



SAS® Model Manager 14.2: Administrator's Guide

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SAS® Model Manager 14.2: Administrator's Guide

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Contents

<i>About This Book</i>	<i>v</i>
<i>What's New in SAS Model Manager 14.2</i>	<i>vii</i>
<i>Accessibility</i>	<i>ix</i>
Chapter 1 • Introduction to SAS Model Manager Administrator's Guide	1
Overview of SAS Model Manager Administration	1
Chapter 2 • Performing Pre-installation Tasks	3
Pre-installation Steps	3
Determine the Database to Use	4
Pre-installation Tasks for SAS Decision Manager Common Data Server	4
Pre-installation Tasks for an Oracle Database	5
Chapter 3 • Installing SAS Model Manager	9
Products Installed with SAS Model Manager	9
Running the SAS Deployment Wizard	9
Chapter 4 • Performing Post-installation Tasks	11
Post-installation Configuration and Verification Steps	12
Update User Passwords for Local User Service	13
Create Users and Assign Permissions	14
Creating Operating System Accounts for Product Administrators and Users	14
Verify WebDAV Folder Permissions for User-Defined Templates	17
Add a New Workspace Server and Create a SAS Application Server Context	19
Enable the SAS Workspace Server XCMD Option	21
Extend Support for Double-Byte Characters in Table and Variable Names	21
Create Oracle Database Tables	22
Verify the Certificate	22
Configure Your Deployment for HTTPS	23
Configure Your Deployment for Single Sign-On Web Authentication	23
Configure Users Authenticated by Kerberos for Publishing Models	24
Configure the Dashboard Reports Directory	25
Configuring Model Manager Java Services Options	26
Configuring the Limitation for the Number of Observations for a Scoring Result Set	33
Modify Log File Settings	33
Chapter 5 • Performing Upgrade Tasks	37
Overview of the Upgrade Process	37
Upgrade Steps	37
Post-upgrade Steps	39
Chapter 6 • Configuring Users, Groups, and Roles	41
Security Administration Tasks for SAS Model Manager	41
Administering SAS Identities for Users	42
Groups and Group Membership	43
Roles and Capabilities	44
Administering Group and Role Membership	46
Model Management User Tasks	48

Chapter 7 • Configuring SAS Workflow	55
Configuring SAS Workflow for Use with SAS Model Manager	55
Configure Alert Notifications for SAS Workflow	60
Chapter 8 • Creating and Configuring Publication Channels	63
Overview of Creating and Configuring Publication Channels	63
Define an HTTP or HTTPS Server	65
Define Publish Locations for the SAS Content Server	66
Configuring Channels and Subscribers for SAS Model Manager	67
Create a Channel Folder	69
Create a New Channel	70
Create a New Subscriber	70
Modify an Existing Channel or Channels Node Location	72
Recommended Reading	73
Index	75

About This Book

Audience

This guide 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 [Chapter 6, “Configuring Users, Groups, and Roles,” on page 41](#).

Prerequisites

Here are the prerequisites for administering SAS Model Manager:

- The following software must be installed on your computer:
 - SAS Web Server and SAS Web Application Server
 - SAS Management Console 9.4

For more information, see *[SAS Intelligence Platform: Installation and Configuration Guide](#)*.

- 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 14.2

Overview

New features and enhancements make it possible for SAS Model Manager customers to do the following:

- configure users authenticated by Kerberos for publishing models to Hadoop and Teradata
- extend naming support for double-byte characters in table and variable names
- update user passwords for local user service

Configure Users Authenticated by Kerberos for Publishing Models

For users who are configured to use single sign-on web authentication by Kerberos for Teradata or Hadoop, additional Java parameters must be added to enable users to publish models from SAS Model Manager to Hadoop or Teradata. For more information, see [“Configure Users Authenticated by Kerberos for Publishing Models” on page 24](#).

Extend Support for Double-Byte Characters in Table and Variable Names

If you are using a locale where national characters or multi-byte characters are used in table names or variable names, you can extend naming support for double-byte characters. For more information, see [“Extend Support for Double-Byte Characters in Table and Variable Names” on page 21](#).

Update User Passwords for Local User Service

If you used the SAS Deployment Manager to update passwords for the SAS Administrator and SAS Trusted User, you must also update the users' passwords for

SAS Model Manager 14.2 Local Services. For more information, see [“Update User Passwords for Local User Service”](#) on page 13.

Accessibility

For information about the accessibility of any of the products mentioned in this document, see the usage documentation for that product.

Chapter 1

Introduction to SAS Model Manager Administrator's Guide

Overview of SAS Model Manager Administration	1
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Overview of SAS Model Manager Administration

This guide provides pre-installation tasks for SAS Model Manager 14.2 on SAS 9.4, and explains both 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 to provide guidance after the SAS Model Manager installation process is completed. The high-level tasks include the following:

- Completing pre-installation and configuration tasks
- Complete post-upgrade steps
- Completing post-installation configuration and verification steps
- Creating and configuring published channels
- Configuring directory permissions

Chapter 2

Performing Pre-installation Tasks

Pre-installation Steps	3
Determine the Database to Use	4
Pre-installation Tasks for SAS Decision Manager Common Data Server	4
Pre-installation Tasks for an Oracle Database	5
Oracle Pre-installation Tasks	5
Verify JDBC Drivers for Oracle	5
Determine the Information Required for the Oracle Database	5
Specify the Required Database Privileges for Oracle	6
Test the Connection to Your Database	7

Pre-installation Steps

Before you install SAS Model Manager, be sure to review the Pre-installation Checklist that is provided with your deployment plan. This checklist provides a detailed list of the pre-installation requirements. It also enables you to record important information that you need when you are installing the software.

Perform the following steps before you install SAS Model Manager:

1. Verify that your system meets the minimum requirements. See the [system requirements](#) documentation on support.sas.com.
2. [Determine the database that you want to use.](#)

Note: The SAS Decision Manager Common Data Server is always configured. Even if you use Oracle for the SAS Model Manager database, you will be prompted for information for the SAS Decision Manager Common Data Server. After your system is configured and running, you can stop the SAS Decision Manager Common Data Server.

3. Complete the pre-installation steps for your database. See [“Pre-installation Tasks for SAS Decision Manager Common Data Server” on page 4](#) or [“Pre-installation Tasks for an Oracle Database” on page 5](#).

Determine the Database to Use

You can use either Oracle or the SAS Decision Manager Common Data Server for the SAS Decision Manager database.

The SAS Decision Manager Common Data Server is based on PostgreSQL 9.1.23. For more information, see “[SAS Web Infrastructure Platform Data Server](http://support.sas.com/documentation/intellplatform/index.html)” in *SAS Intelligence Platform: Middle-Tier Administration Guide* at <http://support.sas.com/documentation/intellplatform/index.html>. Ensure that you have the information listed in “Pre-installation Tasks for SAS Decision Manager Common Data Server” on page 4.

SAS Model Manager supports Oracle 11g and Oracle 12c for the SAS Decision Manager database. For Oracle, complete the tasks described in “[Pre-installation Tasks for an Oracle Database](#)” on page 5.

Pre-installation Tasks for SAS Decision Manager Common Data Server

During the installation and configuration of SAS Model Manager, the SAS Deployment Wizard requires information about the database that SAS Model Manager uses.

The SAS Decision Manager Common Data Server (based on PostgreSQL 9.1.23) is always configured when you run the SAS Deployment Wizard. You need the information in the following table in order to complete the steps in the SAS Deployment Wizard.

Table 2.1 SAS Deployment Wizard Information for SAS Decision Manager Common Data Server

Property	Description
Database Type	Specifies the database type to use for the SAS Decision Manager database. Select SAS Decision Manager Common Data Server .
Database Name	Specifies the database name. The default name for the database is dcmdb .
Database User	Specifies the user name for the database administrator. This user owns the database and has superuser privileges. The default user name is dcmdbowner .
Database Password	Specifies a password for the user ID that is associated with the database account.
Port	Specifies the port that is used by the database. The default port for SAS Decision Manager Common Data Server is 10482.
Host Name	Specifies the fully qualified host name of the server on which the database is installed.
User ID	Specifies the user name for the user whose credentials will be used to access the SAS Decision Manager Common Data Server database. The default user name is dcmdb .

For database-specific information about configuring a database, see [SAS Intelligence Platform: Installation and Configuration Guide](#).

Pre-installation Tasks for an Oracle Database

Oracle Pre-installation Tasks

If you are using Oracle for your SAS Decision Manager database, perform the following steps before you install SAS Model Manager:

1. [Verify that you have the correct JDBC drivers.](#)
2. Verify that you have a tnsnames.ora file for your Oracle client that corresponds to your database.
3. [Determine the required database information.](#)

Note: The SAS Decision Manager Common Data Server is always configured. Even if you use Oracle for the SAS Model Manager database, you will be prompted for information for the SAS Decision Manager Common Data Server. See “[Pre-installation Tasks for SAS Decision Manager Common Data Server](#)” on page 4 for more information.

4. [Specify the required database privileges.](#)
5. [Test the connection to your database.](#)

Verify JDBC Drivers for Oracle

Verify that you have the correct JDBC drivers. To ensure proper installation of SAS Model Manager, the drivers must be on each middle-tier server, and they must be in a directory that does not contain any other files.

You can download the latest JDBC drivers for Oracle Database 11g or 12c from <http://www.oracle.com/technetwork/indexes/downloads/index.html>. Select **JDBC drivers** in the **Drivers** section. The JDBC driver version must match the database version.

Determine the Information Required for the Oracle Database

During the installation and configuration of SAS Model Manager, the SAS Deployment Wizard requires information about the Oracle database that SAS Model Manager uses. Record the information in the following table.

You enter this information in the SAS Decision Manager Database Properties and SAS Decision Manager Database JDBC Properties windows.

Table 2.2 SAS Deployment Wizard Information for Oracle

Prompt	Description
Host Name	Specifies the fully qualified host name of the server on which the database is installed.
Port	Specifies the port number that is used by the database. The default port for Oracle is 1521.

Prompt	Description
Directory containing JDBC driver jars	<p>Specifies the location of the database vendor's JDBC JAR file. This file must be available on the middle tier and on any machine on which you are deploying SAS Model Manager in order to configure SAS Decision Manager database.</p> <p>See “Verify JDBC Drivers for Oracle” on page 5 for more information.</p>
Database SID or Service Name	<p>Specifies the Oracle database name. The database name must match either the service name or the Oracle site identifier (SID), both of which can be found in the tnsnames.ora file.</p> <p>If you select Use Oracle database name as a Service Name, then you must enter the service name that is specified in the tnsnames.ora file. For example, if you had the following entry in the tnsnames.ora file, you would enter monitordb in the Database SID or Service Name field:</p> <pre>monitordb = (DESCRIPTION = (ADDRESS_LIST = (ADDRESS = (COMMUNITY = TCP_COMM) (PROTOCOL = TCP) (HOST = hostname.your.company.com) (PORT = 1521))) (CONNECT_DATA = (SERVICE_NAME = monitordb)))</pre> <p><i>Note:</i> In the tnsnames.ora file, the Net Service Name and the Service Name fields must be the same.</p> <p>You can also find the Oracle SID in the tnsnames.ora file. Alternatively, you can run the following query using a database user ID on your Oracle instance:</p> <pre>select instance from v\$thread</pre>
User ID	Specifies the user ID of the database user whose credentials are used to access SAS Model Manager data on the server.
Password	Specifies the password of the user ID whose credentials are used to access SAS Model Manager data on the server.
Schema Pattern	Specifies the schema name for the database. The default schema name is the same as the user ID.

Specify the Required Database Privileges for Oracle

Ensure that the users of your database have the required database privileges. Here are the required privileges for Oracle databases:

- CONNECT
- CREATE SESSION
- RESOURCE
- CREATE TABLE
- CREATE VIEW

- CREATE SEQUENCE
- CREATE TRIGGER
- UNLIMITED TABLESPACE

Note: The UNLIMITED TABLESPACE privilege is automatically granted for Oracle Database 11g but not for Oracle Database 12c.

Test the Connection to Your Database

Execute a command from the terminal to verify that your database is set up. For example, to use an Oracle database, you can execute the following command using SQL*Plus:

```
sqlplus USER/PASSWORD@ORACLE_SID
```

You must be able to execute this command from any directory. If you are able to execute a database command such as this only from the database installation directory, then verify that the PATH variable is set up correctly. The database client application must be installed and available on the path specified by the PATH variable.

Chapter 3

Installing SAS Model Manager

Products Installed with SAS Model Manager	9
Running the SAS Deployment Wizard	9
About Running the SAS Deployment Wizard	9
Select the SAS Application Server	10
Configure the Database	10
Create and Load Tables through the SAS Deployment Wizard	10

Products Installed with SAS Model Manager

Your deployment plan for SAS Model Manager includes additional SAS products that support and complement SAS Model Manager functionality. See the software order e-mail or the `ordersummery.html` file that is in your SAS Software Depot at `software_depot/install_doc/order_number/ordersummary.html`. The SAS Deployment Wizard prompts you to install and configure each of the products in your deployment plan.

Running the SAS Deployment Wizard

About Running the SAS Deployment Wizard

To run the SAS Deployment Wizard, follow the instructions in “[Install and Configure SAS Interactively](#)” in *SAS Intelligence Platform: Installation and Configuration Guide*.

Note: You can run the wizard on operating systems that do not use a windowing environment. For more information, see *SAS Deployment Wizard and SAS Deployment Manager: User's Guide* at <http://support.sas.com/documentation/installcenter/94/index.html>.

The type and number of configuration-related pages that you see depend on the prompt level that you choose, the SAS tier that you are currently deploying, and the contents of your SAS 9.4 custom order. The following topics provide information for prompts that are specific to SAS Model Manager. For additional information about any of the SAS Deployment Wizard prompts, see the online Help for the wizard page in question.

Select the SAS Application Server

If you are installing SAS Model Manager as an add-on product and have already defined other SAS application servers, the SAS Deployment Wizard asks you to select which application server you want to use. Select an application server other than SASMETA.

Configure the Database

During deployment of SAS Model Manager on SAS 9.4, the SAS Deployment Wizard creates and configures the database tables in the SAS Decision Manager Common Data Server database by default. This database uses the PostgreSQL database management system.

You can use a third-party database server with SAS 9.4. In SAS 9.4, Oracle is the only other third-party database management system that is supported for the SAS Decision Manager database. For information about which versions of the alternative databases are supported, see [“Reviewing Third-Party Database Requirements” in *SAS Intelligence Platform: Installation and Configuration Guide*](#).

The SAS Deployment Wizard prompts you to enter the information that you gathered when you completed the pre-installation tasks for your database. See [“Pre-installation Tasks for SAS Decision Manager Common Data Server” on page 4](#) and [“Pre-installation Tasks for an Oracle Database” on page 5](#) for more information.

For database-specific information about configuring a database, see [SAS Intelligence Platform: Installation and Configuration Guide](#).

Create and Load Tables through the SAS Deployment Wizard

If you select **SAS Decision Manager Common Data Server** as the database type, the database tables are automatically created and loaded during the installation and configuration process for the SAS Decision Manager Common Data Server. The default name for the database is **dcmdb**.

If you select **Oracle** as the database type, the **Automatically create tables and load data** check box in SAS Deployment Wizard is enabled. If you want the Oracle database tables to be created and loaded automatically, leave this box selected. If you want to create the tables yourself, then clear the check box, and submit the necessary SQL statements after the wizard finishes running. See [“Create Oracle Database Tables” on page 22](#) for more information.

Chapter 4

Performing Post-installation Tasks

Post-installation Configuration and Verification Steps	12
Update User Passwords for Local User Service	13
Create Users and Assign Permissions	14
Creating Operating System Accounts for Product Administrators and Users . . .	14
About the User Accounts for SAS Model Manager	14
Using Operating System Groups to Assign Permissions	14
Create Windows Operating System Accounts and Groups for Users	15
Create UNIX Operating System Accounts and Groups for Users	16
Verify WebDAV Folder Permissions for User-Defined Templates	17
Add a New Workspace Server and Create a SAS Application Server Context . . .	19
Enable the SAS Workspace Server XCMD Option	21
Extend Support for Double-Byte Characters in Table and Variable Names	21
Create Oracle Database Tables	22
Verify the Certificate	22
Configure Your Deployment for HTTPS	23
Configure Your Deployment for Single Sign-On Web Authentication	23
Configure Users Authenticated by Kerberos for Publishing Models	24
Configure the Dashboard Reports Directory	25
Configuring Model Manager Java Services Options	26
Modify Java Services Options	26
Report Options	27
Publish Scoring Options	27
Debug Options	28
Valid Variable Name Options	28
In-Database Options	28
Performance Options	30
Factory Miner Options	33
Configuring the Limitation for the Number of Observations for a Scoring Result Set	33
Modify Log File Settings	33
Log4j Configuration File	33
Logging Priority Levels	34
Log Files	34

Post-installation Configuration and Verification Steps

After you install SAS Model Manager using SAS Software Depot, you must perform additional configuration steps 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 `\SAS-configuration-directory\Levn\Documents\`. Follow the instructions that are provided in this file.
2. If you used the SAS Deployment Manager to update passwords for the SAS Administrator and SAS Trusted User, then you must also update the users' passwords for SAS Model Manager 14.2 Local Services before you sign in to the SAS Model Manager web application. For more information, see [“Update User Passwords for Local User Service” on page 13](#).
3. [Create application users and assign permissions](#).
4. [Verify that the WebDAV folder permissions are set appropriately to allow authorized users to create and edit user-defined templates](#).
5. (Optional) SAS Model Manager supports the use of multiple SAS Application Servers to be used as part of a performance definition, a scoring test, or a model retrain definition. To use a SAS Application Server context other than the default **SASApp**, you must add a new workspace server and create a new SAS Application Server context using the SAS Deployment Wizard. For more information, see [“Add a New Workspace Server and Create a SAS Application Server Context” on page 19](#).
6. [If the SAS Workspace Server is located in a UNIX environment, you must enable the SAS Workspace Server XCMD option in order to support R model functionality](#).
7. If you are using a locale where national characters or if multi-byte characters are used in table names or variable names, you must extend naming support for double-byte characters. For more information, see [“Extend Support for Double-Byte Characters in Table and Variable Names” on page 21](#).
8. If you cleared the **Automatically create tables and load data** check box during installation, then you must manually create and load the Oracle database tables for modeling project metadata, including history, job definitions, and job logs. For more information, see [“Create Oracle Database Tables” on page 22](#).
9. (Optional) [Configure your deployment for single sign-on web authentication](#).
10. In order to publish models from SAS Model Manager to a database for scoring, additional configuration steps are required to prepare the database. For more information, see [“Preparing a Data Management System for Use with SAS Model Manager” in *SAS In-Database Products: Administrator's Guide*](#).
11. If your system is configured for Kerberos authentication for Hadoop or Teradata, each user must have a valid Kerberos ticket. You must also complete post-installation configuration steps to enable users to publish models from the SAS Model Manager web application. For more information, see [“Configure Users Authenticated by Kerberos for Publishing Models” on page 24](#).
12. [Verify that the Certificate Authority certificate is available](#).

13. (Optional) [Configure your deployment to use HTTPS](#).
14. (Optional) Add the Visual Analytics: Data Building and Data Management: Lineage roles to the Decision Manager Users group. See [“Administering Group and Role Membership” on page 46](#) for more information. These roles enable users to run SAS Visual Data Builder and view lineage information for rule flows and models.
15. (Optional) [Configure SAS Workflow](#).
16. [Verify the configuration of the dashboard reports directory on the SAS Workspace Server](#).
17. [Configure the Model Manager Java Services Options](#).
18. (Optional) [Configure the limit for the number of observations for a scoring result set](#).
19. (Optional) [Modify log file settings](#).
20. (Optional) If you have a license for SAS Factory Miner and want to integrate with SAS Model Manager to be able to register models to the model repository, see *SAS Factory Miner: Administration and Configuration*.
21. (Optional) If you are using Oracle for the SAS Decision Manager database, you can stop the SAS Decision Manager Common Data Server.

For more information about post-installation tasks, see [SAS Intelligence Platform: Installation and Configuration Guide](#).

Update User Passwords for Local User Service

If you used the SAS Deployment Manager to update passwords for the SAS Administrator and SAS Trusted User, you must also update the users' passwords for SAS Model Manager 14.2 Local Services. For more information, see [“Update a Managed Password” in SAS Intelligence Platform: Security Administration Guide](#).

To update the users' passwords:

1. Log on to SAS Management Console as a SAS administrator.
2. On the **Plug-ins** tab, navigate to **Foundation Services Manager** ⇒ **SASModelManager14.2 Local Services** ⇒ **Core**.
3. Right-click **User Service** and select **Properties**.
4. Click the **Service Configuration** tab and then click **Configuration**.
5. Select a user ID from the list and click **Edit**.
6. Modify the user's password and click **OK**.
7. Repeat steps 5 and 6 for each user.
8. Click **OK**.
9. For changes to take effect, you must restart the web application server, such as **SAS [Config-Lev1] WebAppServer SASServer11_1**.

Create Users and Assign Permissions

The SAS Deployment Wizard does not create application users by default. The SAS Administrator must create users in SAS Management Console with the appropriate group and role permissions. Make sure that all users are granted the appropriate permissions to the SAS Workspace Server. For more information, see [Chapter 6, “Configuring Users, Groups, and Roles,”](#) on page 41.

In a Windows environment, each user or group must be granted permission to the **Log on as a batch job** local security policy. This permission is required in order to access functionality in the Data category. For more information, see [“Create Windows Operating System Accounts and Groups for Users”](#) on page 15.

In a UNIX environment, all SAS Model Manager users must be part of a group that has the appropriate group permissions. For more information, see [“Create UNIX Operating System Accounts and Groups for Users”](#) on page 16.

Creating Operating System Accounts for Product Administrators and Users

About the User Accounts for SAS Model Manager

SAS Model Manager provides two types of user accounts:

Product administrator

A SAS Model Manager administrative user is specific to SAS Model Manager. A product administrator account is not the same as a general administrator account, such as the SAS Administrator (sasadm@saspw). These users must have a valid host operating system account, and you must associate that account with a metadata user.

Users of SAS Model Manager

These users must have a valid host operating system account, and you must associate that account with a metadata user through SAS Management Console.

You must create the operating system account for the administrator and for regular user accounts as a post-installation task. For more information, see the following topics:

- [“Create Windows Operating System Accounts and Groups for Users”](#)
- [“Create UNIX Operating System Accounts and Groups for Users”](#)
- [Chapter 6, “Configuring Users, Groups, and Roles,”](#)

Using Operating System Groups to Assign Permissions

Users have different operating system privileges on the SAS Workspace Server. By defining a user group for SAS Model Manager, you can assign all users to the same group and grant the same permissions to all users at one time. All SAS Model Manager users must have Read, Write, and Execute permissions for each environment directory that a user is permitted to use. Users also need permissions to all of the files and directories in an environment directory. The operating system must be configured to grant these permissions when new files and directories are created. The steps that you

follow to do this depend on which operating system groups are defined and your site's security policies.

Create Windows Operating System Accounts and Groups for Users

On the SAS Workspace Server, create an operating system account for the administrator of SAS Model Manager (for example, mdlmgradmin) and all SAS Model Manager users.

If the SAS Workspace Server is running in the Windows operating environment, use one of the following methods to create this operating system account:

- If you are using an LDAP server to manage your users, define the user (for example, *domain\username*) on the Active Directory server.
- If you are working on a local machine, complete these steps to create this user account:

1. Right-click the Computer icon on your desktop and select **Manage**. The Computer Management window appears.

Note: If you are creating users on a server, you can use the Server Manager.

2. In the left navigation pane, expand the **Local Users and Groups** node. The **Users** and **Groups** nodes appear.
3. Right-click the **Users** node and select **New User**. The New User window appears.
4. In the New User window, complete these tasks:

- Specify a user name and password.

Note: In Windows, you cannot enter *<domain>\username* (you enter the user name only), but you must enter *<domain>\username* in the SAS Deployment Wizard and SAS Management Console.

- Clear the **User must change password at next logon** check box.
- Select the **User cannot change password** check box.
- Select the **Password never expires** check box.

Click **Create**.

5. Click **Close** to close the New User dialog box.
6. If you want to add the users that you created to a group, perform the following steps:
 - a. Right-click the **Groups** node in the Computer Management window, and select **New Group**.
 - b. Click **Add**. Enter the user names, separated by semicolons, and click **Check Names**.
 - c. Click **OK**.
7. Assign the security policy of **Log on as batch job** for each user or group.
 - a. Select **Start** ⇒ **Control Panel** ⇒ **System and Security** ⇒ **Administrative Tools** ⇒ **Local Security Policy**.
 - b. From the Local Security Policy window, expand the **Local Policies** node and select **User Rights Assignment**. Then double-click the **Log on as batch job** policy.

- c. Click **Add user or Group**. Enter the user names or group names, separated by semicolons, and click **Check Names**.
- d. Click **OK**.

Create UNIX Operating System Accounts and Groups for Users

Conditions for the User Group

If you are working in a UNIX operating environment, the following conditions must be met:

- A group of users is created for the UNIX operating environment. The logon IDs for each user must be in this group. The group must also include any user who might run code that is created by SAS Model Manager in a SAS session.
- Users can be members of multiple groups, but the SAS Model Manager group is the primary group for each user.
- The SAS scripts are updated to grant permissions to the SAS Model Manager users on the SAS Workspace Server. For more information, see [“Update the SAS Scripts to Grant Permissions to the User Group” on page 16](#).
- Each environment directory has the correct ownership, and the user group has Read, Write, and Execute permissions.

Update the SAS Scripts to Grant Permissions to the User Group

Using the **umask** option, you can grant permissions to users on a conditional basis if the user is part of the SAS Model Manager user group.

Note: This example might require changes to fit your server configuration. In particular, this example could result in changed permissions on other SAS files, such as OLAP cubes. For example, if you are working with multiple UNIX groups and have a SAS OLAP Server, you must ensure that the account under which the SAS OLAP Server runs has Read and Execute permissions to OLAP files.

To set these permissions:

1. On each SAS Workspace Server, open **/SAS-configuration-directory/Levn/SASApp/appservercontext_env_usermods.sh**.
2. Enter the configuration information for your operating environment. Here is the general format of this code:

Note: The following code uses grave accents and not quotation marks.

```
CMD=<your-operating-system-path>
CURR_GID=`eval $CMD -g`
GID=<solution-group-id>
if [$CURR_GID -eq $GID]; then umask 002 fi
```

1. In the **CMD=<your-operating-system-path>**, specify the full path on your server where the ID command is stored. You can get this information by entering a **which id** or **whence id** command on your console.
2. In the **GID=<solution-group-id>**, specify the group ID. Type **id** on your console to get the GID and UID information.
3. A value of 002 is recommended for the **umask** option.

Here are code examples for each UNIX environment where SAS Model Manager is supported:

Operating Environment	Sample Code
AIX	<pre> CMD=/usr/bin/id CURR_GID='eval \$CMD -g' GID=201 if [\$CURR_GID -eq \$GID]; then umask 002 fi </pre>
H64I (HP-Itanium)	<pre> CMD=/usr/bin/id CURR_GID='eval \$CMD -g' GID=201 if [\$CURR_GID -eq \$GID] ; then umask 002 fi </pre>
S64 (Solaris)	<pre> CMD=/usr/xpg4/bin/id CURR_GID='eval \$CMD -g' GID=201 if [\$CURR_GID -eq \$GID] ; then umask 002 fi </pre>
SAX (Solaris for X64)	<pre> CMD=/usr/xpg4/bin/id CURR_GID='eval \$CMD -g' GID=201 if [\$CURR_GID -eq \$GID] ; then umask 002 fi </pre>
LNx (Linux)	<pre> #!/bin/bash CMD=/usr/bin/id CURR_GID='eval \$CMD -g' GID=500 if ["\$CURR_GID" -eq "\$GID"] ; then umask 002 fi </pre>

Verify WebDAV Folder Permissions for User-Defined Templates

During the SAS Model Manager installation process, the **ModelManager**, **sasfolders**, and **sasdav** WebDAV folders are automatically created with default permissions on the SAS Content Server. If you migrated or upgraded from a previous release, the WebDAV folder permissions should be preserved. Use the SAS Content Server Administration Console (SCS Admin Console) to control access to an existing WebDAV folder.

Here are the default permissions for a new installation of SAS Model Manager for the folder **/ModelManager/ConfigTemplates/ext**:

Group	Permissions	Description
mdlmgrusers	Read	Model Manager Users group
mdlmgradminusers	Read, Write, and Delete	Model Manager Administrator Users group

Group	Permissions	Description
mdlmgradvusers	Read	Model Manager Advanced Users group

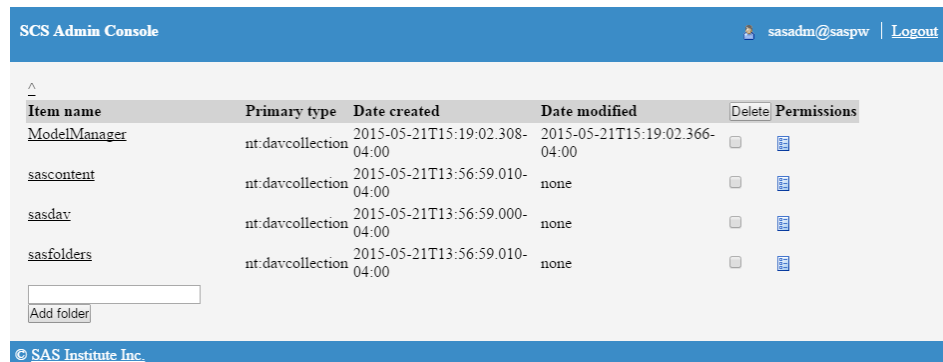
In order to create new model and report templates, as well as edit existing user-defined templates, users must have Read and Write permissions to the **/ModelManager/ConfigTemplates/ext** folder.


To verify or modify the folder permissions for the **ext** folder:

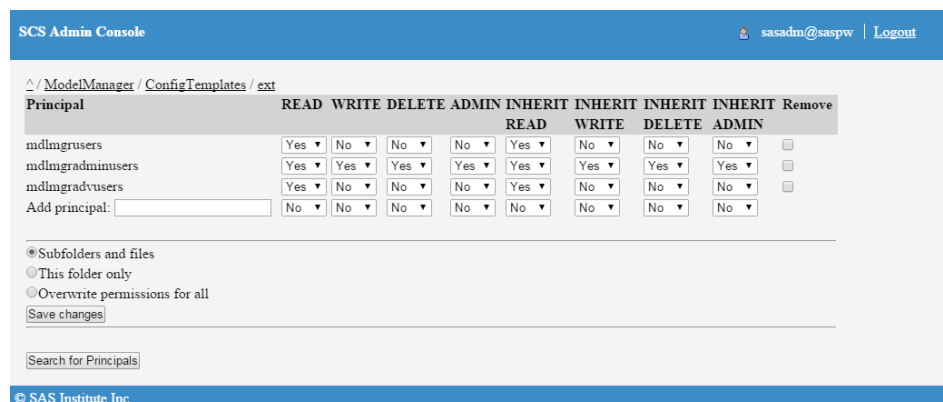
1. Access the SAS Content Server Administration console by entering the following URL in your web browser and substituting the server name and port number of your SAS Content Server: **http://server-name:port/SASContentServer/dircontents.jsp**.

Note: The default port number for the SAS Web Application Server is 7980 for a UNIX environment and 80 for a Windows environment.

2. Sign in to the console as an unrestricted user (for example, SAS Administrator). The SCS Admin Console window appears.



3. Click **ModelManager** ⇒ **ConfigTemplates**.
4. Click the permissions icon  for the **ext** folder. The Permissions page appears.



5. Modify the permissions for the **mdlmgradvusers** principal to give Write permissions by changing the **WRITE** and **INHERIT WRITE** permissions to **Yes**.

Note: It is recommended to give Delete permissions only to the mdlmgradminusers group.

For more information, see “[Modify Permissions for WebDAV Folders and Files](#)” in *SAS Intelligence Platform: Middle-Tier Administration Guide*.

Add a New Workspace Server and Create a SAS Application Server Context

SAS Model Manager on SAS 9.4 provides support for multiple SAS Application Servers that can be used when specifying a performance definition, a scoring test, or a model retrain definition.

To add a new workspace server to your SAS Model Manager installation:

1. On the machine where the SAS Application Server was installed, start the SAS Deployment Wizard from the highest-level directory in your SAS Software Depot using the command file that is appropriate for your operating system. On Windows systems that command file is `setup.exe`. For UNIX systems, use `setup.sh`.
2. Select **Install SAS Software**. Click **Next**.
3. Select **Perform a Planned Deployment**, deselect **Install SAS Software**, and select only **Configure SAS Software**. Click **Next**.
4. You must use the same deployment plan that was used when you installed the original server component. This example uses one of the standard deployment plans. Choose **Select a standard deployment plan**, and select the appropriate **Model Mgr** plan for your machine configuration. Click **Next**.
5. Select the server machine on which you want to configure the SAS Application Server. Click **Next**.
6. On the **Checking System** page, click **Next**.
7. On the Select Configuration Prompting Level page, select **Typical**. Click **Next**.
8. On the Specify Configuration Information page, you must select the same options as your original installation. For this example, use the default settings. Click **Next**.
9. The SAS Deployment Wizard warns you that the configuration directory and level that you specified contain existing files. Select **Yes**.
10. On the Select Products to Configure page, select **SAS Workspace Server**. Click **Next**.
11. On the Local Machine Name page, accept the default settings. Click **Next**.
12. On the Migration Information page, no migration should be performed. Click **Next**.
13. On the Integrated Windows Authentication page, accept the default settings. Click **Next**.
14. On the SAS Metadata Server page, accept the default settings. Verify that the SAS Metadata Server and port are valid. Click **Next**.
15. On the Deployment Accounts: Type of Accounts page, select **Use SAS internal accounts when appropriate**. Click **Next**.
16. On the SAS Internal Account: Unrestricted Administrator page, enter the same password that was used in the original installation. Click **Next**.
17. On the Deployment Accounts: First User page, there is no need to set up a first user ID. Click **Next**.

18. On the Create SAS Application Server Context page, select **Create a SAS Application Server Context**. Click **Next**.
19. On the SAS Application Server: Server Context page, enter **SASApp_2** in the field **SAS Application Server Context Name**. Click **Next**.
20. On the SAS Server Dependencies page, confirm that the value of **SAS Application Server Context** is **SASApp_2**. Click **Next**.
21. On the SAS Workspace Server page, enter the workspace server port. This example uses the default value, 8592. Click **Next**.
22. Select the deployment summary and click **Start**. When the SAS Deployment Wizard is finished, note the additional resources and click **Finish**.

Next you must configure the Job Execution Service and restart the SAS web application servers.

1. Run SAS Management Console and select the **Plug-ins** tab. Select **SAS Application Management** ⇒ **Configuration Manager** ⇒ **SAS Application Infrastructure** ⇒ **Web Infra Platform Services 9.4** ⇒ **JobExecutionService**.
2. Right-click **JobExecutionService** and select **Properties**.
3. Select the **Settings** tab in the JobExecutionService Properties window and locate the **Configure Execution Queues from Available Server Contexts** section.
4. Select the new server (for example, **SASApp_2**). Then move it to the **Selected** list.
5. In the **SASApp_2 Execution Queue Properties** section, clear **Enable for interactive execution?**.
6. Click **OK**.
7. Restart SAS servers, including the SAS Metadata Server and SAS Web Application Servers. For example, in a default Windows installation this can be done for Services from the Windows Management Console by restarting the Service name, such as **SAS [Config-Lev1] WebAppServer SASServer11_1**.

To verify your new server from SAS Model Manager:

1. Sign in to SAS Model Manager.
2. Create a scoring test that uses the new SAS Application Server context.
3. Execute the scoring test.

For more information, see:

- “Managing SAS Application Servers” in *SAS Intelligence Platform: Application Server Administration Guide*
- “Managing Workspace Servers and Stored Process Servers” in *SAS Intelligence Platform: Application Server Administration Guide*
- “Add a New Logical Server in an Existing SAS Application Server” in *SAS Intelligence Platform: Application Server Administration Guide*
- “Job Execution Service” in *SAS Intelligence Platform: Middle-Tier Administration Guide*

Enable the SAS Workspace Server XCMD Option

When you are running the SAS Workspace Server in a UNIX environment for SAS Model Manager 14.2 on a SAS 9.4 deployment, the XCMD option is turned off by default. Therefore, you cannot use the SYSTEM function, the X command, or the PIPE option in a FILENAME statement. You must enable the SAS Workspace Server XCMD option in order to support R model functionality.

To enable the XCMD option:

1. From SAS Management Console, expand the **Environment Management** ⇒ **Server Manager** node on the **Plug-ins** tab.
2. Select and expand **SASApp** ⇒ **SASApp – Logical Workspace Server**.
3. Right-click **SASApp - Workspace Server** and select **Properties**.
4. Select **Options** ⇒ **Advanced Options** ⇒ **Launch Properties** and then select the **Allow XCMD** check box.
5. Click **OK** to save the setting.
6. (Optional) If you have multiple SAS Application Servers with the server type of Workspace Server, repeat steps 2 through 5.
7. Restart your SAS Object Spawner.

Extend Support for Double-Byte Characters in Table and Variable Names

If your locale contains national characters or multi-byte characters, you can extend naming convention support for tables that have a table name or that contain variable names with double-byte characters. After you extend support, you can register these tables in the **Tables** category in SAS Model Manager. (Select **Data** ⇒ **Tables**.) You can view these tables and use them to create summary tables. Tables with extended support for double-byte characters can also be used in models, model projects, and model portfolios, as well as in their associated tasks.

To enable support for these types of tables:

1. Add the following lines to the `autoexec_usermods.sas` file.

```
options validmemname=extend;
options validvarname=any;
```

For Windows environments, this file is located in the `\SAS-configuration-directory\Levn\SASApp\WorkspaceServer\` directory.

For UNIX environments, this file is located in the `/SAS-configuration-directory/Levn/SASApp/WorkspaceServer/` directory.

2. Set the **Valid Variable Name Options** setting to **Yes** in SAS Management Console. For more information, see [“Valid Variable Name Options” on page 28](#).

Note: Although the VALIDMEMNAME=EXTEND and VALIDVARNAME=ANY system options extend support for double-byte characters, blanks, and special characters, SAS Model Manager does not fully support these options. Special characters and blanks in table names or variable names are not supported.

See Also

- “Register and Add New Tables” in *SAS Model Manager: User’s Guide*
- “VALIDMEMNAME= System Option” in *SAS System Options: Reference*
- “VALIDVARNAME= System Option” in *SAS System Options: Reference*

Create Oracle Database Tables

When you ran the SAS Deployment Wizard, the **Automatically create tables and load data** check box was selected by default for the SAS Decision Manager database. (See “Create and Load Tables through the SAS Deployment Wizard” on page 10.) If you cleared the **Automatically create tables and load data** check box and you do not have an existing database instance, you must run the SQL scripts to create and load the tables.

Run the CreateMMTables.sql script in order to create and load the model tables. The script is located in `SASHome\SASModelManagerMidTier\14.2\Config\Deployment\Content\dbscript\oracle\`.

Note: The data model for all tables is the same for SAS Model Manager 3.1 and 3.2 except for the business rules (brm) tables. The data model version for business rules tables is version 3.2.

Verify the Certificate

During installation and configuration of SAS 9.4, the SAS Deployment Wizard enables you to configure the SAS Web Server to use HTTPS and Secure Sockets Layer (SSL) certificates automatically. Verify that the Certificate Authority certificate is available to the trust store for the browser and Java clients such as SAS Workflow Studio and SAS Management Console. For more information, see the Instructions.html file in the directory `\SAS-configuration-directory\Levn\Documents`, and “Validating the Secured Environment” in *SAS Intelligence Platform: Middle-Tier Administration Guide*.

If you did not use the SAS Deployment Wizard to configure the SAS Web Server to use HTTPS and SSL certificates, you can configure it manually. For more information, see “Configuring SAS Web Server Manually for HTTPS” in *SAS Intelligence Platform: Middle-Tier Administration Guide*.

The communication path between SAS Web Server and SAS Web Application Server uses HTTP by default. If you configured the SAS Web Server to use HTTPS by using the SAS Deployment Wizard, you must complete additional steps in order to use HTTPS between SAS Web Server and SAS Web Application Server. For more information, see “Configuring SAS Web Application Server to Use HTTPS” in *SAS Intelligence Platform: Middle-Tier Administration Guide*. If you configure the SAS Web Application

Server to use HTTPS, see [“Configure Your Deployment for HTTPS”](#) on page 23 for additional instructions.

Configure Your Deployment for HTTPS

The steps listed in [“Configuring SAS Web Application Server to Use HTTPS”](#) in *SAS Intelligence Platform: Middle-Tier Administration Guide* change the communication path between the SAS Web Server and SAS Web Application Server to use HTTPS. If you completed those steps and configured the communication path to use HTTPS, then you must also configure the SAS Web Application Server to use HTTPS.

To configure the SAS Web Application Server to use HTTPS:

1. Edit the setenv file for your operating environment.

Environment	File	Directory
UNIX	setenv.sh	<code>/SAS-configuration-directory/Levn/Web/WebAppServer/SASServer7_1/bin</code>
Windows	setenv.bat	<code>\SAS-configuration-directory\Levn\Web\WebAppServer\SASServer7_1\bin</code>

Add the following option to the JVM_OPTS line:

```
-Ddcm.midtier.use.https=true
```

2. In Windows environments, edit the wrapper.conf file in the `\SAS-configuration-directory\Levn\Web\WebAppServer\SASServer7_1\conf` directory.

Add the following line to the Java Additional Parameters section:

```
wrapper.java.additional.n=-Ddcm.midtier.use.https=true
```

The number *n* is the next number in the sequence of wrapper parameters.

3. Restart SASServer7.

Note: The options are needed only on SASServer7; they are not needed on SASServer11.

Configure Your Deployment for Single Sign-On Web Authentication

SAS 9.4 web applications can be configured to use single sign-on web authentication. For more information, see the steps in [“Web Authentication”](#) in *SAS Intelligence Platform: Middle-Tier Administration Guide*. After you complete those steps, an additional configuration is needed.

To configure SAS Model Manager to use single sign-on web authentication:

1. Edit the setenv file for your operating environment.

Environment	File	Directory
UNIX	setenv.sh	<i>/SAS-configuration-directory/Levn/Web/WebAppServer/SASServer11_1/bin</i>
Windows	setenv.bat	<i>\SAS-configuration-directory\Levn\Web\WebAppServer\SASServer11_1\bin</i>

Add the following option to the JVM_OPTS line:

```
-DMMSingleSignOn=on
```

2. In Windows environments, edit the wrapper.conf file in the *\SAS-configuration-directory\Levn\Web\WebAppServer\SASServer11_1\conf* directory.

Add the following line in the Java Additional Parameters section:

```
wrapper.java.additional.n=-DMMSingleSignOn=on
```

The number *n* is the next number in the sequence of the wrapper parameters.

Note: If you are configured to use single sign-on web authentication by Kerberos for Teradata or Hadoop, you must add options to be able to publish models from SAS Model Manager. Other database management systems are not supported for single sign-on authentication at this time. Before continuing to the next step, see [“Configure Users Authenticated by Kerberos for Publishing Models” on page 24](#).

3. Restart SASServer11.

Note: The option is needed only on SASServer11; it is not needed on SASServer7.

Configure Users Authenticated by Kerberos for Publishing Models

To use Kerberos authentication, each SAS Model Manager user must have a valid Kerberos ticket to access SAS Model Manager. Users who are configured to use single sign-on web authentication by Kerberos for Teradata or Hadoop must also perform additional post-installation configuration steps so that they can publish models to a Teradata or a Hadoop Distributed File System (HDFS) from SAS Model Manager:

You must also configure your deployment to use single sign-on web authentication by Kerberos for Teradata or Hadoop.

1. Edit the setenv file for your operating environment.

Environment	File	Directory
UNIX	setenv.sh	<i>/SAS-configuration-directory/Levn/Web/WebAppServer/SASServer11_1/bin</i>
Windows	setenv.bat	<i>\SAS-configuration-directory\Levn\Web\WebAppServer\SASServer11_1\bin</i>

Add the following options to the JVM_OPTS line:

```
-Dmm.kerberized.hadoop=on
-Dmm.kerberized.teradata=on
```

Note: You can enable one or both options.

2. In Windows environments, edit the wrapper.conf file in the **\SAS-configuration-directory\Levn\Web\WebAppServer\SASServer11_1\conf** directory.

Add the following lines in the Java Additional Parameters section:

```
wrapper.java.additional.n=-Dmm.kerberized.hadoop=on
wrapper.java.additional.n=-Dmm.kerberized.teradata=on
```

The number *n* is the next number in the sequence of the wrapper parameters.

Note: You can enable one or both options.

3. Restart SASServer11.

Note: The option is needed only on SASServer11; it is not needed on SASServer7.

Configure the Dashboard Reports Directory

In SAS Model Manager, the dashboard reports directory is configured during installation. The default directory is **\SAS-configuration-directory\Levn\AppData\SASModelManager14.2\Dashboard**.

Note: When the SAS Web Application Server and the SAS Workspace Server are located on different physical machines, the Software Deployment Wizard creates a directory on the SAS Web Application Server machine and uses that value for the **App.DashboardDir** property value. You must create a directory that is accessible by the SAS Workspace server, and the SAS Model Manager users must have permissions to that directory.

To configure a different directory to store the SAS Model Manager dashboard reports:

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

Note: The directory must be located on the SAS Workspace Server or on a network drive that is accessible by the SAS Workspace Server. 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 add (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 add (using SAS Management Console) to the Model Manager Advanced Users group.

- Grant Read and Execute permissions to users who need only to view the dashboard reports. This type of user includes a user who you will add (using SAS Management Console) to the Model Manager Users group.

Note: In a UNIX environment all SAS Model Manager users must be part of a group that has the appropriate group permissions. For more information, see [“Create UNIX Operating System Accounts and Groups for Users” on page 16](#) and [Chapter 6, “Configuring Users, Groups, and Roles,” on page 41](#).

4. From SAS Management Console, expand the **Application Management** node on the **Plug-ins** tab.
5. Select and expand **Configuration Manager** ⇒ **SAS Application Infrastructure** ⇒ **Enterprise Decision Manager 3.2**.
6. Right-click **Model Manager JavaSvcs 14.2** and select **Properties**.
7. (optional) Click the **Settings** tab and then select **Report Options**. Use this setting to specify the styles that are available when a user generates dashboard reports, and to enable the indicator override option for defining dashboard report indicators. When you use the indicator override configuration, indicators with conditions are available when you add dashboard report indicators using SAS Model Manager. For more information, see [“Report Options” on page 27](#).
8. Click the **Advanced** tab to modify the application dashboard directory. Change the property value for **App.DashboardDir** to the directory path that was configured.
9. Click **OK**.
10. For changes to take effect, you must restart the web application server.

Configuring Model Manager Java Services Options

The **Model Manager Java Services Options** setting in SAS Management Console enables you to modify model management configurations. The configurations can be modified for reporting, for metadata tables usage when publishing a scoring function, for SAS code debugging, SAS system options, In-database connection and publishing options, and performance options for the SAS High-Performance Analytics procedures.

Modify Java Services Options

1. Log on to SAS Management Console as a SAS administrator.
2. On the **Plug-ins** tab, navigate to **Application Management** ⇒ **Configuration Manager** ⇒ **SAS Application Infrastructure** ⇒ **Enterprise Decision Manager 3.2**.
3. Right-click **Model Manager JavaSvcs 14.2** and select **Properties**.
4. Click the **Settings** tab and then select **Model Manager Java Services**.
5. Select one of the following options to view and configure the available settings.
 - [Report Options](#)
 - [Publish Scoring Options](#)
 - [Debug Options](#)

- **Valid Variable Name Options**
 - **In-Database Options**
 - **Performance Options**
 - **Factory Miner Options**
6. Click **OK**.
 7. For changes to take effect, you must restart the web application server.

Report Options

The **Report Options** setting in SAS Management Console enables you to modify the SAS Model Manager configurations for the dashboard reports, for model retrain reports, and for performance monitoring. These reports are available on the **Reports** page for a project in SAS Model Manager.

To modify the report options setting:

1. Specify the formats that are available when a user creates model retrain reports. The default values are RTF, PDF, and HTML. You can remove any of the default values so that they are not available in SAS Model Manager.
2. Specify the report styles that are available when a user creates the model retrain reports and dashboard reports. You can add or remove SAS styles. The default values are SAS default, Seaside, Meadow, and Harvest. For more information about SAS styles, see “[Style Templates](#)” in *SAS Output Delivery System: User’s Guide*.
3. Specify a value for a random seed to be used by performance definitions for models that have an interval target. The default value is **12345**. The **random seed** is the initial seed for the random number generator used for sampling the input data set.
4. Specify a value for the sample size that is used by performance definitions for models that have an interval target. The default value is **1000**. The **sample size for models with an interval target** is the number of observations from the input data set.
5. Specify a value for the sample size that is used by performance definitions for characteristic and stability analysis. The default value is **10000**. The **sample size for characteristic and stability analysis** is the number of observations from the input data set.
6. Select **Yes** or **No** to specify whether to use the temporary tables on the High-Performance Analytics appliance for performance monitoring. The default is **Yes**.
7. Specify a value for the correlation coefficient (ρ) that is used by the binomial test to estimate the probability of default (PD) levels. The default value is **0.04**.

Publish Scoring Options

The **Publish Scoring Options** setting enables you to indicate that the metadata tables be populated in the target database when publishing a scoring function. The default is **Yes**. During the installation and configuration process of the database, the metadata tables must be created in the database if this setting is set to **Yes**. If you plan to use only the SAS Embedded Process publish method to publish scoring model files, this setting can be ignored, and you do not need to create the metadata tables during the database configuration process.

For information about the database configurations, see [“Preparing a Data Management System for Use with SAS Model Manager”](#) in *SAS In-Database Products: Administrator’s Guide*. For more information about publishing models to a database, see [“Publishing Models to a Database or Hadoop”](#) in *SAS Model Manager: User’s Guide*.

Debug Options

The **Debug Options** setting enables you to use the debug options when executing SAS code within SAS Model Manager. The default value is **No**.

However, the **Debug Options** setting does not work for scoring tests, performance definitions, and model retrain definitions. To enable debug options with scoring tests, you must add the following line of code to the

appserver_autoexec_usermods.cfg file in the **\SAS-configuration-directory\Levn\SASApp\WorkspaceServer** directory:

```
options mprint symbolgen notes;
```

Note: You can also add this code using the Edit Start-up Code feature in SAS Model Manager.

Valid Variable Name Options

The VALIDVARNAME= system option specifies the rules for valid SAS variable names that can be created and processed during a SAS session. The **Valid Variable Name Options** setting enables you to set the VALIDVARNAME system option to ANY when executing SAS code. To do this, you select **Yes**. The default value is **No**.

However, the **Valid Variable Name Options** setting does not work for scoring tests, performance monitoring, or retraining jobs. To use the VALIDVARNAME system option with these features, you must add the following line of code to the **autoexec_usermods.sas** file in the **\SAS-configuration-directory\Levn\SASApp\WorkspaceServer** directory:

```
options validvarname=any;
```

Note: You can also add this code using the Edit Start-up Code feature in SAS Model Manager. For more information, see [“Edit Start-Up Code”](#) in *SAS Model Manager: User’s Guide*.

When the VALIDVARNAME system option is set to V7, variable names with letters of the Latin alphabet, numerals, or underscores are valid. If you use any other characters, then you must express the variable name as a name literal, and you must also set VALIDVARNAME=ANY. If the name includes either the percent sign (%) or the ampersand (&), then you must use single quotation marks in the name literal in order to avoid interaction with the SAS Macro Facility. For more information, see [“VALIDVARNAME= System Option”](#) in *SAS System Options: Reference*.

Note: You must have set the VALIDVARNAME system option to ANY in order to use PMML models that were created using SAS Enterprise Miner in scoring tests, performance monitoring, and reporting within SAS Model Manager.

In-Database Options

The **In-Database Options** settings enables you to specify the publish type, database connection settings, and publish settings that are used when publishing models to a database using SAS Model Manager.

To modify the settings for the in-database options:

1. Select a method to publish models to the database for scoring. The default publish type is the **SAS Embedded Process** publish method.
2. Select a database type.
3. Specify values for database settings that are required to publish to the selected database type.

Here are the available database settings according to the publish method and database type:

Database Settings	SAS Embedded Process	Scoring Function
Server name	<ul style="list-style-type: none"> • Teradata • Oracle • Netezza • Greenplum • DB2 • Hadoop • SAP HANA 	<ul style="list-style-type: none"> • Teradata • Netezza • Greenplum • DB2
HDFS directory path	Hadoop	Not applicable
Database name or instance number	<ul style="list-style-type: none"> • Teradata • Oracle • Netezza • Greenplum • DB2 • SAP HANA 	<ul style="list-style-type: none"> • Teradata • Netezza • Greenplum • DB2
User ID	<ul style="list-style-type: none"> • Teradata • Oracle • Netezza • Greenplum • DB2 • Hadoop • SAP HANA 	<ul style="list-style-type: none"> • Teradata • Netezza • Greenplum • DB2
Server user ID	Not applicable	DB2
Schema	<ul style="list-style-type: none"> • Oracle • Greenplum • DB2 • SAP HANA 	<ul style="list-style-type: none"> • Greenplum • DB2

4. Specify to use the model manager table when publishing. The default value is **No**. When you are publishing the scoring model files to a database using the SAS

Embedded Process publish method, the files are by default stored in the table `sas_model_table`. If the **Use model manager table** value is set to **Yes**, the scoring model files are stored in the table `sas_mdlnmgr_ep`. These tables are located in the target database. This setting enables users to separate the SAS Model Manager scoring model files from the SAS model scoring files when using the SAS Embedded Process publish method.

Note: The `sas_mdlnmgr_ep` table must be created before setting this option to **Yes**.

For more information, see [“Configuring a Database” in SAS In-Database Products: Administrator’s Guide](#).

5. Specify to force the republish of model scoring files by default when using the SAS Embedded Process publish type. The default value is **No**. If you set this setting to **Yes**, then the **Replace scoring files that have the same publish name** option in the Publish Models window in SAS Model Manager is selected by default.
6. Select the default format of the model publish name when using the SAS Embedded Process publish method. The format selected determines the value that appears for the publish name in the Publish Models window in SAS Model Manager. The scoring function publish method publish name defaults to the model name.
7. Specify a directory path to store the temporary scoring files. If a value is not specified, the SAS work directory is used by default. However, if the directory is not specified and you select the **Display detailed log messages** option when publishing to a database the SASUSER directory is used.

For information about the database configurations, see [“Preparing a Data Management System for Use with SAS Model Manager” in SAS In-Database Products: Administrator’s Guide](#). For more information about publishing models to a database, see [“Publishing Models to a Database or Hadoop” in SAS Model Manager: User’s Guide](#).

Performance Options

The **Performance Options** setting contains the performance parameters for the PERFORMANCE statement to use the SAS High-Performance Analytics procedures. Currently only the Teradata and Greenplum database types support SAS High-Performance Analytics.

The PERFORMANCE statement defines performance parameters for multithreaded and distributed computing, passes variables about the distributed computing environment, and requests detailed results about the performance characteristics of a high-performance analytics procedure.

The following performance options can be specified for the PERFORMANCE statement.

Option	Description	Default Value
Commit	Specifies an integer to request that the High-Performance Analytics procedure writes periodic updates to the SAS log.	10000

Option	Description	Default Value
CPU count	Specifies how many processors the procedure should assume are available on each host in the computing environment. You can enter the value of ACTUAL, or enter an integer between 1 and 256.	ACTUAL
Database server	Specifies the name of the server for the database as defined through the hosts file and as used in the LIBNAME statement.	
Details	Requests a table that shows a timing breakdown of the procedure steps.	No
Timeout	Specifies the time-out in seconds for a High-Performance Analytics procedure to wait for a connection to the appliance and establish a connection back to the client.	120
Host name	Specifies the name of the appliance. If a value for the Host option is specified, it overrides the value of the grid host environment variable.	
Installation directory	Specifies the name of the directory in which the High-Performance Analytics shared libraries are installed on the appliance.	
Install location	Specifies the name of the directory in which the High-Performance Analytics shared libraries are installed on the appliance. If a value is specified for the Installation directory option, it overrides this option.	

Option	Description	Default Value
Number of nodes	Specifies the number of nodes in the distributed computing environment, provided that the data is not processed alongside the database. You can enter an integer or you can specify a value of ALL if you want to use all available nodes on the appliance without oversubscribing the system.	
Number of threads	Specifies the number of threads for analytic computations. This option overrides the SAS system option THREADS NOTTHREADS. If you do not specify a value for this option, the number of threads are determined based on the number of CPUs on the host on which the analytic computations execute.	
Grid host	Specifies the host name for the grid. If a value for the Host option is specified, it overrides the value of the grid host environment variable.	
Grid RSH command	Specifies the command to run a remote shell.	
Grid reply host	The host name of the client node to which the grid connects.	
Grid port range	Specifies the range of ports that are permitted by the firewall.	
Grid path	Specifies the local directory path for the grid node.	
Grid mode	Specifies whether the HPFORECAST procedure runs in symmetric (SYM) mode or asymmetric (ASYM) mode. The default is symmetric (GRIDMODE=SYM).	Symmetric

For more information about High-Performance Analytics, see *SAS High-Performance Analytics Server: User's Guide*.

Factory Miner Options

If SAS Factory Miner and SAS Model Manager are licensed at your site, you can register projects segments and models from SAS Factory Miner to the SAS Model Manager model repository. The project segments and models are created within a portfolio. Use the **Automatically set champion** setting to automatically set the project champion in the model repository when a model is set as the champion for a project segment in SAS Factory Miner. The default value is **No**. For information about integrating SAS Factory Miner with SAS Model Manager, see *SAS Factory Miner: Administration and Configuration*.

Configuring the Limitation for the Number of Observations for a Scoring Result Set

When a scoring test is added on the **Scoring** page of a project in SAS Model Manager, and the **Type** field is set to **Test**, you can use SAS Management Console to limit the number of observations that a scoring result set can contain.

To configure a limitation for the number of observations:

1. From SAS Management Console, expand the **Application Management** node on the **Plug-ins** tab.
2. Select and expand **Configuration Manager** ⇒ **SAS Application Infrastructure** ⇒ **Enterprise Decision Manager 3.2**.
3. Right-click **Model Manager JavaSvcs 14.2** and select **Properties**.
4. Click the **Advanced** tab. Change the property value for **App.TableObsLimitation** to limit the number of observations in the scoring result set. The default value of **0** indicates that there is no limit to the number of observations that a scoring result set can contain.
5. Click **OK**. The value that you specified now appears in the Number of Observations result set property when you create a scoring test using SAS Model Manager.

Modify Log File Settings

Log4j Configuration File

SAS Model Manager uses log4j to perform logging. When SAS Model Manager starts, the log4j configuration file for the web application is read from

SAS-configuration-directory\Levn\Web\Common\LogConfig\SASModelManager-log4j.xml. This file is a standard log4j configuration file.

You should not change the existing categories or root logger in a configuration file unless you are instructed to do so by SAS Technical Support.

Note: If you make any changes to the log4j configuration file, you must restart SASModelManager11 for the changes to take effect.

Logging Priority Levels

You can change the logging priority levels in a log configuration file if needed.

Table 4.1 Logging Priority Levels

Priority	Description
DEBUG	The most verbose logging level. This level displays information that is most useful for debugging an application. SAS Model Manager should run under this priority only for capturing additional log information. This priority level is not an acceptable priority level for the day-to-day operation of SAS Model Manager.
INFO	Verbose logging level. This level displays messages that highlight the progress of an application. SAS Model Manager should run under this priority only for capturing additional log information. This priority level is not an acceptable priority level for the day-to-day operation of SAS Model Manager.
WARN	Restrictive logging. This level displays information about potentially harmful situations and is an acceptable priority for the day-to-day operation of SAS Model Manager.
ERROR	The most restrictive logging level. This level displays error events and is an acceptable priority for the day-to-day operation of SAS Model Manager.

Log Files

SAS Model Manager writes information to the following log files:

SASModelManager14.2.log
contains messages from SAS Model Manager

SASDecMgrCommon3.2.log
contains messages from the Workflow and Data plug-ins

SASDecMgrShell3.2.log
contains general messages from the Shell

By default, the application writes the SAS Decision Manager log files to **SAS-configuration-directory\Levn\Web\Logs\SASServer7_1**. The SASModelManager14.2.log file is written to **SAS-configuration-directory\Levn\Web\Logs\SASServer11_1**. You can change the location of these log files in the configuration file. Changes to the configuration file take effect when the middle-tier application server is restarted. See [“Administering Logging for SAS Web Applications” in SAS Intelligence Platform: Middle-Tier Administration Guide](#) for more information about this configuration file.

SAS Model Manager creates new log files each day. For information about logging configurations, see [“Modifying Your Server Logging Configurations” in SAS Intelligence Platform: System Administration Guide](#).

Turn on SQL Logging

To turn on SQL logging and write SQL parameter values for each query to the log file, add the following categories to the log4j.xml configuration file:

```
<category additivity="false" name="org.hibernate.type">
  <priority value="TRACE"/>
  <appender-ref ref="SAS_FILE"/>
</category>

<category additivity="false" name="org.hibernate.SQL">
  <priority value="DEBUG"/>
  <appender-ref ref="SAS_FILE"/>
</category>
```


Chapter 5

Performing Upgrade Tasks

Overview of the Upgrade Process	37
Upgrade Steps	37
Post-upgrade Steps	39

Overview of the Upgrade Process

Beginning with SAS Model Manager 14.1, the software includes SAS Decision Manager Common components and is integrated with SAS Lineage as well. If you are upgrading from SAS Model Manager 14.1 to 14.2, only one pass of the SAS Deployment Wizard is needed. If you are upgrading from SAS Model Manager 12.3 or 13.1 on SAS 9.4 to SAS Model Manager 14.2 on SAS 9.4, additional installation and configurations steps are required. Therefore, two passes of the SAS Deployment Wizard installation and configuration process are required in order to complete the upgrade. During the first pass, the SAS Deployment Wizard detects which products in your existing deployment to upgrade. After the upgrade has completed successfully, the configuration stage begins. After the configuration stage is complete, you must rerun the SAS Deployment Wizard to install the new product components and to complete the configuration.

If you are upgrading from SAS Model Manager 13.1 to 14.2, the upgrade process supports upgrading to a database from the same vendor as the database that you are currently using. Upgrading from a database based on Oracle to a database based on PostgreSQL, or vice versa, is not supported.

If you are using Oracle for your SAS Decision Manager database, the upgrade process assumes that the upgraded environment uses the same instance of Oracle. The upgrade process does not support moving to a different Oracle database server.

Upgrade Steps

To determine the required steps to upgrade to the latest version of SAS Model Manager, see the upgrade instructions in *SAS Guide to Software Updates* at <http://support.sas.com/documentation/whatsnew/index.html>. For instructions about how to complete the installation and configuration process for an upgrade, see “Add SAS Products That Require Configuration” in *SAS Intelligence Platform: Installation and Configuration Guide*.

Here is product-specific information for running the SAS Deployment Wizard for the second time to complete the upgrade process:

1. Select a plan file that contains SAS Model Manager and SAS Decision Manager Common products. The plan file must be compatible with the plan that was originally used to configure your source system. Verify that you use the new SAS installation data file during this installation.

Note: For an installation in a multi-machine environment, the server products are typically installed on the SAS Application Server. The rest of the products are on a middle-tier server.

2. By default, all products that are displayed are installed. Do not change the selections. If there are no product changes, then the deployment wizard does not re-install any pre-existing products.

Make sure that the following products are among those selected for installation when upgrading from SAS Model Manager 12.3:

- SAS Decision Manager Common Data Server
- SAS Decision Manager Common Mid-Tier for Decision Manager
- SAS Decision Manager Common Mid-Tier for Decision Manager Help and Documentation

3. Some SAS server services must be started before beginning the configuration process.

Make sure that the following services are started:

- SAS Decision Manager Common Data Server

Note: This service is available only when upgrading from SAS Model Manager 13.1.

- SAS Metadata Server
- SAS Web Infrastructure Platform Data Server
- SAS Web Server (httpd - WebServer)
- SAS Object Spawner
- SAS JMS Broker
- SAS Cache Locator

4. Make sure that the following products are among those selected for configuration during the second pass:

Product	Upgrading from SAS Model Manager 12.3	Upgrading from SAS Model Manager 13.1
SAS Decision Manager Common Data Server	Yes	Not applicable
SAS Web Application Server Configuration	Yes	Yes
SAS Lineage Mid-Tier	Yes	Yes
SAS Help Viewer for Mid-Tier Applications	Yes	Yes

Product	Upgrading from SAS Model Manager 12.3	Upgrading from SAS Model Manager 13.1
SAS Decision Manager Common Mid-Tier for Decision Manager	Yes	Not applicable
SAS Model Manager Mid-Tier	Yes	Not applicable

- When upgrading from SAS Model Manager 12.3 to 14.2, choose Oracle or Decision Manager Common Data Server for the SAS Decision Manager Database type prompt. When you are reconfiguring the SAS Model Manager Mid-Tier, the extracted data from the Model Manager Database is imported automatically into the new Oracle database or SAS Decision Manager Common Data Server PostgreSQL database .

Post-upgrade Steps

- After completing the upgrade process with the SAS Deployment Wizard, see the Instructions.html file. The Instructions.html file contains the application URL and instructions that are associated with other products that you have installed. The Instructions.html file is located in `\SAS-configuration-directory\Levn\Documents\`.
- Update your user group memberships, authorization, roles, and capabilities as needed. For more information, see [Chapter 6, “Configuring Users, Groups, and Roles,” on page 41](#).
- (Optional) [Configure your deployment to use HTTPS on page 23](#).
- (Optional) Add the Visual Analytics: Data Building and Data Management: Lineage roles to the Decision Manager Users group. These roles enable users to run SAS Visual Data Builder and view lineage information for models. For more information, see [“Administering Group and Role Membership” on page 46](#).
- (Optional) If you are upgrading from SAS Model Manager 12.3 to 14.2 and are using SAS Workflow, you must perform post-installation configuration and verification steps for SAS Workflow. For more information, see [“Configuring SAS Workflow for Use with SAS Model Manager” on page 55](#).

Chapter 6

Configuring Users, Groups, and Roles

Security Administration Tasks for SAS Model Manager	41
Administering SAS Identities for Users	42
Overview of SAS Identities	42
Creating SAS Identities	42
Groups and Group Membership	43
About Groups	43
Predefined User Groups in SAS Model Manager	43
Roles and Capabilities	44
About Roles and Capabilities	44
Predefined Roles and Capabilities for SAS Model Manager	44
Administering Group and Role Membership	46
Viewing Roles and Capabilities in SAS Management Console	47
Adding a User to a Group or Role	47
Creating New Groups and Roles	47
Modifying Roles	48
Model Management User Tasks	48
Overview of Model Management User Tasks	48
Setting Up SAS Model Manager	49
Setting Up Projects and Portfolios	49
Importing and Assessing Models	50
Deploying and Delivering Models	51
Monitor Champion Model Performance and Retrain Models	51
General Tasks	52

Security Administration Tasks for SAS Model Manager

Security administration for SAS Model Manager consists of the following tasks:

- administering SAS identities for your users by adding account information to the SAS Metadata Server
- administering groups of users in order to simplify the management of roles
- administering roles, which provide users with access to specific application features

The information included here is a brief introduction to the concepts of users, SAS identities, groups, roles, and capabilities. For complete information about security administration, see *SAS Management Console: Guide to Users and Permissions* and *SAS Intelligence Platform: Security Administration Guide*.

Administering SAS Identities for Users

Overview of SAS Identities

For each SAS Model Manager user, you must create an individual SAS identity on the SAS Metadata Server. The SAS identity is a copy of the ID with which the user logs on to SAS applications. Based on this identity, the system can determine who can access which application and can audit individual actions in the metadata layer. The SAS identity consists of a name, user ID, and password for the user's external account. This ID can be any type of account that is known to the metadata server's host, such as an LDAP account, Active Directory account, host account, or other type of account.

When you are entering user IDs for Windows accounts, be sure to qualify the ID (for example, `WIN\myID` or `myID@mycompany.com`).

In a Windows environment, add new users to the **Log on as a batch job** local security policy on the machine that hosts the SAS Workspace Server.

Note: Enter a user ID for Microsoft Windows in the format `domain\userID`. In order for users to be able to schedule jobs with SAS Model Manager, you must specify a valid password for each user's account in the SAS Metadata Repository. Users must sign in with the same user ID (`domain\userID`) and password that you specified in their user account.

Note: Users who log on to SAS Model Manager using an internal account (a user ID that ends in `@saspw`) cannot access all of the features of the application. All users should be assigned external accounts.

The following users are created as part of the SAS Model Manager installation process:

Table 6.1 *Types of Users*

User	Description
SAS Administrator	This user has access to all SAS Management Console capabilities and metadata administrative tasks.
SAS Demo User	This user is optional. You can choose to create this user during installation. However, this user is not assigned to a group during installation.

Creating SAS Identities

To create SAS identities for your users, manually enter the information for each user through the User Manager plug-in in SAS Management Console. If you have a large number of users, then you can extract user and group information from one or more

enterprise identity sources. You can then use SAS bulk-load macros to create the identity metadata from the extracted information.

For more information about creating and managing identities, see [SAS Management Console: Guide to Users and Permissions](#). For information about the SAS bulk-load macros, see “” in [SAS Intelligence Platform: Security Administration Guide](#).

Groups and Group Membership

About Groups

A group is a set of users. Groups enable you to grant multiple users membership in a role or permissions to metadata, thus simplifying security administration. You can create as many groups as are needed in order to manage your installation.

TIP A group's membership can include other groups as well as individual users. This enables you to create a nested group structure.

Predefined User Groups in SAS Model Manager

Table 6.2 Predefined User Groups

Group	Description
Public	This group includes everyone who can access the metadata server, either directly or through a trust relationship. If a user is able to log on to a client application but does not have an individual SAS identity, the user is assumed to be in the public group. Because this group has implicit membership, you cannot explicitly add or remove users from this group.
SAS Users	This group includes everyone who can access the metadata server, either directly or through a trust relationship. If a user is able to log on to a client application but does not have an individual SAS identity, the user is assumed to be in the public group. Because this group has implicit membership, you cannot explicitly add or remove users from this group.
SAS Administrators	This is a standard group for metadata administrators. In a standard configuration, members are granted broad access and administrative capabilities, but are not unrestricted.
Decision Manager Common Administrators	<p>This group has administrative permissions. Membership in this group is required to administer workflows.</p> <p>In your initial installation, this group is a member of the following roles:</p> <ul style="list-style-type: none"> Decision Manager Common: Administration Model Manager: Administration Usage

Group	Description
Decision Manager Users	This group is created during the installation process. Members of this group have permission to read, add, or delete table summary information in the Data category.
Model Manager Administrator Users	This group has administrative permissions in the Projects and Portfolio categories. For specific user tasks that can be performed, see “Model Management User Tasks” on page 48 .
Model Manager Advanced Users	This group has permissions to read, write, and delete content in the Projects and Portfolios categories. For specific user tasks that can be performed, see “Model Management User Tasks” on page 48 .
Model Manager Users	This group has permission to read content in the Projects category. For specific user tasks that can be performed, see “Model Management User Tasks” on page 48 .
SAS System Services	This group enables members to export files on the Folders tab of SAS Management Console.

Roles and Capabilities

About Roles and Capabilities

A role manages the availability of application features such as menu items and plug-ins. An application feature that is under role-based management is called a capability.

Certain actions are available only to users or groups that have a particular role. Any user or group who is a member of a role has all of that role’s capabilities.

Roles can contribute to one another. A role automatically includes all of the capabilities of a role that contributes to it.

Roles differ from permissions. In general, roles do not affect access to metadata or data.

Predefined Roles and Capabilities for SAS Model Manager

Your installation includes several predefined roles for administrators and users of SAS Model Manager. Depending on what software you have installed, you might have other predefined roles.

Note: The ability to access and update metadata is subject to permissions that are placed on that metadata. These roles do not affect permissions.

Table 6.3 *Predefined User Roles and Capabilities*

Role	Description
Decision Manager Common: Administration	<p>Enables users to perform all Decision Manager Common tasks, including administering workflows.</p> <p>This role is assigned to the group Decision Manager Common Administrators and has the Decision Manager Common: Workflow category capability.</p>
Model Manager: Administration Usage	<p>Enables users to perform all model management tasks. For specific user tasks that can be performed, see “Model Management User Tasks” on page 48.</p> <p>This role is assigned to the group Model Manager Administrator Users and has the following Model Manager Plug-in capabilities by default:</p> <ul style="list-style-type: none"> • Model Projects category • Model Portfolios category
Model Manager: Advanced Usage	<p>Enables users to perform all model management tasks except for tasks that can be performed only by an application administrator. For specific user tasks that can be performed, see “Model Management User Tasks” on page 48.</p> <p>This role is assigned to the group Model Manager Advanced Users and has the following Model Manager Plug-in capabilities by default:</p> <ul style="list-style-type: none"> • Model Projects category • Model Portfolios category
Model Manager: Usage	<p>Enables users to perform general model management tasks, such as viewing project and model information. For specific user tasks that can be performed, see “Model Management User Tasks” on page 48.</p> <p>This role is assigned to the group Model Manager Users and has the following Model Manager Plug-in capabilities by default:</p> <ul style="list-style-type: none"> • Model Projects category
Comments: Administrator	<p>Enables users to edit or delete comments.</p> <p>The ability to edit and delete comments is controlled by the capabilities under Applications ⇒ SAS Application Infrastructure ⇒ Comments in SAS Management Console.</p>

Role	Description
Data Management: Lineage	Provides default access to the SAS Lineage application. This role is predefined, but it is not automatically added to the Decision Manager Users group. To enable SAS Model Manager users to access SAS Lineage, add the Data Management: Lineage role to the Decision Manager Users group. See “Adjust Group or Role Membership” in SAS Management Console: Guide to Users and Permissions for instructions.
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 group SAS Administrator Users.
Visual Analytics: Data Building	Enables users to access SAS Visual Data Builder. This role is predefined, but it is not automatically added to the Decision Manager Users group. To enable SAS Model Manager users to access SAS Visual Data Builder, add the Visual Analytics: Data Building role to the Decision Manager Users group. See “Adjust Group or Role Membership” in SAS Management Console: Guide to Users and Permissions for instructions.

Administering Group and Role Membership

To administer group and role membership, use the User Manager plug-in in SAS Management Console.




Viewing Roles and Capabilities in SAS Management Console

To view details about a role, open the User Manager plug-in in SAS Management Console, right-click the role, and select **Properties**. You can then view tabs that display the role's members, capabilities, and contributing roles.

Note: The preferred way to manage permissions for viewing vocabularies and lookup tables is by using capabilities under **Vocabulary/Entity/Term** and **Lookup**. The **Manage Vocabulary/Lookup definitions** capability is for compatibility with previous releases.

Note: Some roles have implicit capabilities that are not specified on the **Capabilities** tab.

The following table describes the icons used in the Properties window.

Icon	Description
	None of the capabilities in this category have been specified for this role.
	Some of the capabilities in this category have been specified for this role, either explicitly or through a contributing role.
	All of the capabilities in this category have been specified for this role, either explicitly or through a contributing role.

Shaded check boxes indicate capabilities that come from contributing roles.

Adding a User to a Group or Role

In most cases, the best way to place a user in a role is to add the user to a group that belongs to the role. You can also add users directly to groups or roles.

To place a user in one of the predefined roles, you can add the user to one of the predefined groups. For example, to add a user to the Decision Manager Common: Administration role, add the user to the Decision Manager Common Administrators group.

For more information, see [SAS Management Console: Guide to Users and Permissions](#).

Creating New Groups and Roles

The predefined groups and roles might be sufficient for many sites. Other sites might need to make application features available to users on either a broader or more granular basis than the predefined groups or roles allow.

You can use combinations of capabilities to create a new role. However, you can use only the capabilities that already appear in User Manager. You cannot create new capabilities.

For detailed information about roles and how to create them, see [SAS Management Console: Guide to Users and Permissions](#).

Modifying Roles

The User Manager plug-in in SAS Management Console enables you to modify roles by selecting or deselecting different capabilities.

CAUTION:

No automated method can revert a role to its original set of capabilities. Instead of adjusting the capabilities of a predefined role, consider creating a new role. This advice is especially important if you need to make major changes.

If you modify a role, then follow these best practices:

- Do not rename the predefined roles. Renaming the predefined roles makes it difficult for SAS Technical Support to help you resolve problems.
- Keep a record of the changes that you make.

When modifying a role, you can use only the capabilities that already appear in User Manager. You cannot create new capabilities.

For more information about roles and how to modify them, see [SAS Management Console: Guide to Users and Permissions](#).

Model Management User Tasks

Overview of Model Management User Tasks

When you work in SAS Model Manager, the application administrator assigns your user ID to one of three SAS Model Manager groups: Model Manager Administrators, Model Manager Advanced Users, and Model Manager Users. Groups can perform certain tasks within SAS Model Manager. For example, users in the Model Manager Administrator group are the only users who can lock a version.

Users in the Model Manager Administrator Users group can perform all task in the Models category view. The Model Manager Advanced Users and Model Manager Users groups are more restrictive. See the tables in the subsequent sections for a list of tasks and the groups whose users can perform the task.

An application administrator can create custom groups for your organization as well as assign roles to those groups. The pre-defined roles enable specific users or groups to be assigned in order to complete specific tasks within SAS Model Manager. In most cases, roles are assigned to groups. Three of the roles are general and correspond to the groups that are supplied by SAS Model Manager. Contact your application administrator to find out your group and roles.

The following table lists the abbreviations for groups that are used in the task tables below:

Group	Abbreviation
Model Manager Administrator Users	MM Admin
Model Manager Advanced Users	MM Adv User

Group	Abbreviation
Model Manager Users	MM User
Decision Manager Users	DCM User
Decision Manager Common Administrators	DCM Admin

Setting Up SAS Model Manager

Use the following table to determine the users who can complete the tasks to set up SAS Model Manager:

Task	Group
Create users in SAS Management Console	SAS Administrator
Create data libraries in SAS Management Console	DCM Admin, DCM User, MM Adv User, MM Admin, SAS Administrator
Create data libraries in the Data category view	DCM Admin, DCM User, MM Adv User, MM Admin, SAS Administrator
Create channel location folders on a SAS server	MM Admin
Create SAS channels in SAS Management Console	SAS Administrator
Define channel subscribers in SAS Management Console	SAS Administrator
Create project tables	MM User, MM Adv User, MM Admin
Register tables	DCM Admin, DCM User, MM Adv User, MM Admin
Configure the SAS Content Server for SAS Model Manager	SAS Administrator
Create workflows	MM Admin, MM Adv User, MM User, DCM Admin, DCM User
Manage workflows	DCM Admin

Setting Up Projects and Portfolios

Use the following table to determine the users who can complete the tasks to set up projects and versions in SAS Model Manager:

Task	Group
Create folders	MM Adv User, MM Admin
Create portfolios	MM Adv User, MM Admin
Create projects	MM Adv User, MM Admin
Create versions	MM Adv User, MM Admin
Delete folders, projects, and portfolios	MM Adv User, MM Admin
Archive and restore folders	MM Adv User, MM Admin.
Create and manage model and report templates	MM Adv User, MM Admin <i>Note:</i> An MM Adv User must have Write permissions to save a new template or changes to an existing template. For more information, see “Verify WebDAV Folder Permissions for User-Defined Templates” on page 17.
Create a workflow	MM User, MM Adv User, MM Admin
Assign participants to a workflow	DCM Admin
View workflows that are associated with a version	DCM Admin

Importing and Assessing Models

Use the following table to determine the users who can complete the tasks to import and assess models:

Task	Group
Import models	MM Adv User, MM Admin
Configure model properties	MM Adv User, MM Admin
View lineage and relationships for a model	MM User, MM Adv User, MM Admin <i>Note:</i> To view the relationships for a model in the SAS Lineage application, the Data Management: Lineage role must be associated with a user or group the user is in.
Map model variables to project variables	MM Adv User, MM Admin
Run model comparison and model validation reports	MM Adv User, MM Admin

Task	Group
Create user reports	MM Adv User, MM Admin
Create aggregated reports	MM Adv User, MM Admin
Create scoring output tables	MM Adv User, MM Admin
Create and run scoring tests	MM Adv User, MM Admin
Schedule a scoring test to execute	MM Adv User, MM Admin

Deploying and Delivering Models

Use the following table to determine the users who can complete the tasks to deploy and deliver models:

Task	Group
Set a champion model	MM Adv User, MM Admin
Flag a challenger model	MM Adv User, MM Admin
Validate the champion model by running a scoring test using test data and reviewing the scoring output	MM Adv User, MM Admin
Lock or unlock versions	MM Admin
Publish a project or model to a SAS channel	MM Adv User, MM Admin
Extract a champion model from a SAS channel	any user who has the appropriate access rights to the SAS Metadata Repository
Publish a model to the SAS Metadata Repository	MM Adv User, MM Admin
Publish a model scoring function or model scoring files to a database	MM Adv User, MM Admin

Monitor Champion Model Performance and Retrain Models

Use the following table to determine the users who can complete the tasks to create and run the reports that are used to monitor the champion model performance and to retrain models:

Task	Group
Set project properties	MM Adv User, MM Admin
Monitor performance of project champion models that are within a portfolio	MM Adv User, MM Admin
Edit a performance definition	MM Adv User, MM Admin
Schedule a performance definition to execute	MM Adv User, MM Admin
Execute the performance definition.	MM Adv User, MM Admin
Run performance monitoring batch jobs	in Test mode: MM User, MM Adv User, MM Admin in Production mode: MM Adv, MM Admin
View monitoring reports and charts	MM User, MM Adv User, MM Admin
Delete performance data sets	MM Adv User, MM Admin
Create and manage dashboard report definitions	MM Adv User, MM Admin
Generate dashboard reports	MM Adv User, MM Admin
View dashboard reports	MM User, MM Adv User, MM Admin
Edit a model retrain definition	MM Adv User, MM Admin
Execute or schedule a model retrain definition	MM Adv User, MM Admin
View retrained models and the associated model comparison reports	MM User, MM Adv User, MM Admin

General Tasks

Use the following table to determine the users who can complete these general tasks:

Task	Group or Role
Add attachments and comments	MM User, MM Adv User, MM Admin
Search for models	MM User, MM Adv User, MM Admin
Set the status of a project champion model and challenger models	MM Adv User, MM Admin
Replace a champion model	MM Adv User, MM Admin

Task	Group or Role
View workflow tasks	<p>MM User, MM Adv User, MM Admin</p> <p>A user must be the actual owner of a task or assigned the workflow participant role of potential owner or business administrator to view tasks in the My Tasks category</p>
Work with workflow tasks	<p>MM User, MM Adv User, MM Admin</p> <p>A user who is a workflow participant can claim, release, and complete tasks.</p>

Chapter 7

Configuring SAS Workflow

Configuring SAS Workflow for Use with SAS Model Manager	55
Overview	55
Prerequisites for Using SAS Workflow	55
Guidelines for Creating Workflow Definitions	56
Associate a Milestone with a Workflow Task	57
Add the Approval Attribute to a Status	58
Make Workflow Definitions Available to SAS Model Manager	58
Log On to the Server	59
Add Tag Attributes to a Workflow Definition	59
Upload a Workflow Definition	59
Verify That the Workflow Definitions Are Available In SAS Model Manager	60
Migrate Workflows	60
Configure Alert Notifications for SAS Workflow	60

Configuring SAS Workflow for Use with SAS Model Manager

Overview

SAS Workflow provides services that work together to model, automate, integrate, and streamline business processes. It provides a platform for more efficient and productive business solutions.

SAS Workflow is used by SAS solutions that benefit from business process management. SAS Workflow Studio is a desktop client application that is used to design and deploy workflow definitions. The SAS middle tier hosts the workflow engine and the workflow services as part of the SAS Web Infrastructure Platform. SAS Model Manager is used to manage the workflows that are associated with versions. For more information about SAS Workflow, see [“SAS Workflow” in SAS Intelligence Platform: Middle-Tier Administration Guide](#).

Prerequisites for Using SAS Workflow

To use SAS Workflow with SAS Model Manager, be sure the following prerequisites are met:

1. SAS Workflow Engine, SAS Workflow Services, and SAS Workflow Studio must be installed and configured. For more information, see [SAS Intelligence Platform: Installation and Configuration Guide](#).
2. If you want to receive notifications for a workflow, you must configure alert notifications using SAS Management Console. For more information, see “[Configure Alert Notifications for SAS Workflow](#)” on page 60.
3. The **Workflows category** capability (under **Decision Manager 3.2** ⇒ **Decision Manager Common**) must be selected for the Decision Manager Common: Administration role. See “[Administering Group and Role Membership](#)” on page 46 for more information.
4. Users must be a member of the Decision Manager Common Administrators Group or of another user group that is associated with the Decision Manager Common: Administration role.
5. In SAS Web Administration Console, the users or groups must be assigned to a workflow template management role. For more information, see “[Deploying and Maintaining Workflows](#)” in *SAS Workflow Studio: User's Guide*.
6. Workflow definitions must be created using SAS Workflow Studio. For more information about creating workflow definitions, see “[Defining Workflows with SAS Workflow Studio](#)” in *SAS Workflow Studio: User's Guide*.

Guidelines for Creating Workflow Definitions

When you create workflow definitions in SAS Workflow Studio to use with SAS Model Manager, follow these guidelines:

- Participants, and policies must be added to the task level. Statuses added at the task level and the default statuses at the workflow definition level can be used for a task status. Data objects can be added at the workflow definition level or task level. Users can see only the data objects defined at the task level from the Workflows category in SAS Model Manager.
- Only the Potential Owner and Business Administrator workflow roles are used by SAS Model Manager and they can be used in either a participant or swimlane definition. The Actual Owner workflow role should not be used as part of a workflow definition.
- In order to assign additional participants to tasks in SAS Model Manager, the user must have or be in a group that is assigned the workflow role of Business Administrator. Also, in order to manage workflows and assign participants, the user must be in the Decision Manager Common Administrators group, or in a group that is a member of the Decision Manager Common Administrators group or that is associated with the Decision Manager Common: Administration role in SAS Management Console.

The following groups are created at installation time:

- Decision Manager Common Administrators Group
- Decision Manager Users Group
- Model Manager Administrator Users Group (mdlmgradminusers)
- Model Manager Advanced Users Group (mdlmgradvusers)
- Model Manager Users Group (mdlmgrusers)

For more information, see [Chapter 6, “Configuring Users, Groups, and Roles,”](#) on page 41.

- Only workflow definitions that are activated in the Workflow repository, that are associated with the **mmapi** tag attribute in the file properties, are available to SAS Model Manager.

Associate a Milestone with a Workflow Task

You can associate a milestone ID with a task as part of creating a workflow definition. This enables the name of the milestone ID to be displayed in the **Milestone** column in SAS Model Manager. This column appears in the Workflows category view, the workflow details view, and in the workflow task drop-down menu that can be accessed from the project toolbar menu.

First you must create a workflow definition using SAS Workflow Studio. Add the tasks, statuses, and data objects that you want to include in your workflow. For more information about creating a workflow definition, see the [SAS Workflow Studio: User's Guide](#).

To associate a milestone ID with a task:

1. Start SAS Workflow Studio, and then open a workflow definition.
2. Expand the **Tasks** node in the workflow tree.
3. Expand a task node, right-click the **Data Objects** folder, and select the **New Data Object** menu option.

4. Enter **MilestoneID** for the data object label.

Note: In previous versions of SAS Model Manager the data object label of **MM_MilestoneID** was used and still works.

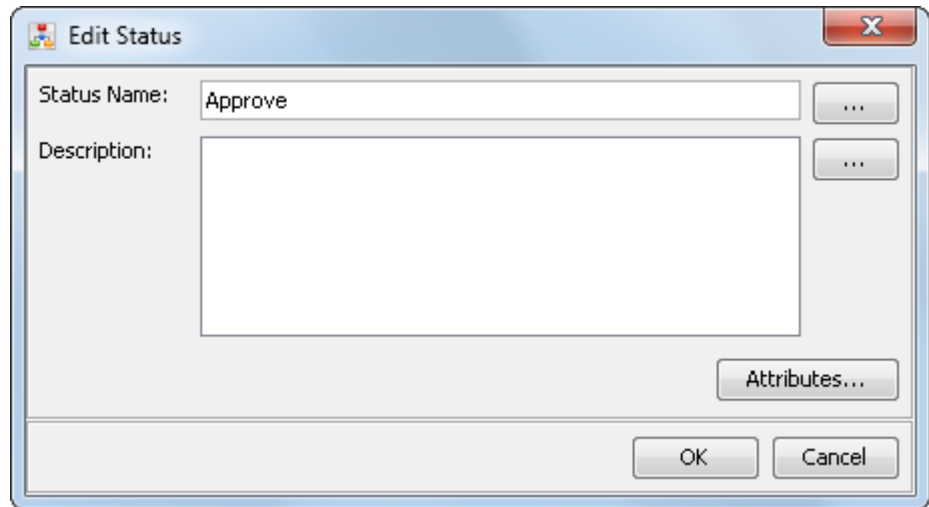
5. Select **Short Text** from for the type of data object.
6. Enter a name for the milestone ID in the **Text** property. The name can be the same as the task name.
7. Click **OK**.
8. Repeat steps 3 through 7 for each task that you want to associate a milestone ID so that it appears on the Workflow Milestones report.

Add the Approval Attribute to a Status

The **Approval** attribute allows a workflow designer to signify that a specific task approves the associated version for a model project. This attribute then notifies the users of the version that a project is approved.

To add the **Approval** attribute to a status:

1. Expand the **Statuses** folder in the **Workflow Tree**.
2. Right-click a status and select **Edit**.



3. Click **Attributes**.
4. Click **Add** and enter the following values for the new attribute.

Key

Approval

Note: This key is case-sensitive.

Value

true

5. Click **OK** twice to save.

Make Workflow Definitions Available to SAS Model Manager

After you have created a workflow definition in the SAS Workflow Studio, you must make the workflow definition available to SAS Model Manager.

To save the workflow definition to the Workflow repository:

1. Save the workflow definition to your local drive.
2. [Log on to the server.](#)
3. [Add the tag attribute](#) of **mmap_i** to the workflow definition file properties.
4. [Upload the workflow definition.](#)
5. [Verify that the workflow definition](#) is available in the Workflows category.

For more information, see “Deploying and Maintaining Workflows” in *SAS Workflow Studio: User’s Guide*.

Log On to the Server

With SAS Workflow Studio, you are limited to managing locally stored workflow definitions on your system until you have logged on to the SAS Content Server. After you are connected, you can access additional workflow definitions that are stored in the SAS Content Server.

To log on to the server:

1. Select **Server** ⇒ **Log On**.
2. In the Log On window, select the host-name from the **SAS environment** drop-down list.

Note: For more information, see “Configuring the SAS Environment File” in *SAS Intelligence Platform: Middle-Tier Administration Guide*.

3. Enter a user ID and password, and click **Log On**.
4. Click **OK** if a confirmation message appears.

Add Tag Attributes to a Workflow Definition

Only those workflow definitions in the Workflow repository that contain the **mmapi** tag attribute in the file properties are available to SAS Model Manager.

To add a tag attribute to the file properties of a workflow template in SAS Workflow Studio:

1. Select **File** ⇒ **Properties** and click **Add**.
2. Enter the tag value of **mmapi**.

Note: The file properties are case sensitive. This value must be lowercase.

3. Click **OK** twice.

Upload a Workflow Definition

To upload a workflow:

1. From the **Server** menu, select the **Save to Repository** menu option. The Save to Workflow Repository window appears.
2. (Optional) Enter relevant comments to associate with the workflow definition.
3. Select the **Activate** option if you want to activate the current version in the Workflow repository.
4. Click **OK**.
5. Click **OK** if confirmation messages appear.

Verify That the Workflow Definitions Are Available In SAS Model Manager

To verify that the workflow definitions are available in the Workflows category view of SAS Model Manager:

1. Enter the URL `http://hostname:port/SASDecisionManager` in your web browser.
2. Enter the user ID and password for a user that is in the Decision Manager Common Administrators Group or a user group that is associated with the Decision Manager Common: Administration role.
3. Verify that the uploaded workflow definition is available in the Workflows category view. From the Workflows category view, select **Actions** ⇒ **Set Mappings**. The Set Mappings window appears with a list of the available workflow definitions.

For more information, see “Set Mappings” in *SAS Model Manager: User’s Guide*.

Migrate Workflows

If you have migrated from SAS Model Manager 12.1 or 12.3, you must migrate the workflows. All active (in progress) or completed workflows will be migrated. Terminated workflows are not migrated. The workflows must also be associated with a valid UUID for a version of a project. Only workflows that are associated with a project that still exists are migrated. If the project was deleted, the associated workflow is not migrated.

Select **Workflows** ⇒ **Actions** ⇒ **Migrate from Previous Version**. The list of workflows is refreshed after the workflows are migrated.

Configure Alert Notifications for SAS Workflow

To enable workflow participants to receive alert notifications from SAS Workflow, you must configure the **E-mail** notification type in SAS Management Console. After you have configured the alert notifications, you can then use the Notify Participant policy and other workflow notification policies for workflow tasks in SAS Workflow Studio. The notifications setting in SAS Management Console is a global setting. Preferences and notifications can also be configured for individual users.

The Send Notification By Data Object policy in SAS Workflow Studio integrates with the SAS Web Infrastructure Platform’s Notification Service. Recipients are notified according to their preferences (e-mail or portlets).

1. Log on to SAS Management Console as an administrator.
2. On the **Plug-ins** tab, navigate to **Application Management** ⇒ **Configuration Manager** ⇒ **SAS Application Infrastructure**.
3. Right-click **SAS Application Infrastructure** and select **Properties**.
4. Click the **Settings** tab.
5. Select **Notifications** in the left panel. Use the menus or text fields to set the property.
6. Select the **E-mail** notification type.
7. Click **OK**.

8. To apply this setting and make it available, restart the SAS Web Infrastructure Platform Services, SAS Shared Services, and applications using SAS Workflow.

For more information about the notification properties, see “[Setting Global Properties for SAS Applications](#)” in *SAS Intelligence Platform: Middle-Tier Administration Guide*. For more information about setting the notification policies for SAS Workflow, see the SAS Workflow Studio Help or *[SAS Workflow Studio: User's Guide](#)*.

Chapter 8

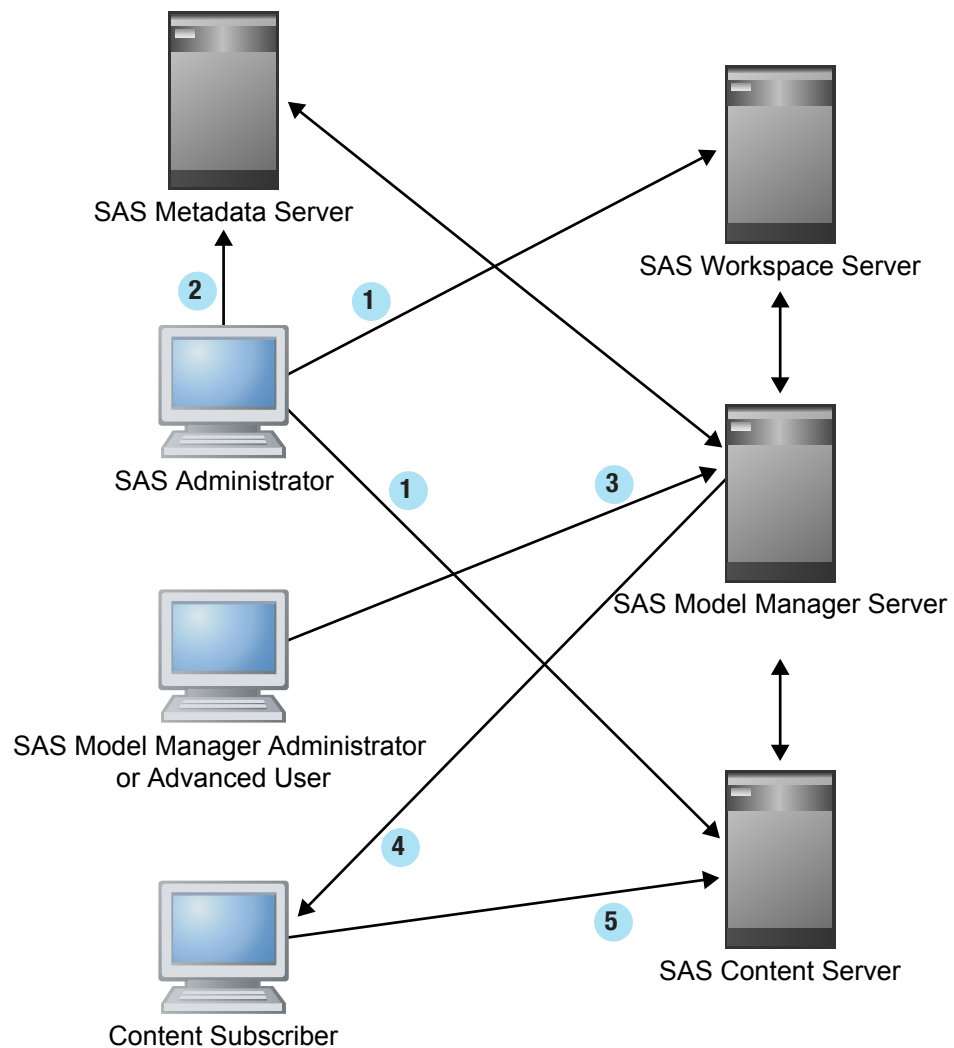
Creating and Configuring Publication Channels

Overview of Creating and Configuring Publication Channels	63
Define an HTTP or HTTPS Server	65
Define Publish Locations for the SAS Content Server	66
Configuring Channels and Subscribers for SAS Model Manager	67
Overview of Configuring Channels and Subscribers	67
Channel to Subscriber Configuration	68
Creating Channels and Subscribers	69
Create a Channel Folder	69
Create a New Channel	70
Create a New Subscriber	70
Modify an Existing Channel or Channels Node Location	72
Modify the Directory Location for the Channels Node	72
Modify the Persistent Store Directory Location for a Channel	72

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 8.1 Configuring SAS Model Manager to Enable Publishing Models

Here are the tasks.

- 1 The application administrator creates either an archive or a WebDAV persistent storage location for channels that is accessible from the SAS Workspace Server.
- 2 The application administrator creates users, HTTP servers, content subscribers, and channels using SAS Management Console.
- 3 The application administrator or an advanced user publishes models using SAS Model Manager.
- 4 The content subscriber (for example, Scoring personnel) receives an email notification from the 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 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. For example, during the installation of SAS Model Manager, a channel that has a persistent

store Archive File type is created. The channel is called **MMChannel**. For more information, see [“Create a New Channel” on page 70](#).

Note: When the SAS Web Application Server and the SAS Workspace Server are located on different physical machines, the Software Deployment Wizard creates a directory on the SAS Web Application Server machine and uses that value for the **App.ChannelDir** property value. You must create a directory that is accessible by the SAS Workspace Server, and the SAS Model Manager users must have permissions to that directory. For more information, see [“Modify an Existing Channel or Channels Node Location” on page 72](#).

Define an HTTP or HTTPS Server

The SAS Model Manager installation process by default defines a SAS Web Server and a 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:

1. Start SAS Management Console. Open your existing connection profile for your server. If your connection profile is not available in the list, see SAS Management Console Help.
2. From the **Plug-ins** tab, right-click **Server Manager**, and then select **New Server**.
3. Select **Resource Templates** ⇒ **Servers** ⇒ **Content Servers** ⇒ **Http Server**, and then click **Next**.

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**.
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 a base path or paths on your server.

Note: If you have not defined the base path for your HTTP server, see [“Define Publish Locations for the SAS Content Server” on page 66](#).

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.
9. Click **Next**.
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**. Your new server is displayed under the **Server Manager** node in the SAS Management Console Navigation Tree.

See Also

- SAS Management Console Help
- *SAS Intelligence Platform: Middle-Tier Administration Guide*

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 publishing location for the WebDAV folder or to 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 65.

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

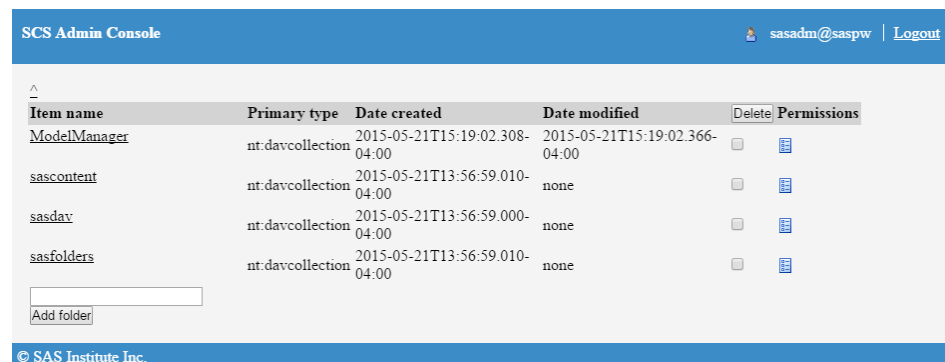
TIP The best practice is to add folders to metadata using SAS Management Console.

To define a new publishing location:

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 for the SAS Web Application Server is 80 for a UNIX environment and 7980 for a Windows environment.

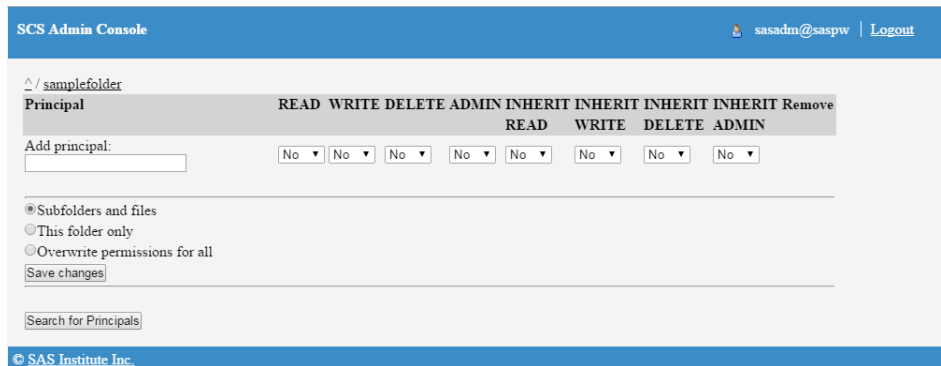
2. Sign in to the console as an unrestricted user (for example, SAS Administrator). The SCS Admin Console window appears.



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



SCS Admin Console sasadm@saspw | Logout

△ / samplefolder

Principal	READ	WRITE	DELETE	ADMIN	INHERIT	INHERIT	INHERIT	INHERIT	Remove
	READ	WRITE	DELETE	ADMIN					

Add principal: No No No No No No No No

☒ Subfolders and files
☐ This folder only
☐ Overwrite permissions for all

Save changes

Search for Principals

© SAS Institute Inc.

- 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 [SAS Intelligence Platform: Web Application Administration Guide](#).

Configuring Channels and Subscribers for SAS Model Manager

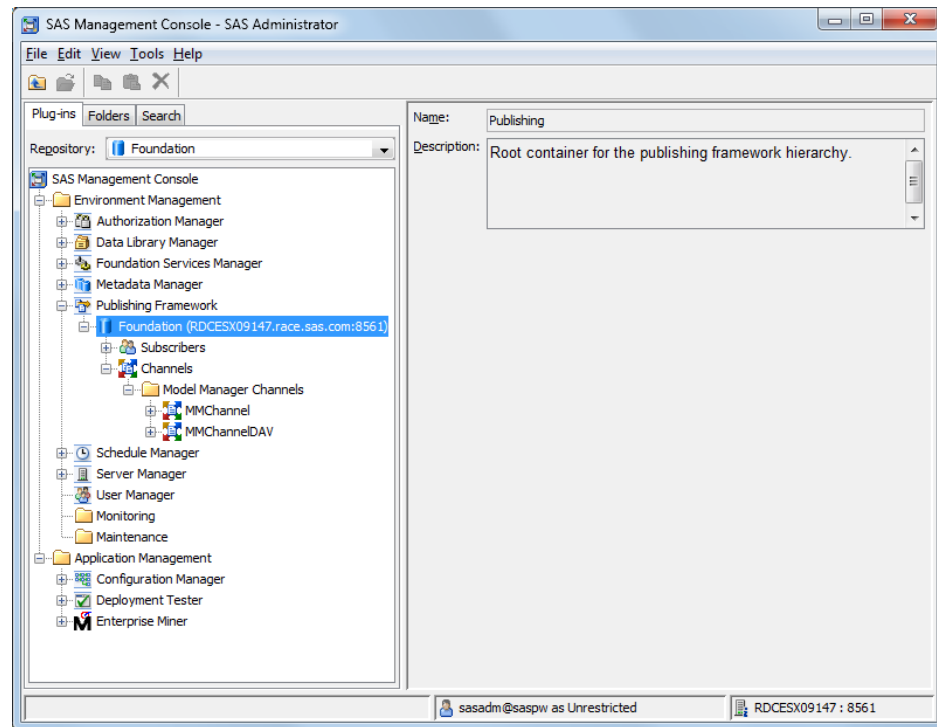
Overview of Configuring Channels and Subscribers

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 9.4 Publishing Framework: Developer's Guide*.

Channel to Subscriber Configuration

There are several ways to configure channels to publish your models to the 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.

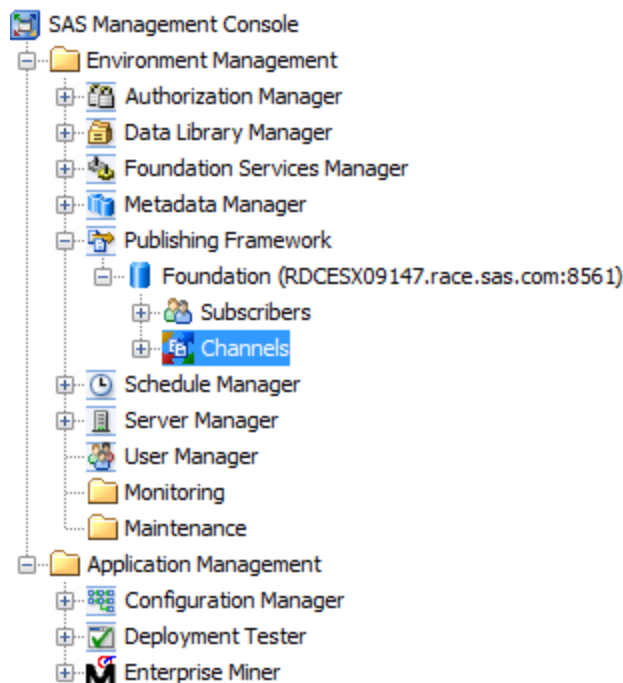
Create a Channel Folder

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 deleting and re-creating channels.

To create channel folders:

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**.
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:

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**.
5. Specify the name of your channel and click **Next**.
6. Use the arrow button to associate content subscribers with this channel to be notified at publish time. Click **Next**.
7. Select **Archive**.
8. Select **File** for **Archive Type** and enter the path of your publish location. Click **Next**.

The information window appears, providing a summary of the input and status of successful completion of the channel creation.

Note: Two other types, HTTP and FTP, are available for you to 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 *SAS 9.4 Publishing Framework: Developer's Guide*.

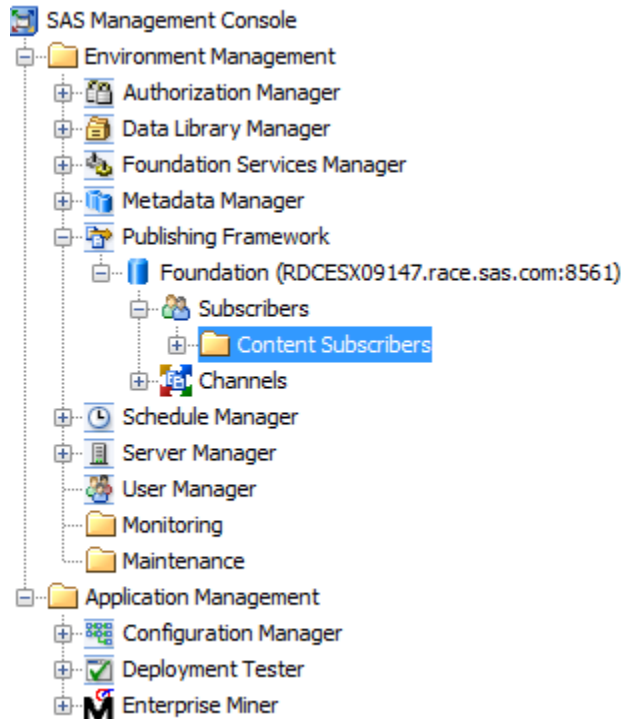
Create a New Subscriber

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**.
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.
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.
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**.
11. Specify one or more filters to eliminate content that the subscriber does not want to receive. To add a filter, click 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.
12. Click **Next**.
13. Review the subscriber specifications. Click **Back** to make any corrections. Click **Finish** when you are satisfied with your selections.

For more information, see the Help or *SAS 9.4 Publishing Framework: Developer's Guide*.

Modify an Existing Channel or Channels Node Location

Modify the Directory Location for the Channels Node

To change the location of the application channels directory:

1. From SAS Management Console, expand the **Application Management** node on the **Plug-ins** tab.
2. Select and expand **Configuration Manager** ⇒ **SAS Application Infrastructure** ⇒ **Enterprise Decision Manager 3.2**.
3. Right-click **Model Manager JavaSvcs 14.2** and select **Properties**.
4. Click the **Advanced** tab to modify the application channels directory. Change the property value for **App.ChannelDir** to a directory that is accessible by the SAS Workspace Server.
5. Click **OK**.

Modify the Persistent Store Directory Location for a Channel

To modify the location of the persistent store directory path for a channel:

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 modifying a channel within a folder, select the **Channels** node and navigate to the desired folder.
4. Right-click the name of the channel that you want to modify, and then select **Properties**.
5. Click the **Persistent Store** tab, and modify the archive file path and server location.
6. Click **OK**.

See Also

SAS Management Console Help

Recommended Reading

Here is the recommended reading list for this title:

- The online Help for the SAS Model Manager
- *SAS Model Manager: User's Guide*
- *SAS Workflow Studio: User's Guide*
- *SAS In-Database Products: Administrator's Guide*
- *SAS Intelligence Platform: Installation and Configuration Guide*
- *SAS Intelligence Platform: Middle-Tier Administration Guide*
- *SAS Intelligence Platform: Desktop Application Administration Guide*
- *SAS Intelligence Platform: System Administration Guide*
- *SAS Intelligence Platform: Web Application Administration Guide*
- *SAS Factory Miner: Administration and Configuration*

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Index

A

access permissions
 capabilities [44](#)
 groups [43](#)
 roles [44](#)
 SAS identities [42](#)
 accounts
 capabilities [44](#)
 roles [44](#)
 SAS identities [42](#)
 administration overview [1](#)
 administrators
 administrative group [43](#)
 Archive File type channels [64](#)
 assessing models
 tasks by user groups [50](#)

C

capabilities [44](#)
 champion models
 monitoring performance tasks by user groups [51](#)
 channel folders, creating [69](#)
 channels
 See [publication channels](#)
 configuration
 channels and subscribers [67](#)
 publication channels [63](#)
 SAS Workflow [55](#)
 configuring
 dashboard reports [25](#)
 number of observations [33](#)

D

dashboard reports [25](#)
 defining HTTP or HTTPS servers [65](#)
 defining publish locations for SAS
 Content Server [66](#)
 defining SAS Application Server [19](#)
 delivering models
 tasks by user groups [51](#)
 deploying models

tasks by user groups [51](#)

G

general tasks [52](#)
 groups [43](#)
 creating [47](#)
 Public [43](#)
 SAS Users [43](#)

H

HTTP or HTTPS servers
 defining [65](#)

I

importing models
 tasks by user groups [50](#)
 installing SAS Model Manager
 installing additional products [9](#)
 pre-installation requirements and steps [3](#)
 running the SAS Deployment Wizard [9](#)
 Instructions.html file [12](#)

L

limit number of observations [33](#)
 Log on as a batch job [15](#)

M

metadata
 access to [43](#)
 MMChannel [64](#)
 models
 assessing tasks by user group [50](#)
 deploying and delivering tasks by user groups [51](#)
 importing tasks by user groups [50](#)
 monitoring champion model performance
 tasks by user groups [51](#)

O

operating system accounts
 users 14
 operating system requirements 3

P

performance
 monitoring champion model
 performance by user groups 51
 permissions
 capabilities 44
 groups 43
 roles 44
 SAS identities 42
 WebDAV folders 17
 post-installation
 configuration 12
 verification 12
 post-upgrade steps 39
 pre-installation requirements and steps 3
 pre-installation steps 3
 pre-installation tasks
 database 5
 projects
 setup tasks by user groups 49
 publication channels
 Archive File type 64
 configuring 63
 creating channel folders 69
 creating new channels 70
 creating new subscribers 70
 MMChannel 64
 Publishing Framework plug-ins 67

R

roles 44
 creating 47
 modifying 48

S

SAS Application Server
 defining 19
 SAS Content Server
 defining publish locations 66
 SAS Deployment Wizard
 running 9
 SAS identities 42
 SAS Intelligence Platform
 security administration 42

SAS Management Console

 Publishing Framework plug-ins 67

SAS Publishing Framework 63

See also Publishing Framework plug-ins

scoring result set

 limit number of observations 33

security

 capabilities 44

 groups 43

 roles 44

 SAS identities 42

 SAS Intelligence Platform 42

setup

 of projects and versions by user groups 49

setup tasks by user groups 49

subscribers to channels, creating 70

T

tasks

 general, by user groups 52

U

upgrade steps 37

upgrade tasks

 overview 37

 post-upgrade steps 39

upgrade-in-place

See upgrade steps

user accounts

 create 14

user IDs

 SAS identities 42

user-defined templates

 permissions 17

V

versions

 setup tasks by user groups 49

W

WebDAV folders

 creating as publishing locations 66

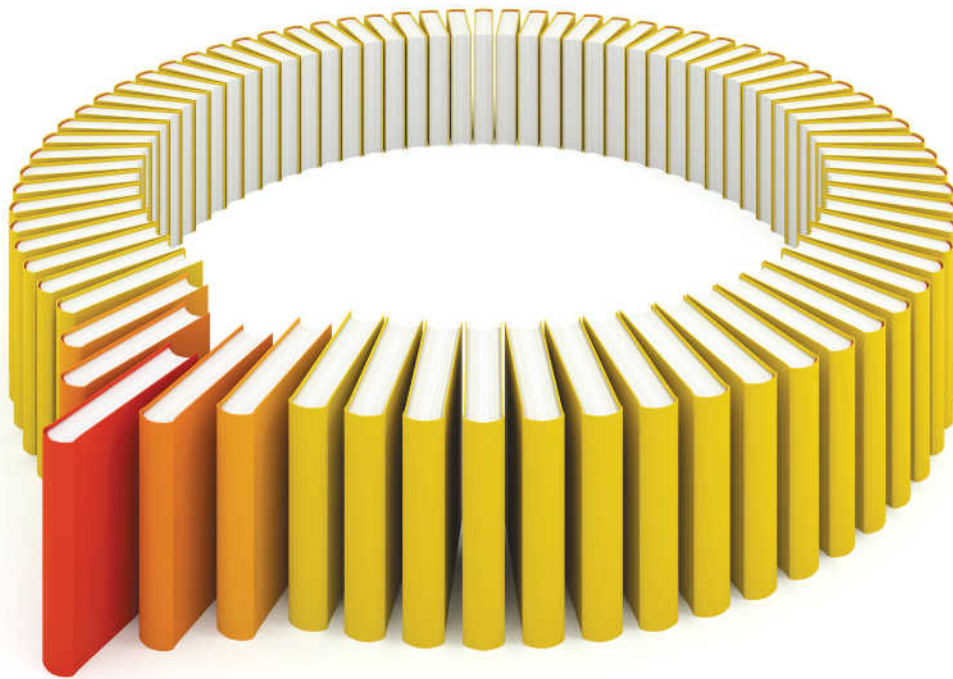
 permissions 17

Windows

 Log on as a batch job 15

workflow

 configuring 55



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