

SAS[®] Business Rules Manager 1.2

Administrator's Guide

Second Edition



The correct bibliographic citation for this manual is as follows: SAS Institute Inc. 2012. *SAS® Business Rules Manager 1.2: Administrator's Guide, Second Edition*. Cary, NC: SAS Institute Inc.

SAS® Business Rules Manager 1.2: Administrator's Guide, Second Edition

Copyright © 2012, SAS Institute Inc., Cary, NC, USA

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

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

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

The scanning, uploading, and distribution of this book via the Internet or any other means without the permission of the publisher is illegal and punishable by law. Please purchase only authorized electronic editions and do not participate in or encourage electronic piracy of copyrighted materials. Your support of others' rights is appreciated.

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

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

December 2012

SAS provides a complete selection of books and electronic products to help customers use SAS® software to its fullest potential. For more information about our e-books, e-learning products, CDs, and hard-copy books, visit support.sas.com/bookstore or call 1-800-727-3228.

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

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

Contents

Chapter 1 • General Overview	1
About SAS Business Rules Manager	1
Viewing Help and Documentation	2
Chapter 2 • Architecture for System Administrators	3
The SAS Intelligence Platform And SAS Business Rules Manager	3
Process for Publishing Rule Flows	5
Chapter 3 • Installation and Configuration	7
Pre-installation Tasks for SAS Business Rules Manager	8
Pre-installation: Database Installation and Preparation Tasks	9
Installing SAS Business Rules Manager	11
Post-installation Tasks for SAS Business Rules Manager	16
Business Rules Manager Users Group	21
Directories for Metadata and XML Files	21
Deleting Business Rules XML Content	21
Chapter 4 • Import And Export Macro Reference	23
Introduction to the Import and Export Macros	23
Dictionary	24
Index	37

Chapter 1

General Overview

About SAS Business Rules Manager	1
Viewing Help and Documentation	2

About SAS Business Rules Manager

Decision management systems can transform the way businesses make decisions. They enable businesses to use the information they already have to make better decisions—decisions that are based on predictive analytics rather than on past history. Decision management systems automate the process of making decisions, particularly day-to-day operational decisions. They improve the speed, efficiency, and accuracy of routine business processes, in part by reducing the need for human intervention.

Business rules capture the logic of business decisions and are one of the core components of decision management systems. Business rules make the decision-making process transparent and adaptable, allowing organizations to respond quickly to new information about customers and markets. They allow organizations to identify and deal with fraud, avoid unnecessary risk, and find opportunities hidden in customer data.

You can use SAS Business Rules Manager to create a database of business rules, connect those rules together into rules flows, and publish the rule flows for use by other applications. SAS Business Rules Manager provides the following capabilities:

vocabulary management

A business vocabulary identifies the objects and actors in your business domain. It defines the entities and terms that are the building blocks of business rules. SAS Business Rules Manager enables you to easily create and edit entities and terms. For individual terms, you can create a list of allowable values, which makes creating rules even easier.

business rule authoring

A business rule specifies conditions to be evaluated and action to be taken if those conditions are satisfied. For example, you can create a rule that determines whether a customer has a mortgage. That same rule can then add the outstanding balance of the mortgage to a running total of the customer's debt. With SAS Business Rules Manager, you define the conditions and actions for each rule. You can use the expression editor to create the expressions for the rule.

rule set management

A rule set is a logical collection of rules. A single rule set can have many rules. For example, you might have a rule set that determines a customer's asset balance and another rule set that determines a customer's debt level. SAS Business Rules

Manager displays rules sets in decision tables. Each row of a decision table defines the conditions and actions for one rule. By using SAS Business Rules Manager, you can easily create new rule sets, reorder the rules in a rule set, add new rules to existing rule sets, and more.

rule flow authoring and publishing

A rule flow is a logical collection of rule sets. A rule flow defines a set of rule sets and the order in which they must be executed. A single rule flow frequently corresponds to a single decision. For example, a rule flow can initially execute the rule set that determines a customer's asset balance. Next, the rule set that determine a customer's debt level is executed. Finally, the rule set that assign's a customer's loan application status is executed.

SAS Business Rules Manager makes it easy to combine rules sets into a rule flow and to publish those rule flows to the metadata server. After a rule flow has been published, it is available for use by other applications.

Viewing Help and Documentation

SAS Business Rules Manager provides the following types of Help and documentation:

how-to Help

How-to Help provides quick instructions or tips to help you complete some tasks in the application. To access how-to Help, select **Help** ⇒ **How To**.

embedded Help

Help pop-up menus and tooltips provide brief descriptions of various fields.

To access a Help pop-up menu for a field, click the Help icon (❓) when it appears next to a field. You can also place the mouse pointer over an element in the SAS Business Rules Manager windows to view the associated tooltip.

SAS Business Rules Manager: User's Guide

This document provides detailed information about the concepts and tasks that are related to using SAS Business Rules Manager. This document is available at <http://support.sas.com/documentation/solutions/brm>.

The user ID and password for this site are available from your SAS consultant.

SAS Business Rules Manager: Administrator's Guide

This document contains information about the administration tasks that are required to set up and configure the SAS Business Rules Manager and is also available at <http://support.sas.com/documentation/solutions/brm>.

Additional resources are available from the **Help** menu. To access these resources, select **Help** ⇒ **SAS on the Web**.

Chapter 2

Architecture for System Administrators

The SAS Intelligence Platform And SAS Business Rules Manager	3
Process for Publishing Rule Flows	5

The SAS Intelligence Platform And SAS Business Rules Manager

The SAS Intelligence Platform architecture is a comprehensive, end-to-end infrastructure for creating, managing, and distributing enterprise intelligence. This architecture consists of the following tiers:

client tier

provides users with desktop access to data and functionality through easy-to-use interfaces. With SAS Business Rules Manager, users author rule sets and rule flows through the SAS Business Rules Manager Flex client.

middle tier

provides web-based interfaces for creating reports and distributing information, while passing analysis and processing requests to the SAS servers. The middle tier provides SAS Business Rules Manager services.

server tier

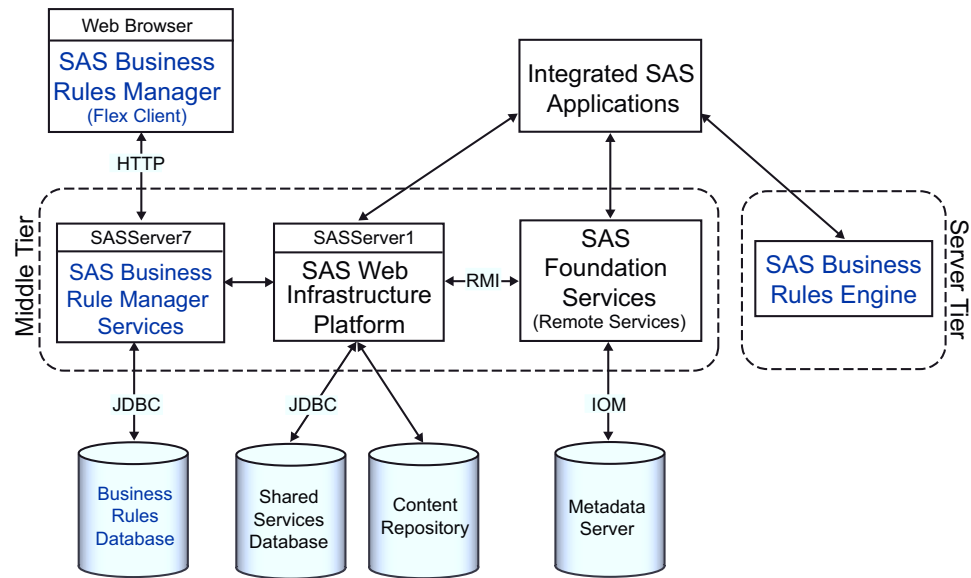
provides SAS servers that process data and handle client requests. For SAS Business Rules Manager, the server tier provides the SAS Business Rules Engine.

data tier

stores your data. The business rules database contains all of the data that the user enters through the SAS Business Rules Manager Flex client application.

The following figure shows how SAS Business Rules Manager is deployed on the SAS Intelligence Platform.

Figure 2.1 SAS Intelligence Platform Architecture and SAS Business Rules Manager



SAS Business Rules Manager

is the Flex client application for SAS Business Rules Manager. Through this client application, users author vocabularies, rule sets, and rule flows.

SAS Business Rules Manager Services

is the middle-tier application for SAS Business Rules Manager. This application manages communication with the business rules database and initiates the process of saving rule flows to the content repository.

Business Rules database

contains all of the data that users enters through the SAS Business Rules Manager client.

SAS Web Infrastructure Platform

provides services that SAS Business Rules Manager uses to authenticate users and to write published rule flows to the metadata server.

SAS Foundation Services

provides access for the SAS Web Infrastructure Platform to additional platform functionality. SAS Business Rules Manager accesses SAS Foundation Services primarily when it publishes rule flows.

SAS Business Rules Engine

generates SAS code that is used together with published rule flows to execute rule flows on the SAS platform.

Shared Services database

used by the SAS Web Infrastructure Platform to store data.

metadata server

contains the BusinessRuleFlow public metadata objects that are created when a rule flow is published. These objects are used by the integrated SAS applications to execute rule flows.

content repository

contains XML data for the published rule flows. The public metadata object on the metadata server refers to the XML content stored in the content repository.

integrated SAS applications

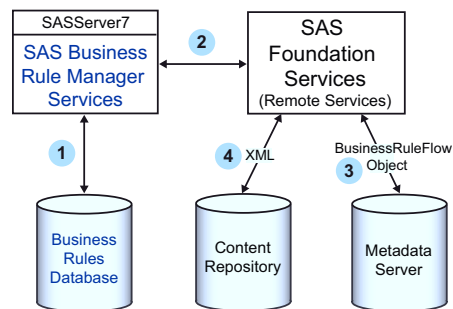
are applications such as SAS Data Integration Studio that support business rules through integration with SAS Foundation Services or the SAS Web Infrastructure Platform.

Process for Publishing Rule Flows

When a user publishes a rule flow, SAS Business Rules Manager sends the rule flow data to SAS Foundation Services (via the SAS Web Infrastructure Platform). SAS Foundation Services creates an XML file and a BusinessRuleFlow metadata object. The XML file is stored in the content repository, and the metadata object is stored on the metadata server.

The following figure illustrates the process of publishing rule flows.

Figure 2.2 Process for Publishing Rule Flows



- 1 SAS Business Rule Manager Services reads the rule flow data in the business rules database.
- 2 SAS Business Rule Manager Services generates a rule flow XML file.
- 3 SAS Foundation Services creates a BusinessRuleFlow public metadata object and stores it on the metadata server. The metadata object points to the XML file in the content repository.
- 4 SAS Foundation Services saves the rule flow XML file in the content repository.

Chapter 3

Installation and Configuration

Pre-installation Tasks for SAS Business Rules Manager	8
About the Pre-installation Tasks	8
Verify Operating System Requirements	8
Install the Prerequisite Software	8
Create Standard User Accounts	9
Obtain a Deployment Plan and a SAS Installation Data File	9
Download Your Software and Create a SAS Software Depot	9
Pre-installation: Database Installation and Preparation Tasks	9
Install a Database Server	9
Install JDBC Drivers	10
Install a Database Client Application	10
Determine Required Database Information	10
Test the Connection to Your Database	11
Installing SAS Business Rules Manager	11
About the SAS Deployment Wizard	11
Single-Machine versus Multiple-Machine Installations	12
Products Installed with SAS Business Rules Manager	12
Run the SAS Deployment Wizard	13
Post-installation Tasks for SAS Business Rules Manager	16
Overview of Post-installation Tasks	16
Follow Instructions in Instructions.html	16
Start Servers and Services	17
Set Up the UUID Generator Daemon	17
Set Up the Rule Set Import Macro	17
Modify Log File Settings	19
Business Rules Manager Users Group	21
Directories for Metadata and XML Files	21
Deleting Business Rules XML Content	21

Pre-installation Tasks for SAS Business Rules Manager

About the Pre-installation Tasks

Before you begin to install SAS Business Rules 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 will need when you are installing the software.

Perform the following pre-installation tasks before you install SAS Business Rules Manager:

1. Verify that your system meets the minimum requirements. (See page 8.)
2. Install the prerequisite software. (See page 8.)
3. Create user accounts in the operating system. (See page 9.)
4. Obtain a deployment plan and installation data file. (See page 9.)
5. Download your software and create a software depot. (See page 9.)

The following topics provide details about each step.

Verify Operating System Requirements

Ensure that you meet the minimum requirements that are described in the SAS Business Rules Manager system requirements documentation at <http://support.sas.com/documentation/installcenter/en/ikbrlstofrsr/65719/HTML/default/index.html>. System requirements are unique for each operating system. They include software requirements, hardware requirements, space requirements, specific product requirements, and graphics hardware and software compatibility.

Install the Prerequisite Software

Before you install SAS Business Rules Manager, install the following prerequisite software:

- Oracle. SAS Business Rules Manager requires an Oracle database server. See “Pre-installation: Database Installation and Preparation Tasks” on page 9 for instructions.
- Java Development Kit. Information is available at <http://support.sas.com/resources/thirdpartysupport/v93/index.html>.
- JBoss Application Server. Information is available at <http://support.sas.com/resources/thirdpartysupport/v93/index.html>.

Note: JBoss is the only web application server that is supported by SAS Business Rules Manager.

- Adobe Flash Player version 10.1.0 or later. This software is required on each client machine that accesses SAS Business Rules Manager.

Create Standard User Accounts

As a pre-installation task, you must create the following user accounts in the operating system:

- an account for the user who will install and configure the SAS software
- an account to run the spawned SAS servers

You should also create a SAS Server Users group on Windows and a sas group on UNIX.

For important details about setting up these users and groups, see the pre-installation checklist for your deployment. Also see Chapter 2, “Setting Up Users, Groups, and Ports” in *SAS Intelligence Platform: Installation and Configuration Guide*.

Obtain a Deployment Plan and a SAS Installation Data File

Before you can install your SAS software, you must obtain a deployment plan. The deployment plan is an XML file that specifies the software that you will install and configure on each machine in your environment. The plan serves as input to the SAS Deployment Wizard. A deployment plan can be a custom plan for your specific software installation, or it can be a standard, predefined plan that describes a common configuration. For more information, see “About Deployment Plans” in Chapter 5 of *SAS Intelligence Platform: Installation and Configuration Guide*.

You must also obtain a SAS Installation Data (SID) file. The SID file contains license (SETINIT) information that is required to install SAS.

Download Your Software and Create a SAS Software Depot

Use the SAS Download Manager to download the software that is listed in your SAS Software Order. The SAS Download Manager creates a SAS Software Depot from which you install your software. For more information, see Chapter 3, “Creating a SAS Software Depot” in *SAS Intelligence Platform: Installation and Configuration Guide*. You can then use the SAS Deployment Wizard to install your software.

Pre-installation: Database Installation and Preparation Tasks

Install a Database Server

SAS Business Rules Manager requires an Oracle database server. You must install this third-party software before you install SAS Business Rules Manager.

For more information, see *System Requirements for SAS Business Rules Manager 1.2* at <http://support.sas.com/documentation/installcenter/en/ikbr1stofrsr/65719/HTML/default/index.html>.

Install JDBC Drivers

You must download the following JDBC drivers and place them in a separate directory without any other files to ensure proper installation and configuration of SAS Business Rules Manager.

- Oracle Database 10g: SAS Business Rules Manager uses the ojdbc6.jar file. You can download a copy of the Oracle driver from http://www.oracle.com/technology/software/tech/java/sqlj_jdbc/index.html. Select the latest Oracle Database 10g 10.2.x driver. The JDBC driver version must match the database version.
- Oracle Database 11g: SAS Business Rules Manager uses the ojdbc6.jar file. You can download a copy of the Oracle driver from http://www.oracle.com/technology/software/tech/java/sqlj_jdbc/index.html. Select the latest Oracle 11.2x driver. The JDBC driver version must match the database version.

For more information about supported database drivers, see *System Requirements for SAS Business Rules Manager 1.2* at <http://support.sas.com/documentation/installcenter/en/ikbrlstofrsr/65719/HTML/default/index.html>.

Install a Database Client Application

As part of the post-installation process, SAS Business Rules Manager requires that you run a database script to prepare and initialize your database. The Instructions.html file (created by the SAS Deployment Wizard) provides more information about this script. To run the script, you must have installed a database client application, and you must have made the application available by setting the PATH environment variable.

Determine Required Database Information

During the installation and configuration of SAS Business Rules Manager, the SAS Deployment Wizard requires information about the database that SAS Business Rules Manager uses. The following table provides a list of information that you need in order to complete the steps in the SAS Deployment Wizard.

Table 3.1 SAS Deployment Wizard Information

Property	Description
Database Type	Specifies the database vendor to use with SAS Business Rules Manager. SAS Business Rules Manager supports only Oracle.
User Name	Specifies the user name for the database that is used with your SAS Business Rules Manager installation.
Password	Specifies a valid password for the user name associated with the database account.
Port	Specifies the port that is used by the database. The default port for Oracle is 1521.
Host Name	Specifies the host name of the machine where the database is installed.

Property	Description
Database Name	<p>Specifies the database name. For Oracle databases, the Net Service Name and the Service Name fields that are configured in the tnsnames.ora file must be the same. You must use this value for the Database Name field in the SAS Deployment Wizard. For example, if you had the following entry in the tnsnames.ora file, you would enter monitordb in the Database Name field in the SAS Deployment Wizard:</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>The Net Service Name and Service Name in this example are the same.</p>
DBMS JAR File	<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 Business Rules Manager in order for configuration to take place.</p> <p>For more information about the JDBC drivers that are supported by SAS Business Rules Manager, see <i>System Requirements for SAS Business Rules Manager 1.2</i> at http://support.sas.com/documentation/installcenter/en/ikbrlstofrsr/65719/HTML/default/index.html.</p>

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.

Installing SAS Business Rules Manager

About the SAS Deployment Wizard

You use the SAS Deployment Wizard to install and configure the SAS software and related products that are included in your deployment plan file. When you execute the SAS Deployment Wizard, you select the deployment type that you are performing. You

can install and configure the software in a single execution of the wizard, or you can install and configure the software in two separate executions. The latter approach gives you the opportunity to test the SAS license before the configuration step.

The SAS Deployment Wizard prompts you to perform a variety of tasks, including the following items:

- specify the software order, the deployment plan, and the SAS software products that you are installing and configuring
- specify the directory paths for third-party products that you have installed, such as web application server software and the Java Development Kit
- specify host machine information
- specify information about user accounts that were created in the pre-installation phase
- for multiple-machine configurations, install the server-tier, middle-tier, and client-tier software on the appropriate machines

For more information, see Chapter 5, “Installing and Configuring Your SAS Software” in *SAS Intelligence Platform: Installation and Configuration Guide*.

Single-Machine versus Multiple-Machine Installations

You can install SAS Business Rules Manager on one or on several machines. This choice is determined when you order SAS Business Rules Manager and is detailed in the deployment plan XML file.

For multiple-machine installations, you must first install SAS Business Rules Manager on the server-tier machine. You can then install SAS Business Rules Manager on other additional machines that are part of a middle tier in your configuration. For guidelines on installing SAS on multiple machines, see “Installation Order Rules for Multiple Machine Deployments” in Chapter 5 of *SAS Intelligence Platform: Installation and Configuration Guide*.

The server tier consists of a set of SAS servers that are installed as a part of the SAS Intelligence Platform. The server tier contains the code generation macro that is necessary for executing rules and integrating SAS Business Rules Manager with other SAS products.

Products Installed with SAS Business Rules Manager

Your deployment plan for SAS Business Rules Manager includes additional SAS products that support and complement SAS Business Rules Manager functionality. The SAS Deployment Wizard prompts you to install and configure each of these products, which include the following:

- DataFlux Data Management Studio
- SAS/ACCESS Interface to Oracle
- SAS/CONNECT
- SAS Data Integration Studio
- SAS Foundation
- SAS Integration Technologies
- SAS Management Console

- SAS Metadata Bridges
- SAS Metadata Server
- SAS Workflow Studio

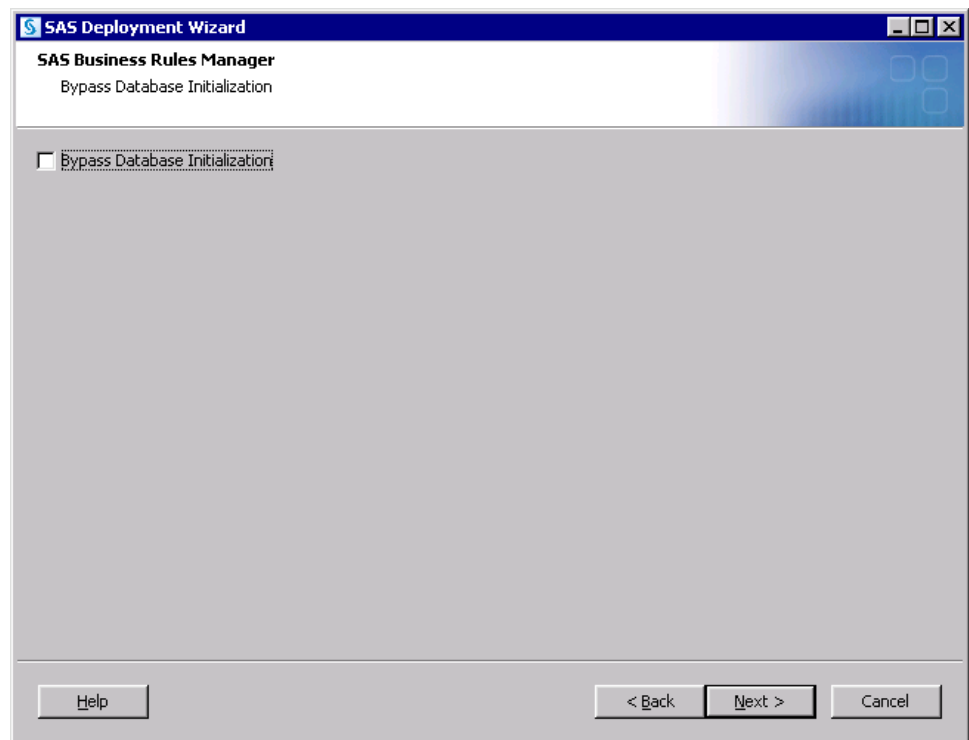
Run the SAS Deployment Wizard

To run the SAS Deployment Wizard, follow the instructions in “Install and Configure SAS Interactively” in Chapter 5 of *SAS Intelligence Platform: Installation and Configuration Guide*.

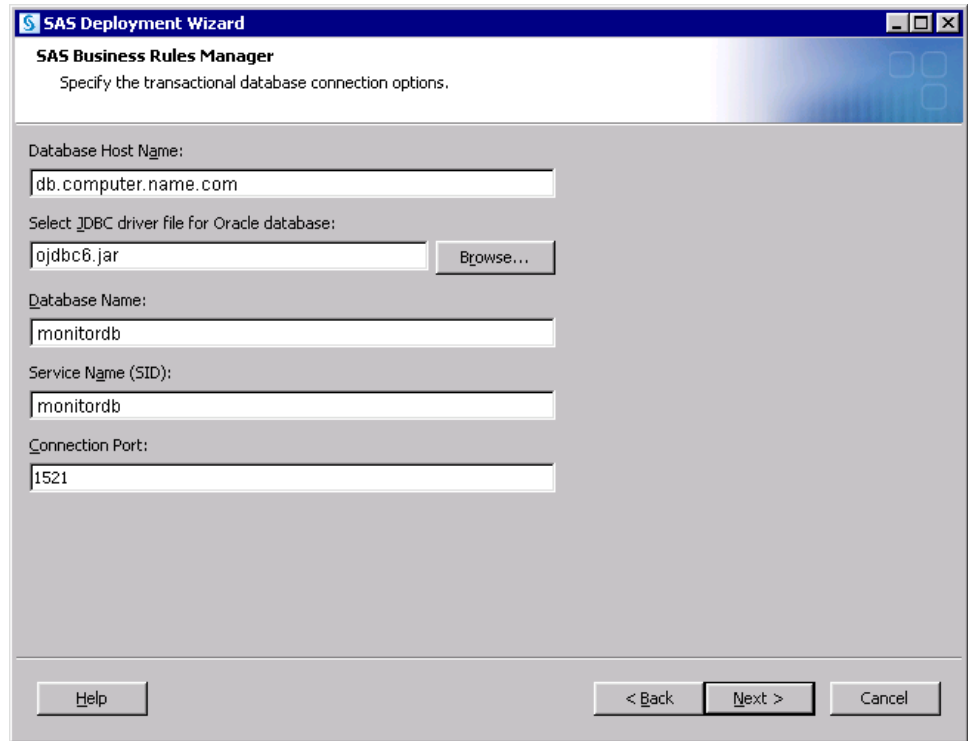
Note: You can run the wizard on operating systems that do not use a windowing environment. For more information, see the *SAS Deployment Wizard and SAS Deployment Manager: User's Guide* at <http://support.sas.com/documentation/installcenter/en/ikdeploywizug/64204/PDF/default/user.pdf>.

To provide information that is required for SAS Business Rules Manager:

1. In the database initialization dialog box, select **Bypass Database Initialization** if you have already created the data and tables within the database for SAS Business Rules Manager. If your database is empty, do not select this check box. SAS Business Rules Manager will create the tables, sequences, and constraints that are specified in the database schema.



2. Specify the connection options for the rules database. See also “Determine Required Database Information” on page 10.



Database Host Name

the fully qualified name of the host machine on which the Oracle database is installed.

Select JDBC driver file for Oracle database

the location of the directory that contains the database vendor’s JDBC JAR files. You must have this file available on the middle tier (for multi-tier deployments) for configuration to take place.

Database Name

the database name. You can refer to the Oracle SID located in the tnsnames.ora file.

Service Name (SID)

the service name should be the same as the database name.

Connection Port

the port on which the database is listening.

3. Specify the user and the schema information that will be used to connect to SAS Business Rules Manager.

SAS Deployment Wizard
SAS Business Rules Manager
 Specify the Connection Options.

Schema:

User ID:

Password:

Confirm Password:

Help < Back Next > Cancel

Schema

the name of the schema that was created for SAS Business Rules Manager data.

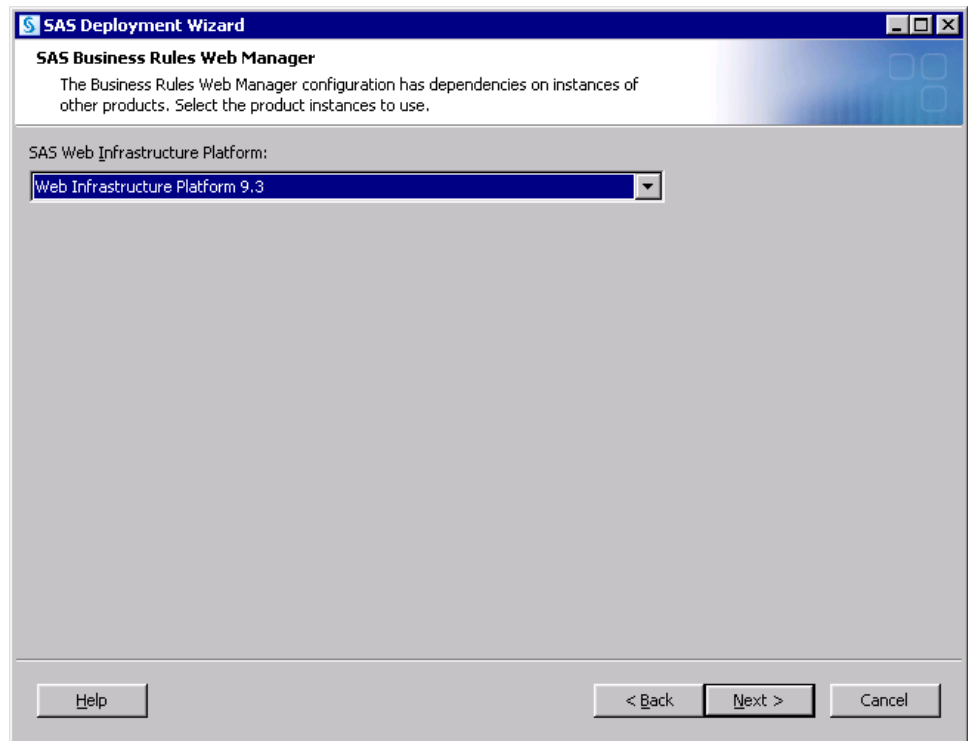
User ID

the ID of the Oracle database user whose credentials will be used to access SAS Business Rules Manager data on the server. The user ID is often the same as the schema name.

Password

the password of the Oracle database user whose credentials will be used to access SAS Business Rules Manager data on the server.

- If you are installing SAS Business Rules Manager as an add-on product and already have an existing Web Infrastructure Platform installed, the SAS Deployment Wizard asks you to select a platform instance. Select **Web Infrastructure Platform 9.3** for the platform instance.



Post-installation Tasks for SAS Business Rules Manager

Overview of Post-installation Tasks

After you install SAS Business Rules Manager, complete the following post-installation tasks:

1. [Follow the instructions in the Instructions.html file. \(See page 16.\)](#)
2. [Start servers and services. \(See page 17.\)](#)
3. [Set up the UUID generator daemon. \(See page 17.\)](#)
4. [Set up the rule set import macro. \(See page 17.\)](#)
5. [\(Optional\) Modify log file settings. \(See page 19.\)](#)

The following topics provide details about each task.

Follow Instructions in Instructions.html

At the end of the installation process for SAS Business Rules Manager, the SAS Deployment Wizard produces an HTML document named `Instructions.html`. If your server tier and middle tier are hosted on separate machines, there is an `Instructions.html` file for each machine. Follow the instructions that are provided in the HTML documents.

Start Servers and Services

To start the servers and services:

1. Start the following servers or services in the order shown, if they were not started automatically:
 1. SAS Metadata Server
 2. SAS Object Spawner
 3. SAS Framework Data Server
 4. SAS Remote Services

Note: When you are configuring SAS web applications, restart the SAS Services Application (Remote Services). On Windows, you must restart the SAS Services Application (Remote Services) from a Windows command line, using the **RemoteServices.bat -start** command. For more information see “Starting or Stopping the SAS Services Application (Remote Services)” in Chapter 5 of *SAS Intelligence Platform: System Administration Guide*.

2. Start the JBoss server for the SAS Information Delivery Portal and SAS Web Infrastructure Platform (usually SASServer1). After you start this JBoss server, you can start the JBoss server for SAS Business Rules Manager (usually SASServer7) and any other JBoss servers that are configured.

Note: You should stop the servers in reverse order.

For more information, see Chapter 5, “Operating Your Servers” in *SAS Intelligence Platform: System Administration Guide*.

Set Up the UUID Generator Daemon

The SAS Business Rules Engine uses the UUIDGEN function to create unique identifiers for rule-fired records. If you are executing rules in an operating environment other than Windows, you need to set up the object spawner to be a UUID Generator Daemon (UUIDGEND). For more information, see “Universal Unique Identifiers and the Object Spawner” in *SAS Language Reference: Concepts*.

In addition, you should specify the UUIDGENHOST system option for any jobs that run code that was generated by the SAS Business Rules Engine. For more information, see “UUIDGENHOST= System Option” in *SAS System Options: Reference*.

Set Up the Rule Set Import Macro

Configure the Macro

For single-tier installations:

1. Create the directory `!SASHOME/SASVersionedJarRepository/picklist/brlstwebapp/`.
2. Copy the file `!SASHOME/SASBusinessRulesWebManager/1.2/Picklists/brmJniPicklist.txt.full` to the following location: `!SASHOME/SASVersionedJarRepository/picklist/brlstwebapp/brmJniPicklist.txt.full`.


```

myBRM.callStringMethod("getParsedTermReferences",parsedTerms);
putlog parsedTerms=;
if errorString = '' and parsedTerms = 'term1' then do;
    put "SUCCESS: BRM VJR SUCCESSFULLY CONFIGURED!!!!";
end;
myBRM.delete();
run;

```

Modify Log File Settings

SAS Business Rules Manager uses log4j to perform logging. As SAS Business Rules Manager begins to run, the log4j configuration file for the web application is read from ***SAS-config-dir***\Web\Common\LogConfig\SASBusinessRulesManagerWeb-log4j.xml. This file is a standard log4j configuration file.

You should not change the categories or root logger in the configuration file unless you are instructed to do so by SAS Technical Support. You can change the logging priority levels if needed.

Table 3.2 Logging Priority Levels

Priority	Description
DEBUG	The most verbose logging level. This level displays information that is most useful for debugging an application. SAS Business Rules 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 Business Rules Manager.
INFO	Verbose logging level. This level displays messages that highlight the progress of an application. SAS Business Rules 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 Business Rules 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 Business Rules 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 Business Rules Manager.

By default, SAS Business Rules Manager writes the log files to ***SAS-config-dir***\Web\Common\Logs\SASBusinessRulesManagerWeb1.2.log. You can also change the location of this log file 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 Business Rules Manager is initially configured to create a single log file and does not create rolling log files. You might need to archive the log file periodically. Alternatively, you can implement a configuration file that creates a new log file each

day. The alternative configuration file shown below implements log file rolling. For the file parameter, specify the path to your configuration directory.

```
<?xml version="1.0" encoding="UTF-8"?>
<!DOCTYPE log4j:configuration SYSTEM "log4j.dtd">
<log4j:configuration xmlns:log4j="http://jakarta.apache.org/log4j/">
  <appender class="org.apache.log4j.ConsoleAppender" name="SAS_CONSOLE">
    <layout class="com.sas.svcs.logging.CustomPatternLayout">
      <param name="ConversionPattern" value="%d [%t] %-5p [%u] %c - %m%n"/>
    </layout>
  </appender>
  <!-- A time/date based rolling appender-->
  <appender class="org.apache.log4j.DailyRollingFileAppender" name="SAS_FILE">
    <param name="datePattern" value="'.yyyy-MM-dd"/>
    <param name="append" value="true"/>
    <param name="file"
      value="C:\\SAS\\Config\\Lev1\\Web\\Logs\\SASBusinessRulesManagerWeb1.2.log"/>
    <layout class="com.sas.svcs.logging.CustomPatternLayout">
      <param name="ConversionPattern" value="%d [%t] %-5p [%u] %c - %m%n"/>
    </layout>
  </appender>
  <category additivity="false" name="com.sas">
    <priority value="WARN"/>
    <appender-ref ref="SAS_CONSOLE"/>
    <appender-ref ref="SAS_FILE"/>
  </category>
  <category additivity="false" name="com.sas.services">
    <priority value="WARN"/>
    <appender-ref ref="SAS_CONSOLE"/>
    <appender-ref ref="SAS_FILE"/>
  </category>
  <category additivity="false" name="com.sas.services.deployment">
    <priority value="WARN"/>
    <appender-ref ref="SAS_CONSOLE"/>
    <appender-ref ref="SAS_FILE"/>
  </category>
  <category additivity="false" name="com.sas.services.discovery">
    <priority value="WARN"/>
    <appender-ref ref="SAS_CONSOLE"/>
    <appender-ref ref="SAS_FILE"/>
  </category>
  <category additivity="false" name="com.sas.services.util">
    <priority value="WARN"/>
    <appender-ref ref="SAS_CONSOLE"/>
    <appender-ref ref="SAS_FILE"/>
  </category>
  <category additivity="false" name="com.sas.rulestudio">
    <priority value="WARN"/>
    <appender-ref ref="SAS_CONSOLE"/>
    <appender-ref ref="SAS_FILE"/>
  </category>
  <root>
    <priority value="ERROR"/>
    <appender-ref ref="SAS_CONSOLE"/>
    <appender-ref ref="SAS_FILE"/>
  </root>
</root>
```



```
</log4j:configuration>
```

For additional information about logging configurations, see “Modifying Your Server Logging Configurations” in *SAS Intelligence Platform: System Administration Guide*.

Business Rules Manager Users Group

A SAS Business Rules Manager user group is created during the installation process. Membership in this group is required to be able to use SAS Business Rules Manager and to access rule flows that have been published on the content server. The group name is Business Rules Manager Users.

Directories for Metadata and XML Files

SAS Business Rules Manager creates two directories for metadata: **Products** and **System**.

SAS Business Rules Manager creates a location for published XML files, **Sasdav/Products**. The BusinessRuleFlow metadata object does not delete the XML documents stored in this location in order to ensure that an audit trail is maintained. For more information, see “[Deleting Business Rules XML Content](#)” on page 21.

Deleting Business Rules XML Content

Before you delete any XML content from **Sasdav/Products**, you should do the following:

1. Back up all versions of the content. The easiest way to back up the content is to use SAS Management Console to export the BusinessRuleFlow object that refers to the content.
2. Ensure that there are not any BusinessRuleFlow objects that refer to the content.

Chapter 4

Import And Export Macro Reference

Introduction to the Import and Export Macros	23
Dictionary	24
%BRM_EXPORT_RULE_FLOW	24
%BRM_EXPORT_RULESET	25
%BRM_EXPORT_VOCABULARY	26
%BRM_IMPORT_RULE_FLOW	27
%BRM_IMPORT_RULESET	30
%BRM_IMPORT_VOCABULARY	33

Introduction to the Import and Export Macros

SAS Business Rules Manager provides the following macros for importing data into the rules database and exporting data from the rules database. These macros must be run on the server tier.

- %BRM_EXPORT_RULE_FLOW
exports rule flows from the rules database into a CSV file
- %BRM_EXPORT_RULESET
exports rule sets from the rules database into a CSV file
- %BRM_EXPORT_VOCABULARY
exports vocabularies from the rules database into a CSV file
- %BRM_IMPORT_RULE_FLOW
imports rule flows from a CSV file into the rules database
- %BRM_IMPORT_RULESET
imports rule sets from a CSV file into the rules database
- %BRM_IMPORT_VOCABULARY
imports vocabulary terms from a CSV file into the rules database

For the %BRM_IMPORT_RULESET macro, additional configurations steps are required. See [“Set Up the Rule Set Import Macro” on page 17](#) for more information.

Dictionary

%BRM_EXPORT_RULE_FLOW

Exports rule flows from the rules database into a CSV file.

Restriction: This macro must be run on the server tier.

Syntax

```
%INCLUDE 'SAS-CONFIG-directory'\Applications\SASBusinessRulesManager\1.2\
ucmacros\brm_export_rule_flow.sas';
```

```
%BRM_EXPORT_RULE_FLOW (RULEFLOWS=ALL | "rule_flow_1<,rule_flow_2...>",
CSV=output_filename.CSV<, FOLDER_PATH=path_name>
<, database-access-options>);
```

Required Arguments

CSV=output_filename

specifies the full pathname to the CSV file where you want to export the data.

RULEFLOWS=ALL | "rule_flow_1<, rule_flow_2...>"

specifies the rule flows that you want to export. Specify ALL to export all rule flows. To export only selected rule flows, specify the identification numbers of the rule flows enclosed in quotation marks. Separate multiple identification numbers with commas.

Tip You can filter the rule flows that are exported by specifying the FOLDER_PATH= option.

Optional Argument

FOLDER_PATH=path_name

specifies a folder pathname in SAS Business Rules Manager that you want to filter the output by. If you specify a folder pathname, then only the objects in that path are exported. For example, if you specify RULEFLOWS=ALL and FOLDER_PATH=RetailLoans, then only the rule flows in the folder RetailLoans are exported. If you specify RULEFLOWS="10045,10572" and FOLDER_PATH=RetailLoans, but neither of the specified rule flows are in the RetailLoans folder, then no rule flows are exported.

Use a forward slash to separate folder names.

Example FOLDER_PATH=Loans/Retail/Applications

Database Access Options

AUTHDOMAIN=domain_name

specifies the authentication domain for accessing the rules database. This domain must be valid for the user that is executing the macro. This domain is defined when SAS Business Rules Manager is configured.

Default BRM_DB_AUTH

DBMS_PATH=tnsname_entry

specifies the tnsname entry that is specified in the tnsnames.ora file for the Oracle service that contains the rules database.

Default Database name that is specified when SAS Business Rules Manager is configured

See [“Determine Required Database Information” on page 10](#) and [“Run the SAS Deployment Wizard” on page 13](#)

%BRM_EXPORT_RULESET

Exports rule sets from the rules database into a CSV file.

Restriction: This macro must be run on the server tier.

Syntax

```
%INCLUDE 'SAS-CONFIG-directory'\Applications\SASBusinessRulesManager\1.2\
ucmacros\brm_export_ruleset.sas';
```

```
%BRM_EXPORT_RULESET (RULESETS=ALL | "rule_set_1<, rule_set_2...>",
CSV=output_filename.CSV)<, FOLDER_PATH=path_name>
<, database-access-options>;
```

Required Arguments

CSV=output_filename

specifies the full pathname to the CSV file where you want to export the data.

RULESETS=ALL | "rule_set_1<, rule_set_2...>"

specifies the rule sets that you want to export. Specify ALL to export all rule sets. To export only selected rule sets, specify the identification numbers of the rule sets enclosed in quotation marks. Separate multiple identification numbers with commas.

Tip You can filter the rule sets that are exported by specifying the FOLDER_PATH= option.

Optional Argument

FOLDER_PATH=path_name

specifies a folder pathname in SAS Business Rules Manager that you want to filter the output by. If you specify a folder pathname, then only the objects in that path are exported. For example, if you specify RULESETS=ALL and FOLDER_PATH=RetailLoans, then only the rule sets in the folder RetailLoans are exported. If you specify RULESETS="10045,10572" and

FOLDER_PATH=RetailLoans, but neither of the specified rule sets are in the RetailLoans folder, then no rule sets are exported.

Use a forward slash to separate folder names.

Example FOLDER_PATH=Loans/Retail/Applications

Database Access Options

AUTHDOMAIN=*domain_name*

specifies the authentication domain for accessing the rules database. This domain must be valid for the user that is executing the macro. This domain is defined when SAS Business Rules Manager is configured.

Default BRM_DB_AUTH

DBMS_PATH=*tnsname_entry*

specifies the tnsname entry that is specified in the tnsnames.ora file for the Oracle service that contains the rules database.

Default Database name that is specified when SAS Business Rules Manager is configured

See [“Determine Required Database Information” on page 10](#) and [“Run the SAS Deployment Wizard” on page 13](#)

%BRM_EXPORT_VOCABULARY

Exports vocabularies from the rules database into a CSV file.

Restriction: This macro must be run on the server tier.

Syntax

```
%INCLUDE 'SAS-CONFIG-directory\Applications\SASBusinessRulesManager\1.2\
ucmacros\brm_export_vocabulary.sas';
```

```
%BRM_EXPORT_VOCABULARY (VOCAB=ALL|"vocabulary_1<, vocabulary_2...>",
CSV=output_filename.CSV)<, FOLDER_PATH=path_name>
<, database-access-options>;
```

Required Arguments

CSV=*output_filename*

specifies the full pathname to the CSV file where you want to export the data.

VOCAB=ALL | "*vocabulary_1<, vocabulary_2...>*"

specifies vocabularies that you want to export. Specify ALL to export all vocabularies. To export only selected vocabularies, specify the names of the vocabularies enclosed in quotation marks. Separate multiple identification numbers with commas.

Tip You can filter the vocabularies that are exported by specifying the FOLDER_PATH= option.

Optional Argument

FOLDER_PATH=*path_name*

specifies a folder pathname in SAS Business Rules Manager that you want to filter the output by. If you specify a folder pathname, then only the objects in that path are exported. For example, if you specify VOCAB=ALL and FOLDER_PATH=RetailLoans, then only the vocabularies in the folder RetailLoans are exported. If you specify VOCAB="loanVocab,riskVocabulary" and FOLDER_PATH=RetailLoans, but neither of the specified vocabularies are in the RetailLoans folder, then no vocabularies are exported.

Use a forward slash to separate folder names.

Example FOLDER_PATH=Loans/Retail/Applications

Database Access Options

AUTHDOMAIN=*domain_name*

specifies the authentication domain for accessing the rules database. This domain must be valid for the user that is executing the macro. This domain is defined when SAS Business Rules Manager is configured.

Default BRM_DB_AUTH

DBMS_PATH=*tnsname_entry*

specifies the tnsname entry that is specified in the tnsnames.ora file for the Oracle service that contains the rules database.

Default Database name that is specified when SAS Business Rules Manager is configured

See [“Determine Required Database Information” on page 10](#) and [“Run the SAS Deployment Wizard” on page 13](#)

%BRM_IMPORT_RULE_FLOW

Imports rule flows from the specified CSV file into the rules database.

Restrictions: This macro must be run on the server tier.
The same user can run any of import macros at the same time. However, the same import macro cannot be run simultaneously by different users.

Syntax

```
%INCLUDE 'SAS-CONFIG-directory\Applications\SASBusinessRulesManager\1.2\
ucmacros\brm_import_rule_flow.sas';
```

```
%BRM_IMPORT_RULE_FLOW(CSV=input_filename.CSV,
REJECT=reject_filename.CSV<, options><, database-access-options>);
```

Required Arguments

CSV=input_filename

specifies the full pathname to the CSV file where you want to import the data from. For more information, see [“Rule Flow CSV Input File Format”](#) on page 29.

REJECT=reject_filename

specifies the full pathname to the CSV file where you want the macro to write any records that were not imported to the rules database. See [“Using the %BRM_IMPORT_RULE_FLOW Macro”](#) on page 28 for more information.

Optional Arguments

BRM_USER=user_ID

specifies the user ID that you want to be associated with the data that is imported. This user ID is associated with the imported objects in the rules database and is displayed in the SAS Business Rules Manager interface.

Default User ID of the user that is running the macro

BYPASSLOCK=Y|N

enables you to override the lock that another user has on the importing process. See [“Using the %BRM_IMPORT_RULE_FLOW Macro”](#) on page 28 for more information.

Default N

Database Access Options

AUTHDOMAIN=domain_name

specifies the authentication domain for accessing the rules database. This domain must be valid for the user that is executing the macro. This domain is defined when SAS Business Rules Manager is configured.

Default BRM_DB_AUTH

DBMS_PATH=tnsname_entry

specifies the tnsname entry that is specified in the tnsnames.ora file for the Oracle service that contains the rules database.

Default Database name that is specified when SAS Business Rules Manager is configured

See [“Determine Required Database Information”](#) on page 10 and [“Run the SAS Deployment Wizard”](#) on page 13

Details

Using the %BRM_IMPORT_RULE_FLOW Macro

The %BRM_IMPORT_RULE_FLOW macro enables you to add new rule flows and update existing rule flows. The macro uses the rule flow name and rule flow path to determine whether a rule flow already exists. If the rule flow path and name already exist, then the rule flow is updated. If the rule flow path exists but the rule flow name does not exist, the rule flow is created. If the rule flow path does not exist, then the rule flow is rejected.

The %BRM_IMPORT_RULE_FLOW macro runs several validation checks as it imports the rule flows. For example, it checks whether a rule set is referenced in a given rule flow more than once and whether section codes have been entered correctly. If the macro finds a validation error in a rule flow, it writes a message to the SAS log, and the rule flow is rejected. The macro writes the input records for the rejected rule flow to the CSV file that was specified in the REJECT= option.

When you run the %BRM_IMPORT_RULE_FLOW macro, it creates a lock table in the rules database named lock_import_rule_flow. The SAS log states which user holds the lock and the time that the lock started. This lock might remain in place after the macro has finished. If this happens, you can override the lock by specifying the BYPASSLOCK=Y option when you run the macro.

Rule Flow CSV Input File Format

Each row of the CSV input file identifies a rule set and a rule flow, and provides the information about how that rule set fits into the rule flow. The CSV file must contain all of the columns listed in the following table, in the order listed. You must specify values for all columns, except as noted in the table. To create a blank column in the CSV file, specify two comma separators without any content between them. For example, to add a rule set to the main section of the rule flow named assignRisk and to specify a blank column for the rule flow description, specify the following in the CSV file:

```
assignRisk,,main
```

Table 4.1 Rule Flow CSV Input File Format

Column	Description	Can Column Be Blank
RULE_FLOW_SK	The identification number of the rule flow.	Yes
RULE_FLOW_NM	The name of the rule flow where you want to add the rule set specified in RULE_SET_NM.	No
RULE_FLOW_SHORT_DESC	The description of the rule flow.	Yes
RULE_SET_SECTION_CODE	The section of the rule flow to which the rule set specified in RULE_SET_NM belongs. Specify init , groupstart , main , groupend , or final . The codes groupstart and groupend are valid only if you also specify at least one term for BY_TERM. See “Simple Rule Flows, Complex Rule Flows, and BY Groups” in Chapter 5 of SAS Business Rules Manager: User's Guide for more information.	No
RULE_FLOW_PATH	The pathname that is in the SAS Business Rules Manager folders for the rule flow. This path must exist. Separate folder names with forward slashes.	No
RULE_SET_NM	The name of the rule set to be added to the rule flow. A rule set can be added to the same rule flow only once.	No

Column	Description	Can Column Be Blank
RULE_SET_PATH	The pathname that is in the SAS Business Rules Manager folders to the rule set that is specified by RULE_SET_NM. The rule set must exist at the specified location. Separate folder names with forward slashes.	No
VOCAB_NM	The name of the vocabulary that the rule set uses. All rule sets in the same rule flow must use the same vocabulary.	No
BY_TERM	The list of BY-group terms that the rule set uses. Separate multiple BY-group terms with commas. The BY-group terms must be the same for all rule sets that are in the same rule flow, and all of the BY-group terms must belong to the same vocabulary. See “Simple Rule Flows, Complex Rule Flows, and BY Groups” in Chapter 5 of SAS Business Rules Manager: User's Guide for more information.	Yes
ORDER	The order number for the rule set that is in the rule flow. Order numbers must start with 1 and be continuous through the entire rule flow. Do not restart order numbers at section boundaries.	No

%BRM_IMPORT_RULESET

Imports rule sets from the specified CSV file into the rules database.

Restrictions: This macro must be run on the server tier.
The same user can run any of import macros at the same time. However, the same import macro cannot be run simultaneously by different users.

Requirement: The %BRM_IMPORT_RULESET macro requires additional configuration. See “[Set Up the Rule Set Import Macro](#)” on page 17 for details.

Syntax

```
%INCLUDE 'SAS-CONFIG-directory'\Applications\SASBusinessRulesManager\1.2\
ucmacros\brm_import_ruleset.sas';
```

```
%BRM_IMPORT_RULESET (CSV=input_filename.CSV,
REJECT=reject_filename.CSV<, options><, database-access-options>);
```

Required Arguments

CSV=*input_filename*

specifies the full pathname to the CSV file where you want to import the data from. For more information, see “[Rule Set CSV Input File Format](#)” on page 32.

REJECT=reject_filename

specifies the full pathname to the CSV file where you want the macro to write any records that were not imported to the rules database. See [“Using the %BRM_IMPORT_RULESET Macro” on page 31](#) for more information.

Optional Arguments**BRM_USER=user_ID**

specifies the user ID that you want to be associated with the data that is imported. This user ID is associated with the imported objects in the rules database and is displayed in the SAS Business Rules Manager interface.

Default User ID of the user that is running the macro

BYPASSLOCK=Y|N

enables you to override the lock that another user has on the importing process. See [“Using the %BRM_IMPORT_RULESET Macro” on page 31](#) for more information.

Default N

Database Access Options**AUTHDOMAIN=domain_name**

specifies the authentication domain for accessing the rules database. This domain must be valid for the user that is executing the macro. This domain is defined when SAS Business Rules Manager is configured.

Default BRM_DB_AUTH

DBMS_PATH=tnsname_entry

specifies the tnsname entry that is specified in the tnsnames.ora file for the Oracle service that contains the rules database.

Default Database name that is specified when SAS Business Rules Manager is configured

See [“Determine Required Database Information” on page 10](#) and [“Run the SAS Deployment Wizard” on page 13](#)

Details**Using the %BRM_IMPORT_RULESET Macro**

The %BRM_IMPORT_RULESET macro enables you to add new rule sets and update existing rule sets. The macro uses the rule set name and rule set path to determine whether a rule set already exists. If the rule set path and name already exist, then the rule set is updated. If the rule set path exists but the rule set name does not exist, the rule set is created. If the rule set path does not exist, then the rule set is rejected.

The %BRM_IMPORT_RULESET macro runs several validation checks as it imports the rule sets. For example, it verifies that the expressions are valid, ensures that the first rule in each rule set uses the IF operator, and verifies that the specified vocabularies exist. If the macro finds a validation error in a rule set, it writes a message to the SAS log, and the rule set is rejected. The macro writes the input records for the rejected rule set and the reason that the record was rejected to the CSV file that was specified in the REJECT= option.

When you run the %BRM_IMPORT_RULESET macro, it creates a lock table in the rules database named lock_import_rule_set. The SAS log states which user holds the lock and the time that the lock started. It is possible for this lock to remain in place after the macro has finished. If this happens, you can override the lock by specifying the BYPASSLOCK=Y option when you run the macro.

Rule Set CSV Input File Format

Each row of the CSV input file specifies a rule, rule set, term, and an expression for that term. The row also specifies whether the expression is a condition expression or an action expression. In other words, each row of the input file can specify only one condition expression or one action expression for a given rule. The CSV file must contain all of the columns listed in the following table, in the order listed. You must specify values for all columns, except as noted in the table. To create a blank column in the CSV file, specify two comma separators without any content between them. For example, to add a rule to the rule set named assignRisk that uses the loanVocab vocabulary and to specify a blank column for the rule set description, specify the following in the CSV file:

```
assignRisk,,loanVocab
```

Table 4.2 Rule Set CSV Input File Format

Column	Description	Can Column Be Blank
RULE_SET_SK	The identification number of the rule set.	Yes
RULE_SET_NM	The name of the rule set where you want to add the rule specified in RULE_NM.	No
RULE_SET_DESC	The description of the rule set.	Yes
VOCAB_NM	The name of the vocabulary that the rule set uses. All rules in the same rule set must use the same vocabulary.	No
RULE_SET_PATH	The pathname that is in the SAS Business Rules Manager folders for the rule set. This path must exist. Separate folder names with forward slashes.	No
RULE_NM	The name of the rule to be added to the rule set.	No
RULE_DESC	The description of the rule.	Yes
RULE_SEQ_NO	The order number for the rule that is in the rule set. Order numbers in a rule set start with 1.	No
CONDITIONAL_NM	The operator for the rule. Specify if , elseif , or or . The first rule in a rule set must use the if operator. For information about these operators, see “Controlling Which Conditions Are Evaluated” in Chapter 4 of SAS Business Rules Manager: User's Guide.	No

Column	Description	Can Column Be Blank
LHS_TERM	The term for the expression specified in the EXPRESSION column. Terms specified in the LHS_TERM column are the terms that SAS Business Rules Manager displays at the top or left side of the decision table. These terms appear in the column headings of the decision table when you are viewing the decision table in the horizontal format. They appear in the row headings of the decision table when you are viewing the decision table in the vertical format.	No
EXPRESSION	A single condition or action expression for the term specified in the LHS_TERM column. This expression is the expression that you would enter into a cell in the decision table. See “Adding Rules to the Rule Set” in Chapter 4 of SAS Business Rules Manager: User's Guide for more information about expressions.	Yes
EXPRESSION_ORDER	The order number of the rule's condition or action expressions. A rule's condition and action expressions are numbered beginning with 1. For example, a rule might have two condition expressions numbered 1 and 2, and it might have three action expressions numbered 1, 2, and 3.	No
EXPRESSION_TYPE	The type of expression. Specify condition or action .	No

%BRM_IMPORT_VOCABULARY

Imports vocabulary terms from the specified CSV file into the rules database.

Restrictions: This macro must be run on the server tier.
The same user can run any of import macros at the same time. However, the same import macro cannot be run simultaneously by different users.

Syntax

```
%INCLUDE 'SAS-CONFIG-directory'\Applications\SASBusinessRulesManager\1.2\
ucmacros\brm_import_vocabulary.sas';
```

```
%BRM_IMPORT_VOCABULARY (CSV=input_filename.CSV,
REJECT=reject_filename.CSV<, options><, database-access-options>);
```

Required Arguments

CSV=*input_filename*

specifies the full pathname to the CSV file where you want to import the data from. For more information, see “Vocabulary CSV Input File Format” on page 35.

REJECT=reject_filename

specifies the full pathname to the CSV file where you want the macro to write any records that were not imported to the rules database. See [“Using the %BRM_IMPORT_VOCABULARY Macro” on page 34](#) for more information.

Optional Arguments**BRM_USER=user_ID**

specifies the user ID that you want to be associated with the data that is imported. This user ID is associated with the imported objects in the rules database and is displayed in the SAS Business Rules Manager interface.

Default User ID of the user that is running the macro

BYPASSLOCK=Y|N

enables you to override the lock that another user has on the importing process. See [“Using the %BRM_IMPORT_VOCABULARY Macro” on page 34](#) for more information.

Default N

Database Access Options**AUTHDOMAIN=domain_name**

specifies the authentication domain for accessing the rules database. This domain must be valid for the user that is executing the macro. This domain is defined when SAS Business Rules Manager is configured.

Default BRM_DB_AUTH

DBMS_PATH=tnsname_entry

specifies the tnsname entry that is specified in the tnsnames.ora file for the Oracle service that contains the rules database.

Default Database name that is specified when SAS Business Rules Manager is configured

See [“Determine Required Database Information” on page 10](#) and [“Run the SAS Deployment Wizard” on page 13](#)

Details**Using the %BRM_IMPORT_VOCABULARY Macro**

The %BRM_IMPORT_VOCABULARY macro enables you to add new vocabulary terms. You cannot use the macro to update existing terms.

The %BRM_IMPORT_RULESET macro runs several validation checks as it imports the vocabulary terms. For example, it verifies that term, entity, and vocabulary names are valid, and ensures that a term is not duplicated in a vocabulary. If the macro finds a validation error, it writes a message to the SAS log, and the term is rejected. The macro writes the input records for the rejected term to the CSV file that was specified in the REJECT= option.

When you run the %BRM_IMPORT_VOCABULARY macro, it creates a lock table in the rules database named lock_import_rule_vocabulary. The SAS log states which user holds the lock and the time that the lock started. It is possible for this lock to remain in

place after the macro has finished. If this happens, you can override the lock by specifying the BYPASSLOCK=Y option when you run the macro.

Vocabulary CSV Input File Format

Each row of the CSV input file defines a term, including the term data type, domain type, and the entity and vocabulary that contains the term. The CSV file must contain all of the columns listed in the following table, in the order listed. You must specify values for all columns, except as noted in the table. To create a blank column in the CSV file, specify two comma separators without any content between them. For example, to add a term to the entity named Customer in the vocabulary named loanVocab and to specify a blank column for the vocabulary description, specify the following in the CSV file:

```
loanVocab,,Customer
```

Table 4.3 Vocabulary CSV Input File Format

Column	Description	Can Column Be Blank
VOCAB_NM	The name of the vocabulary where you want to add entity and term specified by VOCAB_ENTITY_NM and VOCAB_TERM_NM.	No
VOCAB_SHORT_DESC	The description of the vocabulary.	Yes
VOCAB_ENTITY_NM	The name of the entity that VOCAB_TERM_NM belongs to.	No
VOCAB_ENTITY_SHORT_DESC	The description of the entity.	Yes
VOCAB_TERM_NM	The name of the term.	No
VOCAB_TERM_SHORT_DESC	The description of the term.	Yes
VOCAB_TERM_DATA_TYPE_TXT	The data type of the term. Specify string , decimal , integer , boolean , date , or datetime .	No
VOCAB_TERM_DOMAIN_TYPE_TXT	The domain type for the term. Specify discrete , continuous , or boolean . A domain value is discrete if it is just an individual value such as 5.3 or 18JUL2012:10:25:00 . A domain value is continuous if it specifies a range such as >5 or <18JUL2012:10:25:00 . Terms that are assigned the data type string can have discrete domain values only. Boolean terms can have Boolean domain values only.	No
VOCAB_TERM_DOMAIN_TXT	The set of expected values for a term. Separate individual domain values with a semi-colon (;). See “Specify Domain Values” in Chapter 2 of SAS Business Rules Manager: User’s Guide for more information.	Yes

Column	Description	Can Column Be Blank
VOCAB_TERM_ INPUT_EXCLUDE_ FLG	Specifies whether to exclude the term from the data that is required to be mapped to an input data set for a rule flow. Terms that are excluded from input cannot be mapped to input table columns in a production job. Specify Y or N .	No
FOLDER_PATH	The pathname that is in the SAS Business Rules Manager folders for the rule flow. This path must exist. Separate folder names with forward slashes.	No

Index

A

Adobe Flash Player 8

C

client tier 12

D

deployment plan 9

downloading software 9

G

groups

creating as pre-installation task 9

I

installing SAS Business Rules Manager

installing additional products 12

post-installation tasks 16

pre-installation requirements and tasks 8

running the SAS Deployment Wizard 13

single-machine versus multiple-machine installations 12

using the SAS Deployment Wizard 11

Instructions.html file 16

J

Java Development Kit 8

JBoss Application Server 8

M

middle tier 12

multiple-machine installations 12

O

operating system requirements 8

Oracle 8

P

post-installation tasks 16

pre-installation requirements and tasks 8

pre-installation tasks

database 9

prerequisite software 8

S

SAS Business Rules Manager

documentation 2

features 1

installation and configuration 8

SAS Data Integration Studio 12

SAS Deployment Wizard 11

running 13

SAS Download Manager 9

SAS Foundation 12

sas group 9

SAS Installation Data (SID) file 9

SAS Integration Technologies 12

SAS Management Console 12

SAS Server Users group 9

SAS Software Depot 9

server tier 12

servers and services

starting after installation 17

SID file 9

single-machine installations 12

starting servers and services 17

U

user accounts

creating as pre-installation task 9

