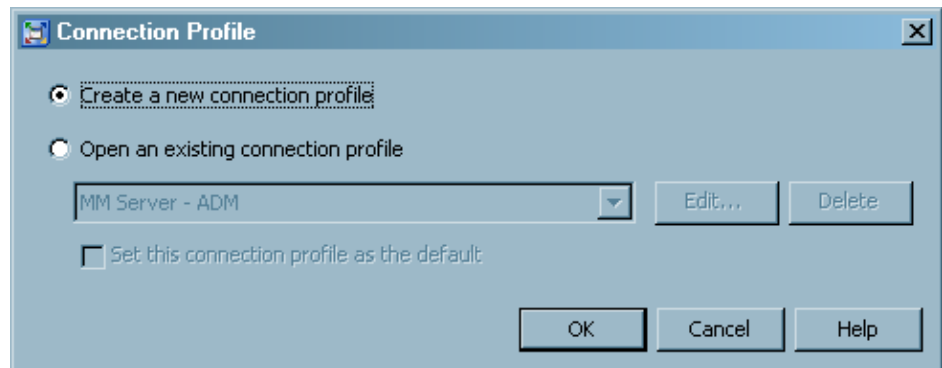
A connection profile enables you to communicate with the SAS Metadata Repository from SAS Management Console. Before you can define SAS Model Manager libraries, users, groups, roles, and publication channels in SAS Management Console, you must create a connection profile.

The Publication Channels Connection Profile wizard guides you through the process of creating the profile for your server. For more information, see the Help.

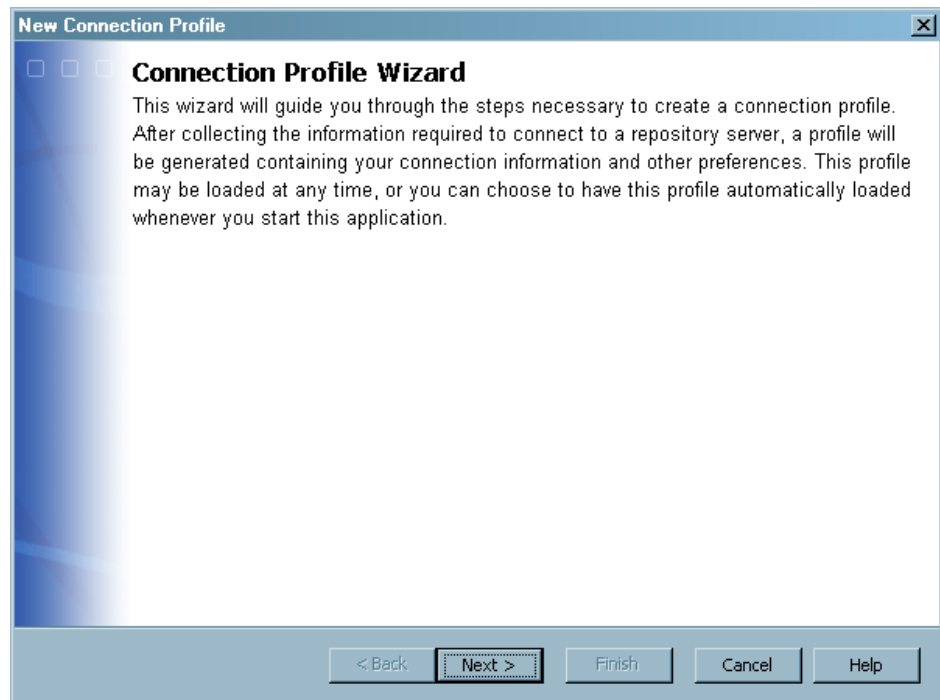
### Creating a New Metadata Profile

To create a new metadata profile, follow these steps:

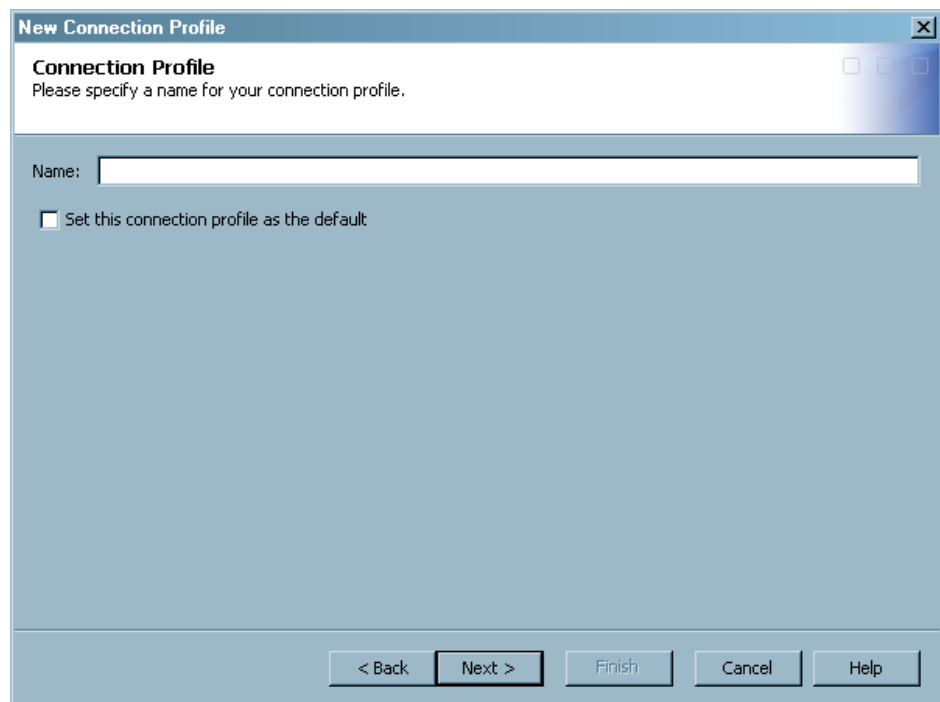
1. Start SAS Management Console. The Connection Profile dialog box appears.



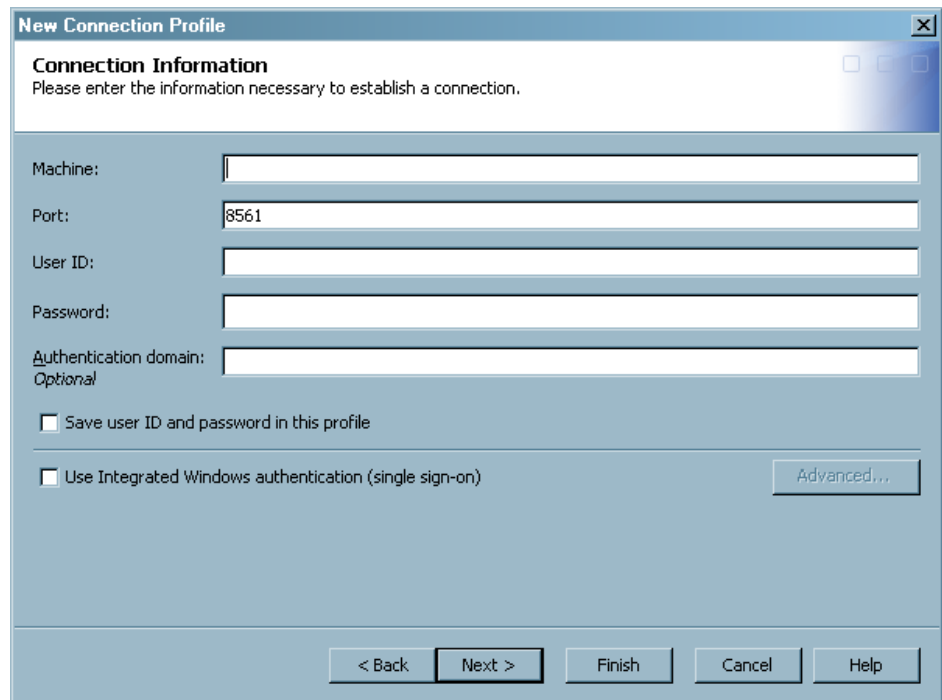
2. Select **Create a new connection profile**, and click **OK**. The Connection Profile wizard window opens.



3. Click **Next**.



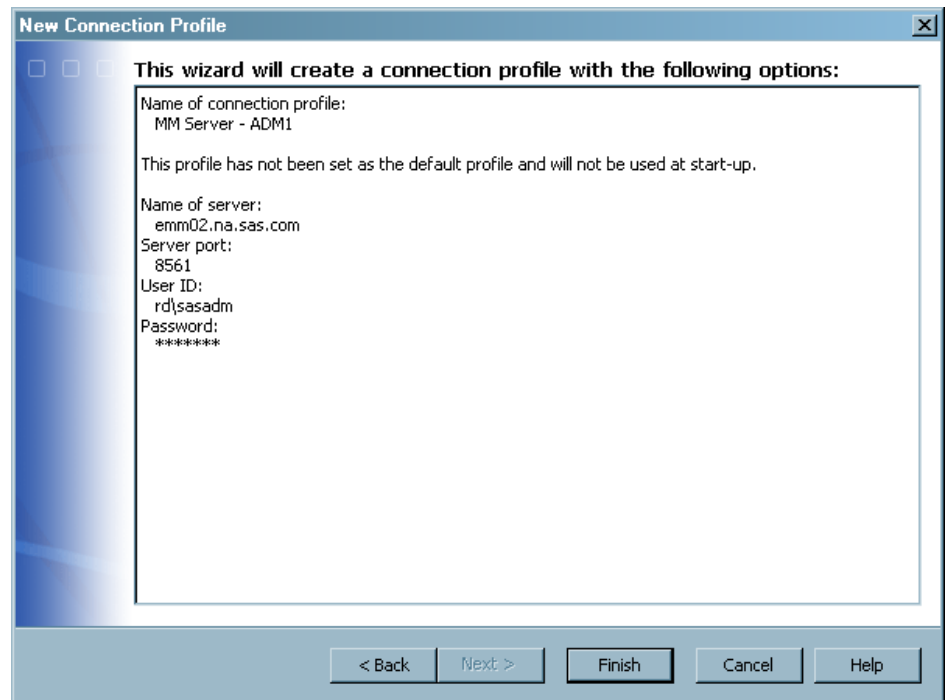
4. Enter the name of your connection profile. Select the check box if you want to open this connection profile by default. Click **Next**.



The image shows a Windows-style dialog box titled "New Connection Profile". It has a standard title bar with a close button (X). The main area is titled "Connection Information" and contains the instruction "Please enter the information necessary to establish a connection." Below this are five text input fields: "Machine:", "Port:" (containing "8561"), "User ID:", "Password:", and "Authentication domain:". The "Authentication domain:" label has "Optional" written below it. There are two checkboxes: "Save user ID and password in this profile" and "Use Integrated Windows authentication (single sign-on)". An "Advanced..." button is located to the right of the second checkbox. At the bottom of the dialog are five buttons: "< Back", "Next >", "Finish", "Cancel", and "Help".

5. Complete the following connection information:
  - a. Enter the fully qualified name (or IP address) of the machine on which your metadata server operates. Enter the TCP/IP port number defined at installation. By default the port is 8561.
  - b. Enter a valid user ID and a password.
  - c. (Optional) Select the check box to save the user ID and password for this profile.

*Note:* By selecting this option the user ID and password is saved and automatically displayed when this profile is chosen during login.
  - d. Click **Next**. A summary of the connection profile options that you defined is displayed.



6. Click **Finish** to save your connection profile.

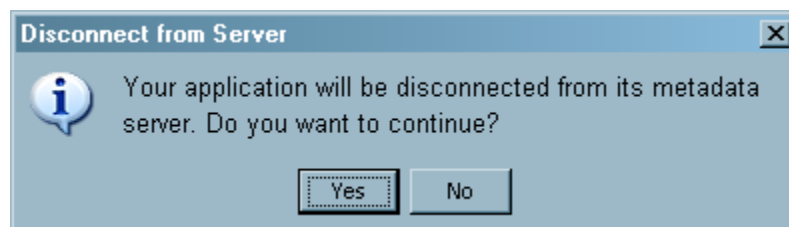
SAS Management Console is then connected to your active connection profile server as shown on the window title bar.

*Note:* You need to verify that Publishing Framework plug-ins are available on your SAS Management Console navigation tree. Otherwise you need to install SAS Foundation Services 1.3 or higher so that you can configure your channels and subscribers for SAS Model Manager.

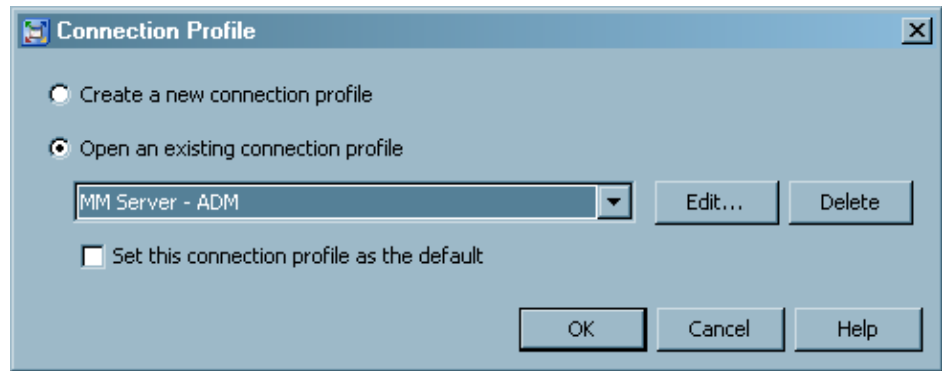
### Connect to an Existing Metadata Profile

To connect to or change your SAS Metadata Server connection profile, follow these steps:

1. Select **File** ⇒ **Connection Profile**. The Disconnect from Server dialog box appears.



2. Click **Yes**. The Connection Profile dialog box appears.



3. Select **Open an existing connection profile**.
4. Select the name of your SAS Metadata Server connection profile from the list.
5. Click **OK**.

Now you should see your SAS Metadata Server name in the SAS Management Console status bar (SAS Metadata Server name: port number).

## Configuring Users, Groups, and Roles

### Overview of Configuring Users, Groups, and Roles

When you use SAS Management Console to configure users, groups, and roles, users from different departments or divisions can collaborate to create, update, and deploy models. They use the SAS Publishing Framework to inform subscribers about model updates.

As an administrator, you need to create users, user groups, and then assign roles in order for users to access the SAS Model Manager repository. The **User Manager** plug-in for SAS Management Console allows a user to define a user or a group. A wizard helps you create the user and groups of users and also to assign roles.

### SAS Model Manager Users, Groups, and Roles

The following users, groups, and roles are created as part of the SAS Model Manager installation process:

**Table 3.1** SAS Model Manager Users

User	Description
SAS Administrator	This user has access to all SAS Management Console capabilities and metadata administrative tasks. SAS 9.2 creates this user during installation.
SAS Model Manager Administrator	This user has administrative permissions for SAS Model Manager.



**Table 3.2** SAS Model Manager Groups

Group	Description
SAS Administrators	This group performs metadata administrative tasks. SAS 9.2 creates this group during installation.
Model Manager Administrator Users	This group has administrative permissions for SAS Model Manager.
Model Manager Advanced Users	This group has permissions to read, write and delete content.
Model Manager Users	This group has permission to read content.
Model Manager Example Life Cycle Assignee Users	This group is used by the example life cycle templates that are shipped with SAS Model Manager. The group contains those users who can change the status of life cycle tasks, but who cannot approve them.
Model Manager Example Life Cycle Approver User	This group is used by the example life cycles templates that are shipped with SAS Model Manager. The group contains those users who can approve completed life cycle tasks.

**Table 3.3** SAS Model Manager Roles

Role	Description
Management Console: Advanced	Provides access to all plug-ins in SAS Management Console. This role is assigned to the group SAS Administrators.
Metadata Server: Operation	Supports adding metadata repositories and operating the metadata server. This role is assigned to the group SAS Administrators.
Metadata Server: User Administration	Supports management of users, groups, and roles other than the unrestricted users role. This role is assigned to the group SAS Administrators.
Metadata Server: Unrestricted	Provides all capabilities in SAS Management Console and provides access to all metadata. This role is assigned to the SAS Administrator Users.

Role	Description
Model Manager: Administration Usage	A user who can perform all SAS Model Manager tasks.  This role is assigned to the group Model Manager Administrator Users.
Model Manager: Advanced Usage	A user who can perform all SAS Model Manager tasks except for tasks that can be performed only by a SAS Model Manager administrator.  This role is assigned to the group Model Manager Advanced Users.
Model Manager: Usage	A SAS Model Manager general user. The general user can perform all tasks except for advanced user tasks and administrator tasks.  This role is assigned to the group Model Manager Users.
Model Manager: Life Cycle Assignee Usage	A user or group who can be assigned to complete a life cycle task.
Model Manager: Life Cycle Approval Usage	A user or group who can approve the completion of a life cycle task.
Model Manager: Life Cycle Participant Usage	A user or group that is displayed in the Participant selection list of the Life Cycle Template Editor.

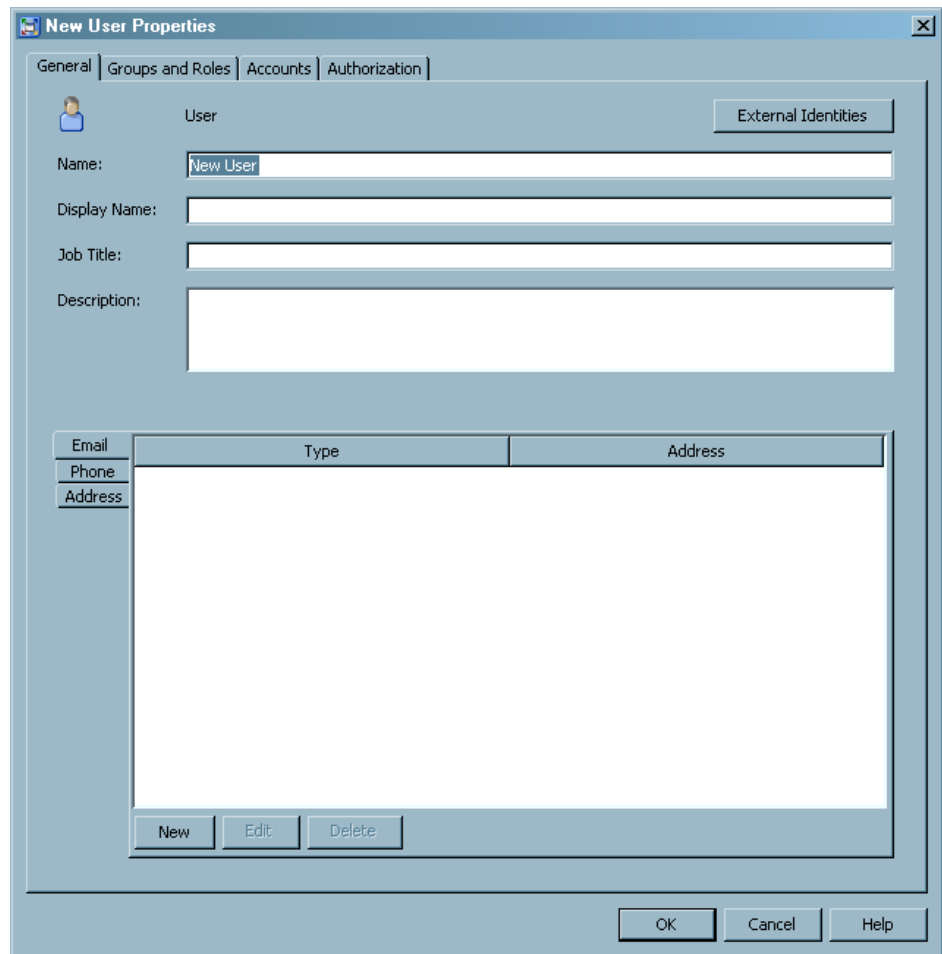
For more information about SAS Model Manager tasks that are associated with each role, see the *SAS Model Manager: User's Guide*.

### Create a New User

Before creating users for SAS Model Manager, you need to define these users on your network domains with valid user IDs and passwords. SAS Management Console helps you create users by using the New User wizard. You can click **Help** any time to get information about the current window properties.

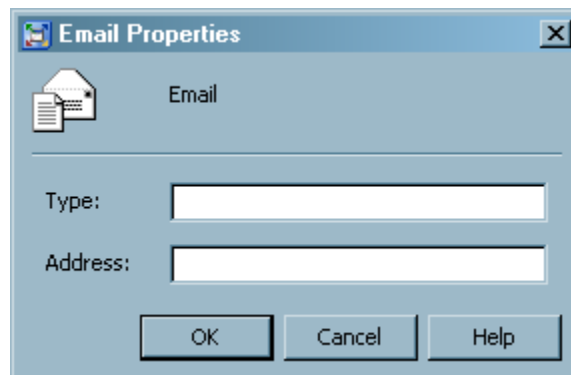
To create a new user, follow these steps:

1. Right-click **User Manager** from the SAS Management Console **Plug-ins** tab, and select **New** ⇒ **User**. The New User Properties window opens.




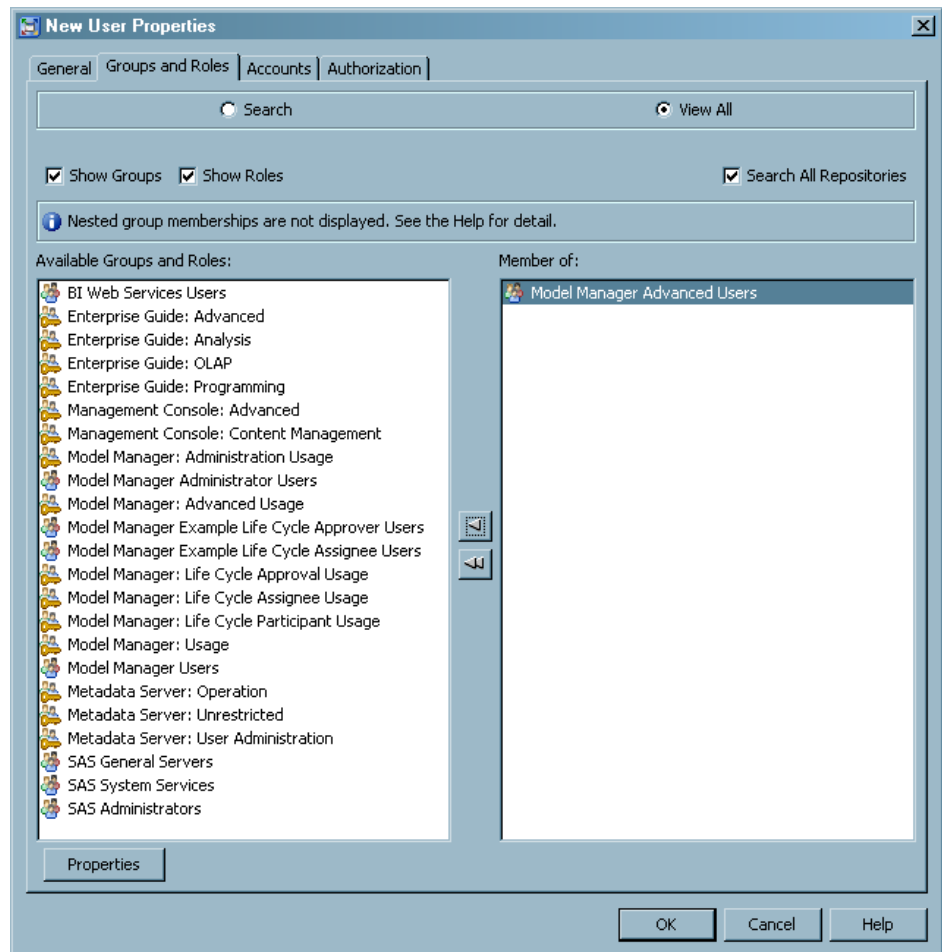
The **New User Properties** dialog box has four tabs: **General**, **Groups and Roles**, **Accounts**, and **Authorization**. The **General** tab is active, showing a user icon and the title "User". There is an "External Identities" button. Below are text fields for "Name:" (containing "New User"), "Display Name:", "Job Title:", and "Description:". At the bottom, there is a table with columns "Email", "Type", and "Address". The "Email" column has sub-headers "Phone" and "Address". Below the table are "New", "Edit", and "Delete" buttons. At the very bottom are "OK", "Cancel", and "Help" buttons.

2. Enter the name of the user on the **General** tab.  
The **Display Name**, **Job Title**, and **Description** are optional. Provide an e-mail address for the user to receive e-mail notifications from the SAS Publishing Framework.
3. Select the **Email** tab on the lower panel and then click **New**. The Email Properties dialog box appears.

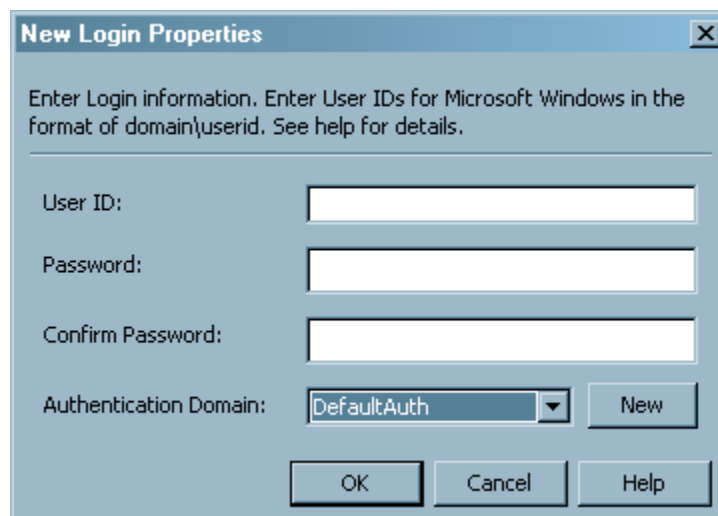


The **Email Properties** dialog box has an email icon and the title "Email". It contains text fields for "Type:" and "Address:". At the bottom are "OK", "Cancel", and "Help" buttons.

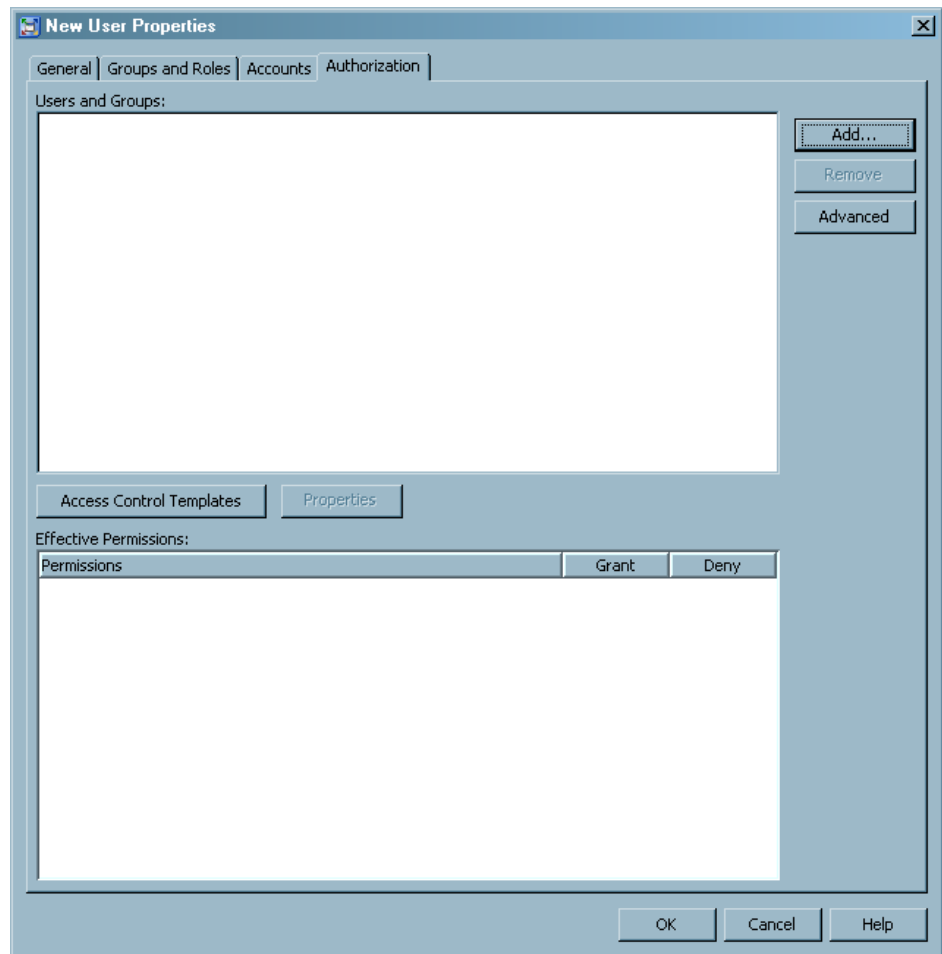
4. Enter SMTP in the **Type** field and the user's e-mail address in the **Address** field. Click **OK**.
5. Select the **Group and Roles** tab if you want this user to be included in a specified group. Use the arrow  to add the new user to a group.



6. Select the **Accounts** tab and select **New**. The New Login Properties dialog box appears.



7. Enter the **User ID**, **Password**, and the **Authentication Domain**. Click **New** to create a new valid domain. Enter a name and description for the new domain, and then click **OK** twice to add the new account.
8. Select the **Authorization** tab to add other users, or to view and modify this user's metadata.



9. Click **OK**.

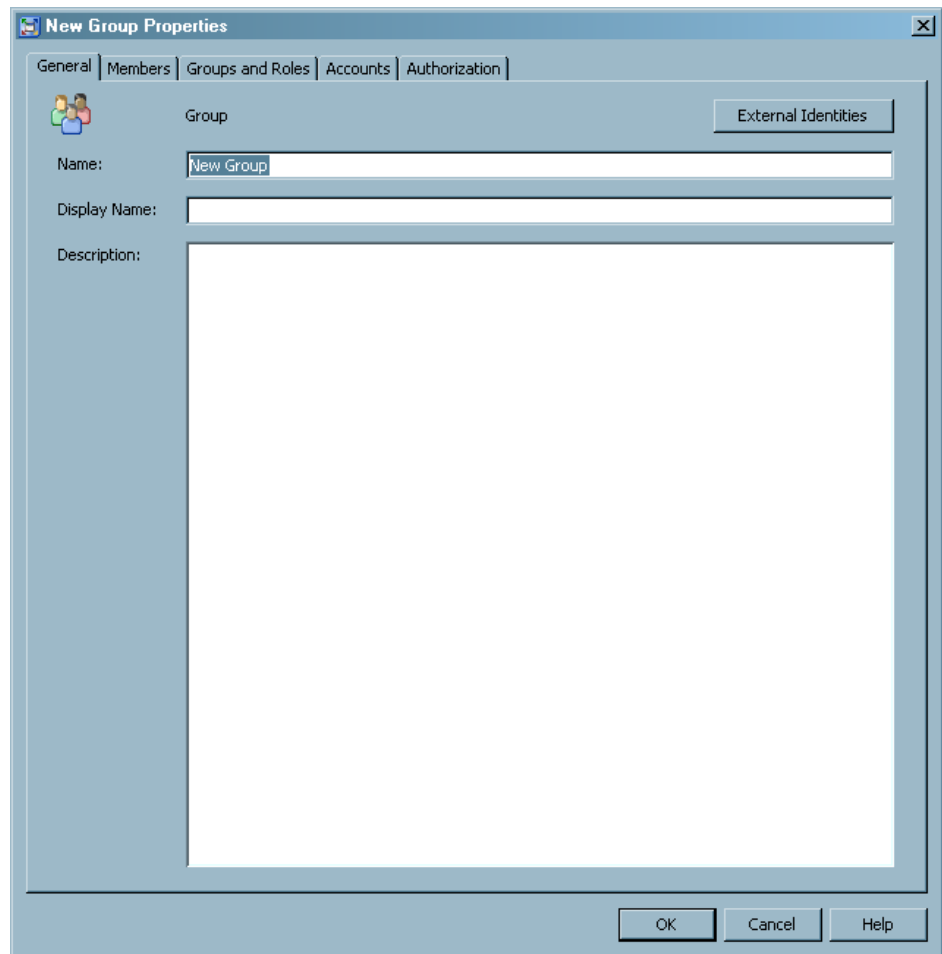
The newly created user is displayed with all the other users when the User Manager object is selected from the SAS Management Console navigation tree.


10. In a Windows environment grant the new user permissions for the user rights assignment of **Log on as a batch job** for local security policies on the machine that hosts the SAS Workspace Server.

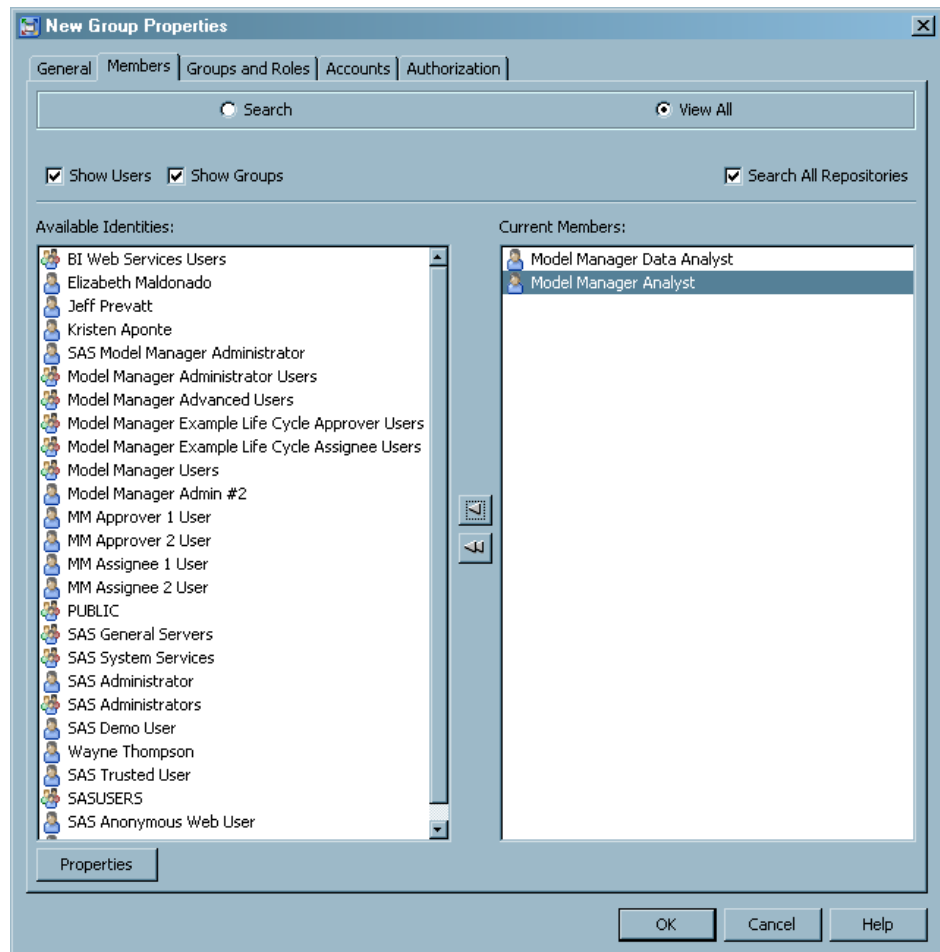
### Create a New User Group

To create a user group, follow these steps:

1. Right-click **User Manager** from the SAS Management Console **Plug-ins** tab, and select **New** ⇒ **Group**. The New Group Properties window opens.



2. Enter the name of the group on the **General** tab. The other fields are optional.
3. Select the **Members** tab. From the **Available Identities** list, select the users to be included in this group. Select the user name from the **Available Identities** list and click  to add it to the **Current Members** list.



4. (Optional) Select the **Groups and Roles** tab if you want this user group to be included in a specified group.
5. (Optional) Select the **Accounts** tab. You might need this to create the New Login Properties for users who were not defined previously.
6. (Optional) Select the **Authorization** tab if you want members of this group to view and modify the metadata of this group.
7. Click **OK**.

The newly created group name is displayed with all the other groups when the User Manager object is selected from the SAS Management Console navigation tree.


## Create a New Role

To create a new role, follow these steps:

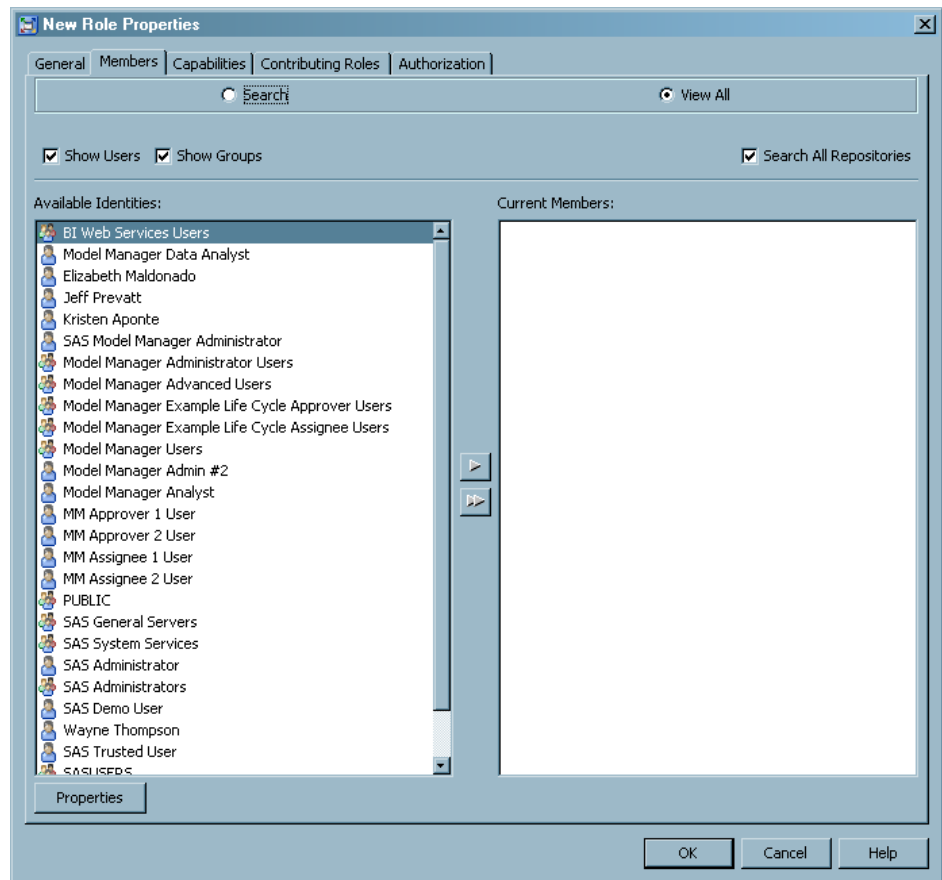
1. Right-click **User Manager** from the SAS Management Console **Plug-ins** tab, and select **New** ⇒ **Role**. The New Role Properties window opens.

The screenshot shows the 'New Role Properties' dialog box with the following elements:

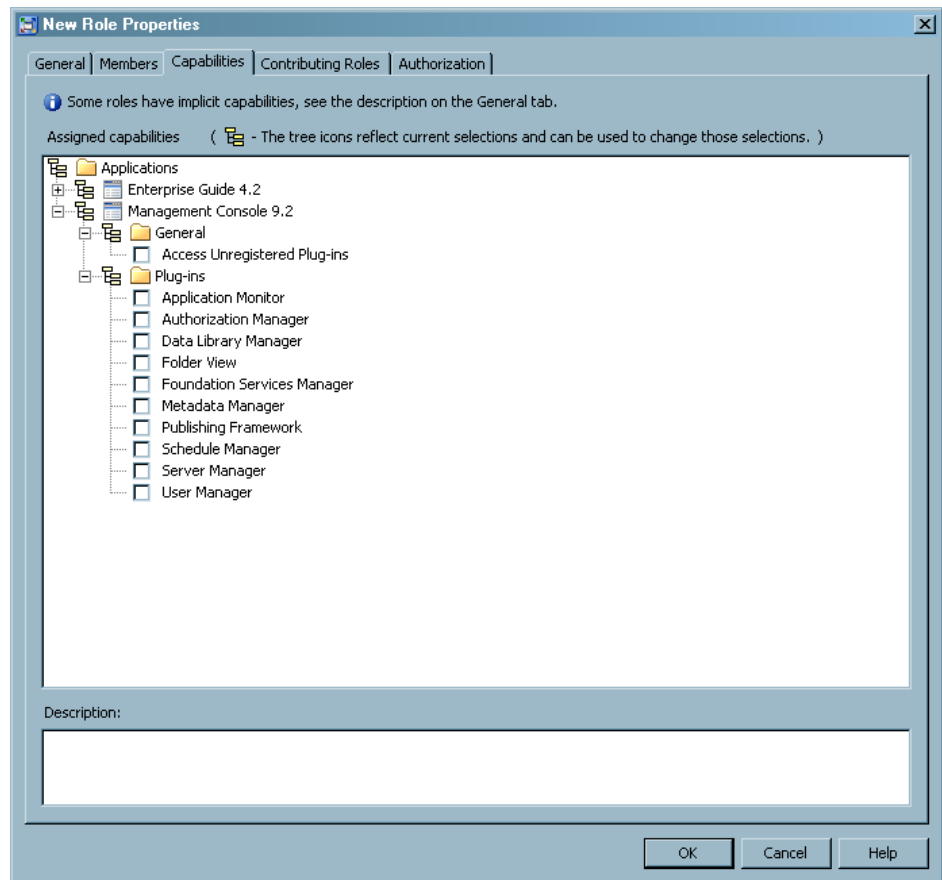
- Tabbed Interface:** 'General' (selected), 'Members', 'Capabilities', 'Contributing Roles', 'Authorization'.
- Left Panel:** Contains a key icon and labels for 'Name:', 'Display Name:', and 'Description:'.
- Right Panel:** Labeled 'Role', it contains three text input fields. The first field, labeled 'Name:', contains the text 'New Role'. The other two fields are empty. An 'External Identities' button is located in the top right corner of this panel.
- Bottom:** Contains 'OK', 'Cancel', and 'Help' buttons.

2. Enter the name of the role on the **General** tab. The other fields are optional.
3. Select the **Members** tab. From the **Available Identities** list, select the users and groups to assign to this role. Select the user or group name from the **Available Identities** list and click  to add it to the **Current Members** list.



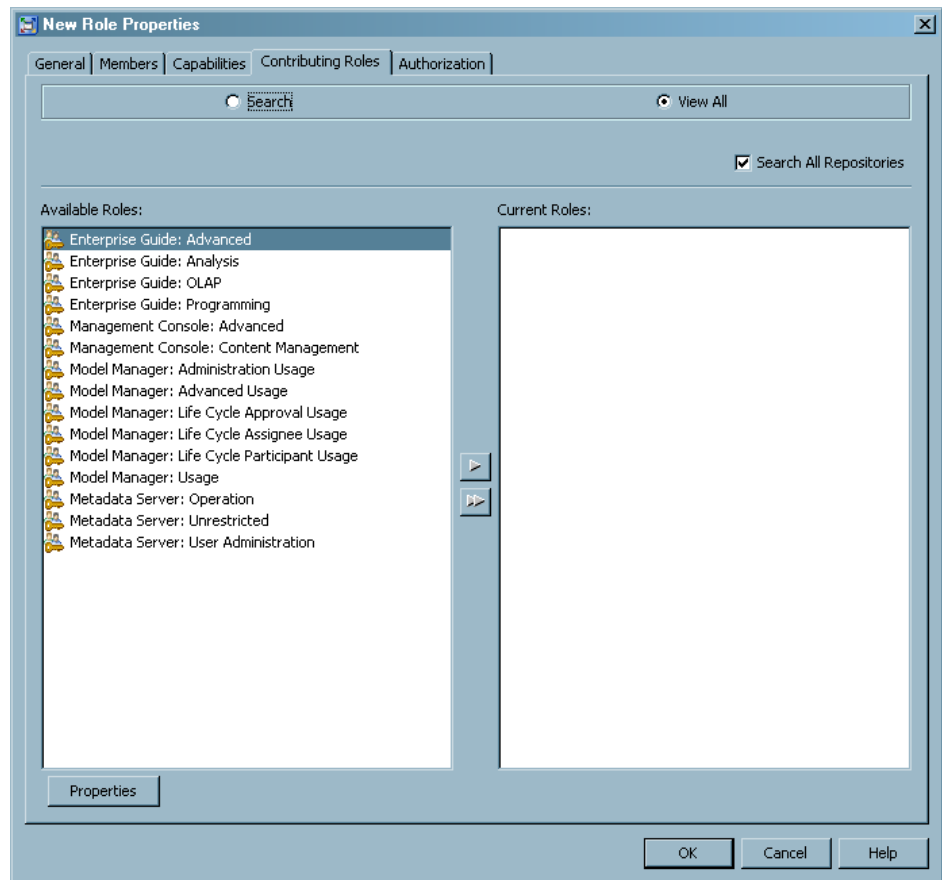


4. Select the **Capabilities** tab. Expand the tree nodes, and then select the check boxes to assign capabilities to the role.



5. Select the **Contributing Roles** tab to give this role all of the capabilities of one or more other roles. Use the arrows to add the new user to a group.

*Note:* Changes that you make to a role's capabilities affect any roles with which that role is associated.



6. (Optional) Select the **Authorization** tab if you want members of this role to be able to view and modify the metadata of this role.
7. Click **OK**.

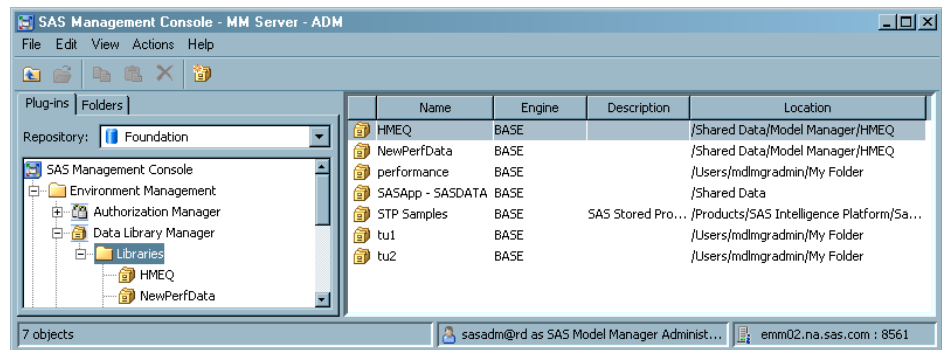
The newly created role name is displayed with all the other roles when the **User Manager** object is selected from the SAS Management Console navigation tree.

---

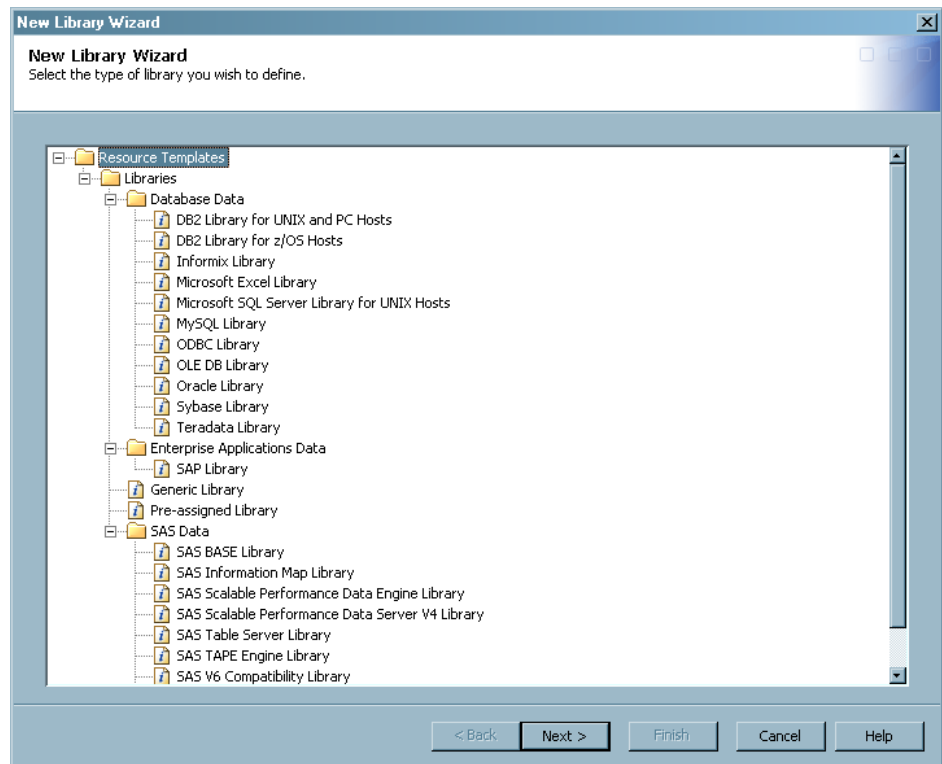
## Create Model Manager Libraries in SAS Management Console

To create a new SAS library in SAS Management Console, follow these steps:

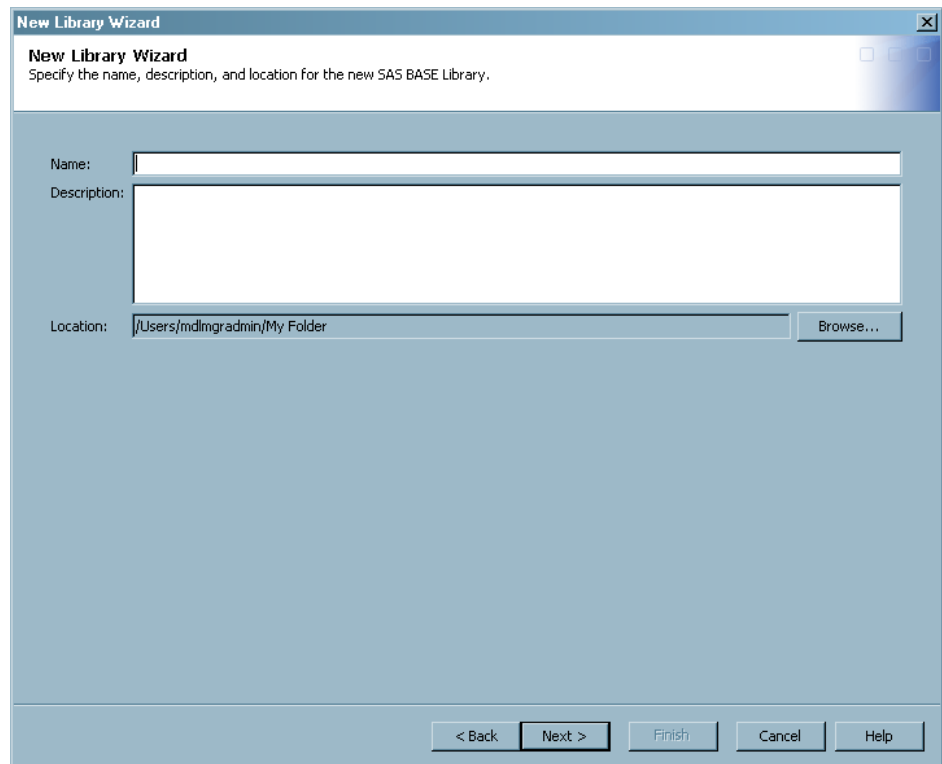
1. Start SAS Management Console and connect to your preferred SAS Metadata Repository.
2. In the SAS Management Console tree, expand the following folders:  
**Environment Management** ⇒ **Data Library Manager** ⇒ **Libraries**.



3. Right-click the **Libraries** folder. From the pop-up menu, select **New Library**. The New Library Wizard opens.



4. In the folder display, ensure that the folders are expanded for **Resource Templates** ⇒ **Libraries** ⇒ **SAS Data**. Select **SAS BASE Library** and then click **Next**.



**New Library Wizard**  
Specify the name, description, and location for the new SAS BASE Library.

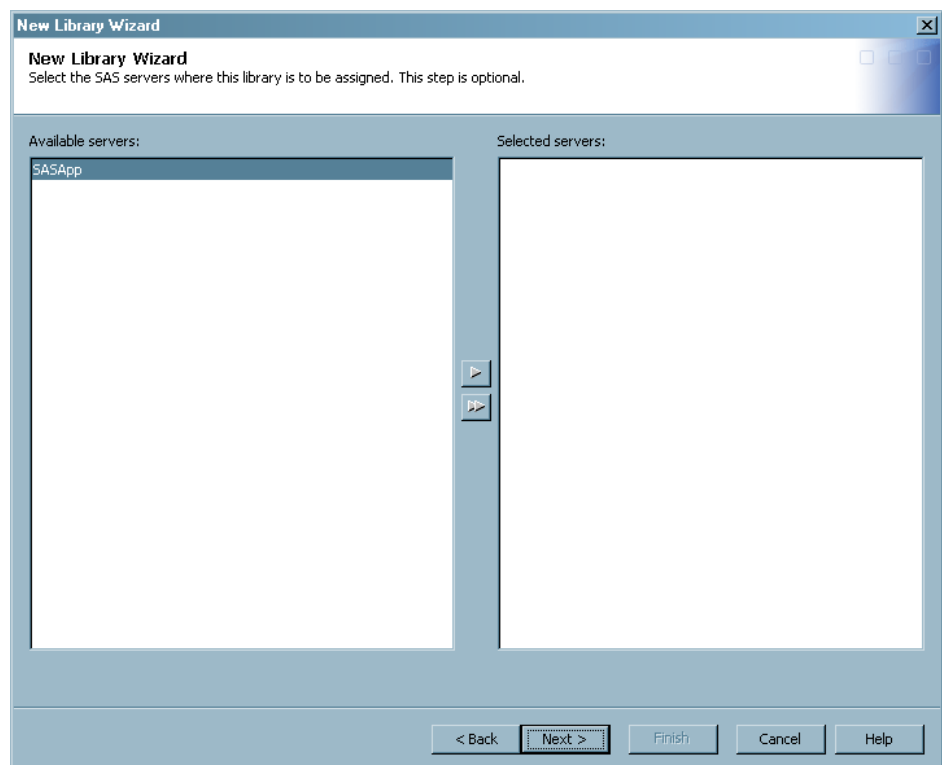
Name:

Description:

Location:

< Back   Next >   Finish   Cancel   Help

5. Enter a name, description and location for your new SAS library, and then click **Next**. Add an optional description.
6. (Optional) Select the SAS server where the new library is to be assigned, and then click **Next**.



**New Library Wizard**  
Select the SAS servers where this library is to be assigned. This step is optional.

Available servers:

SASApp
--------

Selected servers:

--

▶   ►

< Back   Next >   Finish   Cancel   Help

7. Enter a unique SAS library reference name of eight characters or less. You will use the SAS libref to access the table.

**New Library Wizard**  
Enter the following library properties.

Libref:

Engine:

☐ Enable WebDAV Support

Content Server:

Path Specification:

Available items:		Selected items:
\\emm01\MMTestData\hmeq_data		
C:\mmtutorial\Tutorial1\Samples		
C:\mmtutorial\Tutorial2\Samples	<input type="button" value="→"/>	
C:\Program Files\SAS\SASFoundation\9.2\inttech\	<input type="button" value="→"/>	
C:\Program Files\SAS\SASFoundation\9.2\mmserve		
Data		

< Back   Next >   Finish   Cancel   Help

8. Use the arrow controls to choose a path from the **Path Specification Available items** box, or click **New** to specify a new path for your library. Afterwards your library path specification appears in the **Path Specification Selected Items** list. Click **Next**.
9. Review the summary of the information that you entered, and if it is correct, click **Finish**.

**New Library Wizard**  
The following library will be created:

Library: HMEQ2

Location: /Users/mdlmgradmin/My Folder

Libref: hmeq2

Engine: BASE

Path Specification: C:\mmtutorial\Tutorial2\Samples

Library is pre-assigned: No

< Back   Next >   Finish   Cancel   Help

Your SAS Library appears in the SAS Management Console SAS Libraries list. It has been added to the SAS Metadata Repository. Now you can view your new SAS library in SAS Model Manager. For more information, see [“Verify Accessibility of Data Tables in SAS Model Manager” on page 32](#).

---

## Creating a New Table Using SAS

Here are two examples of how to create a new table by submitting SAS code. The first example creates a table based on another existing table. The second example shows how to create a new empty table.

If you submit the example code below to SAS, make sure that the directory path that is specified in the LIBNAME statement exists. Before you submit the code in Example 1, you need to verify that the **appdata.sas7bdat** file exists in the specified LIBNAME directory. Once the code from the examples is submitted to SAS, two new .sas7bdat files will be created on disk at the location **c:\smmwork**.

### **Example Code 3.1** Create a New Table from an Existing Table

```
LIBNAME smmwork 'c:\smmwork';
data smmwork.PROJECTIN;
  set smmwork.appdata;
  keep age numCards everDefault;
  if _N_>1 then stop;
run;
```

### **Example Code 3.2** Create a New Empty Table

```
LIBNAME smmwork 'c:\smmwork';
data smmwork.PROJECTOUT;
  length posterior 8 prediction $1;
  posterior=.; prediction='';
run;
```

---

## Registering a Table Using SAS Management Console

### **Overview of Registering a Table**

After you create your data tables, you must register them in a SAS Metadata Repository so that the SAS Model Manager can locate them. SAS Model Manager can add data tables from the SAS Metadata Repository that are registered in SAS Management Console. You register tables in SAS Management Console in the Data Library Manager, **Libraries** folder.

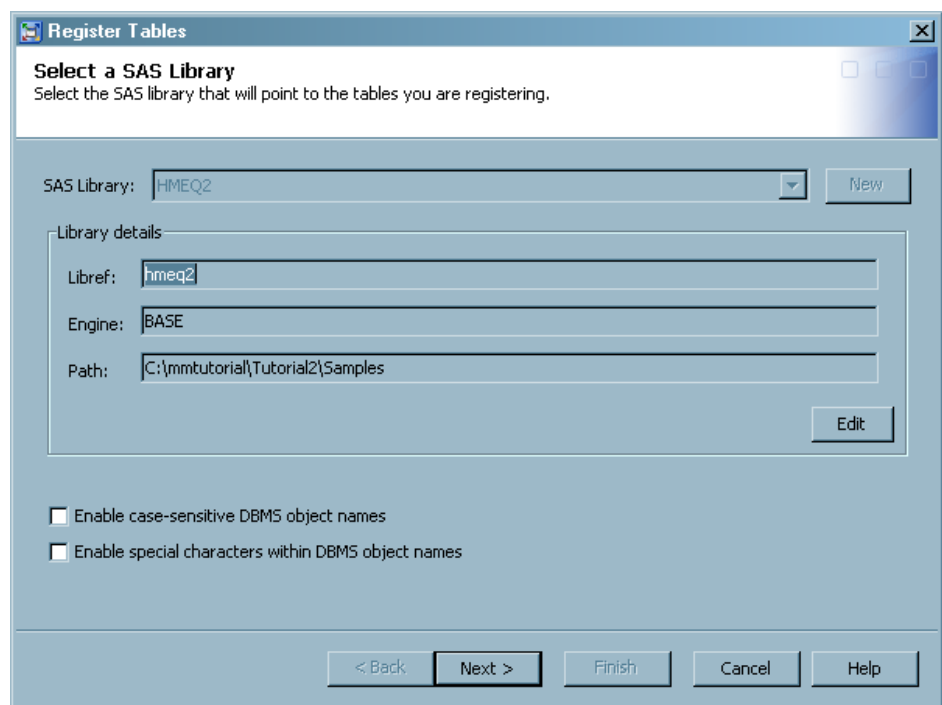
### **How to Register a Table**

The Register Tables wizard guides you through the process of importing and registering a SAS table in the SAS Metadata Repository. Each library type has a different Register Tables wizard that is called from the Data Library Manager.

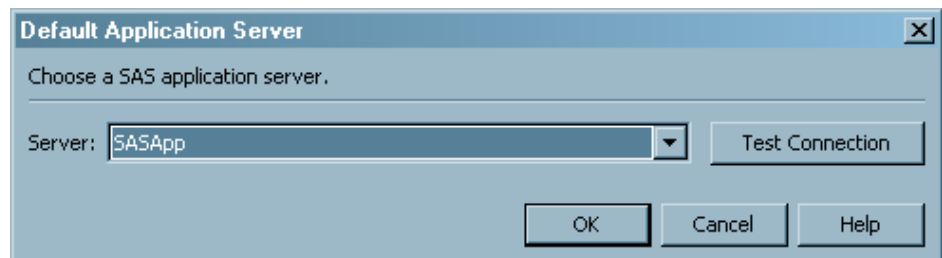
*Note:* The Register Tables wizard is not available on UNIX platforms.

To import and register a table into a SAS Management Console Data Library, follow these steps:

1. Copy the .sas7bdat file for your table into the directory path on the Workspace server that you provided in the **Path Specification** data field of the New Library Wizard. For more information, see [“Create Model Manager Libraries in SAS Management Console” on page 25](#).
2. Start SAS Management Console, and connect to the SAS Metadata Repository that contains your new SAS Library.
3. In the SAS Management Console tree, expand the following folders:  
**Environment Management** ⇒ **Data Library Manager** ⇒ **Libraries**
4. Right-click the SAS Library name that you want to import your table into, and then select **Register Tables** from the pop-up menu. The Register Tables wizard window opens.



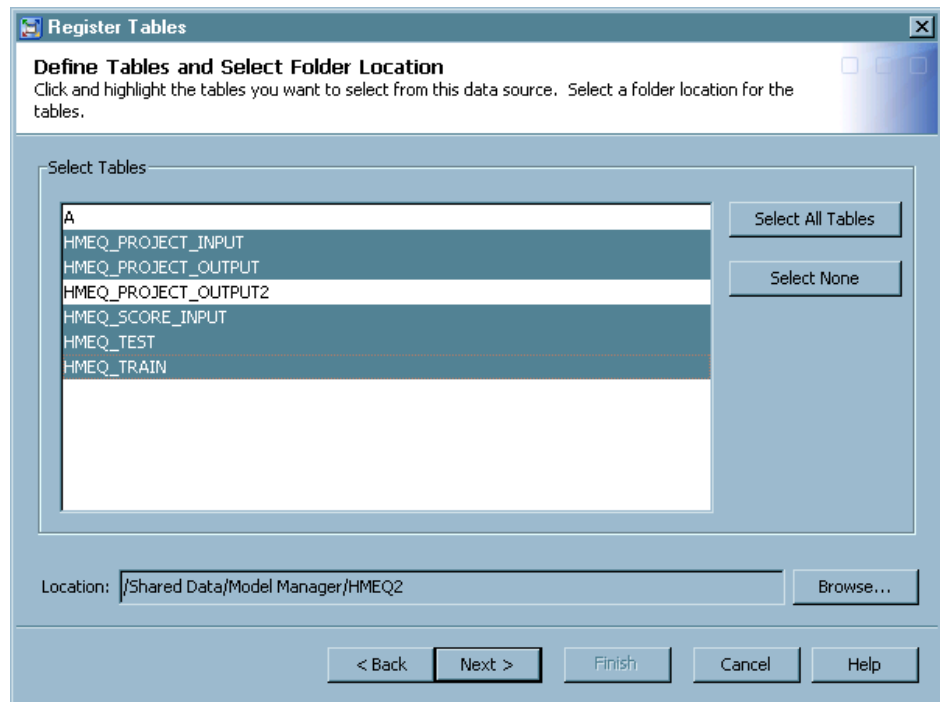
5. Verify that the information that is displayed in the **Select a SAS Library** page is correct, and then click **Next**.
6. The Default Application Server dialog box appears, if a default application server has not been previously selected. Select your SAS server, click **Test Connection** to verify that the connection to the server is successful, and then click **OK**.



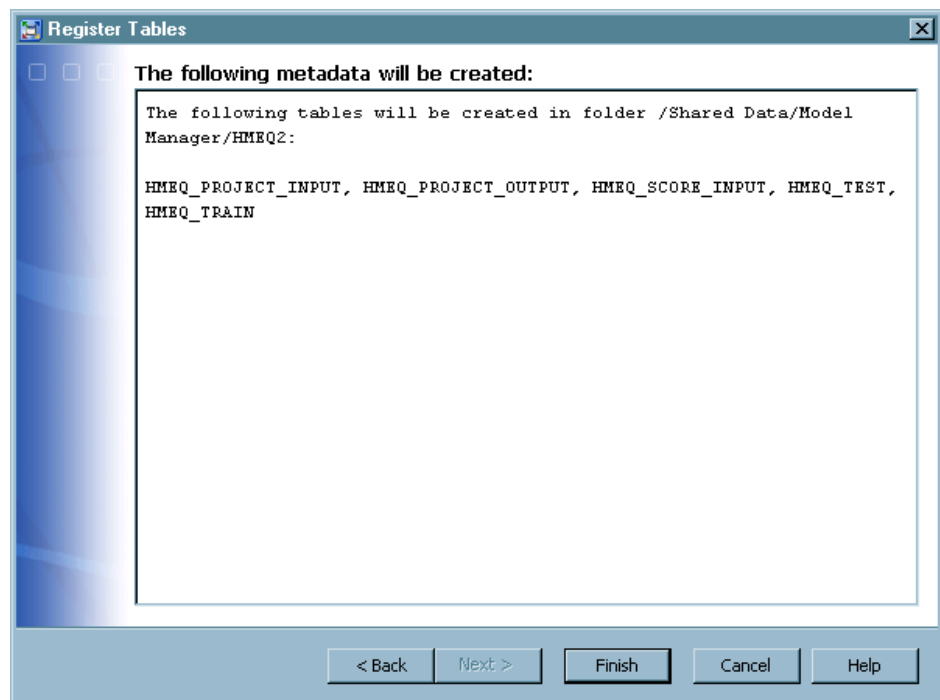
7. If prompted, enter your SAS user ID and password to log on to your SAS server.



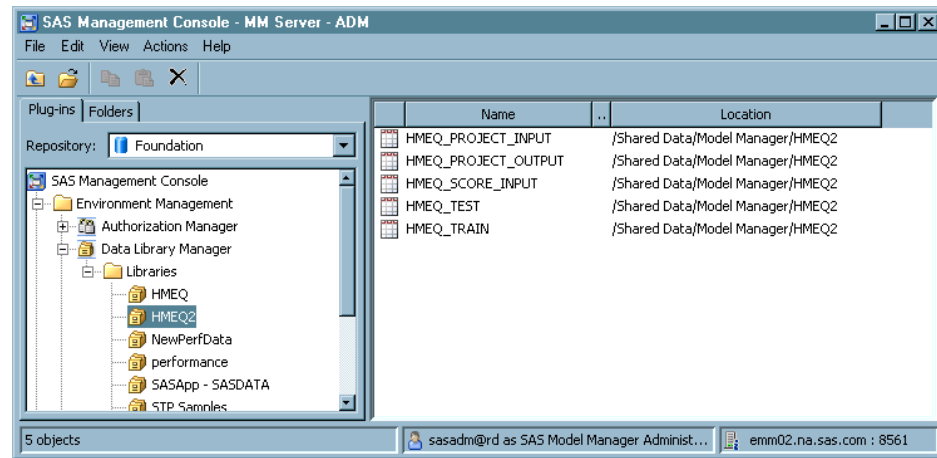
8. The Define Tables and Select Folder Location page is displayed. Select the table or tables that you want to register, and then click **Next**.



9. Click **Finish**.



The metadata for the imported table is written into the SAS Metadata Repository and is associated with the selected SAS Library.



*Note:* You must create folders with appropriate access permissions so that users can manage their models, create reports, and publish models updates. If a SAS Model Manager user does not have the appropriate permissions to access a folder, then the tables and libraries are not listed in the Data Sources perspective of SAS Model Manager. For more information about creating a folder and setting permissions, see the SAS Management Console Help.

### See Also

[“Create Model Manager Libraries in SAS Management Console” on page 25](#)

## Verify Accessibility of Data Tables in SAS Model Manager

To verify that your new library and associated tables are accessible in SAS Model Manager, follow these steps:

1. Start SAS Model Manager and select the Data Sources perspective.
2. Right-click a Data Sources folder and select **Add Data Source**. The Add Data Source window opens.

**Add Data Source**

Library: SASApp - SASDATA

**Tables**

Name	Description
------	-------------

**Details**

Name	Description	Type	Length
------	-------------	------	--------

Refresh

OK Cancel

- Click **Refresh**, and then select the **Library** list. Your new library should be in the list.

**Add Data Source**

Library: SASApp - SASDATA

SASApp - SASDATA

**Tables**

Name	Description
STP Samples	
HMEQ2	

**Details**

Name	Description	Type	Length
------	-------------	------	--------

Refresh

OK Cancel

- Select your new library, and the list of tables that are associated with your new SAS library is displayed.

For more information about adding a Data Source to SAS Model Manager, see the *SAS Model Manager: User's Guide*.



## Chapter 4

# Creating and Configuring Publication Channels

---

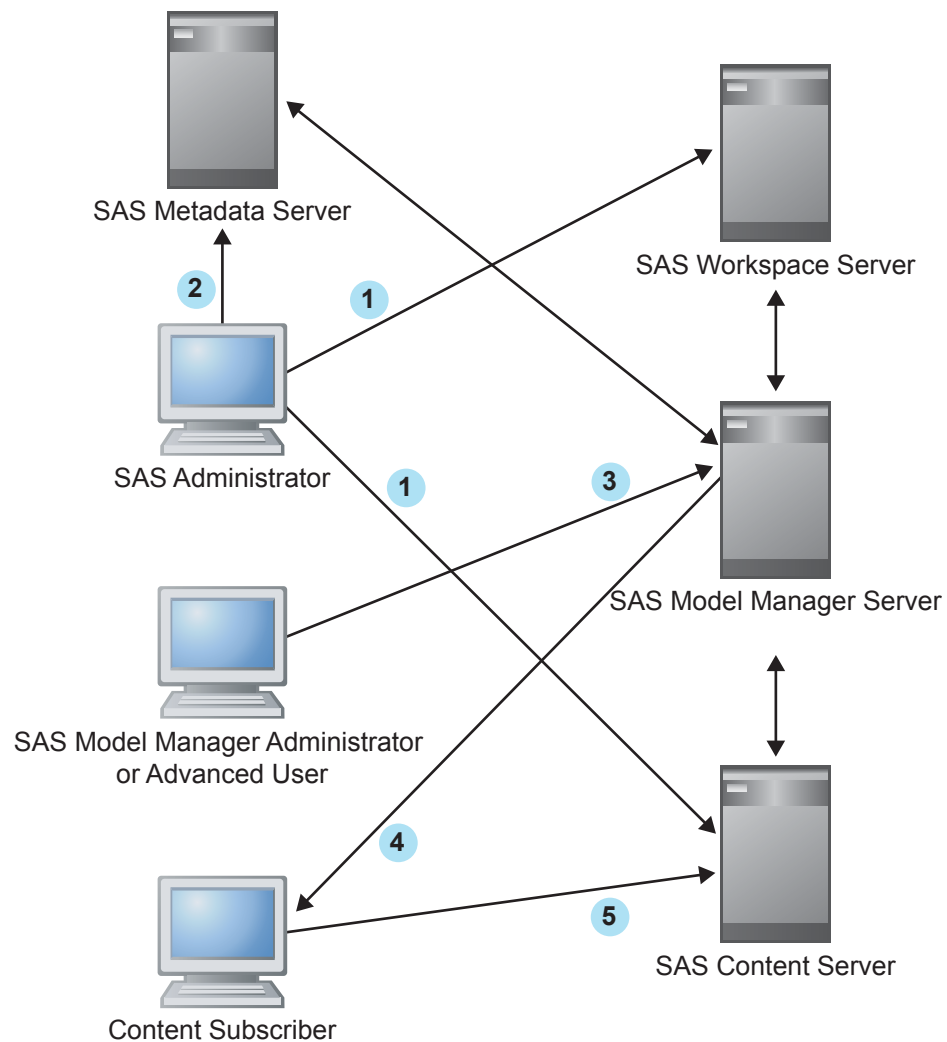
<b>Overview of Creating and Configuring Publication Channels</b> . . . . .	<b>35</b>
<b>Define an HTTP or HTTPS Server</b> . . . . .	<b>37</b>
<b>Define Publish Locations for the SAS Content Server</b> . . . . .	<b>41</b>
<b>Configuring Channels and Subscribers for SAS Model Manager</b> . . . . .	<b>43</b>
Overview of Configuring Channels and Subscribers . . . . .	43
Channel to Subscriber Configuration . . . . .	44
Creating Channels and Subscribers . . . . .	44
<b>Create a Channel Folder</b> . . . . .	<b>44</b>
<b>Create a New Channel</b> . . . . .	<b>46</b>
<b>Create a New Subscriber</b> . . . . .	<b>49</b>

---

## Overview of Creating and Configuring Publication Channels

SAS Model Manager uses the SAS Publishing Framework to publish model updates to an operational environment for testing and production. The SAS Administrator creates and configures definitions for channels, content subscribers, and group subscribers. Then the user can use the SAS Model Manager model extraction macros or user-written SAS code to retrieve and deploy the updated models to the operational environment.

As shown in the following figure, several tasks are necessary to configure and use the SAS Model Manager publishing functionality.

**Figure 4.1** Configuring SAS Model Manager to enable Publishing Models

Here are the tasks.

- 1 The SAS Model Manager administrator creates either an archive or a WebDAV persistent storage location for channels that is accessible from the SAS Workspace Server.
- 2 The SAS Model Manager administrator creates SAS Model Manager users, HTTP servers, content subscribers, and channels using SAS Management Console.
- 3 The SAS Model Manager administrator or an advanced user publishes models using the SAS Model Manager Client.
- 4 The content subscriber (for example, Scoring personnel) receives an e-mail notification from the SAS Model Manager Server that contains a channel content update.
- 5 The content subscriber extracts models from a channel (for example, on a SAS Content Server) to prepare them for scoring.

*Note:* SAS Management Console Help provides details for your SAS Model Manager publishing configuration options.

It is recommended that at first you use channels that have the type of Archive File type for the persistent storage option. This is the simplest channel definition and configuration to use to publish directly to your operational testing or production scoring servers. A channel

called **MMChannel** is created that has a persistent store Archive File type during the installation of SAS Model Manager. For more information, see [“Create a New Channel” on page 46](#).

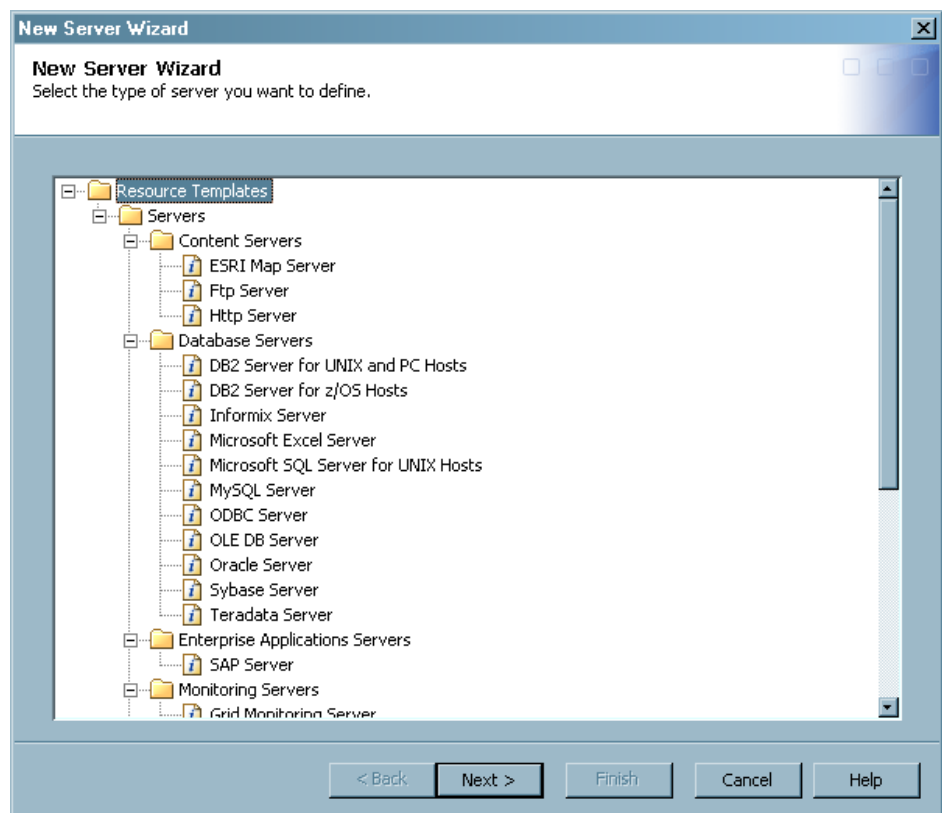
## Define an HTTP or HTTPS Server

The SAS Model Manager installation process defines a default SAS Content Server. Use this process to add additional HTTP or HTTPS servers. A WebDAV-enabled HTTP or HTTPS content server must be defined in SAS Management Console before you can publish to channels from SAS Model Manager. The server is usually a third-party server such as Microsoft Internet Information server or an Apache server.

*Note:* You must have WriteMetadata permission for a repository in order to define an HTTP or HTTPS content server for that repository.

To define your HTTP or HTTPS content server, follow these steps:

1. Start SAS Management Console. Open your existing connection profile for your server. If your connection profile is not available in the list, see [“Configuring a SAS Model Manager Connection Profile for the SAS Metadata Repository” on page 10](#).
2. From the **Plug-ins** tab, right-click **Server Manager**, and then select **New Server**. The New Server Wizard window opens.



3. Select **Resource Templates** ⇒ **Servers** ⇒ **Content Servers** ⇒ **Http Server**, and then click **Next**.

**New Server Wizard**  
Specify the name and description for the new Http Server.

Name:

Description:

< Back   Next >   Finish   Cancel   Help

*Note:* If the HTTP server template is not available, then you must add the resource template. For more information, see the SAS Management Console Help.

4. Enter the name and the description of your HTTP server. Click **Next**.

**New Server Wizard**  
Enter the following server properties.

Software version:

Vendor:

Available items:  Selected items:

Base Path(s):

New... Edit... Delete

Application Server options

Application Server Type:

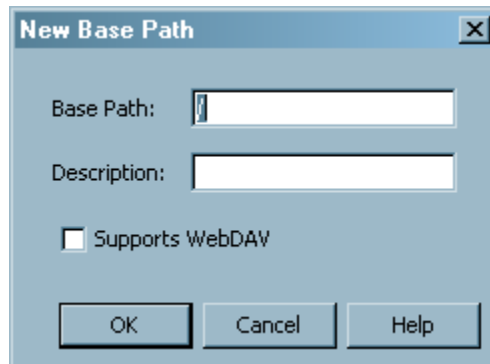
☐ Supports SOAP-based Web Services

< Back   Next >   Finish   Cancel   Help



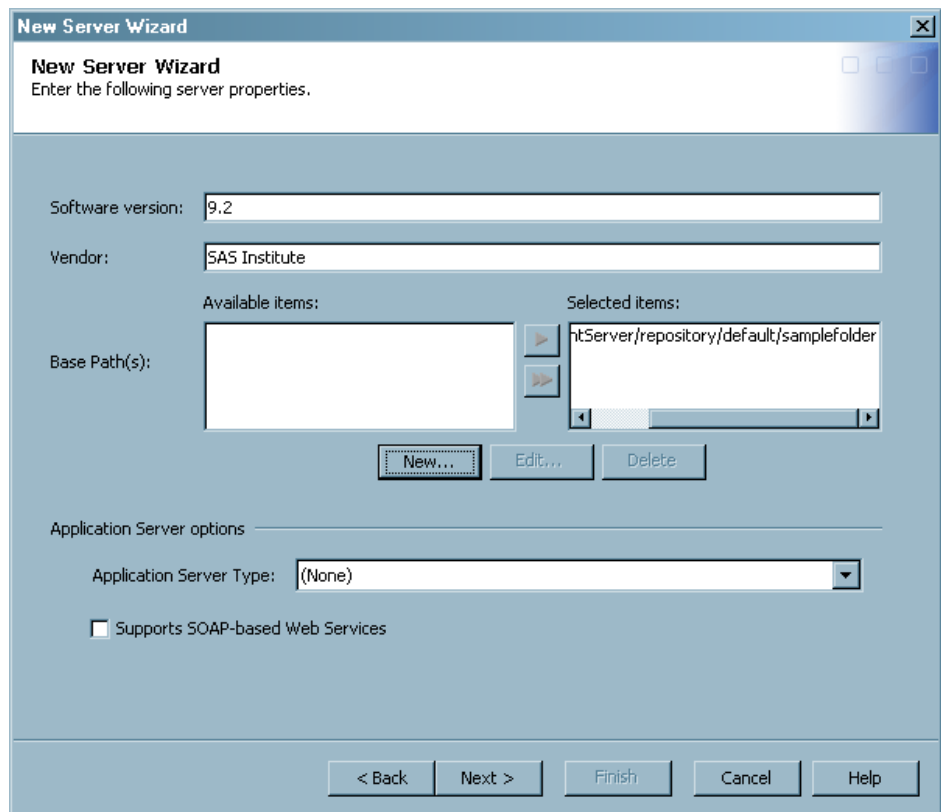
5. (Optional) On the server properties page, enter the software version and vendor information for the third-party HTTP or HTTPS server that you are defining.
6. Click **New** to create base path or paths on your server. The New Base Path dialog box appears.

*Note:* If you have not defined the base path for your HTTP server, see [“Define Publish Locations for the SAS Content Server” on page 41](#).



The **New Base Path** dialog box has a title bar with a close button. It contains two text input fields: **Base Path:** and **Description:**. Below these is a checkbox labeled **Supports WebDAV**. At the bottom are three buttons: **OK**, **Cancel**, and **Help**.

7. In the **Base Path** field specify the location of the top-level directory where report content items such as report definitions or image files are stored. (This path must be set up as an alias on the Web server.) The **Description** field is optional.
8. Select the **Supports WebDAV** option and then click **OK** to save your settings. The new base path appears in the **Base Path(s)** field of the server properties page.

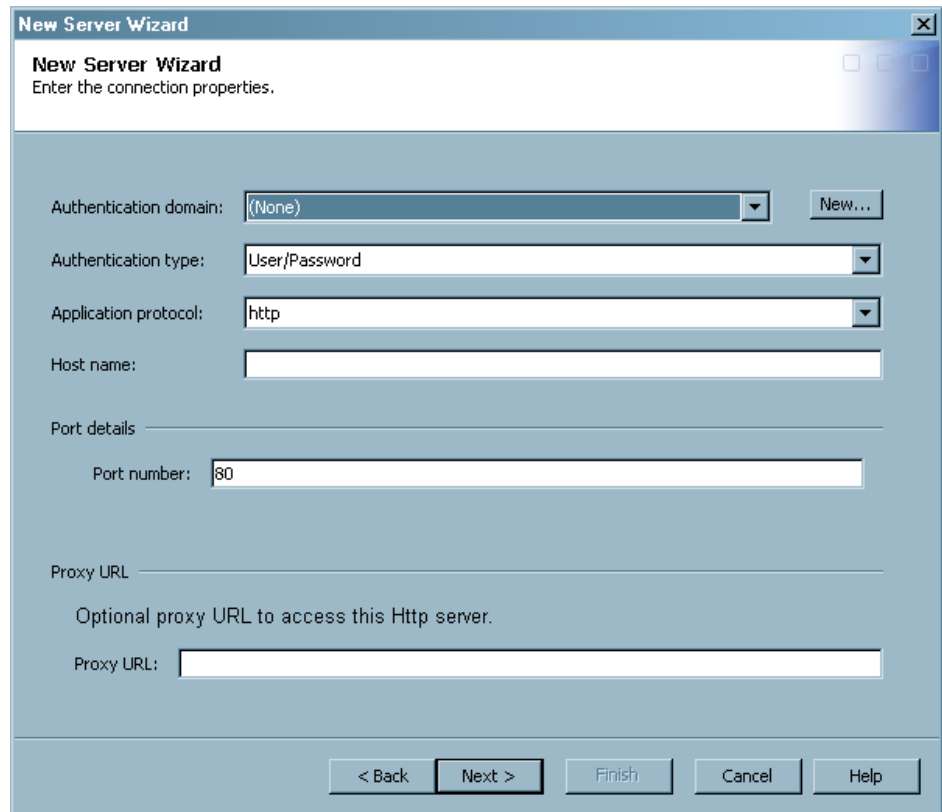


The **New Server Wizard** dialog box has a title bar with a close button. Below the title bar is the text **New Server Wizard** and **Enter the following server properties.**. The main area contains several fields and controls:

- Software version:** A text input field containing **9.2**.
- Vendor:** A text input field containing **SAS Institute**.
- Base Path(s):** A list box with an empty field. To its right are two buttons: **New...** and **Edit...**. Below these buttons is a **Delete** button.
- Available items:** A list box showing **htServer/repository/default/samplefolder**.
- Selected items:** A list box showing **htServer/repository/default/samplefolder**.
- Application Server options:** A section with a dropdown menu for **Application Server Type:** set to **(None)**.
- A checkbox labeled **Supports SOAP-based Web Services**.

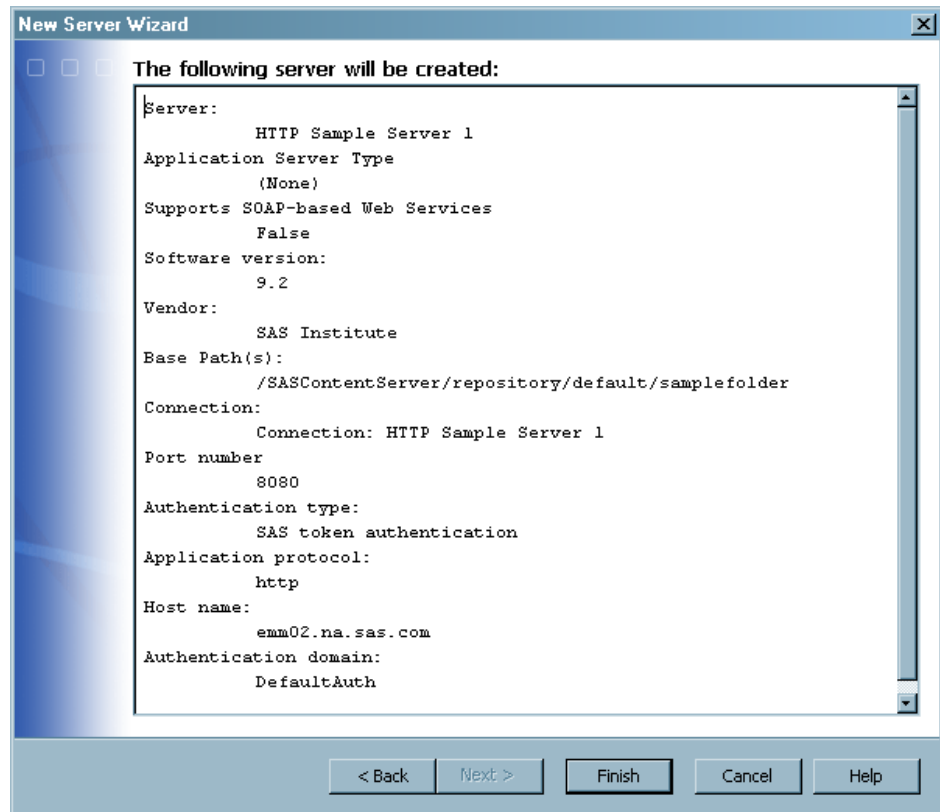
At the bottom are five buttons: **< Back**, **Next >**, **Finish**, **Cancel**, and **Help**.

9. Click **Next**. The connection properties page opens.



The screenshot shows the 'New Server Wizard' dialog box. The title bar says 'New Server Wizard' with a close button. Below the title bar, the text 'New Server Wizard' is followed by 'Enter the connection properties.' The dialog has several input fields: 'Authentication domain:' with a dropdown menu showing '(None)' and a 'New...' button; 'Authentication type:' with a dropdown menu showing 'User/Password'; 'Application protocol:' with a dropdown menu showing 'http'; 'Host name:' with an empty text box; 'Port details' section with 'Port number:' and a text box containing '80'; 'Proxy URL' section with 'Optional proxy URL to access this Http server.' and a 'Proxy URL:' text box. At the bottom, there are five buttons: '< Back', 'Next >', 'Finish', 'Cancel', and 'Help'.

10. Enter the connection properties for your HTTP server:
  - a. Select **DefaultAuth** from the list. When you click **New** to create a new domain, a dialog box appears. Enter the name and description of your domain.
  - b. Enter the fully qualified name or the IP address of your server.
  - c. Enter a port number (for example, 8080 for a Web application server).
11. Click **Next**. The New Server Wizard window displays a summary of the settings for the new server and indicates that you have successfully completed the definition of a new server.



12. Click **Finish**. The wizard window closes and your new server is displayed under the Server Manager node in the SAS Management Console Navigation Tree.

For more information, see the following resources:

1. The SAS Management Console Help.
2. The SAS online documentation about administering HTTP Servers and WebDAV, available at <http://support.sas.com>. Search for Administering HTTP Servers and WebDAV.

---

## Define Publish Locations for the SAS Content Server

During the SAS Model Manager installation process the **ModelManager**, **sasfolders**, and **sasdav** WebDAV folders are automatically created on the SAS Content Server. You can use the SAS Content Server Administration Console (SCS Admin Console) to create a new WebDAV folder publishing location or control access to an existing WebDAV folder. If you need to define a new WebDAV-enabled HTTP content server after the initial installation of SAS Model Manager, then you must define a publishing location. For more information, see “[Define an HTTP or HTTPS Server](#)” on page 37.

*Note:* Although you can add a folder to the **sasfolders** location, the folder that you add is not added to the SAS Metadata Server.

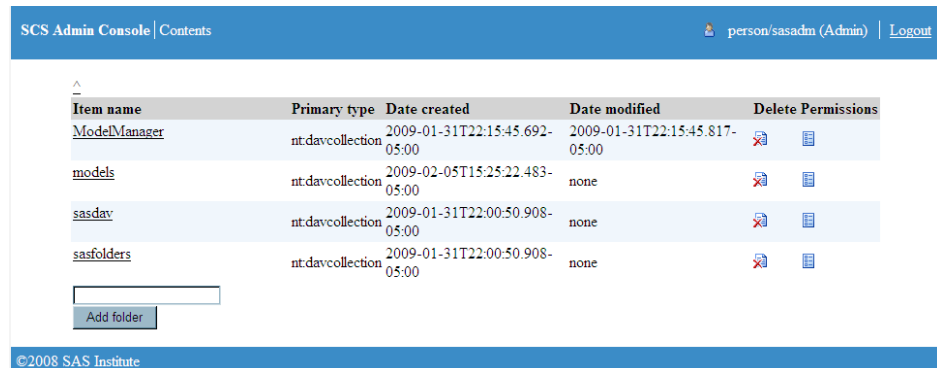
**TIP** The best practice is to add folders to metadata using SAS Management Console.

To define a new publishing location, follow these steps:

1. Access the SAS Content Server Administration console by entering the following URL in your Web browser and substituting the server name and port number of your SAS Content Server: **http://server name:port/SASContentServer/dircontents.jsp**.

*Note:* The default port number depends on the application server that is being used. For example, the default port for JBOSS is 8080.

2. Log on to the console as an unrestricted user (for example, SAS Administrator). The SCS Admin Console window opens.

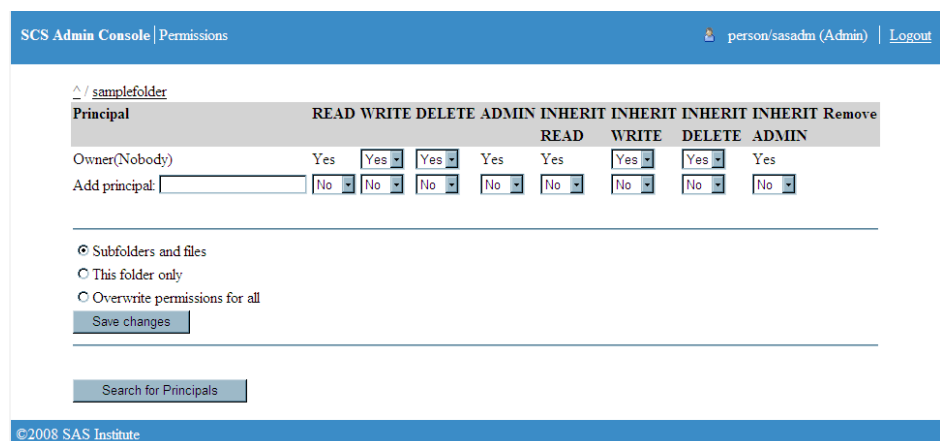


3. Enter a name for the folder in the text box and then click **Add folder** to create a new location for publishing channels.
4. (Optional) To create a subfolder, select the folder that you created in the previous step, enter a name for the subfolder in the text box, and click **Add folder**.

*Note:* Use the breadcrumb trail above the list to return to a parent folder.

5. To set permissions for a folder, follow these steps:

- a. Click the permission icon next to the item that you want to modify. The Permissions page appears.



- b. For each principal that is listed, modify the permissions by changing each permission to **Yes** or **No**.
- c. To add more principals to the page, do one of the following:
  - If you know the principal's name, enter it in the field and click **Save changes**.
  - Click **Search for Principals** to search for a name. When you find the principal that you want to add, select the check box that is next to the principal's name and then click **Return**.

After the principal's name appears on the permission page, you can set permissions for the principal.

*Note:* For more information about administering the SAS Content Server, see the *SAS 9.2 Intelligence Platform: Web Application Administration Guide*.

## Configuring Channels and Subscribers for SAS Model Manager

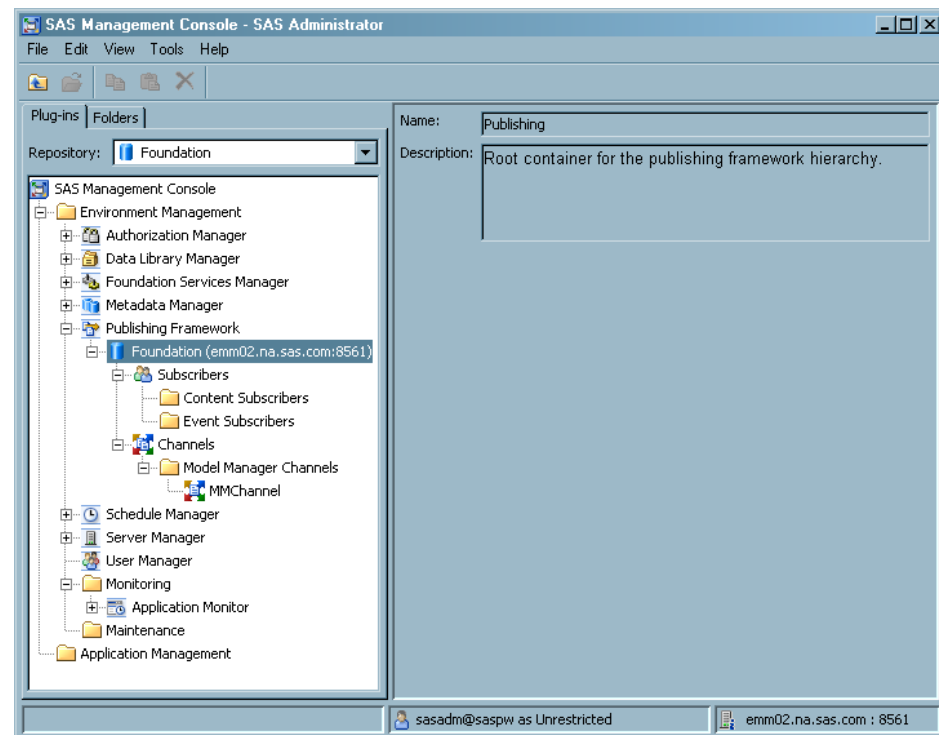
### Overview of Configuring Channels and Subscribers

The Publishing Framework plug-in to SAS Management Console enables you to administer the Publishing Framework.

**Note:** You need to verify that Publishing Framework plug-ins are available in your SAS Management Console navigation tree. If the plug-in is not available, you need to install SAS Foundation Services 1.3 or later so that you can configure your channels and subscribers for SAS Model Manager.

With the Publishing Framework plug-in, you can manage subscribers and channels. For more information, see the Help.

When the Publishing Framework plug-in is available, the SAS Management Console Project Tree should look as follows:



The SAS Metadata Server (for example, **Foundation**) that is shown under the Publishing Framework plug-in contains the **Subscribers** folder and the **Channels** folder.

The Publishing Framework plug-in to SAS Management Console provides wizards that enable you to create subscribers. When you create a subscriber with a wizard, the subscriber object that has the specified attributes is stored on the SAS Metadata Server.

For more information about Publishing Framework, see the *SAS 9.2 Publishing Framework: Developer's Guide*.

## Channel to Subscriber Configuration

There are several ways to configure channels to publish your models to the SAS Model Manager channel subscribers.

Choose one of these options to define the method to use for publishing channels:

1. **None** - specifies to publish all content that is published to the channel directly to the subscribers (through e-mail). The content is not persisted.
2. **Archive** - specifies a path and an optional logical server for the location of the persistent storage. The **Archive File** option is recommended for publishing model packages. Publishing Framework publishes the content as an archive (binary) SPK (SAS package) file to the persistent storage location.
3. **WebDAV** - specifies the WebDAV server location.

**TIP** The best practice is to use the **Archive File** type for channel persistent storage and **e-mail** for subscriber notification.

Before publishing models using SAS Model Manager, you must create channels and subscribers to publish your model updates.

## Creating Channels and Subscribers

The channel sends the information from the publishers to the subscribers who want it.

A subscriber is a person or a program that has a need for information that is published. To receive information from a channel, the user must be defined as a subscriber.

The Publishing Framework plug-in provides wizards that enable you to create subscribers. Information about the subscriber is stored on the SAS Metadata Server.

*Note:* Channel subscribers must be users of the SAS Metadata Server and their e-mail addresses must be specified.

---

## Create a Channel Folder

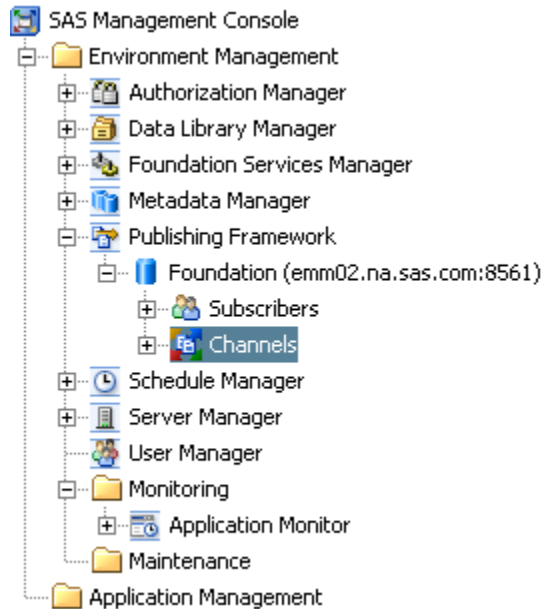
If you expect to create a large number of channels, then consider grouping related channels into channel folders. You can create subfolders within folders, thereby creating a folder hierarchy to which access controls can be applied. For more information, see the SAS Management Console Help.

*Note:* Currently it is not possible to move an existing channel into a folder or from one folder to another. Plan ahead to avoid having to delete and recreate channels.

To create channel folders, follow these steps:

1. From the SAS Management Console navigation tree, expand the **Publishing Framework** node.

2. Select and expand the desired metadata repository node.
3. If you are creating a top-level folder, then select **Channels**. If you are creating a subfolder, then navigate to and select the desired parent folder.

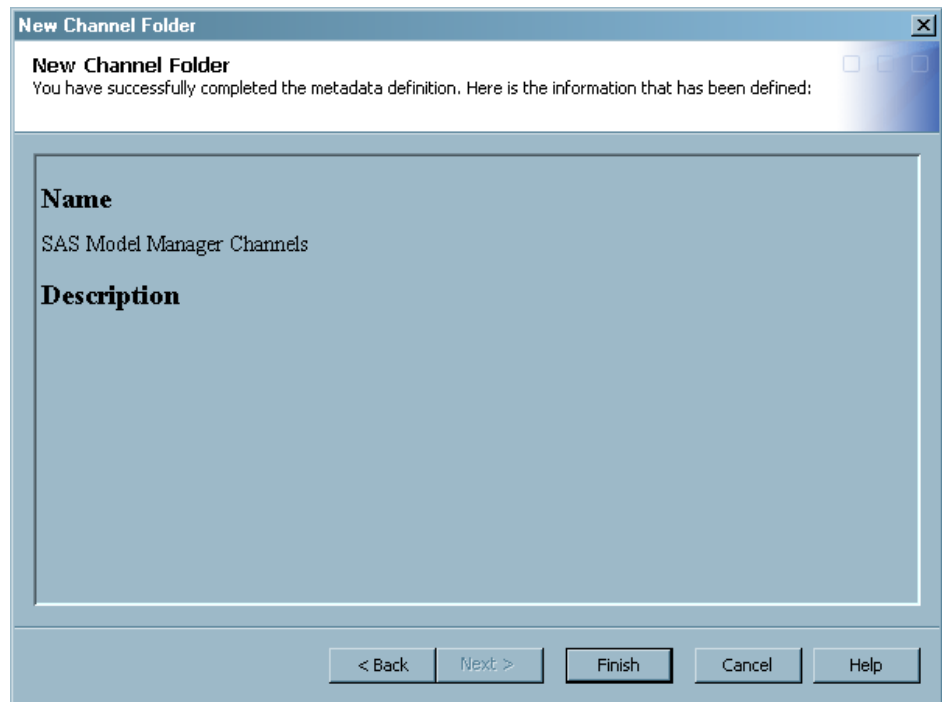


4. Right-click **Channels** and then select **New Folder**.

The New Channel Folder wizard window opens.

A screenshot of the 'New Channel Folder' wizard window. The window has a title bar 'New Channel Folder' and a subtitle 'New Channel Folder Specify a name and optionally a description'. It contains two text input fields: 'Name:' and 'Description:'. At the bottom, there are five buttons: '< Back', 'Next >', 'Finish', 'Cancel', and 'Help'.

5. Enter a name for the new channel folder and then click **Next**. The new folder is created and the metadata definition information is displayed.



6. Click **Finish**.

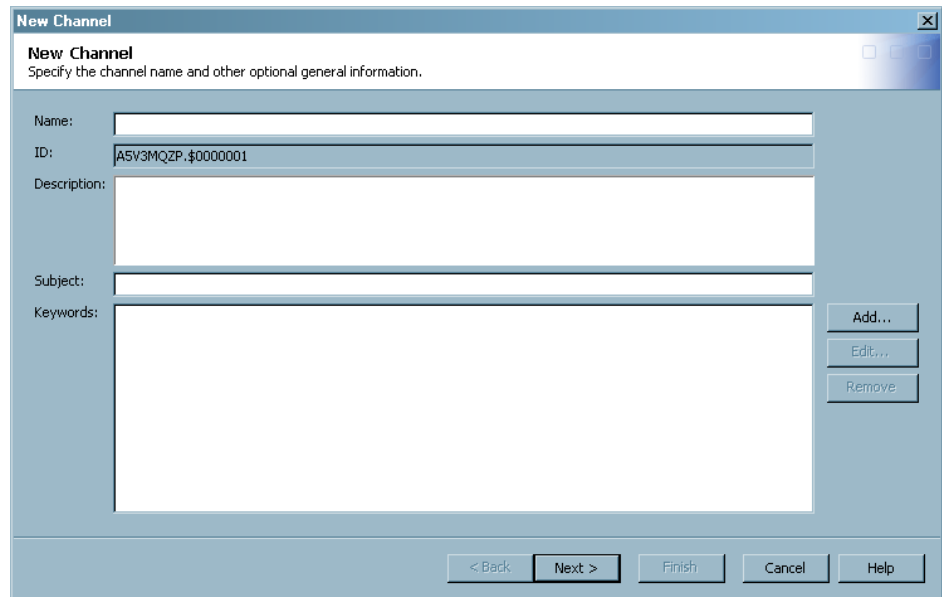
---

## Create a New Channel

To create a new channel, follow these steps:

1. From the SAS Management Console navigation tree, expand the **Publishing Framework** node.
2. Select and expand the desired metadata repository node.
3. If you are creating a channel within a folder, select the **Channels** node and navigate to the desired folder.
4. Right-click **Channels** or the desired channel folder and select **New Channel**. The New Channel wizard opens.





**New Channel**  
Specify the channel name and other optional general information.

Name:

ID: ASV3MQZP.\$0000001

Description:

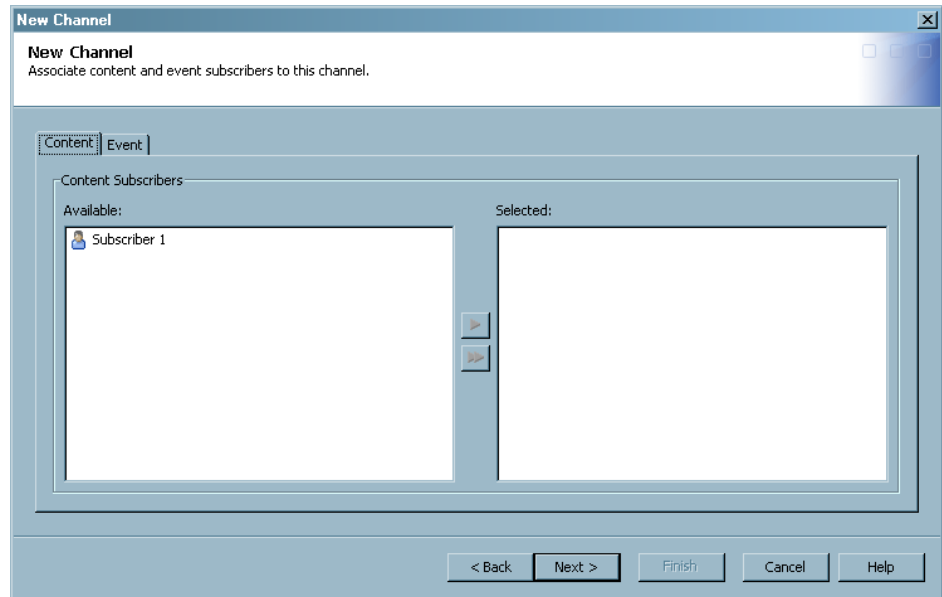
Subject:

Keywords:

Buttons: Add..., Edit..., Remove

Navigation: < Back, Next >, Finish, Cancel, Help

5. Specify the name of your channel and click **Next**.



**New Channel**  
Associate content and event subscribers to this channel.

Content | Event


Content Subscribers

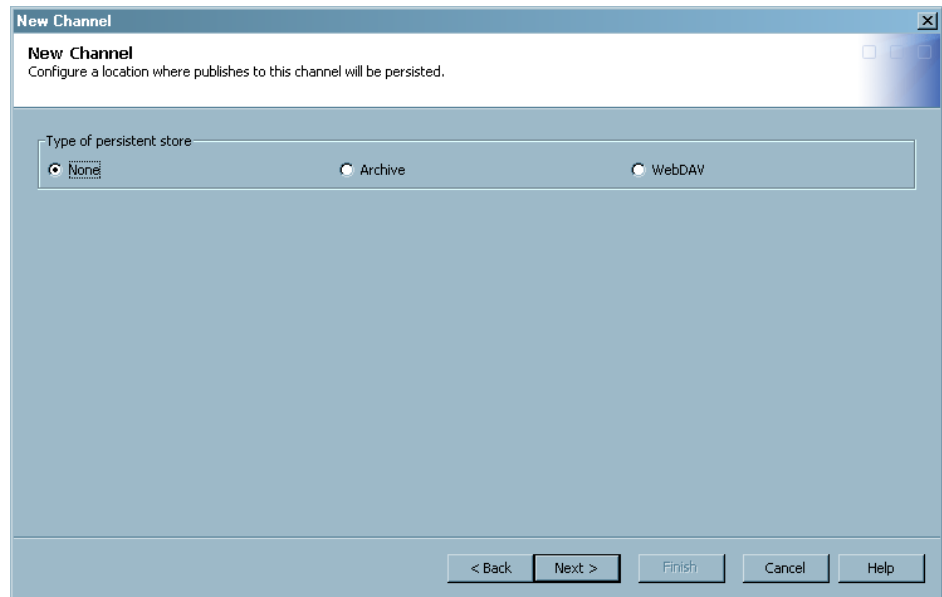
Available:  Subscriber 1

Selected:

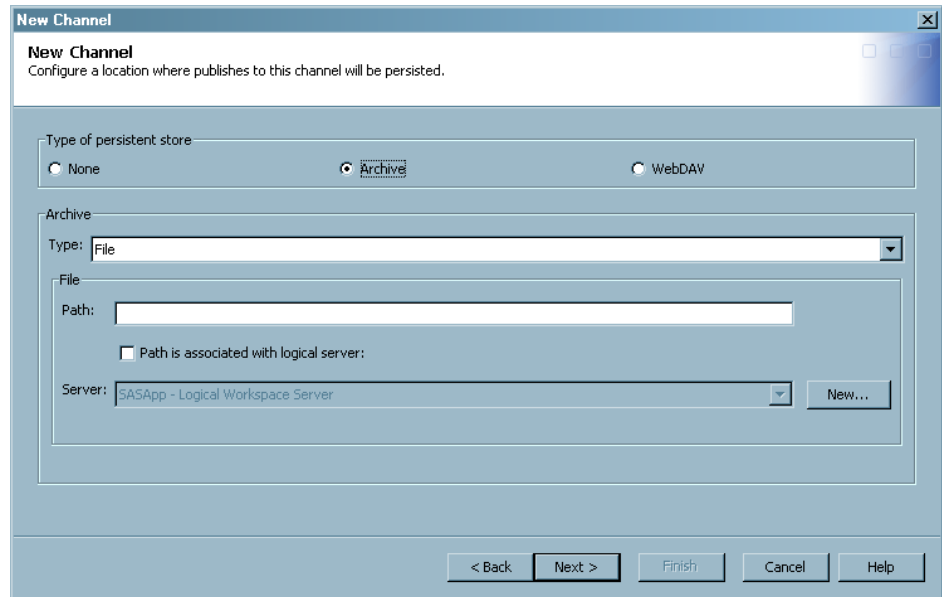
Buttons: >, >>

Navigation: < Back, Next >, Finish, Cancel, Help

6. Use the arrow  to associate content subscribers with this channel to be notified at publish time. Click **Next**.



7. Select **Archive**. The archive page opens.



8. Select **File** for **Archive Type** and enter the path of your publish location. Click **Next**.  
The information window opens, providing the summary of the input and status of successful completion of the channel creation.  
*Note:* The Archive storage has two other types: HTTP and FTP that you can select from the list.
9. Click **Finish**. The new channel name is displayed under the **Channels** node of SAS Management Console.

For more information, see the SAS Management Console Help or the *SAS 9.2 Publishing Framework: Developer's Guide*.

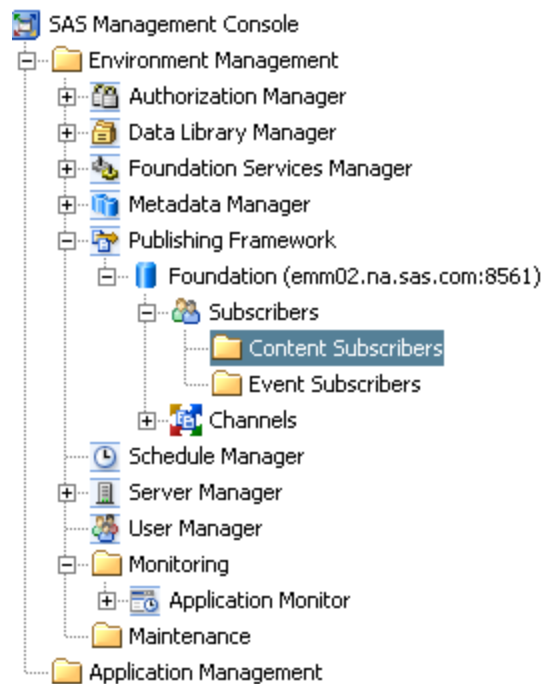
---

## Create a New Subscriber

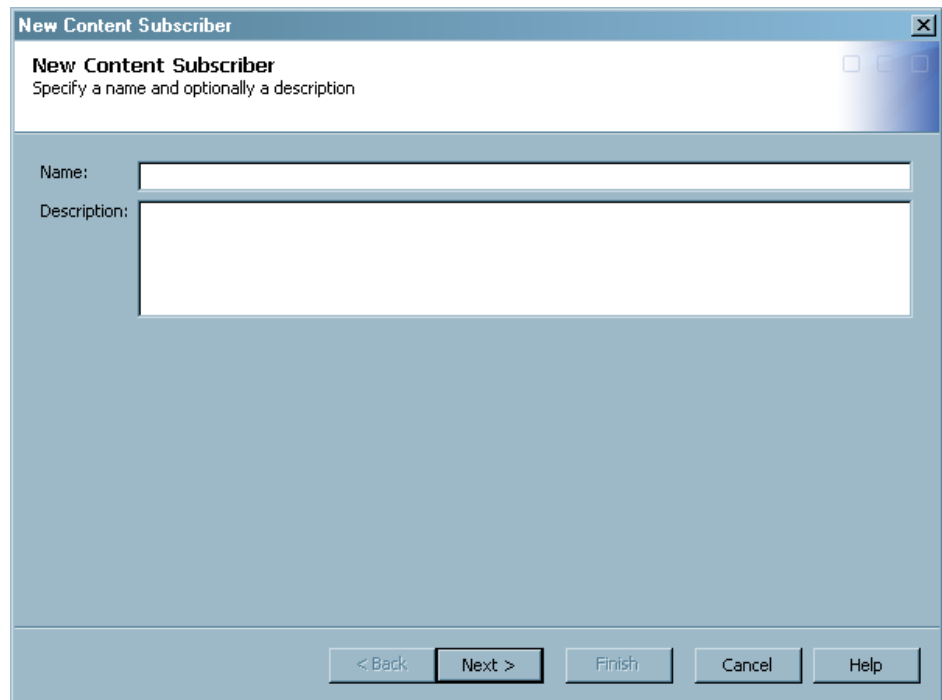
SAS Model Manager supports only the content subscriber and the Name/Value pair filter for filtering. You can publish to a channel even when the channel does not have any associated subscribers. SAS Model Manager users can extract contents from a channel if they are not subscribers of the channel. However, only subscribers of a channel can receive notifications. You can also create a subscriber group that contains individual subscribers or other subscriber groups. For more information, see the SAS Management Console Help.

To create a new content subscriber:

1. Expand the Publishing Framework node in the SAS Management Console navigation tree.
2. Select the desired metadata repository node.
3. Select **Subscribers** ⇒ **Content Subscribers**.

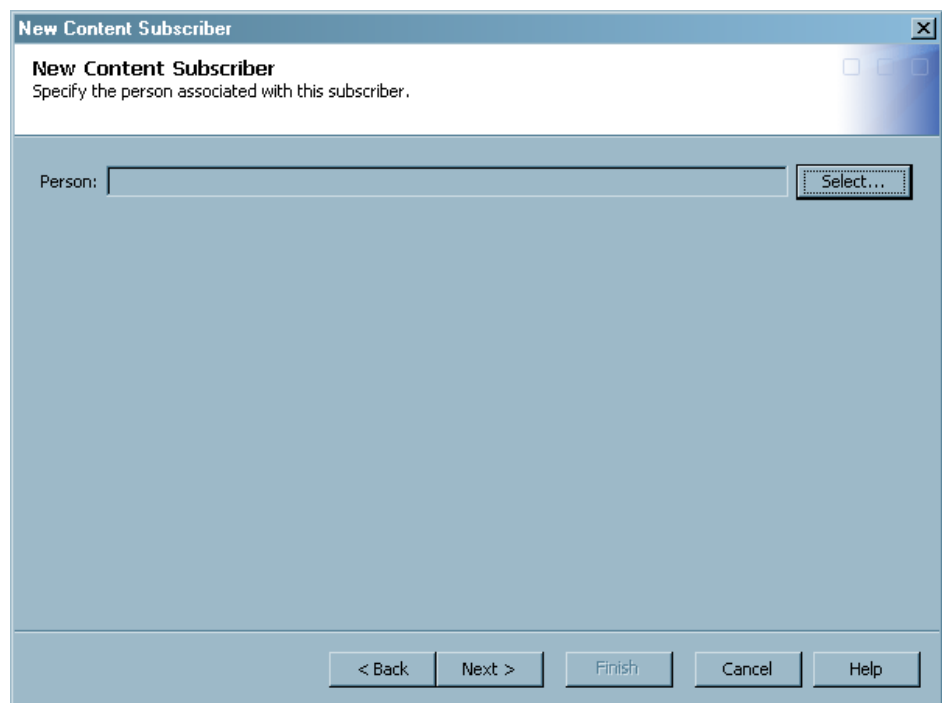


4. Right-click **Content Subscribers** and select **New Content Subscriber**. The New Content Subscriber wizard window opens.



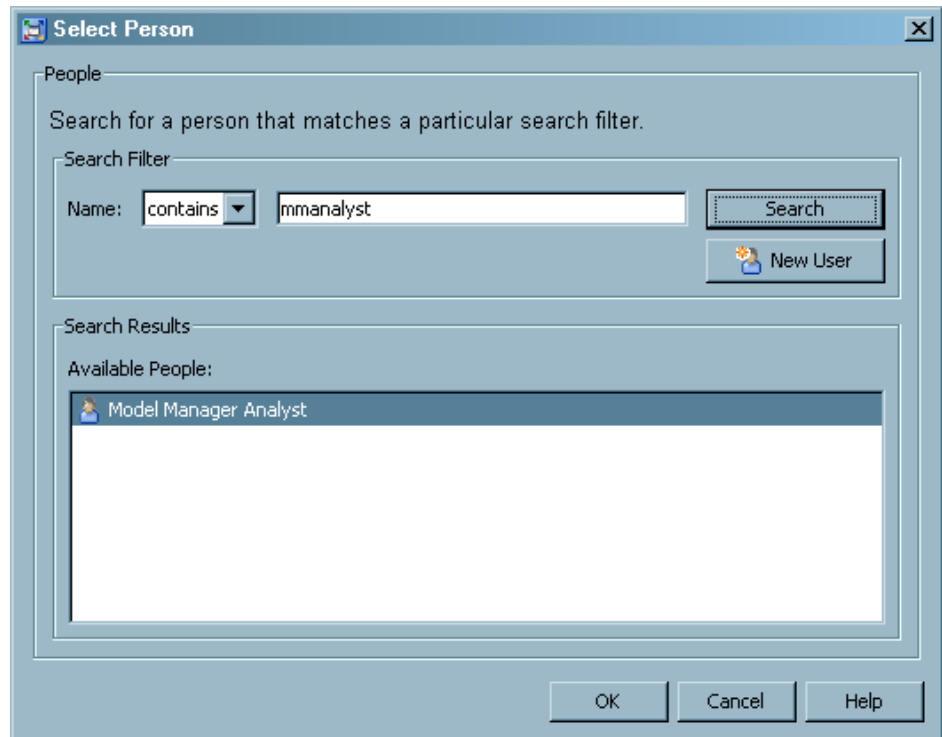
The dialog box is titled "New Content Subscriber" and has a subtitle "Specify a name and optionally a description". It contains two input fields: "Name:" and "Description:". The "Name:" field is a single-line text box, and the "Description:" field is a multi-line text box. At the bottom, there are five buttons: "< Back", "Next >", "Finish", "Cancel", and "Help".

5. Specify a name and a description for this subscriber. The name must be unique within its parent folder. The description is optional. Click **Next**.
6. Click **Select** to associate a person with this subscriber.



The dialog box is titled "New Content Subscriber" and has a subtitle "Specify the person associated with this subscriber.". It contains a "Person:" label followed by a text box and a "Select..." button. At the bottom, there are five buttons: "< Back", "Next >", "Finish", "Cancel", and "Help".

7. The search filter enables you to search the repository for users whose names either contain or are equal to a string that you specify. Enter the string in the text field, select either **contains** or **equals** from the list, and click **Search**. A list of users whose names meet your search criteria appears in the **Available People** list.



**Select Person**

People


Search for a person that matches a particular search filter.

Search Filter

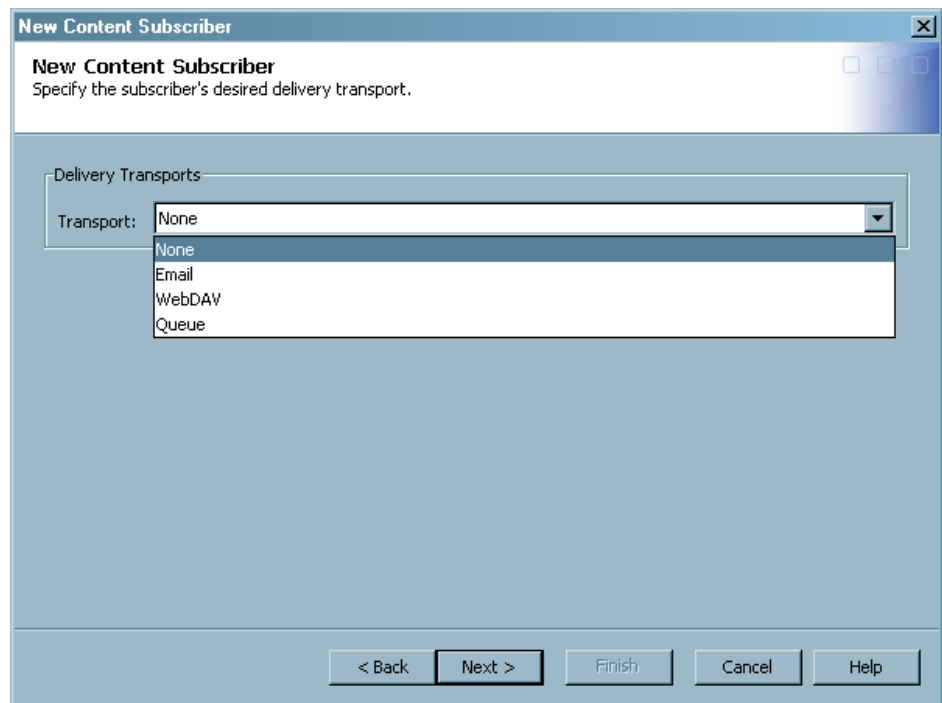
Name:

Search Results

Available People:

-  Model Manager Analyst

8. If the desired user does not exist in the repository, then click **New User** to define that user. Then, select the desired user from the **Available People** list and click **OK**.
9. Click **Next**.
10. Select the subscriber's delivery transport and then specify the attributes. Click **Next**.



**New Content Subscriber**

Specify the subscriber's desired delivery transport.

Delivery Transports

Transport:

- None
- Email
- WebDAV
- Queue

**New Content Subscriber**  
Specify the subscriber's desired delivery transport.

Delivery Transports

Transport:

Email

Format

☒ HTML  
☐ Text

Address

Email Addresses:

< Back   Next >   Finish   Cancel   Help

11. Specify one or more filters to eliminate content that the subscriber does not want to receive. To add a filter, select the tab that corresponds to the type of filter (Name/Value, Entry, or MIME Type). Select **Inclusion** or **Exclusion** and then click **Add** to specify the filter criteria.

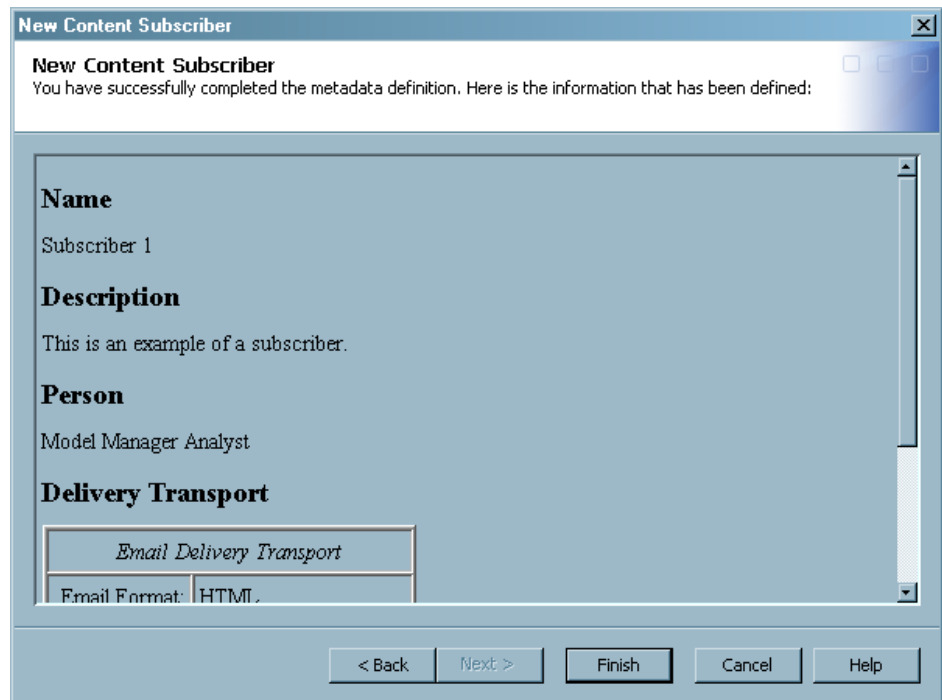
**New Content Subscriber**  
Optionally specify subscriber inclusion/exclusion filters.

Name/Value   Entry   MIME Type

☒ Inclusion   ☐ Exclusion

< Back   Next >   Finish   Cancel   Help

12. Click **Next**.
13. Review the subscriber specifications. Click **Back** to make any corrections. Click **Finish** when you are satisfied with your selections.



The image shows a Windows-style dialog box titled "New Content Subscriber". At the top, it says "New Content Subscriber" and "You have successfully completed the metadata definition. Here is the information that has been defined:". Below this, there are four sections: "Name" with the value "Subscriber 1", "Description" with the value "This is an example of a subscriber.", "Person" with the value "Model Manager Analyst", and "Delivery Transport" with a list box containing "Email Delivery Transport". Below the list box is a label "Email Format:" followed by a text box containing "HTML.". At the bottom, there are five buttons: "< Back", "Next >", "Finish", "Cancel", and "Help".

**New Content Subscriber**

You have successfully completed the metadata definition. Here is the information that has been defined:

**Name**  
Subscriber 1

**Description**  
This is an example of a subscriber.

**Person**  
Model Manager Analyst

**Delivery Transport**

Email Delivery Transport

Email Format: HTML.

< Back   Next >   Finish   Cancel   Help

For more information, see the Help or the *SAS 9.2 Publishing Framework: Developer's Guide*.





## Chapter 5

# Managing Data Tables, Users, Groups, and Roles in SAS Management Console

---

<b>Overview of Managing Data Tables, Users, Groups, and Roles in SAS Management Console</b> .....	<b>55</b>
<b>Modifying a Data Table</b> .....	<b>55</b>
<b>Deleting a Data Table</b> .....	<b>56</b>
Overview of Deleting a Data Table .....	56
Deleting a Data Table in SAS Management Console .....	56
<b>Managing Users, Groups, and Roles</b> .....	<b>57</b>

---

## Overview of Managing Data Tables, Users, Groups, and Roles in SAS Management Console

SAS Management Console is the primary tool that is available to administer the SAS Metadata Repository. SAS Management Console is a framework that provides a variety of plug-ins that expand the capability of SAS Management Console. Only certain users can view and use plug-ins. A user's access to plug-ins depends on which roles the user is assigned to and which capabilities are assigned to those roles. SAS Model Manager makes extensive use of the SAS Metadata Repository. Therefore, SAS Management Console is used to perform a number of administrative tasks. Some of those tasks include managing users, groups, roles, and data tables. For information about other administrative tasks such as creating users, groups, roles, and channels, see [Chapter 3, "Setting Up SAS Management Console for Use,"](#) on page 9.

For information about SAS Management Console and plug-ins, see "Understanding the State of Your System" in the *SAS Intelligence Platform: System Administration Guide*. Also, see the SAS Management Console Help.

---

## Modifying a Data Table

SAS Model Manager does not provide a way to modify the structure of a data source table. If a data source table is modified externally (using SAS Management Console, for example), then the existing SAS Model Manager scoring tasks might stop functioning.

For more information, see SAS Management Console Help or the *SAS Intelligence Platform: System Administration Guide*.

## Deleting a Data Table

### Overview of Deleting a Data Table

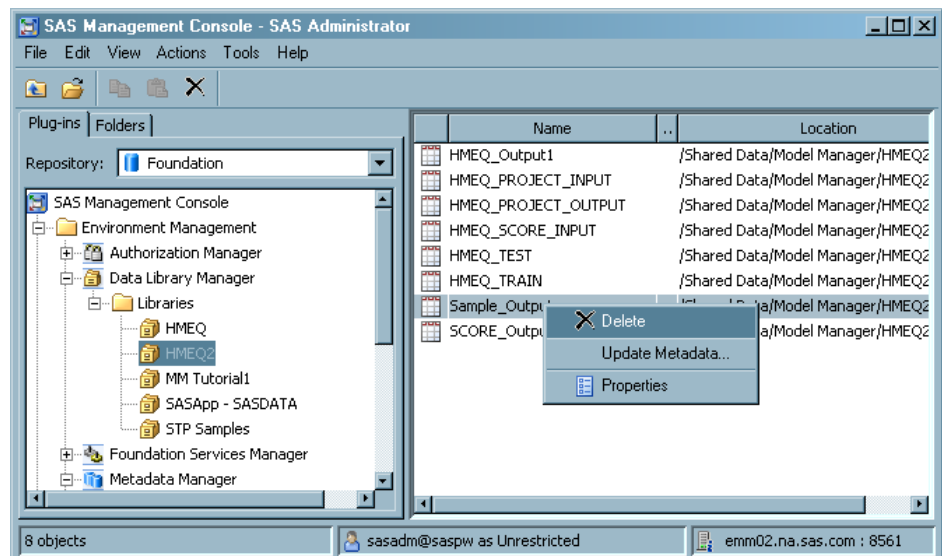
Data tables can be deleted only from the SAS Metadata Repository using SAS Management Console. Data tables cannot be deleted from SAS Model Manager using the Data Sources view. If the data table's metadata is deleted from the SAS Metadata Repository using SAS Management Console or the operating system, SAS Model Manager cannot access the data table to view data or to perform any reporting or scoring tasks. In this case, an error message appears.

*Note:* Only a SAS Administrator or a user with Delete permission can delete data tables using SAS Management Console.

### Deleting a Data Table in SAS Management Console

To delete a data table in SAS Management Console, follow these steps:

1. Start SAS Management Console. Connect to your preferred SAS Metadata Repository.
2. On the **Plug-ins** tab, expand the following folders:  
**Environment Management** ⇒ **Data Library Manager** ⇒ **Libraries**.
3. Select the library that contains the data table that you want to delete.
4. Right-click the data table name in the right pane, and then select **Delete** from the pop-up menu. The Delete Table dialog box is displayed.



5. Click **OK** to delete the data table. The data table is removed from the SAS Metadata Repository library, but it is not physically removed from the operating system.

For more information, see SAS Management Console Help or the *SAS Intelligence Platform: System Administration Guide*.

---

## Managing Users, Groups, and Roles

You use SAS Management Console to set up users, groups, and roles to define which actions a user can perform when using SAS Model Manager. For information about setting up a user, group, or role, see [“Configuring Users, Groups, and Roles” on page 14](#).

In order to make access distinctions and track user activity, security systems must know who is making each request. The primary purpose of user administration is to provide information that helps systems make this determination. The SAS environment requires one external account ID for each user. The SAS environment then uses its copy of these IDs to establish a unique SAS metadata identity for each connecting user. All of a user's group memberships, role memberships, and permission assignments are ultimately tied to their SAS metadata identity.

To access user administration features in SAS Management Console, select the **User Manager** node on the **Plug-ins** tab. Your roles and permissions determine which user administration tasks you can perform.

*Note:* The **User Manager** node is the only location from which you can manage identities.

For more information, see the SAS Management Console Help or the *SAS Intelligence Platform: System Administration Guide*.



## Chapter 6

# Administering User Templates

---

<b>Overview of Administering User Templates</b> .....	<b>59</b>
<b>Creating or Modifying XML Template Files</b> .....	<b>60</b>
Creating or Modifying a Model Template XML File .....	60
Creating or Modifying a Life Cycle Template XML File .....	61
<b>Deploying User Templates</b> .....	<b>64</b>

---

## Overview of Administering User Templates

Members of only two user groups can deploy templates after they have been created: Model Manager Advanced Users and Model Manager Administrator Users who have Write access to the middle-tier server where the SAS Model Manager Application Programming Interface is installed.

SAS Model Manager provides the following sample user templates:

- User Life Cycle Template (UserLifecycleTemplate.xml)
- User Model Template (UserModelTemplate.xml)
- User-Defined Report Template (UserReportTemplate.xml)

Use SAS Model Manager Template Editor instead of manually editing the XML files for model and life cycle user templates. An existing template XML file must be manually edited if the participants list needs to be changed. For more information, see [“Creating or Modifying XML Template Files” on page 60](#).

*Note:* User-defined report templates cannot be modified using the SAS Model Manager Template Editor. For more information, see the User-Defined Reports section of the *SAS Model Manager: User’s Guide*.

For more information, see [“Deploying User Templates” on page 64](#) and the *SAS Model Manager: User’s Guide*.

## Creating or Modifying XML Template Files

### Creating or Modifying a Model Template XML File

SAS Model Manager supplies a sample XML file for you to use as an example when you create a user model template. You can copy this template and modify the attribute values. This file is located in the user template directory `\sasconfigdir\Lev#\AnalyticsPlatform\apps\ModelManager\ext.`

Here is a typical user model template. For a description of the file attributes, see [“Model Template Properties” on page 68](#).

```
<?xml version="1.0" encoding="UTF-8" ?>
<ModelTemplate
  name="User Model Template"
  description="Analytical Model"
  type="AnalyticalModel"
  tool="Base SAS"
  validate="N"
  displayName="Analytical Model"
  scoreCodeType="SAS Program"
  modelMetaMacro="genVarMacro.sas"
  function="analytical">

  <FileList libRef="SMMmodel">
    <File name="score.sas" required="Y" report="Y" type="text"
      description="file.score.desc.txt" fileRef="ScoreCod" />
    <File name="modelinput.sas7bdat" required="Y" report="N" type="binary"
      description="file.inputdataset.desc.txt" fileRef="" />
    <File name="modeloutput.sas7bdat" required="Y" report="N" type="binary"
      description="file.outputdataset.desc.txt" fileRef="" />
  </FileList>

  <Properties type="System"
    resource="com.sas.analytics.modelmanager.metadata.model.Resources">
    <Property name="Algorithm" type="String" editAllowed="Y" required="N"
      initial="" displayName="algorithm.name.txt"
      description="algorithm.desc.txt"/>
    <Property name="Modeler" type="String" editAllowed="Y" required="N"
      initial="" displayName="Modeler" description="modeler.desc.txt"/>
  </Properties>

  <Properties type="User">
    <Property name="User1" type="String" editAllowed="Y" required="N"
      initial="" displayName="User1"
      description="User defined name/value pair."/>
  </Properties>
</ModelTemplate>
```

The following table provides information about updating an XML model template:

Template Editor Item	XML Element or Attribute	XML File Usage Information
Model Template Properties	<ModelTemplate name="" description="" type="" tool="" validate="" displayName="" scoreCodeType="">	For a description of the attributes, see <a href="#">“Template Properties” on page 68</a> .
FileList Properties	<FileList libRef=""> <File name="" required="" report="" type="" description="" fileRef="" />	For each file assign a name, type, and description. For more information, see <a href="#">“FileList Properties” on page 70</a> .
System Properties	<Properties type="System" resource="com.sas.analytics.modelmanager.metadata.model.Resources"> <Property name="" type="" editAllowed="" required="" initial="" displayName="" description="" />	For each system property assign a name, type, and description. For more information, see <a href="#">“System and User Properties” on page 71</a> .
User Properties	<Properties type="User"> <Property name="" type="" editAllowed="" required="" initial="" displayName="" description="" />	For each user property assign a name, type, and description. For more information, see <a href="#">“System and User Properties” on page 71</a> .

## Creating or Modifying a Life Cycle Template XML File

SAS Model Manager supplies a sample XML file for you to use as an example when you create a user life cycle template. You can copy this template and modify the attribute values. This file is located in the user template directory `\sasconfigdir\Lev#\AnalyticsPlatform\apps\ModelManager\ext`.

Here is a typical life cycle template.

```
<?xml version="1.0" encoding="UTF-8" ?>
<LifecycleTemplate
  name="User Lifecycle Template"
  version="5"
  isDefault="false"
  description="A lifecycle template for the users to experiment with."
>
  <Participants>
    <Participant id="1" name="mdlmgrexampleassignees"/>
    <Participant id="2" name="mdlmgrexampleapprovers"/>
  </Participants>
  <Lifecycle>
    <Milestone id="1" type="Develop" name="Development"
      desc="The development milestone">
      <Action id="1" type="SetChampion" name="Select Champion"
        dependsOn="" assignees="1" approvers="2"
        weight="100" duration="1"
        desc="Specify which is the champion model." />
    </Milestone>
  </Lifecycle>
</LifecycleTemplate>
```

```

</Milestone>
<Milestone id="2" type="Production" name="Production"
  desc="The production milestone">
  <Action id="2" type="DeclareProduction"
    name="Declare Ready For Production"
    dependsOn="1" assignees="1" approvers="2"
    weight="100" duration="10"
    desc="Declare this version ready to be put into production."/>
</Milestone>
<Milestone id="3" type="Retire" name="Retire"
  desc="The retire milestone">
  <Action id="3" type="RetireChampion" name="End Production Scoring"
    dependsOn="2" assignees="1" approvers="2"
    weight="100" duration="1"
    desc="De-activate the champion model and stop scoring with it."/>
</Milestone>
</Lifecycle>
</LifecycleTemplate>

```

Most of the XML elements and element attributes match the property names that are described in [“Life Cycle Template Properties” on page 65](#). One of the most notable differences between creating a life cycle template using the SAS Model Manager Template Editor and modifying an XML template file using a text editor is that the template editor generates milestone, task, and dependency identifiers, and provides a list of users and groups who can be participants. When you create a life cycle template using a text editor, you must assign identifiers, increment the number for the version property, and know the names of SAS Model Manager users and groups. You can obtain the user and group names from SAS Management Console.

The following table provides information about updating an XML life cycle template:

Template Editor Item	XML Element or Attribute	XML File Usage Information
Life Cycle Template Properties	<LifecycleTemplate name="" version="" isDefault="" description="">	For a description of the attributes, see <a href="#">“Template Properties” on page 65</a> .
Participants List	<Participant id="" name=""	For each SAS Model Manager user, create a <Participant> element. Assign each participant an ID. In the name attribute, supply a SAS Model Manager user name or a group name.  For more information, see the <i>SAS Model Manager: User's Guide</i> .



Template Editor Item	XML Element or Attribute	XML File Usage Information
Milestone	<Milestone id="" type="" name="" desc="">	<p>For each milestone, assign a milestone ID, type, name, and description. The ID is an integer number. For each successive milestone, increment the ID by 1.</p> <p>In the type attribute, enter a milestone phase. Valid values are Develop, Test, Staging, Production, Retire, and UserDefined.</p> <p>For more information, see <a href="#">“Milestone Properties” on page 66</a>.</p>
Task	<Action id="" type="" name="" dependsOn="" assignees="" approvers="" weight="" duration="" desc="">	<p>In an XML life cycle template file, a task is defined by the &lt;Action&gt; element. For a description of the attributes, see <a href="#">“Task Properties” on page 66</a>.</p> <p>When you create a life cycle template using an XML file, you assign the task IDs in the form <i>milestoneID.taskID</i>. <i>milestoneID</i> is the milestone ID for this task. <i>taskID</i> is an integer. For each successive task, increment <i>taskID</i> by 1.</p> <p>Enter any task dependencies using the form <i>milestoneID.taskID</i>. Separate multiple dependencies using a comma.</p> <p>Valid task type values are UserDefined, Signoff, DeclareProduction, SetChampion, and RetireChampion.</p> <p>Enter one or more assignees as a SAS Model Manager user or group. Separate multiple assignees using a comma.</p> <p>Enter one or more approvers as a SAS Model Manager user or group. Separate multiple approvers using a comma.</p> <p>For more information about assignees and approvers, see the <i>SAS Model Manager: User’s Guide</i>.</p>

---

## Deploying User Templates

A user template defines what a life cycle, model, or report is to SAS Model Manager. Users can create and edit user templates. Only users that have Write access to the middle-tier server where SAS Model Manager is installed can deploy user templates. Middle-tier server access is granted by your system administrator and is not part of SAS Model Manager user access privileges.

To deploy a user template, follow these steps:

1. Navigate to the location of the user template XML file.
2. Copy the user-defined template XML file into the `\sasconfigdir\Lev#\AnalyticsPlatform\apps\ModelManager\ext` directory.
3. For user report templates, copy SAS programs into the **SAS Code** folder, which is located in the same directory as the user templates.
4. Stop the SAS Analytics Platform server. Which will stop all SAS Analytics Platform clients, including SAS Model Manager. For more information, see the *Administrator's Guide for SAS Analytics Platform* (<http://support.sas.com/documentation/onlinedoc/apcore/index.html>).
5. Restart the SAS Analytics Platform server.
6. Verify that the new user template is available in SAS Model Manager.
  - a. A new user life cycle template should be displayed in the Life Cycle perspective.
  - b. A new user model template should be displayed in the **Choose a model template** list when you import a model from local files for a project.
  - c. A new user-defined report template should be displayed in the New Reports Wizard **Reports** list.

For more information, see “[Creating or Modifying XML Template Files](#)” on page 60 or the *SAS Model Manager: User's Guide*.

## Appendix 1

# Properties

<b>Life Cycle Template Properties</b> . . . . .	<b>65</b>
Template Properties . . . . .	65
Milestone Properties . . . . .	66
Task Properties . . . . .	66
<b>Model Template Properties</b> . . . . .	<b>68</b>
Template Properties . . . . .	68
FileList Properties . . . . .	70
System and User Properties . . . . .	71

## Life Cycle Template Properties

### Template Properties

Here is a list of the life cycle template properties.

Property Name	Description
<b>Name</b>	Identifies the name of the life cycle template. This property is required.
<b>Description</b>	Specifies user-defined information about the life cycle template.
<b>Version</b>	<p>Specifies a life cycle version number. A version number is an integer. Each time that you create a new version of a template, increment the version number by 1. The version number for each life cycle template is unique to that template. This property is required.</p> <p>SAS Model Manager checks for new versions each time it starts. If a new life cycle version is detected, SAS Model Manager uses the updated life cycle template for new versions that specify that template.</p>
<b>Default</b>	<p>Specifies whether the life cycle template is the default template that is used when you create a new version in a project. Only one life cycle template in the middle-tier server user-template directory can be the default template. Valid values are TRUE and FALSE. In the template editor, select the check box to set the value to TRUE.</p> <p>This property is required.</p>

## Milestone Properties

Here is a list of the milestone properties for the life cycle template.

Property Name	Description
<b>Name</b>	Identifies the name of the milestone. This property is required.
<b>Display ID</b>	Displays a system-supplied milestone identifier that is an integer greater than 0. A milestone identifier is based on the order in which the identifier appears in the life cycle definition. For example, the first milestone in the life cycle template has an identifier of 1. The second milestone has an identifier of 2.
<b>Description</b>	Specifies user-defined information about the milestone.
<b>Milestone Phase or Type</b>	<p>Specifies the phase for the milestone. Here is a list of valid milestone phases:</p> <p><b>Develop</b> specifies that the milestone has development tasks such as registering models and ensuring that a version has all of the required resources for validating candidate models.</p> <p><b>Test</b> specifies that the milestone has testing tasks such as validating a model's input and output variable data structure and creating reports to compare the scores of candidate models.</p> <p><b>Staging</b> specifies that the milestone has staging tasks such as exporting a champion model to a SAS metadata repository, publishing a model to a channel, and publishing In-Database scoring functions to a database.</p> <p><b>Production</b> specifies that the milestone has production tasks such as scoring a champion model in a production environment, and monitoring a champion model's performance.</p> <p><b>Retire</b> specifies that the milestone has retirement tasks such as removing a model from a production environment.</p> <p><b>UserDefined</b> specifies a custom milestone for your organization, such as indicating that a champion model is in compliance with government regulations or industry process standards.</p>

## Task Properties

Here is a list of the task properties for the life cycle template.

Property Name	Description
<b>Name</b>	Identifies the name of the task. This property is required.

Property Name	Description
<b>Display ID</b>	Displays a system-supplied milestone and task identifier in the form <b>milestone#.task#</b> (for example, <b>1.1</b> ) that identifies the milestone that the task is a part of as well as the task. Each milestone and task identifier is based on the order in which it appears in the life cycle definition. For example, the first milestone in the life cycle template has an identifier of 1. The second milestone has an identifier of 2. The identifier for the first task in milestone 1 is 1.1. The second task in milestone 1 has an identifier of 1.2.
<b>Dependencies</b>	Identifies a <b>DisplayID</b> for a task that must be completed before this task can be completed. If a <b>DisplayID</b> has a dependency on more than one other task, those DisplayIDs are separated by a comma.
<b>Description</b>	Displays user-defined information about the task.
<b>Task Type</b>	<p>Specifies a type for the task. Here is a list of valid task types:</p> <p><b>UserDefined</b> identifies the task as a custom task for your organization. A user-defined task represents a step in your organization's model life cycle that you would like to track using SAS Model Manager. SAS Model Manager does not perform any tests or verify that any project or version tasks have been performed for any user-defined tasks.</p> <p><b>Signoff</b> specifies that all of the milestone tasks are complete and have been approved.</p> <p><b>DeclareProduction</b> specifies that the champion model is ready to be exported to the production environment.</p> <p><b>SetChampion</b> specifies that the task is to determine a champion model. Before this task can be completed, a champion model must be set for a version in the Project Tree.</p> <p><b>RetireChampion</b> specifies that the champion model is retired.</p>
<b>Assignees</b>	<p>Specifies a user or group name from the <b>Participants</b> list. The specified user or any member of the specified group is the user who is assigned to complete the task. The specified user or group members are the only users who are authorized to set the task <b>Status</b> field to <b>Not Started</b>, <b>Started</b>, or <b>Completed</b>.</p> <p><b>Assignees</b> can be unassigned. If this field is unassigned, the following rules apply:</p> <ul style="list-style-type: none"> <li>• Updates to the task status are not required.</li> <li>• Only those users and groups that are in the life cycle <b>Participants</b> list can modify the task status.</li> </ul>

Property Name	Description
<b>Approvers</b>	<p>Specifies a user or a group from the <b>Participants</b> list. The specified user or any member of the specified group is the user who is assigned to complete the task. The specified user or any member of the group is authorized to set the task <b>Status</b> field to <b>Approved</b>.</p> <p><b>Approvers</b> can be unassigned. If this field is unassigned, the following rules apply:</p> <ul style="list-style-type: none"> <li>• The task approval status is not required to be updated.</li> <li>• Only those users and groups who are on the life cycle's <b>Participants</b> list can modify the task approval status.</li> </ul>
<b>Weight</b>	<p>Specifies a percentage as an integer. The integer indicates the relative work effort that is required by the task to complete the milestone. SAS Model Manager uses weight values to calculate the percentage that is complete for a milestone. The weight displays as a property for a version's <b>Life Cycle</b> folder. If you use the <b>Weight</b> property, the weight values for all tasks in a milestone should add up to 100. When weights for a milestone do not add up to 100, SAS Model Manager performs a weight proportion adjustment so that the sum of those weights within a milestone adds up to 100.</p> <p>Note: user-defined weights are not explicitly adjusted. Weights remain as entered and are not adjusted.</p>
<b>Duration</b>	<p>Specifies a number either as an integer or a fractional number that indicates the amount of time that is allocated to complete the task. The default duration unit is the number of days.</p>

## Model Template Properties

### Template Properties

Here is a list of the general properties that define the model template.

Property Name	Description
<b>Name</b>	Identifies the name of the template. This is a required field. The following characters cannot be used in the template name: @, \, /, *, %, #, &, \$, (, ), !, ?, <, >, ^, +, \.
<b>Description</b>	Specifies user-defined information about the template.

Property Name	Description
<b>Type</b>	<p>Specifies the type of the model. SAS Model Manager supports only the following model types:</p> <p><b>AnalyticalModel</b> specifies the type of model that is associated with the Analytical model function.</p> <p><b>ClassificationModel</b> specifies the type of model that is associated with the Classification model function.</p> <p><b>PredictionModel</b> specifies the type of model that is associated with the Prediction model function.</p> <p><b>ClusteringModel</b> specifies the type of model that is associated with the Segmentation model function.</p> <p>For more information about the model function types, see the <i>SAS Model Manager: User's Guide</i></p>
<b>Tool</b>	Specifies a text value that describes what tool is used to produce this type of model.
<b>Validate</b>	Indicates, when selected, that SAS Model Manager verifies that all of the required files are present when users try to import a model into SAS Model Manager. If validation fails, the model will not be successfully imported.
<b>Display Name</b>	Specifies a text value that is displayed as the name of the model template.
<b>Score Code Type</b>	Specifies whether the imported model score code runs using a DATA step fragment or SAS program code.
<b>modelMetaMacro</b>	Specifies the model meta macro that is used either to generate model input or to output XML based on modelinput.sas7bdat and modeloutput.sas7bdat in the file section. This property is auto-populated in the user model template XML file with the value <b>genVarMaro.sas</b> and is not displayed in the SAS Model Manager Template Editor properties.

Property Name	Description
<b>Function</b>	<p>The model function is related to the type of model. This value appears as a model function option when a user creates a project. When a user imports a model, the model template options are filtered based on the model function that was selected when the project was created. This property is not displayed in the SAS Model Manager Template Editor properties. SAS Model Manager provides the following values:</p> <ul style="list-style-type: none"> <li>• analytical</li> <li>• classification</li> <li>• prediction</li> <li>• segmentation</li> <li>• any</li> </ul> <p>Note: If the <b>Function</b> property has a value of <b>any</b>, then all types of models can be imported into a SAS Model Manager project.</p>

### FileList Properties

Here is a list of the FileList properties that specify the files that are contained in a model.

Property Name	Definition
<b>Name</b>	Identifies the name of the file. This is a required field.
<b>Description</b>	Specifies user-defined information about the file.
<b>Required</b>	Indicates, when selected, that the file is a required component file of the model to be imported.
<b>Report</b>	Indicates, when selected, that the file is to be included in a SAS package file when a model is published to a channel.
<b>Type</b>	Specifies a file whose type is text or binary.
<b>Fileref</b>	Specifies an eight-character (or less) SAS file reference for users to refer to this file in their score.sas code. The fileref is assigned by SAS Model Manager when a SAS job is submitted.

*Note:* All user-defined models are required to have three files.

- score.sas is the model's score code.
- modelinput.sas7bdat is a SAS data set whose variables are used by the model score code. The contents of the data set is not used by SAS Model Manager.
- modeloutput.sas7bdat is a resulting data set when a user runs score.sas against modelinput.sas7bdat. The data set provides output variables that the model creates after a scoring task is executed. The contents of the data set is not used by SAS Model Manager.



## System and User Properties

Here is a list of the system-defined and user-defined properties for a model template. Users can set these properties when they import a model.

Property Name	Description
<b>Name</b>	Identifies the name of the property. This is a required field.
<b>Description</b>	Specifies user-defined information about the property.
<b>Type</b>	Specifies a property whose type is String or Date.
<b>Edit</b>	Indicates, when selected, that the property can be modified when importing a model or after the model is imported to SAS Model Manager.
<b>Required</b>	Indicates, when selected, that the property is required.
<b>Initial Value</b>	Specifies a text string for the initial value for the property.
<b>Display Name</b>	Specifies a text value that is displayed as the name of the property.



# Glossary

---

**candidate model**

a predictive model that evaluates a model's predictive power as compared with the champion model's predictive power.

**champion model**

the best predictive model that is chosen from a pool of candidate models in a data mining environment.

**channel**

a virtual communication path for distributing information. In SAS, a channel is identified with a particular topic. Using the features of the Publishing Framework, authorized users or applications can publish digital content to the channel, and authorized users and applications can subscribe to the channel in order to receive the content.

**classification model**

a predictive model that has a categorical, ordinal, or binary target.

**data source**

a data object that represents a SAS data set or a DBMS table. SAS Model Manager has seven types of data sources: project input and output tables, test tables, scoring task input and output tables, performance tables, and training tables.

**DATA step**

in a SAS program, a group of statements that begins with a DATA statement and that ends with either a RUN statement, another DATA statement, a PROC statement, the end of the job, or the semicolon that immediately follows lines of data. The DATA step enables you to read raw data or other SAS data sets and to use programming logic to create a SAS data set, to write a report, or to write to an external file.

**DATA step fragment**

a block of SAS code that does not begin with a DATA statement. In SAS Model Manager, all SAS Enterprise Miner models use DATA step fragments in their score code.

**folder**

an object that contains other container objects and files.

**input variable**

a variable that is used in a data mining process to predict the value of one or more target variables.

**libref**

a SAS name that is associated with the location of a SAS library. For example, in the name MYLIB.MYFILE, MYLIB is the libref, and MYFILE is a file in the SAS library.

**metadata**

a description or definition of data or information.

**metadata identity**

a metadata object that represents an individual user or a group of users in a SAS metadata environment. Each individual and group that accesses secured resources on a SAS Metadata Server should have a unique metadata identity within that server.

**milestone**

a collection of tasks that complete a significant event. The significant event can occur either in the process of selecting a champion model, or in the process of monitoring a champion model that is in a production environment.

**model function**

the type of statistical model, such as classification, prediction, or segmentation.

**output variable**

in a data mining process, a variable that is computed from the input variables as a prediction of the value of a target variable.

**package file**

a container for data that has been generated or collected for delivery to consumers by the SAS Publishing Framework. Packages can contain SAS files (SAS catalogs; SAS data sets; various types of SAS databases, including cubes; and SAS SQL views), binary files (such as Excel, GIF, JPG, PDF, PowerPoint and Word files), HTML files (including ODS output), reference strings (such as URLs), text files (such as SAS programs), and viewer files (HTML templates that format SAS file items for viewing).

**prediction model**

a model that predicts the outcome of an interval target.

**project**

a collection of models, SAS programs, data tables, scoring tasks, life cycle data, and reporting documents.

**Project Tree**

a hierarchical structure made up of folders and nodes that are related to a single folder or node one level above it and to zero, one, or more folders or nodes one level below it.

**publication channel**

an information repository that has been established using the SAS Publishing Framework and that can be used to publish information to users and applications.

**publish**

to deliver electronic information, such as SAS files (including SAS data sets, SAS catalogs, and SAS data views), other digital content, and system-generated events to one or more destinations. These destinations can include e-mail addresses, message queues, publication channels and subscribers, WebDAV-compliant servers, and archive locations.

**Publishing Framework**

a component of SAS Integration Technologies that enables both users and applications to publish SAS files (including data sets, catalogs, and database views), other digital content, and system-generated events to a variety of destinations. The Publishing Framework also provides tools that enable both users and applications to receive and process published information.

**SAS Content Server**

a server that stores digital content (such as documents, reports, and images) that is created and used by SAS client applications. To interact with the server, clients use WebDAV-based protocols for access, versioning, collaboration, security, and searching.

**SAS data set**

a file whose contents are in one of the native SAS file formats. There are two types of SAS data sets: SAS data files and SAS data views. SAS data files contain data values in addition to descriptor information that is associated with the data. SAS data views contain only the descriptor information plus other information that is required for retrieving data values from other SAS data sets or from files whose contents are in other software vendors' file formats.

**SAS Metadata Repository**

a repository that is used by the SAS Metadata Server to store and retrieve metadata.

**SAS Metadata Server**

a multi-user server that enables users to read metadata from or write metadata to one or more SAS Metadata Repositories. The SAS Metadata Server uses the Integrated Object Model (IOM), which is provided with SAS Integration Technologies, to communicate with clients and with other servers.

**SAS package file**

See package file

**SAS variable**

a column in a SAS data set or in a SAS data view. The data values for each variable describe a single characteristic for all observations (rows).

**scoring**

the process of applying a model to new data in order to compute outputs.

**scoring function**

a user-defined function that is created by the SAS Scoring Accelerator from a scoring model and that is deployed inside the database.

**scoring task**

a process that executes a model's score code.

**segmentation model**

a model that identifies and forms segments, or clusters, of individual observations that are associated with an attribute of interest.

**subscriber**

a recipient of information that is published to a SAS publication channel.

**version**

a folder in the Project tree that typically represents a time phase and that contains models, scoring tasks, life cycle data, reports, documents, resources, and model performance output.

**WebDAV server**

an HTTP server that supports the collaborative authoring of documents that are located on the server. The server supports the locking of documents, so that multiple authors cannot make changes to a document at the same time. It also associates metadata with documents in order to facilitate searching. The SAS business intelligence applications use this type of server primarily as a report repository. Common WebDAV servers include the Apache HTTP Server (with its WebDAV modules enabled), Xythos Software's WebFile Server, and Microsoft Corporation's Internet Information Server (IIS).

# Index

---

## A

accessibility features [1](#)  
 administration overview [1](#)  
 Archive File type channels [36](#)

## C

channel folders, creating [44](#)  
 channels  
   *See* [publication channels](#)  
 configuration  
   connection profiles [10](#)  
   publication channels [35](#)  
   SAS Metadata Repository [4](#)  
   SAS Model Manager [3](#)  
   SAS Model Manager channels and  
     subscribers [43](#)  
   users, groups, and roles [14](#)  
 connection profiles  
   connecting to [13](#)  
   creating [10](#)

## D

data tables  
   *See* [tables](#)  
 DB2  
   JDBC Driver [7](#)  
 defining HTTP or HTTPS servers [37](#)  
 defining publish locations for SAS Content  
   Server [41](#)  
 deleting tables [56](#)

## F

FileList properties  
   model templates [70](#)

## G

groups

configuring [14](#)  
 creating new groups [19](#)  
 managing [55](#), [57](#)

## H

HTTP or HTTPS servers  
   defining [37](#)

## I

In-Database Scoring for Teradata [5](#)  
 installation directories  
   for In-Database Scoring for Teradata [6](#)  
 instructions.html file [3](#)

## J

Java Scoring API [7](#)  
 JDBC Driver for DB2 [7](#)  
 JDBC Driver for Netezza [7](#)  
 JDBC Driver for Teradata [7](#)

## L

libraries  
   creating in SAS Management Console  
     [25](#)  
   organizing [9](#)  
 life cycle templates  
   creating or modifying [61](#)  
   milestone properties [66](#)  
   properties [65](#)  
   task properties [66](#)  
 Log on as a batch job user right [4](#)

## M

milestone properties  
   life cycle templates [66](#)  
 MMchannel [36](#)

- model SPK files, registering 4
- model templates
  - creating or modifying 60
  - FileList properties 70
  - properties 68
  - system and user properties 71

**N**

- Netezza
  - JDBC Driver 7

**P**

- plug-ins, access to 55
- preparing SAS Model Manager for use 3
- properties
  - life cycle templates 65
  - model templates 68
- public directories
  - creating on SAS Content Server 4
- publication channels
  - Archive File type 36
  - configuring 35
  - creating channel folders 44
  - creating new channels 46
  - creating new subscribers 49
  - MMChannel 36
- Publishing Framework plug-ins 13, 43

**R**

- registration
  - of model SPK files 4
  - of tables 29
- roles
  - configuring 14
  - creating new roles 21
  - managing 55, 57

**S**

- SAS Content Server
  - accessing the Administration Console 4
  - creating a public directory 4
  - defining publish locations 41
- SAS Enterprise Miner
  - using SAS Model Manager with 4
- SAS Management Console 55
  - access to plug-ins 55
  - creating libraries in 25
  - managing tables, users, groups, and roles 55
- Publishing Framework plug-ins 13, 43
- registering tables 29
- setting up for SAS Model Manager use 9

- User Manager plug-in 57
- SAS Metadata Repository
  - configuring 4
  - connection profiles 10
  - storing table metadata 9
- SAS Model Manager Template Editor 59, 62
- SAS package files
  - See [SPK files](#)
- SAS Publishing Framework 35
  - See also [Publishing Framework plug-ins](#)
- scoring functions in SAS Model Manager 5
- SPK files
  - registering a model SPK file 4
- subscribers to channels, creating 49
- system and user properties
  - model templates 71

**T**

- tables
  - creating for Teradata 6
  - creating with SAS code 29
  - deleting 56
  - managing 55
  - modifying 55
  - registering 29
  - verifying accessibility 32
- task properties
  - life cycle templates 66
- templates, user
  - administering 59
  - deploying 64
  - properties 65
- Teradata
  - creating tables 6
  - JDBC Driver 7
  - preparing for SAS Model Manager use 5

**U**

- User Manager plug-in 57
- user templates
  - administering 59
  - deploying 64
  - properties 65
- users
  - configuring 14
  - creating new users 16
  - managing 55, 57

**V**

- verification
  - SAS Model Manager 3



table accessibility [32](#)

creating as publishing locations [41](#)

Windows

Log on as a batch job user right [4](#)

## **W**

WebDAV folders



---

## Your Turn

We welcome your feedback.

- If you have comments about this book, please send them to **`yourturn@sas.com`**. Include the full title and page numbers (if applicable).
- If you have comments about the software, please send them to **`suggest@sas.com`**.

