SAS® Strategy Management 5.4

System Administration Guide

SAS® Documentation

The correct bibliographic citation for this manual is as follows: SAS Institute Inc 2012. *SAS® Strategy Management 5.4: System Administration Guide*. Cary, NC: SAS Institute Inc.

SAS® Strategy Management 5.4: System Administration Guide

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

Electronic book 1, December 2012

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Contents

Using This Book

Audience

This guide is intended for SAS Strategy Management 5.4 system administrators.

The Batch Maintenance Facility (BMF) and its part of this guide are primarily intended for SAS Strategy Management scorecard modelers, that is, users of Strategy Management who create and maintain their organization's Strategy Management data. Readers must understand the Strategy Management data model and must be comfortable with basic computer network concepts, editing files with text editors, and running SAS client sessions.

Requirements

To administer the solutions software, you must be familiar with the operating system on which it is installed. For example, you must know how to create folders, run scripts (.bat files or .sh files), and update environment variables. On Microsoft Windows, you must be an administrator of the system.

Documentation Conventions

This book uses the following documentation conventions to identify paths in the software configuration:

Path	Refers to	Example
`!sasroot`	Path to the SAS root directory	Windows: `C:\Program Files\SAS\SASFoundation\9.3` UNIX: `/usr/local/SAS/SASFoundation/9.3`
`SAS-config-dir`	Path to the SAS configuration directory	Windows: `C:\SAS\Config` UNIX: `/usr/local/SAS/Config`
`MySQL-install-dir`	Path to the MySQL installation directory	Windows: `C:\mysql` UNIX: `/usr/local/mysql`
`WebSphere-install-dir`	Path to the installation directory for IBM WebSphere	Windows: `C:\Program Files\IBM\WebSphere\AppServer` UNIX: `/usr/IBM/WebSphere/AppServer`

Note:

- The name of the configuration directory and the level number might be different at your site.
- If your configuration is the result of a migration from the previous release of SAS Solutions Services, the **`SASApp`** directory might be called **`SASMain`** instead (for example, **`C:\SAS\Config\Lev1\SASMain`** rather than **`C:\SAS\Config\Lev1\SASApp`**). Make the appropriate substitutions as you read this document.
- File system pathnames are typically shown with Windows separators (\); for UNIX, substitute a forward slash (/).
- Some code examples contain line breaks (indicated by an underscore _ at the end of the line) so that the code fits on the line. If you copy the code, remove the underscores and line breaks.

What's New

What's New in SAS Strategy Management 5.4 System Administration?

Overview

SAS Strategy Management 5.4 system administration provides the following changes and enhancements:

- a workflow feature
- a mobile tablet feature
- support for the SAS Package Import and Export feature
- an import configuration ID
- a View Audit Records feature
- Firefox web browser support
- additional security capabilities and groups
- improvements to the Batch Maintenance Facility (BMF)
- improvements to the Time Period Sets wizard
- removal of ODCS support

Workflow Feature

SAS Strategy Management 5.4 provides workflow, which is a way to control the submission and approval of data entered into data-entry forms. By default, SAS Strategy Management provides two workflow templates. If you have a detailed understanding of workflow and how to use SAS Workflow Studio, you can customize these templates for your organization's workflow requirements.

Mobile Tablet Feature

You can save the content of a SAS Strategy Management enhanced portlet as a SAS Mobile BI report. You can view SAS Strategy Management content on the iPad tablet. SAS Strategy Management also provides blacklisting support.

Support for the SAS Package Import and Export Feature

SAS Strategy Management 5.4 provides a new interface that is integrated with SAS Management Console. You can use this interface to export and import SAS Strategy Management projects and related content to and from a SAS package file.

Import Configuration ID

The Import Configuration wizard displays an import configuration ID that you can use to automatically run an import configuration.

View Audit Records Feature

SAS Strategy Management 5.4 provides a new, simple-to-use interface to view audit records that are generated by SAS Strategy Management.

Firefox Web Browser Support

SAS Strategy Management expands its browser options with support for the Firefox web browser.

Security Capabilities and Groups

SAS Strategy Management provides new groups and capabilities to enhance the security of data-entry form users and approvers. Capabilities have also been added for viewing audit records, creating SAS reports from an enhanced portlet view, and accessing the Strategy Management Builder from a portlet view. For modelers, all of the BMF capabilities are now provided by default.

Improvements to the Batch Maintenance Facility

BMF 5.4 provides the following new features:

- The BMF macro has been renamed to %STMBMF. The previous name, %SPMBMF, is still supported.
- Support for associating a named link with an element.
- Support for associating a named link with a nonmetric element attribute.
- Support for the named link field has been added to the element and element attribute data model files.
- Support for the description field has been added to the setup data model file.
- Headings have been added to the error logs for ease of use.
- Behavior of the error logs has changed. Now, the error logs are generated only if errors occur.
- The BMF chapters of this book have been redesigned to improve ease-of-use.

Improvements to the Time Period Sets Wizard

In the Time Periods section, you can customize the name and description for each time period by clicking in the applicable cell and entering the new name or description.

Removal of ODCS Support

SAS Strategy Management 5.4 no longer provides support for ODCS and the sharing of hierarchies with SAS Financial Management.

Accessibility

Accessibility Information

For information about the accessibility of SAS Strategy Management, see *SAS Strategy Management: User's Guide*.

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

Part 1

System Administration

1

Introduction

Overview of SAS Strategy Management

SAS Strategy Management enables you to describe your strategy, regardless of the performance management framework that you have chosen. SAS Strategy Management aligns the actions of an organization to optimize strategic outcomes. You can define, plan, execute, and validate your strategy—all using SAS Strategy Management.

- **Define:** Formalize strategy and goals and the relationships between key performance indicators using strategy maps and diagrams.
- **Plan:** Set targets, thresholds, priorities, and weights associated with strategic objectives and metrics. Align strategies to support those of the organization.
- **Execute:** Monitor progress toward targets and goals. Receive alerts to areas that are underperforming. Visually depict the impact between leading and lagging indicators. Share feedback and commentary.
- **Validate:** Prove that a strategy delivers expected results. Statistically quantify impact, priorities, and relationships and perform what if analysis.

For more information about SAS Strategy Management, see the *SAS Strategy Management: User's Guide*.

Overview of Servers

There are three types of servers that you might work with when you are using SAS Strategy Management:

- The metadata server is the server system on which the SAS Metadata Server software is running. SAS software must be available on this same system.
- The data-tier server is the server system on which SAS software runs data-handling programs (including the logical servers for SAS Workspace and SAS Stored Process servers). Transformations, error tables, and jobs are installed on

the data-tier server. The MySQL server is typically installed on the data-tier server.

Note: The same system is often used as both the data-tier server and the metadata server.

- The middle-tier server is the server system on which the managed servers and SAS Remote Services run.

Additional Documentation

The following SAS Strategy Management books are available at **http://support.sas.com/documentation/onlinedoc/stm**:

- *SAS Strategy Management: User's Guide*
- *MySQL Database Server Installation Guide for SAS Strategy Management* (readme.pdf)
- *SAS Strategy Management: Migration Guide*

Note: This web page is password-restricted. You can find the user name and password in the pre-installation checklist or by contacting SAS Technical Support at **http://support.sas.com/techsup/contact**.

For information about administering the SAS Intelligence Platform, see the following documents (and others) at **http://support.sas.com/93administration**:

- *SAS Intelligence Platform: System Administration Guide*
- *SAS Intelligence Platform: Middle-Tier Administration Guide*
- *SAS Intelligence Platform: Web Application Administration Guide*
- *SAS Intelligence Platform: Data Administration Guide*
- *SAS Intelligence Platform: Security Administration Guide*
- *SAS Intelligence Platform: Installation and Configuration Guide*
- *What's New in SAS 9.3 Intelligence Platform*

For information about administering third-party software such as the web application servers, see **http://support.sas.com/resources/thirdpartysupport/v93**.

For information about SAS Add-in for Microsoft Office, see the documentation at **http://support.sas.com/documentation/onlinedoc/addin/index.html**.

For information about SAS Data Integration Studio, see the *SAS Data Integration Studio: User's Guide* at **http://support.sas.com/documentation/onlinedoc/etls/index.html**.

2

Performing Post-configuration Steps

Overview

This chapter describes the post-configuration tasks for SAS Strategy Management, including:

- tasks that must be performed for SAS Strategy Management
- optional tasks that apply to SAS Strategy Management
- tasks that apply to localization
- tasks that apply to the configuration of add-on features

Be sure to check the SAS Notes for additional information and support fixes. Go to `support.sas.com/notes`.

General Modifications

Increase the Permanent Generation Size for SASServer1

Note: These options apply to the IBM WebSphere Server (Solaris only) and to the Oracle WebLogic Server.

In the Java Virtual Machine (JVM) options for the SASServer1 managed server, modify the PermSize and MaxPermSize options as follows:

```
-XX:PermSize=768m -XX:MaxPermSize=768m
```

Then restart SASServer1 and the other managed servers.

For information about setting JVM options, see the *SAS Intelligence Platform: Middle-Tier Administration Guide*. (See "Additional Documentation" on page 4.)

Configure PC Files Server

Overview

Installing SAS PC Files Server is mandatory for 64-bit Windows installations and optional for UNIX installations. It enables users to load data from 32-bit PC files into 64-bit SAS. With this configuration, data administrators can use Microsoft Excel or Microsoft Access files as input to jobs in SAS Data Integration Studio.

The following sections explain how and why to change the port number for SAS PC Files Server and how to use a Microsoft Office file as a data source in SAS Data Integration Studio. These sections assume that you have already installed SAS PC Files Server as a service on a Windows system.

Change the Port Number for SAS PC Files Server

SAS PC Files Server uses port 8621 by default. This port is also the default port for the SAS Stored Process Server. If you used the default port for SAS Stored Process Server, modify the port number for SAS PC Files Server by completing the following steps:

1. Stop the Windows service that runs the SAS PC Files Server by typing the following command at a command prompt:

   ```
   net stop service-name
   ```

2. From the **Windows Start** menu, select **SAS** ▸ **PC Files Server**.
3. In the application window, click **Change Options**.
4. Change the port number from `8621` to `9621` or another unused port number. Save your changes.
5. Click **Shutdown Server** to stop the desktop application.
6. Restart the service:

```
net start service-name
```

Install the Microsoft Office 2007 ODBC Driver

On the server where you installed SAS PC Files Server, install the Microsoft Office 2007 ODBC driver, which works with both Office 2007 and Office 2003 files. To download the driver, see the following SAS Note: **http://support.sas.com/kb/37/521.html**.

Validate the Configuration Changes

To validate the changes that you made, follow these instructions for importing a Microsoft Excel file.

Note: The file to be imported must reside on the system where SAS PC Files Server is installed, and it must be accessible from the data tier.

Add a library for the imported files by completing the following steps:

1. Log on to SAS Data Integration Studio as a data administrator.
2. On the **Inventory** tab, right-click the **Library** folder and select **New Library**.
3. Select **Resource Templates** ▸ **Libraries** ▸ **Generic Library**. Click **Next**.
4. Enter a name for the library.
5. Click **Browse** and select a location for the library. Click **Next**.
6. From the **Available Servers** list, select **SASApp**. Click **Next**.
7. On the Library properties page, enter the following values:
   - **Libref**: Enter a libref with a maximum of 8 characters.
   - **Engine Type**: Enter **pcfiles**.
   - **Other Options**: Enter the path to the file that you want to import and the port number for SAS PC Files Server. If the file is on a server other than the data tier, enter the server name. For example:

     ```
     path="C:\MyFiles\myfile.xlsx" port=9621 server=servername
     ```

   For more information, see *SAS/ACCESS 9.3 Interface to PC Files: Reference* at **http://support.sas.com/documentation**
8. Click **Next**.
9. Review your selections and click **Finish**.

Register the Excel file that you want to import by completing the following steps:

Note: You cannot register tables as the unrestricted user.

1. Right-click the new library and select **Register tables**.
2. Select the following options:
   - **Enable case-sensitive**
   - **Enable special characters**
3. Select the tables to register.

4 Click **Next**.

5 Review your selections and click **Finish**.

Enable Proc HTTP for Secure Socket Layer (SSL)

Your organization's SSL administrator must setup the SSL configuration to enable the SAS Strategy Management environment for SSL. The configuration requires that Proc HTTP be enabled for SSL. If you do not enable the environment for SSL, the following problems can occur:

- time period definitions cannot be saved or edited
- SAS Information Maps exported from SAS Strategy Management fail to work
- Batch Maintenance Facility (BMF) fails to work

For more information, see the documentation that is available on the SAS 9.3 Support for Web Application Servers and HTTP Servers web page at `http://support.sas.com/resources/thirdpartysupport/v93/appservers/`.

(Optional) Configure Quick Help Display

In SAS Strategy Management, Quick Help is a short Help topic that can be automatically displayed on a Web application page. By default, Quick Help is not displayed. As an administrator, you can enable or disable the Quick Help display.

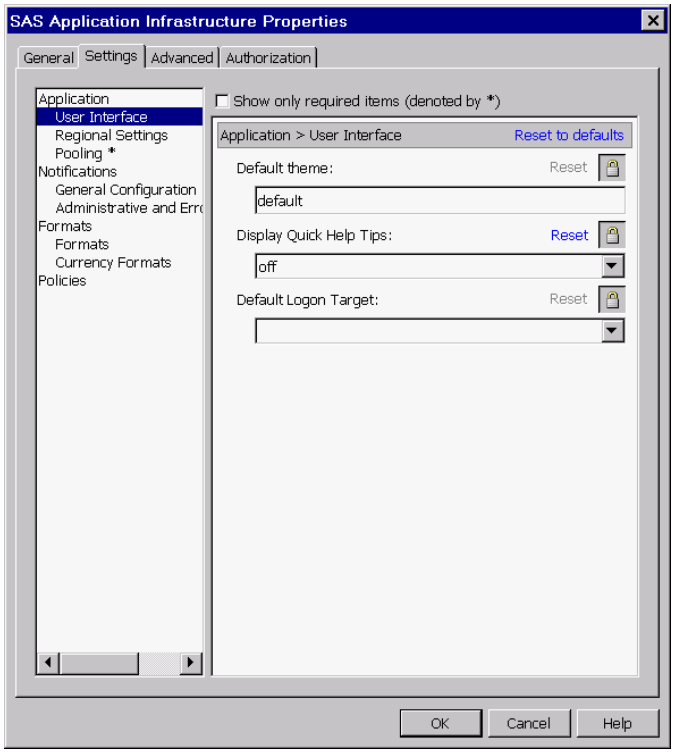
To enable the Quick Help display:

1 Log on to SAS Management Console as the SAS Administrator.

2 On the **Plug-ins** tab, navigate to **Application Management** ▸ **Configuration Manager**.

3 Right-click **SAS Application Infrastructure** and open its properties.

4 Click the **Settings** tab.



5 Click the **Lock** button  for **Display Quick Help Tips**.

By default, this property is locked. Unlocking the property makes it possible to change its value in components that inherit it.

6 Click **OK**.

7 Right-click **SAS Application Infrastructure** and select **Properties**.

8 Click the **Settings** tab.

9 From the **Display Quick Help Tips** list, select **Yes** to enable the Quick Help display.

10 Click **OK**.

11 Restart the managed servers.

Note: Do not re-lock the quick help configuration property for SAS Application Infrastructure. Doing so erases the changes that you made to SAS Strategy Management applications. Those applications would again inherit their setting from SAS Application Infrastructure.

For details about the Configuration Manager, see “Administering the SAS Web Infrastructure Platform” in the *SAS Intelligence Platform: Web Application Administration Guide*. (See “Additional Documentation” on page 4.)

SAS Strategy Management Modifications

(Optional) Change the Column Length Settings for SAS Information Maps

If an information map that was exported from SAS Strategy Management displays truncated data, you must increase the column length settings.

To change these settings:

1. Log on to SAS Management Console as the SAS Administrator.
2. On the **Plug-ins** tab, navigate to **Data Library Manager** ▸ **Libraries** ▸ **SASApp - SPMImapXport**.
3. In the right pane, delete the table called GENERICSPMEXPORT.
4. Navigate to **Application Management** ▸ **Configuration Manager** ▸ **SAS Application Infrastructure**. Right-click **Strategy Mgmt 5.4** and select **Properties**. The Properties window appears.
5. Click the **Advanced** tab.
6. Locate the IMapExport.IMapCColLen property and edit its **Property Value** cell to set the character column length that you want.
7. Locate the IMapExport.IMapNColLen property and edit its **Property Value** cell to the numeric column length that you want.
8. Click **OK** to save the changes.
9. Log off from SAS Strategy Management and restart the SAS Strategy Management Web-based application on its server.
10. Log in to the Strategy Management Builder and export an information map. Doing so forces the GENERICSPMEXPORT table definition in metadata to be regenerated with the new column lengths.

    Note: You must complete this final step.

(Optional) Disable Diagram Analysis

To disable diagram analysis in SAS Strategy Management, you must set the Diagram.AllowAnalysis property. Complete the following steps:

1. On the **Plug-ins** tab of SAS Management Console, navigate to **Application Management** ▸ **Configuration Management**.
2. Right-click **Strategy Mgmt 5.4** and select **Properties**.
3. In the Properties window, click the **Advanced** tab.
4. Click **Add**.
5. In the **Property Name** field, type `Diagram.AllowAnalysis`.

6 In the **Property Value** field, type `false`.

7 Save your changes.

To apply this new property, reload the sas.strategymanagement5.4.ear application in the Web application server.

(Optional) Enable Comment Deletion

By default, users cannot delete comments that they make in SAS Strategy Management. However, you can enable comment deletion by changing a setting in SAS Management Console. For more information about the SAS Comment Manager and SAS Management Console, see the *SAS Intelligence Platform: Middle-Tier Administration Guide*. (See "Additional Documentation" on page 4.)

(Optional) Enabling Auditing in SAS Strategy Management

Audit Levels in SAS Strategy Management

Audit logging in SAS Strategy Management enables site administrators to track and report on model changes, usage patterns, value changes, and permission changes.

You can configure the following auditing levels:

Level	Description
Audit.Model	Tracks all changes to templates, projects, scorecards, and elements.
Audit.Usage	Tracks the usage of table views, aggregate views, association views, and diagram views. **Note:** This level produces a large auditing table.
Audit.Values	Tracks all changes to the values of metric attributes.
Audit.Permissions	Tracks changes to permission settings.

Enable Auditing in SAS Strategy Management

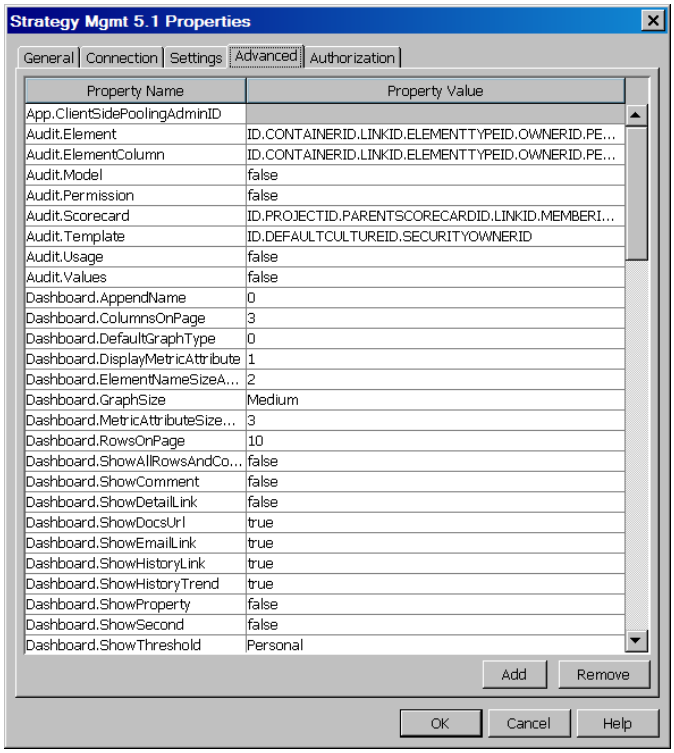
By default, auditing is disabled for SAS Strategy Management. To enable auditing for one or more levels:

1 Log on to SAS Management Console as a member of the SAS Administrators group.

2 On the **Plug-ins** tab, navigate to **Application Management** ▸ **Configuration Manager**.

3 Right-click **Strategy Mgmt 5.4** and select **Properties**.

4 In the Properties window, click the **Advanced** tab.



5 Select a level (**Audit.Model**, **Audit.Permissions**, **Audit.Usage**, or **Audit.Values**) and change its value to `true`.

Note: Use lowercase. The property value is case sensitive.

6 If you are enabling **Audit.Model** or **Audit.Usage**, you must also configure the fields to be audited. Complete the following steps:

a Select one of the following properties:

- **Audit.Element**
- **Audit.ElementColumn**
- **Audit.Scorecard**
- **Audit.Template**

b Each of the properties is configured with a default set of values. In the **Property Value** column, add or remove field names, separating the entries with a period (.).

Audit.Element	ID.CONTAINERID.LINKID.ELEMENTTYPEID.OWNERID.PE...

For a list of all the available field names, see “Property Value Field Names” on page 12.

7 Click **OK** to save your changes.

The changes go into effect when you restart all the managed servers.

Property Value Field Names

The following table lists the field names that can be set in the **Property Value** column. Your selections apply to both **Audit.Model** and **Audit.Usage** (if auditing for those levels is enabled).

Table 2.1 *Auditing Levels and Fields*

Level	Field Name	Description
Audit.Element	ID	The UUID that identifies this element.
	CONTAINERID	The UUID for the scorecard or project that contains this element.
	ELEMENTTYPEID	The UUID for the element type of this element.
	LINKID	The UUID for any element that is associated with this element. If the element is not associated with any other elements, then this value is identical to the ID value.
	OWNERID	The user ID of the current owner of this element.
	PERIODTYPE	The periodicity of this element.
	SECURITYOWNERID	The user ID of the user who created this element.
	SECURITYUSETYPE	The security use type for this element. Possible values are: ■ **N**: None ■ **C**: Container ■ **E**: Entity ■ **H**: Hierarchy
	FROMPERIODID	The beginning effective period for this element.
	TOPERIODID	The ending effective period for this element.
	ORDERNUM	An internal value that is used to order elements for viewing.
Audit.ElementColumn	ELEMENTID	The UUID used to identify the element that this attribute belongs to.
	COLUMNID	The UUID used to identify the element attribute.
	PERIODID	The UUID used to identify the period associated with the element attribute.
	VALUE	The current value of the element attribute
	METRICTEXTVALUE	The associated metric text value for this cell.
	LASTMODIFIEDDATE	The date the element attribute was last modified.
	RANGEID	The UUID used to identify the range associated with the element attribute.
	LINKID	The UUID used to identify the link associated with this cell.
	MEASUREID	The UUID used to identify the measure associated with this cell.
	FORMULA	The formula assigned to the element attribute.

Level	Field Name	Description
	THRESHOLD	The value at which an associated threshold is crossed.
	THRESHOLDOPERATOR	The operator for the associated threshold.
	THRESHOLDTYPE	The threshold type for the associated threshold.
	THRESHOLDINTERVALID	The interval ID of the associated threshold.
	ISUSEROVERRIDEVALUE	An override flag. A value of `1` indicates that the cell value has been overridden by the user. Otherwise, the value is `0`.
	STOREDPROCESSID	The ID of an associated stored process.
	STOREDPROCESSPARMS	The parameters to be sent to the associated stored process, in a string separated by semicolons.
Audit.Scorecard	ID	The UUID that identifies this scorecard.
	PROJECTID	The UUID for the project that contains this scorecard.
	PARENTSCORECARDID	The UUID for the parent scorecard of this scorecard.
	MEMBERID	The UUID for the dimension ID, if the project for this scorecard is linked to a dimensional hierarchy.
	SECURITYOWNERID	The user ID for the owner of this scorecard.
	SECURITYUSETYPE	The security use type for this scorecard (see the description of this field in the **Audit.Element** level).
	ORDERNUM	An integer value for the scorecard ordering.
	SCORECARDCODE	A 36-character string that you can set to anything you want to use to identify the scorecard for the import system.
Audit.Template	ID	The UUID used to identify the template.
	DEFAULTCULTUREID	The UUID used to identify the default language for this template.
	SECURITYOWNERID	The user ID of the template owner.
	SECURITYUSETYPE	The security use type for this template. (See the description of the SECURITYUSETYPE field in the **Audit.Element** level.)

Create an Audit Report

Auditing information is recorded in three tables in the SHAREDSERVICES database:

- SAS_AUDIT
- SAS_AUDIT_ENTRY

The following example is a SAS program that creates an audit report. The query includes the following filter in order to return only items that have been logged for SAS Strategy Management:

```
where sas_audit.executor_nm = "Strategy Mgmt 5.4"
```

Note: The following code is intended only as an introduction to audit reporting.

Example Code 2.1 *Sample Audit Report*

```
/* Create a libref to the SharedServices database */
/* (Replace mysqlusername, serverpassword, servername, serverport) */

libname auditref MYSQL user=mysqlusername password=serverpassword
   database=SharedServices server=servername port=serverport;

/* Use PROC SQL to create an audit table with entries of interest */
proc sql;
   create table audit as select distinct sas_audit.user_id,
      sas_audit.timestamp_dttm, sas_audit.session_id,
      sas_type_object.type_object_cd, sas_audit.object_id,
      sas_audit.audit_id, sas_audit_entry.property_nm,
      sas_audit_entry.new_value_txt

   from auditref.sas_audit, auditref.sas_audit_entry, auditref.sas_type_object

   /* Include only SAS Strategy Management audit records */
   where sas_audit.executor_nm = "Strategy Mgmt 5.4" and
      sas_audit.object_type_id = sas_type_object.type_object_id and
      sas_audit.audit_id = sas_audit_entry.audit_id;
run;
proc sort data=audit;
   by user_id audit_id object_id;
run;
```

The following columns are referenced in the example program:

SAS_AUDIT.USER_ID	The user ID of the user performing the action.
SAS_AUDIT.TIMESTAMP_DTTM	A timestamp of when the action occurred.
SAS_AUDIT.SESSION_ID	The session ID for the action.
SAS_AUDIT.OBJECT_ID	The UUID of the object that the audit is being performed on (for example, the SAS Strategy Management project).
SAS_TYPE_OBJECT.TYPE_OBJECT_CD	The object type, such as **`SPMProject`**.
SAS_AUDIT.AUDIT_ID	The ID of the audit record.
SAS_AUDIT_ENTRY.PROPERTY_NM	The name of the property that was affected.
SAS_AUDIT_ENTRY.NEW_VALUE_TXT	The new value of the property.

View Audit Records

To view audit records, complete the following steps in the SAS Strategy Management Builder:

1. On the Template and Project Manager page, click **View Audit Records**.
2. On the View Audit Records page, make one or more selections to build a query to the audit records database.
   a. From the **Action type** list, select the type of action that is recorded in the audit record.

      Note: All action types do not apply to all object types. For example, you can create a project, but you cannot reject a project.

   b. From the **User ID** list, select the user ID of the user that performed the action in the audit records.

   c. From the **Object type** list, select the object type that you want to search for. Valid types include template, project, scorecard, element, metric value, and form.

   d. In the **Start date** field, select the start date of the date range in which the action occurred.

   e. In the **End date** field, select the end date of the date range in which the action occurred.
3. Click **Go**. Any audit records that match your query appear in the table. You can click a column heading to sort the column contents.
4. To change your query, change one or more selections and click **Go** again.
5. When you are finished viewing records, click **Close** to return to the Template and Project Manager page.

See Also

- For localization information, see "Localization Configuration" on page 16.
- If you installed SAS Strategy Management as an add-on to an existing installation of the SAS Intelligence Platform, see "Add-On Configuration" on page 18.

Localization Configuration

Modify the SAS Autocall Macro SPMEXPSC

If your installation is in a language other than English, you must modify the SAS autocall macro %SPMEXPSC. Complete the following steps:

1. Log on to SAS Management Console as the SAS Administrator.
2. On the **Plug-ins** tab, navigate to **Environment Management** ▸ **Server Manager**.

3 Right-click **SAS Content Server** and select **Properties**. The Properties window appears.

4 On the **General** tab, copy the name of the SAS Content Server and store it for later use.

5 Open the spmexpsc.sas file for editing. This file is located on the data tier, in the following applicable directory:

Windows	`!sasroot\scorecard\sasmacro`
UNIX	`!sasroot/sasautos`

Note: Before you edit this file, make a backup copy of it.

6 Locate the following line:

```
ss = "omsobj:TCPIPConnection?TCPIPConnection[Source/ServerComponent
   [@Name='SAS Content Server' and
   @ClassIdentifier='DAC0D7F0-10DA-11D6-8816-AA0004006D06']]";
```

7 In that line, substitute the name of your site's SAS Content Server for **`SAS Content Server`**.

8 Make the same change to the following line:

```
ss = "omsobj:Directory?Directory[DeployedComponents/ServerComponent
[@Name='SAS Content Server' and @ClassIdentifier=
'DAC0D7F0-10DA-11D6-8816-AA0004006D06']]";
```

9 Save the file.

Modify the Encoding Value

If you export SAS Strategy Management data to SAS Information Maps and your installation is in a language other than English, you might need to customize the encoding value that is used by the export process. Typically, if the exported information map is not displayed correctly or is not displayed at all, you must modify the encoding value.

Note: If the installation uses a double-byte character code language, you must modify the encoding value.

To modify the encoding value:

1 Locate the stored process macro called SPMEXP2.sas. Typically, this macro is located in the following directory:

```
C:\Program Files\SASHome\SASFoundation\9.3\scorecard\sasstp
```

2 Open the SPMEXP2 macro in a text editor and locate the first call to the STMBMF or SPMBMF macro.

Note: The STMBMF and SPMBMF macro names can be used interchangeably.

3 The last parameter in the call to STMBMF is:

```
encoding=UTF-8
```

Change **`UTF-8`** to the encoding value that your installation requires.

TIP If you use the `auto` keyword for the encoding value, the STMBMF macro uses the encoding value that is set for the SAS option. However, this encoding value might not resolve the problem. A best practice is to specify the encoding value that your installation requires.

Set Monday as the First Day of the Week

You can configure your installation of SAS Strategy Management to use Monday as the first day of the week instead of Sunday. Complete the following steps:

1. Log on to SAS Management Console as the SAS Administrator and connect to the metadata server.
2. On the **Plug-ins** tab, navigate to **Application Management** ▸ **Configuration Manager**.
3. Right-click **SAS Application Infrastructure** and select **Properties**. The Properties window appears.
4. Click the **Advanced** tab.
5. At the bottom of the window, click **Add**. A new window appears.
6. In the **Property name** field, enter `Calendar.Startday`.
7. In the **Property value** field, enter `2`.

   Note: Any value other than 2, including no value, results in Sunday being used as the first day of the week.
8. Click **OK** and then click **OK** to close the Properties window.
9. Restart Remote Services and all of the managed servers.

Add-On Configuration

Overview

You must perform an *add-on configuration* when you install the SAS Intelligence Platform and SAS Strategy Management and later install SAS Financial Management as an add-on. When you install the add-on, you must perform some manual configuration steps, as described in this section.

Import Data Source Definition Files for SAS BI Dashboard

As of SAS BI Dashboard 4.3, data source definition files (.DSX files) and contributor files (.CDX files) must be stored in the WebDAV repository. If you install SAS BI Dashboard and at a later time install an add-on, that solution might have .DSX and .CDX files that are not stored in WebDAV. You might also create additional .DSX and .CDX files at a site.

If necessary, follow these steps to import the files. The files are typically located in subdirectories of ***SAS-config-dir*\Lev1\AppData\SASBIDashboard4.31** on the middle-tier server where SAS BI Dashboard is installed.

1. On the **Folders** tab in SAS Management Console, navigate to **SAS Folders** ▸ **System** ▸ **Applications** ▸ **SAS BI Dashboard** ▸ **SAS BI Dashboard 4.3** ▸ **DataSourceDefinitions**.
2. Right-click and select **Add Content From External File(s) or Directories**.
3. Select and import the .DSX file.

   The .DSX files are typically located in the ***SAS-config-dir*\Lev1\AppData\SASBIDashboard4.31\DataSourceDefinitions** directory on the middle-tier server where SAS BI Dashboard is installed.
4. In SAS Management Console, navigate to **SAS Folders** ▸ **System** ▸ **Applications** ▸ **SAS BI Dashboard** ▸ **SAS BI Dashboard 4.3** ▸ **ContributorDefinitions** .
5. Right-click and select **Add Content From External File(s) or Directories**.
6. Select and import the .CDX file.

   The .CDX files are typically located in the ***SAS-config-dir*\Lev1\AppData\SASBIDashboard4.31\ContributorDefinitions** directory on the middle-tier server where SAS BI Dashboard is installed.

For more information, see “Working with Data Source XML (DSX) Files” in the *SAS Intelligence Platform: Web Application Administration Guide*. (See “Additional Documentation” on page 4.)

Adding the SAS Add-In for Microsoft Office to Strategy Management

By using the SAS Add-In for Microsoft Office plug-in with SAS Strategy Management, users can view SAS Strategy Management reports in the following Microsoft applications:

- Excel
- Outlook
- PowerPoint
- Word

To determine whether the SAS Add-in for Microsoft Office is installed, open any of these Microsoft Office applications. If the tabs for the ribbon bar across at the top of the window include a SAS tab, the plug-in is installed. For information about installation, see the SAS Add-in for Microsoft Office documentation. (See “Additional Documentation” on page 4.)

Accessibility Configuration

The following features in SAS Strategy Management 5.4 use a default theme that cannot be customized:

- Time Period Sets wizard
- Import wizard
- Enhanced Strategy Management portlet

Troubleshooting Problems

Trusted Authentication Fails

When trusted authentication fails, the following features might have problems or might also fail:

- SAS Information Maps

  If trusted authentication fails, you cannot read an information map that was exported from SAS Strategy Management. This failure occurs because the exported information sends a query to SAS Strategy Management for dynamic data and the querying user ID fails authentication with SAS Strategy Management.

- Strategy Management provider for SAS BI Dashboard
- Time period sets

These problems might be caused by the settings for the remote services in the login.config file. The settings might have been changed at your site.

To correct the settings in this file:

1. Open the login.config file for editing. This file is located on the middle tier, in the ***SAS-config-dir*\Lev1\Web\Common** directory.
2. Modify the `PFS` block that contains `com.sas.services.security.login.OMILoginModule`.

   Change `"aliasdomain"="DefaultAuth"` to `"aliasdomain"="MidtierInternal"`.

   Do not modify the `SCS` block.
3. Save the file.
4. Restart the remote services and the managed servers.

The SAS Autocall Macro SPMEXPSC Fails

If the SAS autocall macro SPMEXPSC fails, the following features might have problems or might also fail:

- SAS Information Maps
- Time period sets

To correct the problem, see “Modify the SAS Autocall Macro SPMEXPSC” on page 16.

3

Securing SAS Strategy Management

Overview

You can secure SAS Strategy Management in the following ways:

- configure security settings for folders and files
- configure access to the MySQL database
- specify access to SAS Strategy Management objects
- specify access to SAS Strategy Management features and tasks
- specify access to portals and portlets

By using a combination of these security options, you can tailor the security of SAS Strategy Management to meet the requirements of your environment.

Securing Folders and Files

Overview

This section contains information about setting operating system protection for files and folders, for both Windows and UNIX systems. For an overview and detailed

information about security in the SAS Intelligence Platform, see the *SAS Intelligence Platform: Security Administration Guide*. (See "Additional Documentation" on page 4.)

Configure Windows Security Settings

To configure security for configuration directories:

1. Apply the operating system protections that are recommended for configuration directories on the SAS Intelligence Platform. For instructions, see "What to Do Next: Administration Tasks" in the *SAS Intelligence Platform: System Administration Guide*. (See "Additional Documentation" on page 4.)
2. Apply the additional protections that are recommended in Table 3.1 on page 22. All of these directories are located in ***SAS-configuration-directory*\Lev1** on the data tier.
3. Provide the operating system protections in Table 3.2 on page 22 to the MySQL directories.

Table 3.1 *Windows: Protections That Apply to SAS Strategy Management Directories*

Directories	Permissions
Under **SASApp\SASEnvironment\StrategyManagement**: **SASCode\Jobs** **SASFormats** **SASMacro**	Grant Modify permission to the SAS Server Users group.
SASApp\Data and its subdirectories	Grant Full Control to SAS General Server User (sassrv) . Grant Read/Write/Modify permission to users who run SAS Data Integration Studio jobs in order to update data in the data warehouse. These users should include the Solutions Host User (sassln).

Table 3.2 *Windows: Recommended Operating System Protections for the MySQL Directories*

Directories	Permissions
MySQL-install-dir	Grant Full Control to SYSTEM and Administrators only.
***MySQL-install-dir*\bin**	Grant Read and Execute permissions to the Everyone group. (During installation and configuration, you were asked to give this group Read, Execute, and Modify permissions. After installation and configuration, restrict these permissions.)

Configure UNIX Security Settings

To configure security for configuration directories:

1 Apply the operating system protections that are recommended for configuration directories on the SAS Intelligence Platform. For instructions, see "What to Do Next: Administration Tasks" in the *SAS Intelligence Platform: System Administration Guide*. (See "Additional Documentation" on page 4.)

2 Apply the additional protections that are recommended in the following table. All of these directories are located in ***SAS-configuration-directory*/Lev1** on the data tier.

Table 3.3 *UNIX: Protections That Apply to SAS Strategy Management Directories*

Directories	Permissions
Under **SASApp/SASEnvironment/[FinancialManagement, StrategyManagement]:**: **SASCode/Jobs** **SASFormats** **SASMacro**	Permit full access for the sas user ID and the sas user group
SASApp/Data and its subdirectories	Permit full access for the sas user ID and the sas user group.

Secure Access to MySQL

On Windows, MySQL is installed as a system service by default. Consequently, the service has access to all directories. MySQL can be used only with its own user IDs. You have the option to restrict the IP address that MySQL uses.

Note: During the configuration process, several MySQL users are created, and the root user for MySQL is deleted after it is no longer needed.

To restrict the IP address that MySQL uses, complete these steps after the configuration has been validated:

1 On the machine where MySQL resides, create a file (grant.sql) with this content (line breaks are inserted for readability):

```
revoke all privileges, grant option from 'sqladmin'@'%';
GRANT ALL PRIVILEGES ON *.* TO sqladmin@'datatier'
    IDENTIFIED BY 'mysqlpassword'
    WITH GRANT OPTION;
GRANT ALL PRIVILEGES ON *.* TO sqladmin@'midtier'
    IDENTIFIED BY 'mysqlpassword'
    WITH GRANT OPTION;
GRANT ALL PRIVILEGES ON *.* TO sqladmin@'localhost'
    IDENTIFIED BY 'mysqlpassword'
    WITH GRANT OPTION;
flush privileges;
```

2 In this file, make the following changes:

   a Replace *mysqlpassword* with the password for sqladmin.

b Replace *datatier* and *midtier* with the fully qualified host names of the data tier and middle tier, respectively.

Save the file.

3 At a command prompt, execute the following command (replace *mysqlpassword* with the password for sqladmin):

```
mysql -usqladmin -pmysqlpassword < grant.sql
```

Follow the same procedure for additional MySQL users (depending on the products that you installed): sassdmdbadm, hcmdbadm, and spmdbadm.

Securing Access to SAS Strategy Management

Overview of Securing Objects and Product Features

SAS Strategy Management provides two ways to secure access:

- limiting access to content (objects) in SAS Strategy Management. This is done by using access permissions.
- limiting access to product features in SAS Strategy Management. This is done by using capabilities.

When you combine these two methods of security, you can tailor the way that a user can access SAS Strategy Management.

Access permissions are assigned directly to a user or to a group. If you have more than one user that requires the same access permissions, it is easier to manage the access permissions if you assign the permissions to a group. Then you can make the affected users members of that group. For more information, see “Accessing Permissions for Strategy Management Content” on page 27.

Capabilities provide you with a way to manage different levels of access to SAS Strategy Management product features. Capabilities are assigned to a role. Then you assign a user to a role.

It is important to understand the difference between groups and roles, as well as the privileges that each conveys. In SAS Strategy Management, group membership determines the content that a user has access to. Role membership determines the actions a user can perform with this content. Role assignments can control the menus and links that are displayed in the application, and roles can determine a user's ability to perform a task such as deleting a file.

Users, Groups, and Roles

Overview

A metadata identity is created in either of the following ways:

- when you define an individual user or group in the User Manager plug-in to the SAS Management Console

- when you import user and group definitions from an enterprise source by using SAS bulk-load macros

The authorization facility uses identity metadata to define who is granted or denied permission to access a resource. This section describes the default metadata identities (representing users, groups, and roles) that are required by SAS Strategy Management, as well as the identities that need to be created on site.

Additional information:

- For detailed information about authentication and authorization, see the *SAS Intelligence Platform: Security Administration Guide*. (See "Additional Documentation" on page 4.)
- The SAS Intelligence Platform configures a default set of users, groups, and roles during the deployment process. For information about those identities, see "Understanding the State of Your System" in the *SAS Intelligence Platform: System Administration Guide*.

Users

SAS Strategy Management users are typically the business users in a particular domain such as finance or sales. A site's administrator must load all of the appropriate information for each user who requires access to SAS Strategy Management.

Register users by using the SAS Management Console. For information about registering users, see the *SAS Intelligence Platform: Security Administration Guide*.

TIP When you define a user, be sure to include the user's e-mail address. E-mail notifications are often sent to users. For the successful processing of some functions, you must define an e-mail address for every user.

Note: In Windows environments, in order for users to access a standard workspace server using credential-based host authentication, the users require the local **Log on as a batch job** right on that system. For more information, see "Windows Privileges" in the *SAS Intelligence Platform: Security Administration Guide*.

Groups

If you have more than one user that requires the same access permissions, it is easier to manage the access permissions if you assign the permissions to a group. You can assign users to groups by using SAS Management Console. SAS Strategy Management provides the following groups:

Table 3.4 *SAS Strategy Management: Groups*

Group Name	Description
SAS Strategy Management MySQL Users	This group has a login to the SPM database in MySQL.
SAS Strategy Management Users	All SAS Strategy Management users should belong to this group. A user must be a member of this group in order to be an owner of a SAS Strategy Management object.
Strategy Management: Administrators Group	A group associated with a SAS Strategy Management role. [1]

Group Name	Description
Strategy Management: Analyst Group	A group associated with a SAS Strategy Management role. [1]
Strategy Management: Data-Entry Group	A group associated with a SAS Strategy Management role. [1]
Strategy Management: Data-Entry Approver Group	A group associated with a SAS Strategy Management role. [1]
Strategy Management: Data-Entry Portlet Administration Group	A group associated with a SAS Strategy Management role. [1]
Strategy Management: Information Consumer Group	A group associated with a SAS Strategy Management role. [1]
Strategy Management: Modeler Group	A group associated with a SAS Strategy Management role. [1]

[1] The groups associated with SAS Strategy Management roles are not used to manage roles and capabilities. Instead, they are used to manage access to SAS Strategy Management portlets. For more information about SAS Strategy Management role groups, see "Access to the Portal and SAS Strategy Management Portlets" on page 33.

Roles

Roles enable the actions that a user can perform and the menu items that are available to a user. The level of enablement for a role is controlled by the capabilities assigned to that role. SAS Strategy Management provides roles with predefined capabilities by way of default metadata permissions. However, you can adjust the capabilities assigned to a role to meet your needs.

Note: Role assignments do not provide data security. To restrict the data that a user can access, use the access permission that you can apply to users and groups.

Note: Unlike groups, roles are not hierarchical. They do not inherit properties from other roles.

This table lists the roles that are provided by SAS Strategy Management. For more information about roles and capabilities, see "Accessing Product Features" on page 28.

Table 3.5 *SAS Strategy Management: Roles*

Role Name	Description
Information consumer	Users with this role have privileges similar to the data entry role. However, they cannot access the Performance Data Entry portlet. [1]
Data entry	Users with this role can access and enter data in Performance Data Entry portlets. [1] **Note:** As of version 5.4, the Performance Data Entry portlet must be a shared portlet. Users cannot add the portlet unless it has been shared by the content administrator.

Role Name	Description
Data-entry approver	Users with this role can access and view the Performance Data Entry portlet. They use the portlet to approve data in submitted data-entry forms.[1] **Note:** As of version 5.4, the Performance Data Entry portlet must be a shared portlet. Users cannot add the portlet unless it has been shared by the content administrator.
Analyst	In SAS Strategy Management, these users can view tables, aggregate tables, diagrams, associations, and ranges. They can edit column selections and set personal thresholds and formats, as well as access and customize historical trend charts. In addition, these users can manage and use data-entry forms. They can also access the Strategy Management portlet and the Performance Data Entry portlet. [1] Unlike modelers, analysts cannot create or modify scorecard projects.
Modeler	Users with this role can create scorecard projects and can fully manage the content of templates, projects, and scorecards that they are authorized to view, edit, and delete. They have administrative privileges only for projects and scorecards that they create. Users with this role can also access the Strategy Management portlet and the Performance Data Entry portlet. [1]
Administrator	The administrator can assign capabilities to the information consumer role, the data entry role, and the analyst role. The administrator can also enable access to SAS Strategy Management, enable Update and Create access to objects, and more.

[1] For information about setting portlet access, see "Access to the Portal and SAS Strategy Management Portlets" on page 33.

Accessing Permissions for Strategy Management Content

Access permissions control how a particular user or group can access SAS Strategy Management content. The following SAS Strategy Management content, or objects, include access permissions:

- user-defined templates
- projects
- scorecards
- elements

More than one type of access permission can be assigned to a user or group. The user who creates an object receives all access permissions for the object. Subsequent users who are added to the access permissions list for an object are given Read access permission by default. A user inherits the access permissions of the group that the user belongs to. A group does not inherit access permissions that have been assigned to a specific user.

Table 3.6 SAS Strategy Management Permissions

Permission	Description
Read	Enables a user to view or display the object. When users have Read access permission only, they cannot move or rename the object or change any of its information.
Write	Enables a user to edit the object. Users can rename and change the properties and contents of the object. Read access permission is automatically granted with Write access permission.
Delete	Enables a user to delete the object. Read and Write access permission is automatically granted when users have Delete access permission.
Administer	Enables a user to change all access permissions for the object. Read, Write, and Delete access permission is automatically granted when users have Administer access permission.

For more information about how to assign access permissions in Strategy Management, see “Working with Access Permissions” in the *SAS Strategy Management: User’s Guide*. (See “Additional Documentation” on page 4.)

Accessing Product Features

Overview

SAS Strategy Management provides settings that control whether a user can access product features. These settings are called *capabilities*. SAS Strategy Management provides a default set of capabilities for each Strategy Management role as described in Table 3.5 on page 26. By using SAS Management Console, you can enable or disable capabilities for these roles.

When you are working with capabilities, remember the following considerations:

- With the exception of administering permissions, the metadata permissions for the modeler provide full access. The only capability that can be added to this role is the ability to administer project permissions. For example, a modeler can create templates, projects, scorecards, and elements. However, the modeler must contact the administrator to set the access permissions for these objects. Capabilities can be removed, restricting the modeler role from performing certain tasks, if this is required.

  TIP Remember that, in addition to managing capabilities, the administrator also enables access permission to SAS Strategy Management objects.

- If you add the correct capability, the analyst can create new scorecards, elements, enter data, and more. You can also add the applicable capabilities to the lowest level roles: information consumer and data entry.
- You can give all roles access to SAS Strategy Management by adding the following capability: **General** ▸ **Access to the Strategy Management Builder**.
- By default, the information consumer role does not have portlet access.
- The data entry and data-entry approver roles have access only to the Performance Data Entry portlet.

- For capabilities to take effect, users must have Write permission to Strategy Management objects.

Available Capabilities

SAS Strategy Management provides the following capabilities. You can manage capability assignments to roles by using SAS Management Console. For more information, see “Specify Capabilities” on page 32.

Table 3.7 *Capabilities That Affect General Access*

General	Category that provides capabilities that enable a user to work with SAS Strategy Management.
Access to the Strategy Management Builder	Enables a user to open a project and use the Strategy Management Builder.

Table 3.8 *Capabilities That Affect Template Access*

Template	Category that provides capabilities that enable a user to work with template content.
Manage Content	Enables a user to create, delete, and modify template content. This content includes element types, attributes, metric attributes, and languages.
View Content	Restricts a user to only viewing template content. This content includes element types, attributes, metric attributes, and languages.

Table 3.9 *Capabilities That Affect Project Access*

Project	Category that provides capabilities that enable a user to work with project content.
Manage Content	Enables a user to create, edit and delete projects, ranges, data-entry forms, column selections, links, suggestion elements. Also enables a user to manage import options, register projects, calculate projects, and set project options.
View Content	Restricts a user to viewing properties that belong to projects, ranges, column selections, and links. Users can set project options.
Manage Personal Column Selections	Enables a user to create, edit, and delete personal columns selections.

Table 3.10 *Capabilities That Affect Time Access*

Time	Category that provides capabilities that enable a user to define time-period sets (formerly called time dimensions).
Manage Content	Enables a user to create, delete, and modify time-period sets (formerly called time dimensions).

Table 3.11 *Capabilities That Affect Audit Record Access*

Audit	Category that provides capabilities that enable a user to view audit records.
View Audit Records	Enables a user to view audit records.

Table 3.12 *Capabilities That Affect Administration Access*

Administration	Category that provides capabilities that enable a user to perform administrative tasks.
Manage Project Security	Enables a user to manage template and project security by editing permission levels. **Note:** This capability does not permit the user to bypass permission checking, but does permit access to the Security Administration page in the Strategy Management Builder. To bypass permission checking, the user must be a member of the Strategy Management: Administrators Group, which assigns the administrator role to the user.
Project and Template Export	Enables an administrator to import and export SAS packages of SAS Strategy Management data. This functionality is integrated into SAS Management Console.

Note: For more information, see "The Data-Entry Form Feature in SAS Strategy Management 5.4" on page 35.

Table 3.13 *Capabilities That Affect Web Data-Entry Form Access*

Web Data-Entry Forms	Category that provides capabilities that enable a user to work with data-entry forms.
View Data-Entry-Form Data	Restricts a user to only viewing data-entry forms.
Enter Data-Entry-Form Data	Enables a user to enter values into data-entry forms.
Approve Data-Entry-Form Values	Enables a user to approve data that is entered into a submitted form.
Enter Data-Entry-Form Comments	Enables a user to make comments about a data-entry form.

Note: For SAS Strategy Management 5.4, the modeler role includes all of the BMF capabilities by default.

Table 3.14 Capabilities That Affect the Batch Maintenance Facility

Batch Maintenance Facility	Category that provides capabilities that enable a user to work with the Batch Maintenance Facility.
Create	Enables a user to create content by using the Batch Maintenance Facility.
Modify	Enables a user to modify content by using the Batch Maintenance Facility.
Get	Enables a user to get content from SAS Strategy Management by using the Batch Maintenance Facility.

Table 3.15 Capabilities That Affect Scorecard Access

Scorecards	Category that provides capabilities that enable a user to work with scorecard content.
Manage Content	Enables the user to create, edit, delete, and publish content for table, association, aggregate, and diagram views. The content includes elements, metric attribute values, ranges, and more.
View Content	Restricts a user to only viewing and navigating content in table, association, aggregate, and diagram views. This restriction allows a user to change the view and customize the view.
Manage Personal Thresholds	Enables a user to set personal thresholds.
Add Comments	Enables a user to add comments to content.

Table 3.16 Capabilities That Affect Portlet Access

Portlet	Category that provides capabilities that enable a user to work with SAS Strategy Management portlets. These portlets include classic style and enhanced portlets.
Edit Portlet	Enables a user to specify the content that appears in a portlet.
View Portlet	Restricts a user to only viewing portlets.
Suggest New Elements	Enables a user to suggest new elements while working in a portlet.
Create SAS Reports from a Portlet View	Enables a user to save a SAS Strategy Management enhanced portlet view as a SAS report. These reports can be viewed by using the SAS Mobile BI app.
Portlet Access Links	Enables a user to access the SAS Strategy Management Builder if the user clicks either the **Project** or **Scorecard** links in the portlet. If this capability is not assigned to a user, the links are disabled.

Specify Capabilities

To specify the capabilities assigned to a role in SAS Management Console:

1. Log on to SAS Management Console as the SAS Administrator.
2. On the **Plug-ins** tab, click **User Manager**.
3. In the right pane, double-click the role with the capabilities that you want to change.
4. In the **Properties** window, click the **Capabilities** tab.
5. Expand **Strategy Mgmt 5.4**. The categories of capabilities appear.
6. Expand the category that contains the capability that you want to add or remove from the role.
7. Select a capability to add it to the role. Clear the selection to remove a capability.
8. Click **OK** to save your changes.

Examples of Combining Access Permissions and Capabilities

Overview

The following examples list the minimum capabilities required to enable the role to perform a task that the metadata permissions do not allow.

Example: Information Consumer Role

By default, the information consumer role has no access to SAS Strategy Management (that is, Strategy Management Builder and the portlets are not available to the user).

To enable the user to access SAS Strategy Management and view a template:

- **Access permissions:** Add the user to a Strategy Management template and assign the user Read permission for the template.
- **Capabilities:** Assign the following minimum capabilities to the user:
  - **General** ▸ **Access to the Strategy Management Builder**
  - **Template** ▸ **View Template**
- **Result:** The user logs on to SAS Strategy Management. The template is available for the user with the template option **Properties**.

Example: Data-Entry Role

As of version 5.4, the SAS Strategy Management data-entry role does not require any permissions to enter data. This role requires only its default capability of Enter Data-Entry-Form Data. By default, the data-entry role has no access to the Strategy Management Builder or portlets, except the shared Performance Data Entry portlet. The user can add this shared portlet to their Portal. For more information, see “The Data-Entry Form Feature in SAS Strategy Management 5.4” on page 35.

Note: If you want to enable this user to access SAS Strategy Management, you must assign the **General** ▸ **Access to the Strategy Management Builder** capability.

Example: Analyst Role

By default, the Analyst role has portlet access, which means that the user can access SAS Strategy Management through these portlets, given sufficient access level to templates and projects (the minimum is Read access). The user cannot access SAS Strategy Management through the SAS Strategy Management Web address. The **General** ▸ **Access to the Strategy Management Builder** capability is required for that access. Metadata permissions for the analyst role do not allow the user to make any updates or create new objects, even with Update permissions.

Because this role has access to SAS Strategy Management by way of the portlets, there are default capabilities for the project, scorecard, element, and portlet objects.

Note: With at least Read permission assigned to all SAS Strategy Management objects, the user can view all information, but cannot make any updates.

To enable the user to create new scorecards and new elements:

- **Access permissions:** Assign the following object permissions to the user:
  - Template – Read
  - Project – Write

  The default scorecard exists.
- **Capabilities:** In addition to the default capabilities, assign the following minimum capabilities to the user:
  - **General** ▸ **Access to the Strategy Management Builder**
  - **Scorecards** ▸ **Manage Content**
- **Result:** The user logs on to SAS Strategy Management and opens the project. The user selects the default scorecard and can create a new scorecard by clicking **Scorecard** ▸ **New Scorecard**.

Example: Modeler Role

The scorecard modeler has full access to SAS Strategy Management with the exception of administering permissions. The only capability that can be added to this role is to administer project permissions. Capabilities can be removed, restricting the role from performing certain tasks, if this is required.

Example: Administrator Role

The SAS Strategy Management administrator has full access to SAS Strategy Management, including administering permissions.

Access to the Portal and SAS Strategy Management Portlets

If the correct capability is assigned to the roles, all SAS Strategy Management roles can access the Strategy Management Builder in the following ways:

- by using the Web address of the Builder

- by accessing the Builder by way of the SAS Information Portal

To access the Strategy Management template, the minimum capability required is **Template** ▸ **View Content**. The minimum access permission level is Read.

However, by default, none of the roles can access any of the SAS Strategy Management portlets. To enable access to the portlets, the user must be a member of one of the following Strategy Management groups:

- Strategy Management: Administrator Group
- Strategy Management: Analyst Group
- Strategy Management: Data-Entry Group
- Strategy Management: Data-Entry Approver Group
- Strategy Management: Information Consumer Group
- Strategy Management: Modeler Group

For example, a user that is assigned the data-entry role must be a member of the Data-Entry Group in order to access the Performance Data Entry portlet. This portlet must also be a shared portlet. Membership in this group restricts the user to accessing only this portlet type. For more information, see "The Data-Entry Form Feature in SAS Strategy Management 5.4" on page 35.

Note: As of version 5.4, the Performance Data Entry portlet must be a shared portlet. Users cannot add the portlet unless it has been shared by the content administrator.

TIP If your organization does not use the SAS Strategy Management portlets, then membership in these groups is not necessary.

Table 3.17 *Group Memberships for Roles*

Role	Group Memberships
Information consumer	The following groups restrict the information consumer role from accessing any portlets: ■ SAS Strategy Management Users ■ Strategy Management: Information Consumer Group
Data entry	The following groups restrict the data entry role to accessing only the Performance Data-Entry portlet: ■ SAS Strategy Management Users ■ Strategy Management: Data-Entry Group
Data-entry approver	The following groups restrict the data-entry approver role to accessing only the Performance Data-Entry portlet: ■ SAS Strategy Management Users ■ Strategy Management: Data-Entry Approver Group
Analyst	The following groups enable the analyst role to access all SAS Strategy Management portlets: ■ SAS Strategy Management Users ■ Strategy Management: Analyst Group

Role	Group Memberships
Modeler	The following groups enable the modeler role to access all SAS Strategy Management portlets: ■ SAS Strategy Management Users ■ Strategy Management: Modeler Group
Administrator	The following groups enable the administrator role to access all SAS Strategy Management portlets: ■ Strategy Management: Administrators Group ■ Strategy Management MySQL Users ■ SAS Strategy Management Users **Note:** Membership in this group is optional. ■ Modeler Group **Note:** Membership in this group is optional.

For information about roles and permissions for SAS BI Dashboard, see "Managing Security for SAS BI Dashboard" in the *SAS Intelligence Platform: Web Application Administration Guide*. (See "Additional Documentation" on page 4.)

The Data-Entry Form Feature in SAS Strategy Management 5.4

As of version 5.4, the SAS Strategy Management data-entry form feature has been redesigned.

- SAS Strategy Management Builder no longer provides access for entering data in a form. Data entry is supported only in a shared Performance Data Entry portlet.
- Forms are created by users that are assigned the modeler role.
- Although forms that were created with versions prior to version 5.4 are supported, only forms that you create with version 5.4 or later can include the workflow feature.

The following process is a typical example of the process used by the new data-entry form feature:

1. A modeler creates a form based on a column selection that enables data entry.
2. The modeler adds a data-entry user to the workflow.
3. The modeler adds a data-entry form approver to the workflow.
4. The modeler starts the workflow.
5. The content administrator creates a shared Performance Data Entry portlet. The portlet must be shared with the Data-Entry group and the Data-Entry Approver group.
6. The data-entry user log on to the Portal and adds the shared portlet that contains the form.
7. The data-entry user enters the data into the form and then submits the data.
8. The data-entry form approver reviews the data and either approves or rejects the data.

For information about creating and managing forms, see the *SAS Strategy Management: User's Guide*.

4

Administering the Middle Tier and Other SAS Servers

Overview

About the Managed Servers

Depending on the software that you installed and your choices during the configuration steps, your system has several managed servers. The following table shows the default servers, listen ports, and a partial listing of the contents, which consist of enterprise archive (EAR) files. For complete information, see the WebLogic Console and the *SAS-config-dir*`\Lev1\Web\Common` directory.

Server (Default Name)	Partial Contents (EAR Files)	Default Listen Port
SASServer1	The Web Infrastructure Platform (WIP), the Logon Manager, the SAS Information Delivery Portal, SAS BI Dashboard	7001
SASServer2	The SAS WebDoc application, SAS Web Report Studio, SAS Web OLAP Viewer	7101
SASServer3	The Strategy Management application EAR file for WebLogic deployment	7201

Server (Default Name)	Partial Contents (EAR Files)	Default Listen Port
SASServer11	The Strategy Management application EAR file for JBoss deployment	9080

Note: You can choose to install SAS Financial Management with SAS Strategy Management. For information about its servers and ports, see the *SAS Financial Management: System Administration Guide*.

You must start the SAS Remote Services application before you start the managed servers. If you restart SASServer1 (where sas.wip.services9.3.ear is deployed), you must restart the other managed servers as well.

Additional Information

For detailed information about administering Web applications and the Web application server, see the *SAS Intelligence Platform: Web Application Administration Guide*. (See "Additional Documentation" on page 4.) That book also contains information about topics such as the following:

- tuning the Web application servers
- administering the SAS remote services
- installing a custom theme and setting the default theme
- modifying application configuration properties in the Configuration Manager plug-in of SAS Management Console
- administering the SAS Information Delivery Portal, SAS Web Report Studio, SAS BI Dashboard, and SAS Web OLAP Viewer
- WebDAV administration

Note: WebLogic clustering is not supported by SAS Strategy Management.

For more information, see the *SAS Intelligence Platform: Middle-Tier Administration Guide*.

Server Modifications

Oracle WebLogic Server

The following modifications might be necessary for the Oracle WebLogic managed servers, depending on your system configuration:

- **URL Mapping:** WebLogic seems to treat domains differently if they are referenced differently (for example, **http://Dxxx/yyy** and **http://Dxxx.mycompany.com/yyy**). This situation causes problems when a Web application stores information in the HttpSession context. The configuration parameter **Frontend Host** addresses this issue. According to the WebLogic documentation, this parameter should be set when the Host information coming from the URL might be inaccurate due to the presence of a firewall or proxy. If this parameter is set, the HOST header is ignored and this value is used instead.

The **Frontend Host** parameter is part of the HTTP Protocols for a managed server. For instructions about modifying these protocols, see the WebLogic documentation.

- **If you installed SAS Strategy Management:** If you have a configuration with a large number of concurrent users or with a large amount of data, increase the queue size for that managed server. For instructions, see the online Help for the WebLogic administration console.

IBM WebSphere Server

The default sizes for WebSphere log files and history files might be too small to capture substantial logging. To change the log settings:

1. Log on to the WebSphere administrative console.
2. In the navigation tree, select **Troubleshooting Logs and Trace**.
3. On the Logging and Tracing page, click the server name.
4. Click **JVM Logs**.
5. For the System.out log, find the file size for the log file rotation, and change the maximum size from 1 MB to 10 MB. You can adjust this value to suit your configuration.
6. To save log files that have been rotated, increase the value of **Maximum Number of Historical Log Files**.
7. Make the same changes for the System.err log.
8. Save your changes.

Log Files

Log File Locations and Configuration Files

The following log files are located on the middle tier, where you installed the Web application server.

Table 4.1 Middle-Tier Log Files

Application	Log File Information
SAS Strategy Management Remote Services	For local services, SAS Strategy Management and the remote services use the logging framework from the SAS Web Infrastructure Platform. You can modify the logging configuration in the Foundation Services Manager of SAS Management Console. For more information, see the *SAS Intelligence Platform: Middle-Tier Administration Guide*. The default log file location is ***SAS-config-dir*\Lev1\Web\Logs**. SAS Strategy Management has two additional log files (log.txt and bmf_log.txt) that by default are written to the ***SAS-config-dir*\Lev1\Web\Logs\SAS Strategy Management** directory. The log.txt and bmf.log.txt log files are configured in the ***SAS-config-dir*\Lev1\Web\Common\LogConfig** directory. Most of the output for these loggers goes to the SAS Management Console.
Oracle WebLogic servers	By default, the log files for the Oracle WebLogic servers are located in subdirectories under ***SAS-config-directory*\Lev1\Web\SASDomain\servers*server-name*\logs** directory, where *server-name* is the name of the managed server. Output to the WebLogic console is written to these log files.
IBM WebSphere servers	By default, the log files for the IBM WebSphere servers are located in the ***WebSphere-install-directory*/profiles/*profile-name*/logs/*server-name*** directory.
JBoss servers	By default, the log files for JBoss servers are located in the ***Jboss–install–directory*/Jboss-as/server/*server-name*/log** directory.

Dynamically Configuring Logging Levels

For SAS Strategy Management, you can dynamically change logging levels for the Web application. The new priorities apply until the managed servers are restarted. Complete the following steps:

1. Log on to SAS Strategy Management as a user in the SAS Administrators group.
2. Redirect your browser to **http://*server*:*port*/SASStrategyManagement/admin/Logging**. Default logging contents are displayed on the page.
3. Locate the priority that you want to change and select the radio button in the appropriate DEBUG, INFO, WARN, ERROR, or FATAL column.

   Note: SAS Technical Support might provide you with a specific logging context. If so, type the context in the box at the bottom of the page and select a priority.
4. Click **Set Options**.

Additional Log Files

The following books are available at **http://support.sas.com/93administration**:

- For information about log files for other Web applications, see the *SAS Intelligence Platform: Middle-Tier Administration Guide*.

- For information about log files that are generated by the SAS servers, see "Enabling Server Logging" in the *SAS Intelligence Platform: System Administration Guide*.

Limitations and Requirements for the Middle Tier

JBoss Installations and Double-Byte Character Set Languages Limitation

The *filenames* for the following content must not include double-byte character set (DBCS) characters:

- image files that are located on the server, such as images uploaded for use in diagrams
- images filenames that are used to save trend analysis charts

Import Feature Limitations and Requirements

Overview

The import feature has limitations and requirements for SAS servers that must be met. For more information about the import feature, see the *SAS Strategy Management: User's Guide*.

Excel Spreadsheet Support and the SAS Middle Tier

When the SAS middle tier is installed on a system that is running UNIX, the import feature does not support reading data from Microsoft Excel spreadsheets. Microsoft does not provide support for reading Excel files on UNIX systems.

This limitation does not affect reading data from SAS data sets.

Microsoft ACE Engine Requirement

The SAS Application Server is now installed with the 64-bit version of SAS. In order for SAS Strategy Management to read Excel files, this server must be installed with the following software:

- the 64-bit version of SAS
- the 64-bit version of either Microsoft Office or the Microsoft Access Database Engine 2010

Installing 32-bit versions of the Microsoft products on this server does not work. You cannot have a 32-bit version of Office installed on the server with the 64-bit version of SAS. The import feature will fail to read the Excel spreadsheet. This limitation affects registered and unregistered Excel spreadsheets. You can download the ACE support from Microsoft at: `http://www.microsoft.com/downloads/en/details.aspx?displaylang=en&FamilyID=c06b8369-60dd-4b64-a44b-84b371ede16d`

Note: This limitation occurs if any 32-bit versions of Microsoft products are installed on the SAS middle tier or on the SAS Application Server, including Silverlight.

Pooled Workspace Server

The SAS Workspace Server (SASApp) must be running in order for the import feature to work. The SAS Pooled Workspace server is used by the underlying code to create the SAS LIBNAME association with SAS data sets and Microsoft Excel spreadsheets.

5

Administering MySQL Server

Overview

SAS Strategy Management stores data in a MySQL database that is created during the installation process. Support for INNODB tables must be enabled within MySQL to provide transaction support.

For information about installing and configuring MySQL, see the readme.pdf file. (See "Additional Documentation" on page 4.)

Installing and Configuring the MySQL Server on Windows

The MySQL server is configured to read its configuration settings from the ***MySQL-install-dir*\my.ini** configuration file. If you need to adjust your MySQL configuration, you can modify these configuration settings in the MySQL Administrator, or you can edit the my.ini file directly. Before you make any changes, be sure to make a backup copy of the my.ini file. After you make your changes, restart the service.

The MySQL client reads its configuration information from a copy of the my.ini file that is located in the Windows root directory (for example, **C:\WINNT\my.ini**). If you modify the ***MySQL-install-dir*\my.ini** file, be sure to copy your modified file to the Windows root directory.

Installing and Configuring the MySQL Server on UNIX

Excessive I/O in MySQL might be an indicator that sorts are not occurring in memory. In that case, consider increasing sort_buffer_size. See "Tuning Server Parameters" in the *MySQL Reference Manual* for information about changing this

parameter, which is allocated per thread. As a test, you can temporarily set sort_buffer_size as high as 32 M. However, a lower permanent setting might be more appropriate. To modify a parameter setting, edit the ***MySQL-install-dir*/my.cnf** file and restart the MySQL server.

At Solaris sites with heavy data usage, you can improve performance by editing the my.cnf file to set the thread_concurrency value. This value is used in determining the number of threads to be run simultaneously. The following value is a typical setting for such sites:

```
number-of-cpus * (2..4)
```

6

Administering Data

Loading Data

A SAS Strategy Management administrator supplies data to the SAS Strategy Management software. The ultimate destination of all the data that you supply is MySQL tables to which SAS Strategy Management has access (the SPM database). You can import data in the following ways:

- You can use the Import wizard, a new, easy-to-use interface provided by SAS Strategy Management. By using this wizard, you can define how to import your data. You can import a scorecard hierarchy, but you cannot import content for the scorecards. Alternatively, you can import content into a pre-existing scorecard hierarchy. For more information, see “Importing Data into a Strategy Management Project” in the *SAS Strategy Management: User’s Guide*.
- You can use the Batch Maintenance Facility (BMF) to load numeric values and text values into the SPM database, which scorecards can access directly. For more information, see Chapter 11, “Introduction to the Batch Maintenance Facility,” on page 85.
- You can use the TABLEN and TABLEC formulas to point to metric tables. For more information, see “Registering Tables for Use with the TableN and TableC Functions” on page 48.

You must define the time period sets for your Strategy Management installation before you can work with projects. For information, see Chapter 7, “Specifying a Time Period Set,” on page 53.

Note: The Time Period Sets wizard replaces the Dimension Editor that was used in previous releases.

Registering Data

Overview

Some features in SAS Strategy Management require that you register the data in the SAS Metadata Repository. *Register* refers to the process of loading a file into SAS Metadata Repository by using the SAS Management Console. For more information about SAS Management Console, see the *SAS Intelligence Platform: Data Administration Guide*. (See "Additional Documentation" on page 4.)

The following features require that you register data:

- SAS data sets that you want to import by using the Import wizard
- (Optional) Microsoft Excel spreadsheets that you want to import by using the Import wizard
- Tables that are referred to by the TABLEC and TABLEN functions in the Formula Editor

Register a SAS Data Set

To register a SAS data set:

1. Create a data library. Complete the following steps in SAS Management Console:
   a. In the left pane, expand **Data Library Manager**, right-click **Libraries**, and select **New Library**.
   b. In the New Library wizard, select **Resource Templates** ▸ **Libraries** ▸ **SAS Data** and select **SAS BASE Library**. Click **Next**.
   c. In the **Name** field, enter a descriptive name for the library and click **Next**.
   d. Assign the SASApp workspace server to this library and click **Next**.
   e. In the **Libref** field, type a SAS libref value. The value must not exceed 8 characters in length.
   f. In the **Path Specification** group, select the path location of the SAS data set from the **Available items** list and add it to the **Selected items** list.
   g. Click **Next**.
   h. Click **Finish** to save the settings and exit the wizard.
2. Register the table with the data library. Complete the following steps in SAS Management Console:

   Note: You must be an administrator to perform this task.

   a. In the left pane, select **Environment Management** ▸ **Data Library Manager** ▸ **Libraries** . Right-click the library that you defined and select **Register Tables**. The Register Tables wizard appears and displays the name of the SAS Library that you defined.

b Click **Next**.

c In the **Select Tables** list on the Define Tables and Select Folder Location page, select the table to register and click **Next**.

d Click **Finish** to save the settings and exit the wizard.

The table appears in the right pane as one of the tables that is registered with your data library.

Register an Excel Spreadsheet

To register an Excel spreadsheet:

1 Create a data server. Complete the following steps in SAS Management Console:

Note: You must be an administrator to perform this task.

a In the left pane, right-click **Server Manager** and select **New Server**.

b In the New Server wizard, expand **Database Servers** and select **Microsoft Excel Server**. Click **Next**.

c In the **Name** field, enter a descriptive name for the server and click **Next**.

d The server properties do not require changes. Click **Next**.

e In the **Data source (physical file path)** field on the Connection Properties page, enter the full UNC pathname to the file location. Make sure you enclose the path in double quotation marks, for example, `"\\rdcesx04070.race.sas.com\public\Measuresdata.xlsx"`.

Note: The wizard does not validate the pathname. You must make sure that the pathname is correct.

The file must be located in a place where the SAS middle tier can find it. The file must meet the following requirements:

- The remote location and the SAS middle tier must be on a system running Windows. You cannot read Excel spreadsheets located on a UNIX system.
- The folder where the file is located must be shared on your network such that the Java Virtual Machine that is running the SAS middle tier can see it.
- The file must be in the same network domain as the SAS middle tier.

f Click **Finish** to save the settings and exit the wizard.

2 Create a data library that references the new server. Complete the following steps in SAS Management Console:

Note: You do not have to be an administrator to perform this task.

a In the left pane, expand **Data Library Manager**, right-click **Libraries**, and select **New Library**.

b In the New Library wizard, select **Resource Templates** ▸ **Libraries** ▸ **Database Data**. Select **Microsoft Excel Library** and click **Next**.

c In the **Name** field, enter a descriptive name for the library and click **Next**.

d Assign the SASApp workspace server to this library and click **Next**.

e In the **Libref** field, type a SAS libref value of 8 characters or fewer and click **Next**.

f From the **Database Server** list, select the server that you defined in the New Server wizard.

g Click **Finish** to save the settings and exit the wizard.

3 Register the table with the data library. Complete the following steps in SAS Management Console:

a In the left pane, select **Environment Management** ▸ **Data Library Manager** ▸ **Libraries**. Right-click the library that you defined and select **Register Tables**. The Register Tables wizard appears and displays the name of the Excel spreadsheet that you associated with your data library.

b Click **Next** and continue to click **Next** until the wizard opens the spreadsheet.

c In the **Select Tables** list on the Define Tables and Select Folder Location page, select the worksheet that you want to register and click **Next**.

d Click **Finish** to save the settings and exit the wizard.

The worksheet appears in the right pane as one of the tables that is registered with your data library.

Registering Tables for Use with the TableN and TableC Functions

Overview

If you want to use the TABLEN or TABLEC functions in the Formula Editor, you must first register the table data that you want to use with the functions.

After you complete this task, you can refer to your tables in formulas by using the libname.tablename syntax. This task enables you to use the same formula syntax to refer to the tables in either SAS or MySQL.

Create a User with View-Only Access Permissions to the MySQL Libraries

To create a user that cannot access the SPM database, but who has view-only access permission to the MySQL libraries, complete the following steps:

1 In SAS Management Console, create a new group such as *StM tablen users*.

2 Add `SAS Trusted User` as a member of the new group.

3 Specify a new account (for example, *sqluser/UserUser1*) by using the StmMySQLAuth domain.

Note: If the StmMySQLAuth domain name does not work, use `SPM Auth` instead.

4 Create a new user such as *tablenUser*.

Note: Specify an internal login account for the user.

5 Add the user to the following groups:

- StM tablen users
- SAS General Servers
- Strategy Management Administrators Group
- Strategy Management Users
- Strategy Management Modeler Group

Create the Tables in MySQL and SAS

To create the tables in MySQL and SAS, complete the following steps in the MySQL Query Browser:

1 Add a new schema or library that provides the tables that you want to use for the TABLEN or TABLEC functions.

2 Select **File** ▸ **New Script Tab** and submit a script that adds your new tables to the new library.

3 Add users to the MySQL database:

a Select **Tools** ▸ **MySQL Administrator**.

b In the left pane, click **User Administration**.

c In the right pane, click **Add new user**.

d On the **User Information** tab, specify the account information for the user in the **MySQL User** and **Password** fields.

e Click the **Schema Privileges** tab and specify that the user have full privileges to the schema or library.

Register the New Tables in the SAS Metadata Repository

To register the two new tables in the SAS Metadata Repository, complete the following steps in SAS Management Console:

1 In the left pane, expand **Data Library Manager**, right-click **Libraries**, and select **New Library**.

2 In the New Library wizard, select **Resource Templates** ▸ **Libraries**. Select **MySQL Library** and click **Next**.

3 In the **Name** field, enter a descriptive name for the library and click **Next**.

4 Assign the SASApp workspace server to this library and click **Next**.

5 In the **Libref** field, type a SAS libref value of 8 characters or fewer.

6 Click **New** to create a new server.

7 Specify the name of the new server. Click **Next** and then click **Next** again.

8 Specify the database information.

a Specify the database to use.

b Specify the MySQL server. This value is the name of the server where MySQL is running.

Note: Make sure that you enclose the server name in single quotation marks (for example, 'department_server ').

c Specify the domain (for example, `StmMySQLAuth`).

Note: If the newly created domain name does not work, use `SPM Auth` instead.

9 Click **Next** and then click **Finish**.

10 In the **Default login** field, enter the name of the user that you created in step 3 of "Create a User with View-Only Access Permissions to the MySQL Libraries" on page 48.

11 Click **Next**.

12 Click **Finish** to save the settings and exit the wizard.

13 Right-click on the new library and select **Register Tables**. The Register Tables wizard appears and displays the name of the library that you defined.

14 Click **Next**.

15 On the Login page, enter a user ID that is a member of the SAS General Server group and its password.

16 On the next Login page, enter the MySQL user ID and password.

17 In the **Select Tables** list on the Define Tables and Select Folder Location page, select the table to register and click **Next**.

18 Click **Finish** to save the settings and exit the wizard.

Create the Tables in SAS and Register the Tables in the SAS Metadata Repository

To create the two tables in SAS and then register these tables:

1 To create the tables in SAS, create a directory on the local SAS middle tier system. Then, submit the SAS code to create the tables.

2 To register the two new tables in the SAS Metadata Repository, complete the following steps in SAS Management Console:

a In the left pane, expand **Data Library Manager**, right-click **Libraries**, and select **New Library**.

b In the New Library wizard, select **Resource Templates** ▸ **Libraries** ▸ **SAS Data**. Select **SAS BASE Library** and click **Next**.

c In the **Name** field, enter a descriptive name for the library and click **Next**.

d Assign the SASApp workspace server to this library and click **Next**.

e In the **Libref** field, type a SAS libref value of 8 characters or fewer.

Note: The libref value and the name of the library definition in SAS Metadata Repository must match.

f In the **Path Specification** group, select the path location of the SAS data set from the **Available items** list and add it to the **Selected items** list.

g Click **Next**.

h Click **Finish** to save the settings and exit the wizard.

i Right-click on the new library and select **Register Tables**. The Register Tables wizard appears and displays the name of the library that you defined.

j Click **Next**.

k In the **Select Tables** list on the Define Tables and Select Folder Location page, select the table to register and click **Next**.

l Click **Finish** to save the settings and exit the wizard.

7

Specifying a Time Period Set

What Is a Time Period Set?

A *time period set* is a group of one or more *time period levels*, such as Year, Quarter, Month, and Day. Each time period level can consist of one or more *time periods*. For example, the time period level Day consists of Monday, Tuesday, Wednesday, Thursday, Friday, Saturday, and Sunday.

Table 7.1 *Examples of Time Period Levels and Time Periods*

A time period set consists of one or more time period levels:	Time period levels consist of one or more time periods:	
Year	2012 2013 2014	
Quarter	First quarter Second quarter	Third quarter Fourth quarter
Month	January February March April May June	July August September October November December

When you define a set of time period levels, you specify time periods that are customized to your business needs, such as a fiscal year of January to December or June to May.

Locales and Time Period Sets

In a time period set, you can define how each time period level is labeled. When you define labels in your time period set, you can provide the labels in more than one language. For example, your template uses a default language of English, but you also want the names and descriptions in the time period set to be in Spanish and Canadian French. Each language represents a *locale*.

Notations Used to Specify Time Period Sets

When you define a time period set, you must also define the time period levels that are included in the set. For each level, you can specify the name and description that appears in the template and projects that use the time period set. When you specify the name and description, use the following notations.

Notation	Description	Example
{Y}	The full numeric value of the year	2011
{y}	The last two digits of the value of the year	11
{N}	Single-digit period number	1, 2, 3
{NN}	Double-digit period number	01, 02, 03
{NNN}	Triple-digit period number	001, 002, 003
{b}	The localized abbreviation for a month	Jan, Feb
{B}	The localized name for a month	January, February

TIP If you cannot remember the notations while you are using the Time Period Set wizard, click ⓘ in the **Name** and **Description** column headings to view the available notations.

TIP If a time period set includes multiple years, a best practice is to include the year notation with other notations. Doing so enables the user to easily distinguish period types that have the same name, but that are in different years.

The following table shows examples using the notations and the output displayed by the notations.

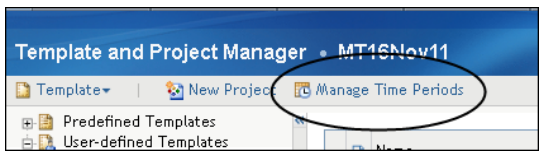
Table 7.2 Period Type Notation and Examples

Period Type	Examples			
	Notation Used for the Period Type Name	Output from Name Notation	Notation Used for Period Type Description	Output from Description Notation
Year	{Y}	2012	Financial Year {Y}	Financial Year 2012
Half year	{Y}Half{N}	2012H1	{Y} Half {N}	2012 Half 1
Month	{b}{Y}	Jan2012	{B} {Y}	January 2012
Quarter year	{Y}Q{N}	2012Q1	{Y} Quarter {N}	2012 Quarter 1
Week ISO 8601	{Y}WK ISO 8601{NN}	2012WKISO860101	{Y} Week ISO 8601 {NN}	2012 Week ISO 8601 01
Week Sunday	{Y}WK Sunday{NN}	2012WK Sunday01	{Y} Week Sunday {NN}	2012 Week Sunday 01
Week Monday	{Y}WK Monday{NN}	2012WK Monday01	{Y} Week Monday {NN}	2012 Week Monday 01
Day	{Y}Day{NNN}	2012Day001	{N} Day {NNN}	2012 Day 001
Semester **Note:** This type is an example of a user-defined period type.	{Y}Term{N}	2012Term1	{Y} Term {N}	2012 Term 1

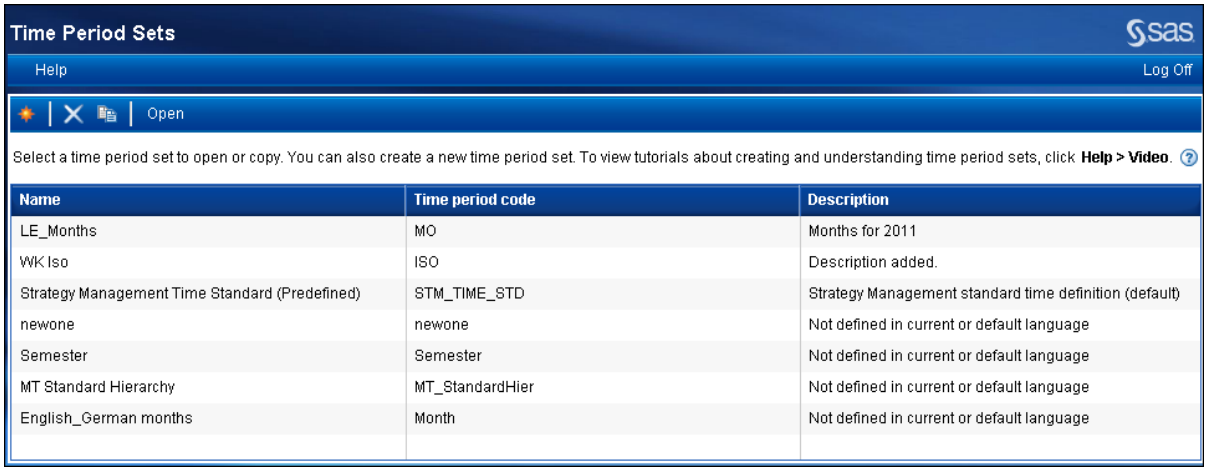
Define a Time Period Set

To define a time period set, complete the following steps in the Strategy Management Builder:

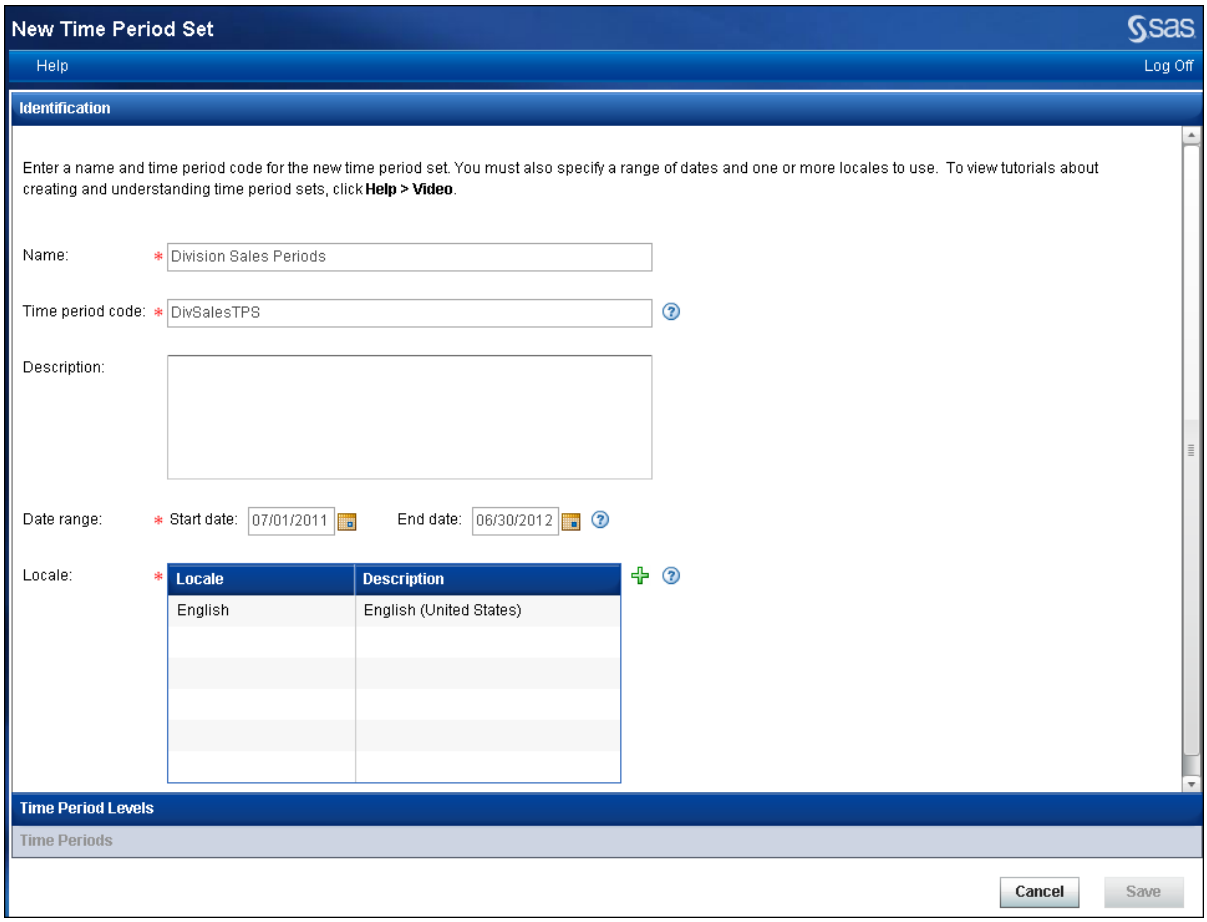
1 On the Template and Project Manager page, select a template and click **Manage Time Periods**.



2 In the Time Period Sets window, click .



3 In the **Identification** section of the New Time Period Set wizard, specify the basic information that is required for the time period set.



a In the **Name** field, enter a name that is unique within the template.

b In the **Time period code** field, enter a unique code of alphanumeric characters that identifies the time period set.

TIP This code connects time periods to elements. The code is also used when projects are moved from one system to another, such as importing

and exporting projects. To make debugging easier, specify a meaningful name for the time period code.

c (Optional) In the **Description** field, enter information that distinguishes this time period set from others.

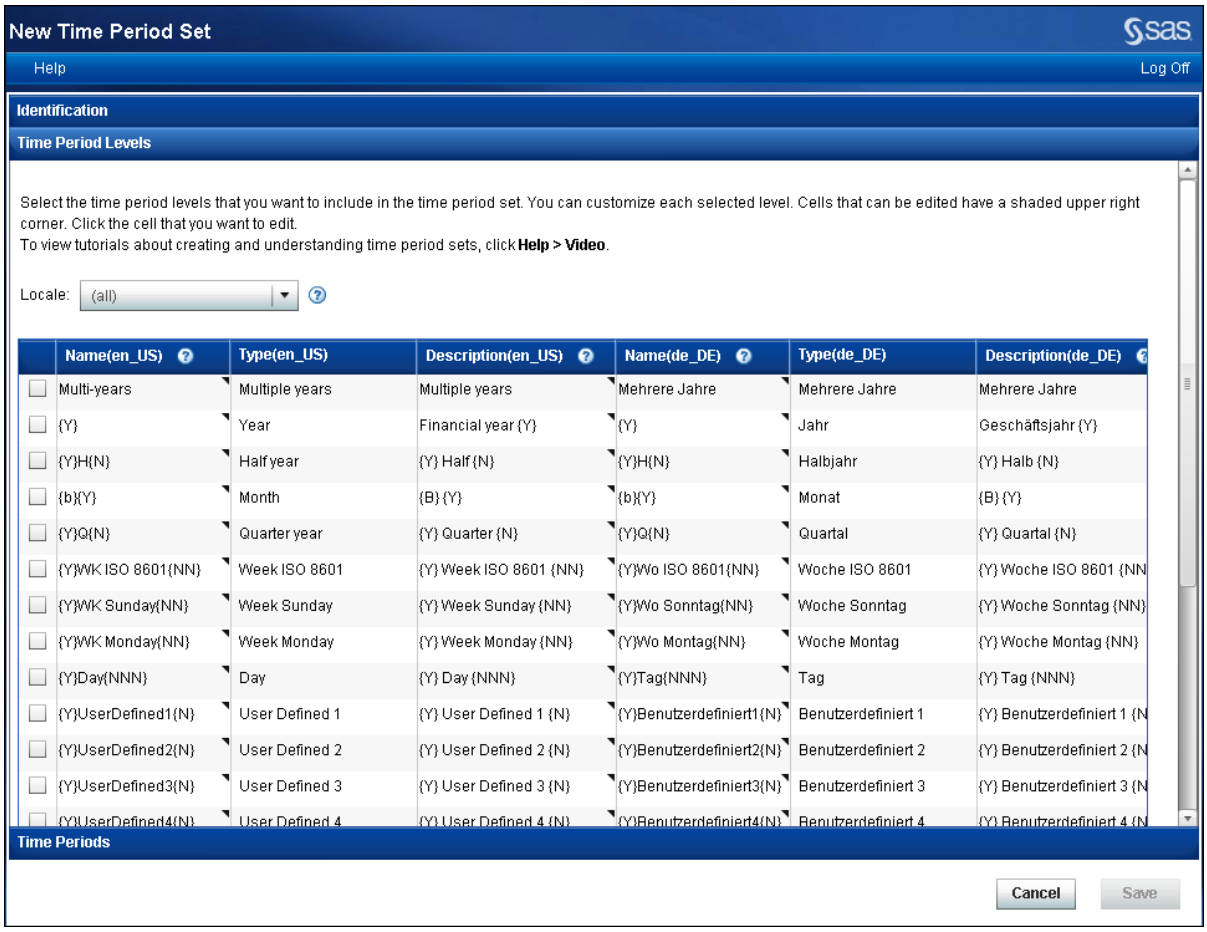
d For the **Date range**, specify the start and end dates that define a range of time for the time period set as a whole. For example, you can specify to track information for a three-year range of time.

e Next to the **Locale** table, click ➕ to add another locale. In the Locale column, a list of locales appears. Select the locale that you want to add.

Note: For more information, see "Locales and Time Period Sets" on page 54.

Note: If you add or delete a locale after you have defined settings in the following sections of the wizard, you lose any unsaved settings in the **Time Period Levels** section and **Time Periods** section in the wizard. To avoid this loss, click **Save** before you add or delete a locale. You might need to scroll to the bottom of the browser window to view the **Save** button.

4 Expand the **Time Period Levels** section. In this section, you select and customize the time period levels that you want to include in your time period set.



a If the time period set includes more than one locale, use the **Locale** list to filter the locale-specific columns in the table.

TIP For each locale that you specified, the table includes a Name, Type, and Description column. Multiple locales can make the table very wide. When you select a locale, the table displays only that locale, which makes it easier to customize the locale settings.

b Select the time period levels that you want to include in your time period set by selecting the check box in the far left column.

c For each level that you select, click its cell in the Name and Description columns to customize the time period level.

TIP If you cannot remember the notations while you are editing your time period set, click ? in the column headings to view the available notations.

Note: For more information, see "Notations Used to Specify Time Period Sets " on page 54.

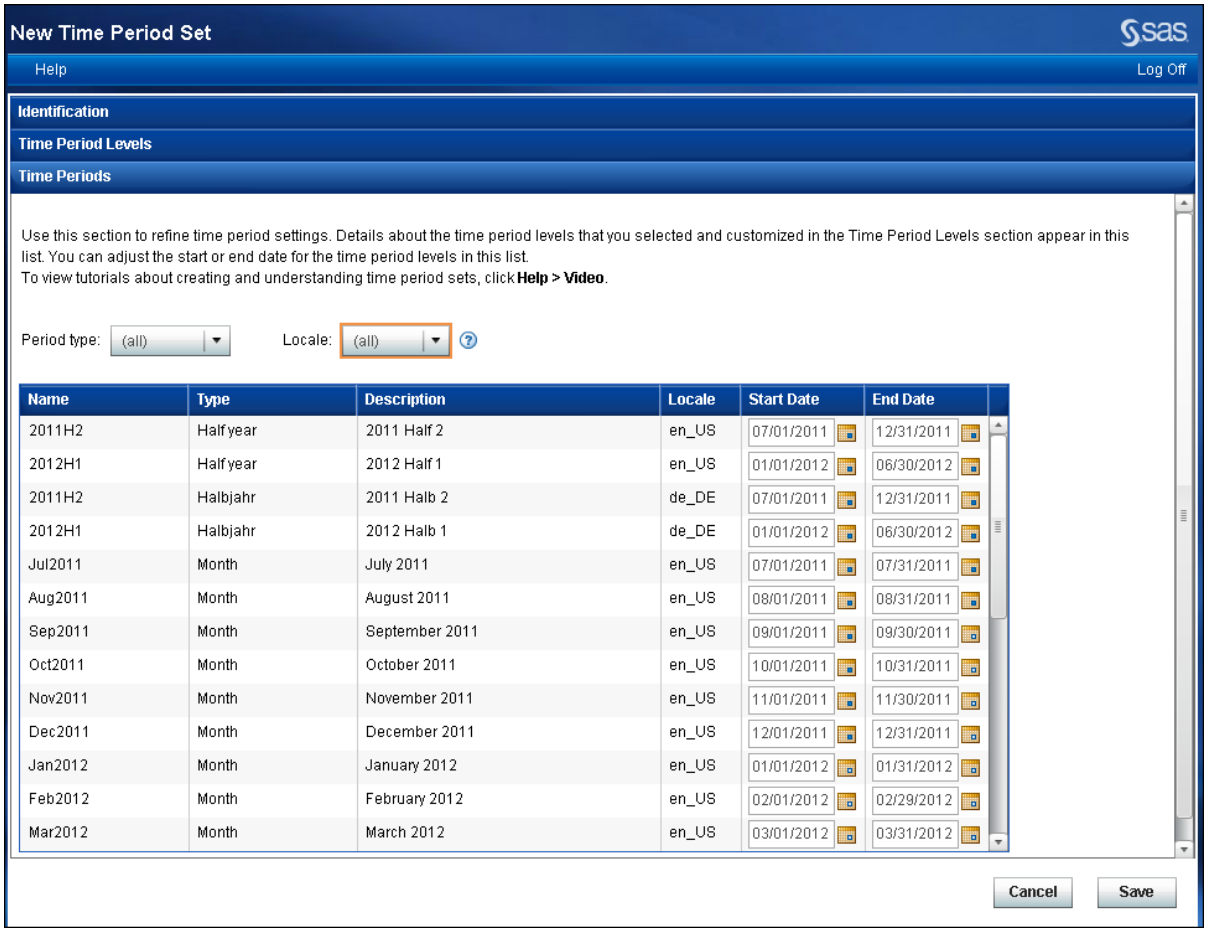
d If you want to change the default setting for a selected level, specify the start month and start day for that level.

TIP You might have to scroll the table to the right to see the Start Month and Start Day columns.

e If you filtered the time period set by using the **Locale** list, make sure that you change the selection. Then, edit the name and description settings for the other locales in the list.

5 Expand the **Time Periods** section. In this section, you can further refine your customization of the selected time period levels.

Note: If you defined a period type that extends beyond the date range that you set in the **Identification** section, that time period is not included. For example, suppose you set a start date of March 1 in the **Identification** section and you define a half-year period type in the **Time Period Levels** section. In the **Time Periods** section, the first available time period of this type starts on July 1. The date range does not include the entire first half of the year and therefore is not a valid half-year time period.



a Use the **Period type** list to filter the rows in the table by period type.

> **TIP** For each period type that you have specified, the table includes additional rows. Multiple period types can make the table very long. When you select a period type, the table displays only that period, which makes it easier to customize the start and end dates.

b If the time period set includes more than one locale, use the **Locale** list to filter the locale-specific rows in the table.

> **TIP** For each locale that you have specified, the table includes additional rows. Multiple locales can make the table very long. When you select a locale, the table displays only that locale, which makes it easier to customize the start and end dates.

c For each period type, customize the name and the description if required. Click the cell that you want to change and enter the new name or description.

d For each period type, customize the start and end dates if required. In the Start Date and End Date columns, click to select the new date.

e If you filtered the time period set by using the **Period type** list, make sure that you change the selection. Then, edit the start and end date settings for the other period types in the list.

f If you filtered the time period set by using the **Locale** list, make sure that you change the selection. Then, edit the start and end date settings for the other locales in the list.

6 Click **Save** to save the time period set definition.

Note: You might need to scroll to the bottom of the browser window to view the **Save** and **Cancel** buttons.

Edit a Time Period Set

To edit a time period set definition, complete the following steps in the Strategy Management Builder:

1 On the Template and Project Manager page, select a template and click **Manage Time Periods**.

2 Double-click the time period set that you want to edit. The Time Period Set wizard appears.

3 Change the applicable settings in the time period set definition as described in "Define a Time Period Set" on page 55.

Note: If you add or delete a locale after you have defined settings in the following sections of the wizard, you lose any unsaved settings in the **Time Period Levels** section and **Time Periods** section in the wizard. To avoid this loss, click **Save** before you add or delete a locale. You might need to scroll to the bottom of the browser window to view the **Save** button.

Copy a Time Period Set

To copy a time period set, complete the following steps in the Strategy Management Builder:

1 On the Template and Project Manager page, select a template and click **Manage Time Periods**.

2 Select the time period set definition that you want to copy and click  . The copied definition appears in the list. The words "Copy of" precede the definition name.

3 To edit the copied definition, double-click its name. The Time Period Set wizard appears.

4 Change the applicable settings in the time period set definition as described in "Define a Time Period Set" on page 55.

Note: If you add or delete a locale after you have defined settings in the following sections of the wizard, you lose any unsaved settings in the **Time Period Levels** section and **Time Periods** section in the wizard. To avoid this loss, click **Save** before you add or delete a locale. You might need to scroll to the bottom of the browser window to view the **Save** button.

Delete a Time Period Set

To delete a time period set, complete the following steps in the Strategy Management Builder:

1. On the Template and Project Manager page, select a template and click **Manage Time Periods**.
2. Select the time period set definition that you want to delete and click  .
3. A confirmation message appears. Click **Yes** to delete the definition.

Troubleshoot the Time Period Sets Wizard

When you save a time period set definition, one of the following messages might be displayed:

- The information in the time definition table failed to be saved.
- The confirmation check of the time definition table failed. New records are not present in the table.
- The transaction that adds records to the time definition template table failed.

To correct these problems, make sure that the object spawner is operational and that stored processes are working in your installation. If the problem persists, contact SAS technical support.

8

Customizing SAS Strategy Management

Customizing Portals

Overview

This chapter includes information about customizing the SAS Information Delivery Portal for SAS Strategy Management. For detailed information about portal administration, see the following references:

- the online Help for the SAS Information Delivery Portal
- the *SAS Intelligence Platform: Web Application Administration Guide*. (See "Additional Documentation" on page 4.)

These references explain how to administer portal content, how to create page templates, and how to administer portal authorization.

Note: Membership in the Portal Admins group is no longer recommended.

Providing a Portlet Link That Opens the Strategy Management Builder

If you want to provide a link that opens the Strategy Management Builder, you must create that link in a Collection portlet. For more information, see "Starting SAS

Strategy Management Builder from a Portlet" in the *SAS Strategy Management: User's Guide*.

Adding SAS Strategy Management Portlets

SAS Strategy Management provides the following types of portlets for displaying scorecards. For detailed information about adding and customizing Strategy Management portlets, see "Part 4. Creating Portlet Views for Business Users" in the *SAS Strategy Management: User's Guide*.

Table 8.1 *Portlets Available with SAS Strategy Management*

Portlet Type	Description
Strategy Management	Displays multiple strategy views in a single portlet. Scorecard data can be displayed using any of its tiles, including Association View and Scorecard Hierarchy.
Performance Aggregate Table	Displays data for the selected scorecard and all of its children.
Performance Association	Displays the hierarchical relationship between scorecard elements of a single scorecard or project.
Performance Data Entry	Displays a Web data-entry form.
Performance Dashboard	Displays scorecard elements in graphical format. Each element is represented by a dashboard that displays, in graphical format, the data ranges that have been defined. In addition to ranges, you can display comments, history data, and element properties from a dashboard.
Performance Diagram	Displays data in the form of diagrams, to illustrate the relationships between elements. The data can be based on project element types or scorecard element types.
Performance Table	Displays data for the selected scorecard in tabular form.

Adding an Alerts Portlet

An *alert* is a notification of an event that the user might need to respond to. In SAS Strategy Management, the administrator or scorecard modeler can change settings such that the business user receives alerts when a threshold is exceeded, or when a comment is added to a scorecard.

For more information about alerts and SAS Strategy Management, see the following topics in the *SAS Strategy Management: User's Guide*:

- "Creating a Portlet" describes adding portlets to a page, including Alerts portlets.
- "Set Alert Preferences" describes setting the preferred way to receive alerts.
- "Set Alerts on Comments" describes setting the alert option for the Comment Manager.
- "Edit a Global or Personal Threshold" includes steps for setting the alert option on thresholds.

Specifying Automatic Responses to Thresholds

Overview

In a scorecard project or table, users can define global and personal thresholds. Within the threshold options, users can select a stored process to be invoked when the threshold is met, and define parameters to be passed to the stored process.

Automatic Variables

Several automatic variables are available to these stored processes to identify the threshold context. The following variables can be accessed as `&variable-name`:

Table 8.2 *Automatic Variables from Global or Personal Thresholds*

Automatic Variable	Type	Description
ENTITYKEY	String	The session entity key.
SPM_THRESHOLDOPERATOR	Numeric	The operator that was chosen when building the threshold. Possible operators are: ■ `1`: less than ■ `2`: less than or equal ■ `3`: greater than ■ `4`: greater than or equal ■ `5`: equal ■ `6`: not equal The operator `0` calls for no action, and the stored process is not invoked.
SPM_THRESHOLDTYPE	String	The threshold type: ■ `G`: Global ■ `P`: Personal
SPM_THRESHOLDVALUE	String	The value that was chosen when building the threshold.
SPM_THRESHOLDVALUETYPE	String	The threshold value type: ■ `D`: Double ■ `I`: Interval
SPM_CONTAINERID	String	The ID of the container (project or scorecard) that crossed the threshold.
SPM_ELEMENTNAME	String	The name of the element that crossed the threshold.
SPM_ELEMENTID	String	The ID of the element that crossed the threshold.

Automatic Variable	Type	Description
SPM_COLUMNID	String	The ID of the column that crossed the threshold.
SPM_PERIODID	String	The ID of the period that crossed the threshold.
SPM_METRICVALUE	String	The metric value of the cell that is defined by SPM_ELEMENTID, SPM_COLUMNID, and SPM_PERIODID.

Example

The following code is an example of automatic variables from a stored process log:

```
ENTITYKEY=dd48e492aa9d18a2:-3d2a3b32:129656d95db:-3e93
SPM_THRESHOLDOPERATOR=1
SPM_COLUMNID=41ed6bc5-0a0c-0bd8-283f-da7f5481959e
SPM_CONTAINERID=4274faf7-0a0c-0bd8-689e-b45726536cf2
SPM_ELEMENTID=42780448-0a0c-0bd8-689e-b457a2c401c4
SPM_ELEMENTNAME=m1
SPM_METRICVALUE=20.0
SPM_PERIODID=182
SPM_THRESHOLDTYPE=P
SPM_THRESHOLDVALUE=100.0
SPM_THRESHOLDVALUETYPE=D
```

Customizing Workflow for Data-Entry Forms

Overview

As of version 5.4, the SAS Strategy Management data-entry form feature has been redesigned. The feature now provides a workflow option. Only forms that are created by using version 5.4 or later can use the workflow option. Forms created by using version 5.3 or earlier are still supported, but these forms cannot use the workflow option. For more information, see “The Data-Entry Form Feature in SAS Strategy Management 5.4” on page 35.

SAS Strategy Management provides two workflow templates. These templates provide the following workflow options:

- data-entry form approvers can approve the form in any order
- data-entry form approvers must approve the form in a specific order

You can customize these templates by using SAS Workflow Studio 1.2 or later.

CAUTION! You must have a detailed understanding of SAS Workflow Studio and workflows. Any changes that you make to the default templates provided by SAS Strategy Management can cause the workflow to fail.

Customize a Template

The following procedure provides an overview of how to customize a workflow template. Complete these steps for each template:

1 Locate the SAS Strategy Management workflow templates in the following directory: `C:\Program Files\SASHome\SASStrategyManagementMidTier\5.4\Config\Deployment\Workflows` .

The templates have the following names:

- StrategyManagementWorkflowTemplateOrderedApproval
- StrategyManagementWorkflowTemplateUnorderedApproval

2 Save the templates on the server on which they are installed.

3 Start SAS Workflow Studio and open a template.

4 Select **Server** ▸ **Log On** to log on to the SAS Metadata Server.

5 Confirm that the template is loaded on the metadata server by selecting **Server** ▸ **Manage Processes**. A list of installed templates appears.

6 Right-click a template and select **Check Out**. A copy of the template is copied to your local system.

7 Close the Manage Process window.

8 Click the "x" on each tab to close them.

9 Open the local copy of the template by selecting **File** ▸ **Open**.

10 Make your custom changes to the workflow template. When you are finished, you must save the template to the repository for the template to take effect.

Select **Server** ▸ **Save to Repository**. A window appears with the name of the active template.

11 Select **Activate** and then click **OK**. If a message window appears and asks whether to save the template to the local system, click **No**. A message window appears, stating that the new template definition was saved to the repository.

12 Click **OK**.

13 Click **Server** ▸ **Manage Processes**.The list displays the newly installed template.

Limitations

If you use data-entry forms with a workflow, do not use the SAS Table Server in your SAS Strategy Management installation. For more information, see the Product Advisory Notices from SAS at `http://support.sas.com/techsup/pcn/index.html#s1=5`.

9

Exporting and Importing SAS Strategy Management Projects

Overview

SAS Strategy Management 5.4 provides support for creating packages by using the SAS Package feature in the SAS Management Console. You can use this feature to complete the following tasks:

- export and import a SAS package from one SAS Strategy Management installation to another
- copy a project
- migrate a project
- back up a project
- add an existing project and its data to another project

> **TIP** This scenario might occur when you initiate a project on a test server and then want to add scorecards and data when the project moves to a production server.

Note: This feature replaces the **Export Template** and **Export Project** functionality in earlier versions of SAS Strategy Management.

Requirements and Considerations

When you are planning your export and import, remember the following considerations:

- SAS Strategy Management must be running for the export and the import to succeed.

- A user assigned the modeler role must have the **Project and Template Export** capability. This capability is located under **Administration**.
- If you want SAS Management Console installed on your local system, see the installation instructions in the *SAS 9.3 Intelligence Platform: System Administration Guide, Second Edition*.
- You can export and import only one package at a time. However, a package can contain multiple SAS Strategy Management projects. If you include multiple projects, all of the projects use the same package options.
- A package can contain more than SAS Strategy Management projects. For example, if the project includes SAS Information Maps, tables, or other metadata objects, you can include these objects in the package with the project object.

For more information about the SAS Package feature and SAS Management Console, see the *SAS 9.3 Intelligence Platform: System Administration Guide, Second Edition*.

Export a SAS Strategy Management Project and Its Data

To export a SAS Strategy Management project and its data, complete the following steps in SAS Management Console:

1. Click the **Folders** tab in the left pane.
2. Expand and navigate the tree to the location where you registered the project.

   TIP You can look up the registration location in the SAS Strategy Management Builder. Open the project and view its properties.

3. In the right pane, right-click the project and select **Export SAS Package**.
4. In the Export SAS Package wizard, enter the location where you want to store the package in the **Specify a package** field. Specify the filename of the package also.
5. Click **Next**.
6. Select the package in the tree.
7. In the section below the tree, click the **Options** tab.
8. Make the applicable selections for your package.

   Note: You can choose to include all of the options in the exported package. When you import the package, you can choose not to import one or more options from the package. Be aware that the more you include, the larger the package file will be.

Option	Description
Include Templates	Includes the template that the project is based on. **Note:** Include this selection only if you plan to import the project to a system that *does not already* have a copy of this template.

Option	Description
Include Time Definitions	If the project uses a customized time dimension, include this option. However, make sure that you import the time dimension only *once*. If you import another project that uses the same customized time dimension, do not inadvertently import the same dimension again. If the project uses the standard default time dimension, do not include this option. You want to avoid confusion from multiple copies of the time dimension on the target system. **Note:** All time dimensions should be exported and imported with caution. Importing an inappropriate time dimension can cause severe problems in the affected project.
Include Images	Includes any files that are located in the `images` directory for the project. Typically, these files include diagram images.
Include Security	Includes all of the permission settings used by the project. If you do not export these settings, the user name that imports the project is set as the project owner and the permissions are set at the template and project level only. **Note:** You do not want to import security settings if the target server uses different user names.
Include Comments	Includes any comments that are present in the project. **Note:** Depending on the size of the project and the number of comments, this option can slow performance of the export.
Include Alerts	Includes any alerts that are present in the project. **Note:** Depending on the size of the project and the number of alerts, this option can slow performance of the export.

9 Click **Next** and review the summary of your selections.

10 Click **Next**. The wizard creates the export package.

11 When the export is complete, click **View Log** to view any errors or warnings that occurred during the export. The log also reports the specific selections, such as user names and objects, that were included in the package. Click **OK** to dismiss the log.

12 Click **Finish** to close the wizard.

Note: If you want to view the contents of the SAS package, you can use any ZIP utility to open the SPK file.

Import a SAS Strategy Management Project and Its Data

To import a SAS Strategy Management project and its data, complete the following steps in SAS Management Console:

1 Click the **Folders** tab in the left pane.

2 Expand and navigate the tree to the folder where you want to import the package.

3 Right-click the folder and select **Import SAS Package**.

4 In the Import SAS Package wizard, enter the location and filename of the package in the **Enter a location** field.

5 Select **Include access controls** only if the following conditions are met:

- the user names in the SAS package are also defined on the target server
- the permissions in the SAS package are also defined on the target server

Note: Typically, you do not make this selection.

6 Click **Next**.

7 Select the project in the tree.

8 In the section below the tree, click the **Options** tab.

9 Select the options that you want to import from the package. If an option is unavailable, it was not exported to the package.

Option	Description
Delete Old Project Before Import	If the project exists on the target system, this option deletes the project and imports the copy in the SAS package. This option can be time consuming.
Overwrite Project Content	If the project exists on the target system, this option retains the existing project and imports new scorecards and new data from the SAS package.
Include Templates	Includes the template that the project is based on. **Note:** Include this selection only if you plan to import the project to a system that *does not already* have a copy of this template.
Include Time Definitions	If the project uses a customized time dimension, include this option. If multiple projects use the same time dimension in an installation, it is a recommended best practice that only a single copy of a time dimension be used. When required, import a time dimension *only* once and share the time dimension among the affected projects. In some circumstances, sharing a time dimension is not feasible. When a time dimension is imported more than once, a unique dimension code is generated. This unique dimension code enables copies of a time dimension to coexist in an installation and to be used independently by different projects. If the project uses the standard default time dimension, do not include this option. You want to avoid confusion from multiple copies of the time dimension on the target system. **Note:** All time dimensions should be exported and imported with caution. Importing an inappropriate time dimension can cause severe problems in the affected project.
Include Images	Includes any files that are located in the `images` directory for the project. Typically, these files include diagram images.

Option	Description
Include Security	Includes all of the permission settings used by the project. If you do not export these settings, the user name that imports the project is set as the project owner and the permissions are set at the template and project level only. **Note:** You do not want to import security settings if the target server uses different user names.
Include Comments	Includes any comments that are present in the project. **Note:** Depending on the size of the project and the number of comments, this option can slow performance of the export.
Include Alerts	Includes any alerts that are present in the project. **Note:** Depending on the size of the project and the number of alerts, this option can slow performance of the export.

10 Click **Next** and review the summary of your selections.

Note: The summary might contain the following message: `Overwrite x Strategy Management project object.`, where **x** indicates one or more project objects. This message appears only if the project exists (is registered) in the metadata.

Note: If you did not select the **Delete Old Project Before Import** and the **Overwrite Project Content** options, the log might contain warnings about duplicate SQL insert statements.

11 Click **Next**. The wizard imports the package.

12 When the import is complete, click **View Log** to view any errors or warning that occurred during the import. Click **OK** to dismiss the log.

13 Click **Finish** to close the wizard.

10

Managing the Mobile Device Feature

SAS Visual Analytics Transport Service Configuration

SAS Visual Analytics Transport Service executes in the middle tier to enable communications between SAS Mobile BI on mobile devices and the middle tier. The SAS Deployment Wizard configures properties and values for this component.

To view these properties and values, click the **Plug-ins** tab in SAS Management Console. On the **Plug-ins** tab in SAS Management Console, navigate to **Application Management** ▸ **Configuration Manager** ▸ **SAS Application Infrastructure** ▸ **Visual Analytics 6.1** ▸ **Visual Analytics Services 6.1** ▸ **Visual Analytics Transport Service 6.1** and right-click **Properties** to display the Visual Analytics Transport Service 6.1 Properties window.

SAS Mobile BI on Mobile Devices

The SAS Mobile BI application runs on mobile devices, and enables users to access data in their reports. To manage mobile devices that are installed with SAS Mobile BI, you can use the Mobile Devices application.

Manage Mobile Devices Capability

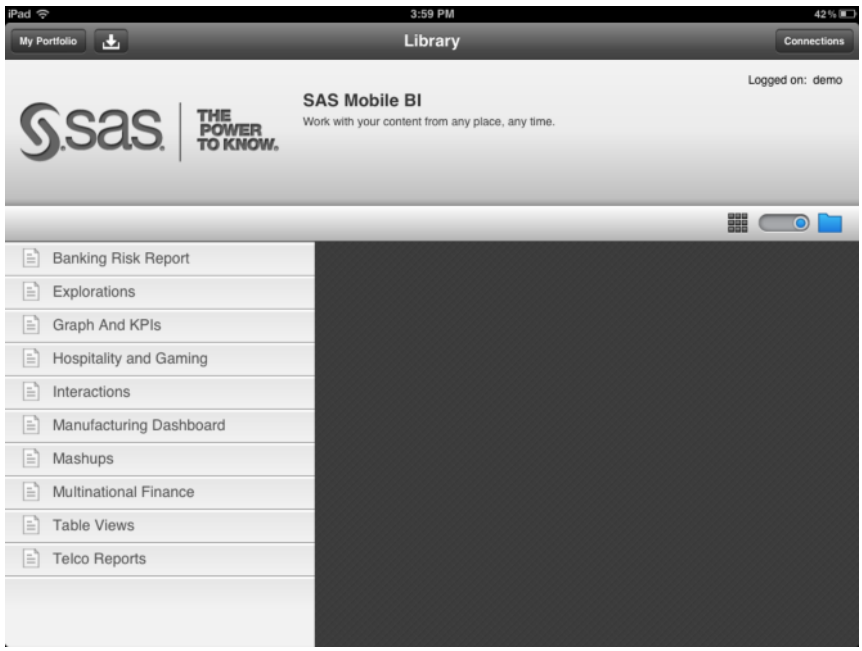
The modeler role requires the Manage Mobile Devices capability to use the Manage Mobile Devices feature in SAS Strategy Management and to manage mobile devices. To view this capability, log on to SAS Management Console, and select the **Strategy Management: Modeler** role. Click the **Capabilities** tab, and navigate to **Visual Analytics 6.1** ▸ **Advanced** ▸ **Manage Mobile Devices**.

Note: To view the **Mobile Devices** tab in the Mobile Devices web application, the modeler role must also be a member of the Visual Analytics: Administration group. If the modeler is not a member of this group, then the modeler must have the following capabilities: Manage Environment and Manage Mobile Devices.

Configure the Display of Banner-Related Items for SAS Mobile BI

Deployment of this application configures the display of banner-related items with default values. You can customize the display of your company logo, banner, and a title in SAS Mobile BI on mobile devices. Here is an example of a custom company logo, banner, and title that is displayed in SAS Mobile BI.

Display 10.1 *SAS Mobile BI with Custom Logo, Banner, and Title*



To customize the display of a custom logo, banner, and title in SAS Mobile BI:

1 On the **Plug-ins** tab in SAS Management Console, navigate to **Application Management** ▸ **Configuration Manager** ▸ **SAS Application Infrastructure** ▸ **Visual Analytics 6.1** ▸ **Visual Analytics Services 6.1** ▸ **Visual Analytics**

Transport Service 6.1 and right-click **Properties** to display the Visual Analytics Transport Service 6.1 Properties window.

2 Click the **Advanced** tab.

3 Specify the following properties and the required values:

Property Name: `viewerservices.company.banner.logoUrl`

The logo web address that you specify must be accessible by the mobile device.

Property Value: *URL_Address_for_the_Logo*

Property Name: `viewerservices.company.banner.title`

Property Value: *Title_for_the_Banner*

Property Name: `viewerservices.company.banner.message`

Property Value: *Message_for_the_Banner*

4 Click **OK** to exit the Visual Analytics Transport Service 6.1 Properties window.

5 To enable these changes to take effect, restart the web application server.

Modify the Value Used for Resizing Images in the Middle Tier for SAS Mobile BI

The `viewerservices.image.default.max.bytes` property represents the number of bytes that are used to determine whether server-side resizing of images occurs before an image is delivered to the mobile device. The types of images that are resized include PNG, BMP, JPEG, and GIF files.

By default, this property is set to 300 KB. The limit on the size of images that are delivered ensures both faster download times and smaller memory footprints on the mobile device. The default value is sufficient for most environments. Resizing of images in the middle tier is disabled if the value for this property is set to 0.

You should modify this value only when you want to increase or decrease the number of image bytes that are allowed to be delivered to a mobile device. Modify the value for this property cautiously because it impacts the download time and memory in the mobile devices.

If your users can customize image resizing, a user can select **Insert** ▸ **Other** ▸ **Image** to display the Image Selection window. In that window, if the **Scale type** option is set to **None**, any images that are delivered to mobile devices are not scaled down to a size below the value that is specified for the `viewerservices.image.default.max.bytes` property.

For the **Scale type** option in the **Image Selection** window, if a user selects **Stretch**, **Fit All**, **Fit Width**, or **Fit Height**, these selections do not impact the value that is specified for the `viewerservices.image.default.max.bytes` property.

The number of bytes that you specify for this property is used to determine whether resizing of images should occur in the middle tier before they are delivered to SAS Mobile BI.

To modify the number of bytes that is specified for this property:

1. On the **Plug-ins** tab in SAS Management Console, navigate to **Application Management** ▸ **Configuration Manager** ▸ **SAS Application Infrastructure** ▸ **Visual Analytics 6.1** ▸ **Visual Analytics Services 6.1** ▸ **Visual Analytics Transport Service 6.1** and right-click **Properties** to display the Visual Analytics Transport Service 6.1 Properties window.
2. Click the **Advanced** tab.
3. Click **Add** to display the Define New Property window.
4. Modify the value for the `viewerservices.image.default.max.bytes` property:

   Property Name: `viewerservices.image.default.max.bytes`

   Property Value: *Number_of_Bytes*
5. Click **Add** in the Visual Analytics Transport Service 6.1 Properties window.
6. Click **OK** to exit the Visual Analytics Transport Service 6.1 Properties window.
7. To enable this change to take effect, restart the web application server.

Manage Mobile Devices

You can use the Mobile Devices web application to manage mobile devices. Use this web application to perform the following tasks:

- view data about mobile devices that have logged on to the SAS Visual Analytics server. These mobile device users can view reports. The displayed data includes user ID, device type, device model, device ID, OS version, application version, and the timestamp of last access.
- aort the data for mobile devices in ascending or descending order.
- filter data for mobile devices. For example, you can filter data by the mobile device type or by the mobile device model.
- blacklist lost or stolen mobile devices.
- remove blacklisted mobile devices from the blacklist.

To perform tasks such as viewing, sorting, filtering, or blacklisting a mobile device:

1. In SAS Strategy Management Builder, click **Manage Mobile Applications**.
2. On the **Mobile Devices** tab, select **Logon History**. Or, log on to the application directly:

   `http://`*`Server_Name`*`:`*`Port_Number`*`/SASVisualAnalyticsAdministrator`
3. To sort the items in the columns in either ascending or descending order, click the column heading for any column on this page.
4. To filter and view selected data about mobile devices:

   a. From the **Filter** menu, select an item (for example, **Device Type**). Then, enter a valid value in the field (for example, `iPad`), and click **Apply**.

The value that you specified for the filter determines the type of data that is displayed.

b To view the entire history of events (for example, various application versions that were used by devices) associated with the item that you specified in the **Filter**, field, select the **Include Device History** check box.

5 To add a mobile device to the blacklist:

a Click **Manage Blacklist**.

b Click ➕.

You are prompted by the Add New Device ID window.

c Enter the device ID and click **OK**.

The device is added to the Manage Blacklist list, and an audit of the action is recorded in the Blacklist History.

d To view the history of blacklist changes, click **Blacklist History**.

The Blacklist History page shows the current list of blacklisted devices, and provides an audit of changes that were made to all mobile devices. The **Action** column indicates the status of this device (whether it as blacklisted), and the **Result** column indicates whether your action was successful. Blacklisted mobile devices cannot be used to access the SAS Visual Analytics suite of applications.

The most recent action for a mobile device identifies its current status. However, if a filter was applied, all changes made to that mobile device might not be displayed.

TIP You can also blacklist a device by going to the Logon History page and clicking on **Device Id**.

6 To remove a mobile device from the blacklist, click **Manage Blacklist**.

7 On the Manage Blacklist page, select the device and click ✖.

8 When prompted by a confirmation window, click **Yes**.

9 To view blacklisted mobile devices or confirm that a device was blacklisted, click **Manage Blacklist**.

10 To search for a blacklisted mobile device either by the device ID or the administrator ID, click **Blacklist History**. Then, select **Admin ID** or **Device ID** from the **Filter** list. Click **Apply**.

The blacklist changes that meet the criteria that you specified are displayed.

The following information is provided in the Blacklist History page.

Table 10.1 Fields in the Blacklist History Page

Field	Description
Admin ID	User name of the administrator who blacklisted the device.
Device ID	Name of the blacklisted device.

Field	Description
Action	Type of action that was performed on the mobile device.
Result	Indicates whether the attempt to blacklist a mobile device was successful.
Timestamp	Displays the date and time when a specific mobile device was blacklisted.

Load Icon Images for Use in Mobile Reports

SAS Reports generated from SAS Strategy Management might contain icon images such as icons that indicate an element type or range-based icons. You must load these images into a common folder in the metadata where the icons can be available for all reports.

To load these images, complete the following steps in SAS Management Console:

1 Log on to your metadata server using an administrator ID. You should log on from one of the following places:

- the SAS Strategy Management middle tier server
- from a system that has file system access to the SAS Strategy Management middle-tier server

2 Click the **Folders** tab and expand the tree by selecting **System** ▸ **Applications** ▸ **SAS Strategy Management** ▸ **Common** ▸ **Shared**.

3 Create a subfolder called `images` if it does not already exist.

4 Set the images folder to be the current folder.

5 To load images from the SAS Strategy Management web application installation, complete the following steps:

a Click the **Actions** list and select **Add Content From External Files or Directories**.

b In the Choose Source Files or Directories window, in the **Files of type** list, select **SAS Report image, (*.png, *.gif, *.jpg, *.jpeg, *.bmp)**.

c Navigate to the images location in the SAS Strategy Management web application installation. The typical locations are as follows:

For JBoss	`C:\jboss5.1\jboss-eap-5.1\jboss-as\server\SASServer11\deploy_sas\sas.strategymanagement5.4.ear\sas.strategymanagement.war\images`
For WebLogic	`C:\sas\Config\Lev1\Web\Staging\exploded\sas.strategymanagement5.4.ear\sas.strategymanagement.war\images`

d Select all of the image files by pressing the Shift key and the left mouse button.

e Click **Open**.

Note: The open process might take a few minutes to complete.

6 To load images from the SAS Themes web application installation, complete the following steps:

a Click the **Actions** list and select **Add Content From External Files or Directories**.

b In the Choose Source Files or Directories window, in the **Files of type** list, select **SAS Report image, (*.png, *.gif, *.jpg, *.jpeg, *.bmp)**.

c Navigate to the location of the SAS Themes web application installation. The typical locations are as follows:

For JBoss	`C:\jboss5.1\jboss-eap-5.1\jboss-as\server\SASServer1\deploy_sas\sas.themes.ear\sas.theme.default.war\themes\default\images`
For WebLogic	`C:\sas\Config\Lev1\Web\Staging\exploded\sas.themes.ear\sas.theme.default.war\themes\default\images`

d Select the following images by pressing the Ctrl key and the left mouse button:

- NoData.gif
- TrendDown.gif
- TrendNoChange.gif
- TrendUp.gif

e Click **Open**.

Note: The open process might take a few minutes to complete.

The required icon images are now loaded and available for SAS reports on a mobile device.

Display Limitations on Mobile Devices

When you view SAS Strategy Management views as a SAS report on a mobile device, remember the following display limitations:

- The scorecard hierarchy tile is not supported in mobile reports.
- The thermometer gauge is displayed in the vertical orientation only.
- The speedometer gauge is displayed as a full circle only.

Part 2

Using the Batch Maintenance Facility

11

Introduction to the Batch Maintenance Facility

What Is the Batch Maintenance Facility?

The Strategy Management Batch Maintenance Facility (BMF) is a macro (%STMBMF) provided with the SAS Strategy Management application. This tool enables you to get SAS Strategy Management data into local files and to use those files to create and maintain the data in a batch manner.

Why Use BMF?

BMF is useful when you want to use data in the following ways:

- enter large quantities of new data into a SAS Strategy Management project
- make daily updates to the data in a SAS Strategy Management project
- extract data from a SAS Strategy Management project and then run other SAS software to analyze the data

For example, by using BMF, you can perform the following tasks:

- run a batch process to update SAS Strategy Management with frequently acquired data, such as daily sales data
- run a process that extracts data from a database or data warehouse, inserts the data into the BMF data model, and uses BMF to enter the data into SAS Strategy Management

If you want to make simple, confined changes to data in a SAS Strategy Management project, it is easier to use the SAS Strategy Management Builder. If

you have large volumes of data to add or change, then use the batch feature that is BMF.

How Do You Use BMF?

The tool consists of a SAS macro (%STMBMF) that you invoke in a SAS client or by using the BMF transformation in SAS Data Integration Studio. The client communicates with the server on which SAS Strategy Management is running. Arguments pass data in comma-separated-value (CSV) files or in SAS data sets. The arguments also pass settings to tell the macro what to do.

Note: The system that is running the SAS client and the server on which SAS Strategy Management is running typically are *not* the same systems.

BMF is primarily intended for SAS Strategy Management scorecard modelers, that is, users of SAS Strategy Management who create and maintain their organization's SAS Strategy Management data. Understanding the SAS Strategy Management data model is critical to effectively use this tool. SAS Strategy Management data is complex in both value and relationships. Correspondingly, BMF is complex too. You must be prepared to create and edit the input files with considerable care.

You also must be comfortable with basic computer network concepts, editing files with text editors, and running SAS client sessions.

How BMF Works

The following process is typical for most %STMBMF macro invocations:

1. The SAS system checks the macro invocation for syntactic errors and reports any errors to the SAS log.
2. The %STMBMF macro validates the invocation and reports errors to the SAS log.
3. If errors occur, the macro stops executing. See the SAS log to correct your errors. For more information, see Chapter 21, “Debugging BMF,” on page 175.
4. The SAS system sends the argument values to the application server. The BMF code in SAS Strategy Management on the application server now controls the processing.

   When the macro completes processing without errors, the following message is displayed in the SAS log:

   ```
   NOTE: Event SAS.Solutions.SpmBOBInterface published successfully.
   ```

   Note: If errors occur, the SAS log contains only error messages that indicate syntactic errors for the macro invocation and for any problems connecting to the server.
5. BMF performs the job or jobs that you submitted.
6. BMF writes all further error messages to the BMF server-side log and the BMF local log.

7 After BMF has completed the jobs, it sends an e-mail notification.

Note: The user ID that is specified in the USER argument must have e-mail enabled for the notification to succeed. For more information, see "Information to Get from Your SAS Administrator" on page 95.

The %STMBMF Macro

Macro Actions

The %STMBMF macro provides three actions:

GET
: gets existing SAS Strategy Management project data and creates CSV files or SAS data sets of the data.

MODIFY
: modifies existing SAS Strategy Management project data by using changes that are identified in the affected CSV files or SAS data sets. The MODIFY action is useful for adding, modifying, or deleting data in an existing SAS Strategy Management project. You can use the GET action to create the data files, and then use the MODIFY action to modify the data.

CREATE
: creates new SAS Strategy Management data and objects for a project, including the template and project objects. The CREATE action is useful if you want to create a new SAS Strategy Management project by using scripting languages to create new CSV files.

Typically, the GET and MODIFY actions are used the most.

Macro Arguments

Remember the following considerations when using the BMF arguments:

- The header of the %STMBMF macro documents all the macro arguments.
- The required arguments vary depending on the BMF action that you want to run.
- All arguments use the keyword=value convention.
- Argument keywords are case insensitive.
- Each keyword-value pair must be followed by a comma except for the last pair before the closing parenthesis.
- You can specify either CSV files or SAS data sets. However, you cannot specify both CSV files and SAS data sets in a macro invocation.

Table 11.1 *Arguments for the %STMBMF Macro*

Argument	Description	Required
Required Arguments		
action	A value that indicates which action you want to perform: GET, MODIFY, or CREATE.	Yes

Argument	Description	Required
user	A valid SAS ID for the Strategy Management application. The user must have sufficient permissions to create and modify Strategy Management data. Membership in the SAS Strategy Management Users Group is sufficient. You can assign a user to this group by using SAS Management Console. The user must also be assigned the appropriate BMF capabilities. For information, see "Securing Access to SAS Strategy Management" on page 24. **Note:** If you want this user ID to receive e-mail notifications from BMF, the user ID must have e-mail enabled. This user ID setting must be set in SAS Management Console.	Yes
pw	The password for that user.	Yes
templatename	The name of the Strategy Management template that you want to work with.	Required if project_id is not specified or if action=CREATE.
projectname	The name of the Strategy Management project that you want to work with.	Required if project_id is not specified or if action=CREATE.
project_id	The UUID of the project that is being used for a GET or MODIFY action. **Note:** Do not specify the TEMPLATENAME or PROJECTNAME arguments if specifying PROJECT_ID.	Required if TEMPLATENAME and PROJECTNAME are not specified.
outputdir	The name of a directory in which BMF can create output files.	Yes
Input Data Arguments for Using CSV Files **Note:** You can specify either CSV files or SAS data sets. However, you cannot specify *both* CSV files and SAS data sets in a macro invocation.		
setup	The setup file that contains information about the template, template permissions, element types, metric attributes, column formatting, and attribute definitions.	Required if INPUTDIR is not specified and the following actions are specified: ■ action=MODIFY and you are modifying strategy management objects that are contained in this file ■ action=CREATE and you are using this file to create a template and template objects
project	The project file that contains information about the project and project permissions.	Required if INPUTDIR is not specified and the following actions are specified: ■ action=MODIFY and you are modifying strategy management objects that are contained in this file ■ action=CREATE and you are using this file to create a project

Argument	Description	Required
range	The range file that contains information about project ranges and range intervals.	Required if INPUTDIR is not specified and the following actions are specified: ■ action=MODIFY and you are modifying strategy management objects that are contained in this file ■ action=CREATE and you are using this file to create ranges
scorecard	The scorecard file that contains information about project scorecards.	Required if INPUTDIR is not specified and the following actions are specified: ■ action=MODIFY and you are modifying strategy management objects that are contained in this file ■ action=CREATE and you are using this file to create scorecards
element	The element file that contains information about elements, both project and scorecard level.	Required if INPUTDIR is not specified and the following actions are specified: ■ action=MODIFY and you are modifying strategy management objects that are contained in this file ■ action=CREATE and you are using this file to create elements
attribute	The attribute file that contains information about the attributes of each element.	Required if INPUTDIR is not specified and the following actions are specified: ■ action=MODIFY and you are modifying strategy management objects that are contained in this file ■ action=CREATE and you are using this file to create element attributes
cell	The cell file that contains information about the cells of each element.	Required if INPUTDIR is not specified and the following actions are specified: ■ action=MODIFY and you are modifying strategy management objects that are contained in this file ■ action=CREATE and you are using this file to create cells
cellformat	The cell format file that contains information about the cell formats of each cell.	Required if INPUTDIR is not specified and the following actions are specified: ■ action=MODIFY and you are modifying strategy management objects that are contained in this file ■ action=CREATE and you are using this file to create cell formats
link	The link file that contains information about the links that are associated with an element cell value.	Required if INPUTDIR is not specified and the following actions are specified: ■ action=MODIFY and you are modifying strategy management objects that are contained in this file ■ action=CREATE and you are using this file to create links

Argument	Description	Required
diagram	The diagrams file that contains information about the project diagrams.	Optional if action=MODIFY. **Note:** This is an XML file and it should not be modified. However, the unmodified XML file is required to migrate projects containing diagrams.
quickentry	The file that contains quick entry data. For more information, see Chapter 19, "Modifying an Existing Project and Its Data Using Quick-Entry Mode," on page 163.	Required if you specify the QUICKENTRYMODE argument with a value of YES.
inputdir	The name of a directory in which BMF can locate input files. Use this argument to specify the directory in which all the input CSV files are located. For more information, see Chapter 13, "Setting Up Your Data Files," on page 101.	Required if you do not specify your CSV files individually, PROJECT_ID is not specified, and action=MODIFY or CREATE.
Input Data Arguments for Using SAS Data Set Files **Note:** You can specify either CSV files or SAS data sets. However, you cannot specify *both* CSV files and SAS data sets in a macro invocation.		
setupds	The setup data set that contains information about the template, template permissions, element types, metric attributes, column formatting, and attribute definitions.	Required if INPUTDSLIB is not specified and the following actions are specified: ■ action=MODIFY and you are modifying strategy management objects that are contained in this file ■ action=CREATE and you are using this file to create a template and template objects
projectds	The project data set that contains information about the project and project permissions.	Required if INPUTDSLIB is not specified and the following actions are specified: ■ action=MODIFY and you are modifying strategy management objects that are contained in this file ■ action=CREATE and you are using this file to create a project
rangeds	The range data set that contains information about project ranges and range intervals.	Required if INPUTDSLIB is not specified and the following actions are specified: ■ action=MODIFY and you are modifying strategy management objects that are contained in this file ■ action=CREATE and you are using this file to create ranges
scorecardds	The scorecard data set that contains information about project scorecards.	Required if INPUTDSLIB is not specified and the following actions are specified: ■ action=MODIFY and you are modifying strategy management objects that are contained in this file ■ action=CREATE and you are using this file to create scorecards

Argument	Description	Required
elementds	The element data set that contains information about elements, both project and scorecard level.	Required if INPUTDSLIB is not specified and the following actions are specified: ■ action=MODIFY and you are modifying strategy management objects that are contained in this file ■ action=CREATE and you are using this file to create elements
attributeds	The attribute data set that contains information about the attributes of each element.	Required if INPUTDSLIB is not specified and the following actions are specified: ■ action=MODIFY and you are modifying strategy management objects that are contained in this file ■ action=CREATE and you are using this file to create element attributes
cellds	The cell data set that contains information about the cells of each element.	Required if INPUTDSLIB is not specified and the following actions are specified: ■ action=MODIFY and you are modifying strategy management objects that are contained in this file ■ action=CREATE and you are using this file to create cells
cellformatds	The cell format data set that contains information about the cell formats of each cell.	Required if INPUTDSLIB is not specified and the following actions are specified: ■ action=MODIFY and you are modifying strategy management objects that are contained in this file ■ action=CREATE and you are using this file to create cell formats
linkds	The link file that contains information about the links that are associated with an element cell value.	Required if INPUTDSLIB is not specified and the following actions are specified: ■ action=MODIFY and you are modifying strategy management objects that are contained in this file ■ action=CREATE and you are using this file to create links
outputdslib	The SAS library in which the output SAS data sets are stored. For more information, see “Writing Data into SAS Data Sets” on page 158. **Note:** For more information, see “determine the folder locations to specify for BMF.” on page 96.	Required if action=GET and you want SAS data sets instead of CSV files for your output. This argument is valid only when using BMF synchronously. See “Providing Output to Another Program” on page 159.
converteddsdir	The directory in which the CSV files that are converted from the input SAS data sets are written. **Note:** For more information, see “determine the folder locations to specify for BMF.” on page 96.	Required if action=MODIFY or CREATE and specifying SAS data sets as input, either individually or using the INPUTDSLIB argument.

Argument	Description	Required
inputdslib	The name of a directory in which BMF can locate input data sets. Use this argument to specify the directory in which all the input data sets are located. For more information, see Chapter 13, “Setting Up Your Data Files,” on page 101.	Required if you do not specify your SAS data sets individually, PROJECT_ID is not specified, and action=MODIFY or CREATE.
quickentryds	The data set used for quick entry data. For more information, see Chapter 19, “Modifying an Existing Project and Its Data Using Quick-Entry Mode,” on page 163.	Required if you specify the QUICKENTRYMODE argument with a value of YES.
Optional Arguments		
filter	A CSV file that specifies filter data for BMF GET actions. For more information, see “Filtering Output Returned by the BMF GET Action” on page 153.	Optional
filterds	A data set that specifies filter data for BMF GET actions. For more information, see “Filtering Output Returned by the BMF GET Action” on page 153.	Optional
migrate	A setting that indicates the specified project is being migrated. Valid values are `Yes` and `No`. The default value is No. For more information, see “Migrating a Project” on page 159.	Optional
quickentrymode	A setting that indicates to BMF that you are using the QUICKVALUES file for data input. Valid values are `Yes` and `No`. The default value is No. For more information, see Chapter 19, “Modifying an Existing Project and Its Data Using Quick-Entry Mode,” on page 163.	Optional
encoding	A value that specifies the Java supported character encoding used for the input data files. For more information, see “Specifying Character Encoding” on page 108.	Optional
integerkeywords	A setting that directs the BMF GET action to return data files that use integer values for keywords in the Keywords column. Valid values are `Yes` and `No`. The default value is No. For more information, see “Replacing Keywords with Integers in Data Files” on page 109.	Optional

Argument	Description	Required
synchronous	A setting that directs BMF to process its job synchronously. If set to synchronous, the macro waits for BMF to complete processing before allowing subsequent SAS statements to run. The following values are valid: ■ YES, Y, or 1 (synchronous) ■ NO (asynchronous) By default, BMF jobs are processed asynchronously. See "Providing Output to Another Program" on page 159. **Note:** In BMF 5.3, this argument replaced the EVENTNAME argument.	Optional
appendlocallog	A setting that directs BMF to append log output to the local log file instead of overwriting the log with each invocation. Valid values are `YES` and `NO`. The default value is NO. For more information, see "Saving the Local Log Information" on page 176.	Optional
importconfig	A setting that indicates to BMF that you are using an import configuration file for data input with the supplied UUID. The import configuration file is identified by the supplied UUID. The import configuration is already created by using the Import wizard in the Strategy Management Builder. BMF runs the import configuration in the same way as from the Import wizard. For more information, see "Import a Configuration" on page 161.	Optional
attachlocallog	A setting that directs BMF to attach the local log output to a notification e-mail. **Note:** The user ID that is specified in the USER argument must have e-mail enabled for the notification to succeed. For more information, see "Information to Get from Your SAS Administrator" on page 95. Valid values are `YES` and `NO`. By default, BMF does not attach the local log. For more information, see "Sending the Local Log by E-mail" on page 176.	Optional

12

Before You Use BMF

Overview

Before you identify and set up your data files, and use the BMF macro, there are questions that you need to answer and important information that you must locate. Make sure that you review the following sections before you proceed to use the BMF macro.

Information to Get from Your SAS Administrator

To use BMF successfully, obtain the following information from your SAS administrator.

that all prerequisites for SAS Strategy Management 5.4 are satisfied.
To use BMF, all prerequisites for SAS Strategy Management 5.4 must be satisfied. Consult with your administrator and *SAS Strategy Management 5.4: System Requirements* for information about prerequisites.

the location of the BMF macro in your installation
BMF is controlled by the %STMBMF macro that is distributed in the SAS Strategy Management application. This macro typically is located where the other SAS core macros are stored on your system. Contact your SAS administrator to determine this location or to find out whether the macro is in your autocall path.

which BMF macro to use.
The version of the macro is associated with the version of the SAS code on your application server. It is important to use the correct version.

Note: As of SAS Strategy Management 5.4, the macro has been renamed to %STMBMF. However, %SPMBMF still works.

the location of the SAS metadata server.
You will need this location when you submit the BMF macro.

ensure that your user permissions are sufficient to use BMF.
The BMF macro requires that you provide a valid SAS Strategy Management user name. BMF uses this name to log on to the SAS Strategy Management application and perform the tasks that you specify. This user name must have adequate permissions in order to perform the work.

You must be a member of the SAS Strategy Management Users group.

To ensure that the user name can perform all work, regardless of the ownership or permissions of any individual SAS Strategy Management object, the user must be a member of the following two groups:

- the Strategy Management Users group
- the Strategy Management Scorecard Modeler group

An administrator can make these assignments by using SAS Management Console. For information, see "Securing Access to SAS Strategy Management" on page 24.

ensure that your user capabilities are sufficient to use BMF.
You must be assigned the appropriate BMF capabilities. For example, if you want to use the BMF GET action, you must have the BMF GET capability.

An administrator can make these assignments by using SAS Management Console. For information, see "Securing Access to SAS Strategy Management" on page 24.

request that the user name be enabled to receive e-mail notifications from BMF.
(Optional) If you want the user name to receive e-mail notifications from BMF, the user name must have e-mail enabled. This user name setting must be set in SAS Management Console.

determine the folder locations to specify for BMF.
Typically, you want the output files written to a directory on the system that is running the SAS middle tier. However, the macro arguments are interpreted by the BMF that typically is running on a different system. Therefore, you must specify the output directory from the network perspective of the system that is running BMF.

The following table provides examples that use a Microsoft Windows network and a local system called MYCOMPUTER. The output directory is called **`C:\BMFFiles`**.

Note: You must make the specified output directory shareable and provide Write permission to the SAS middle tier. Contact your SAS administrator for more information.

System Running Your SAS Products	Output File Location	Argument Example
■ SAS client is running on your local system. ■ SAS Strategy Management and BMF are running on the SAS middle tier.	Written on the local system (MYCOMPUTER)	`OUTPUTDIR=\\MYCOMPUTER\BMFFiles`
SAS client, SAS Strategy Management, and BMF are all running on the SAS middle tier.	Written on the SAS middle tier.	`OUTPUTDIR=C:\BMFFiles`

Note: In some installations, the SAS middle tier might be running on a UNIX system. To store the data files on a UNIX system, make sure that you provide UNIX style path statements in the affected %STMBMF macro arguments.

Questions to Ask about Your Data

Think about your data and how you will use the affected SAS Strategy Management project.

What type of data files are you using?

BMF supports using either comma-separated-value (CSV) files or SAS data sets. However, you cannot use both types in the same macro invocation. You must make sure that all of the data that you want to use is in CSV files or in SAS data sets, not a mixture of the two.

For more information about data files requirements, see Chapter 13, “Setting Up Your Data Files,” on page 101.

Are you using SAS data sets?

If you are using SAS data sets, you must specify that the BMF job run synchronously.

See “Providing Output to Another Program” on page 159.

Does the affected SAS Strategy Management project and data require internationalization?

If you plan to use BMF in a language other than English, you must determine the character encoding that is used by your data files. You should also review how to use the input file keywords option provided by the BMF macro.

For more information, see “Data Files and Internationalization” on page 108.

Do you need to filter the output data from BMF?

By default, the BMF GET action returns *all associated data* from a specified SAS Strategy Management template and project. What if you do not need all of the data? For example, what if you want data from only one scorecard? BMF enables you to specify that you receive only that data.

For more information, see “Filtering Output Returned by the BMF GET Action” on page 153.

Do you need BMF to provide output to another program?

If you want a BMF job to be part of another program and the program logic requires the output from the BMF job before proceeding, you must specify that the BMF job run synchronously.

See “Providing Output to Another Program” on page 159.

Note: Typically, this requirement also affects BMF jobs that are used in SAS Data Integration Studio. For more information, see Chapter 20, “Using BMF with SAS Data Integration Studio,” on page 171.

Are you using BMF to import data into SAS Strategy Management by using an import configuration file?

The import configuration file must already exist and you must have the import configuration file ID.

For more information, see “Import a Configuration” on page 161.

How Much BMF Functionality Do You Need?

When using BMF, the most used action is MODIFY. BMF provides the quick-entry option that enables you to use quick-entry mode. Quick-entry mode provides a subset of the MODIFY action support.

Use Quick-Entry Mode	Use the Standard BMF Mode
■ You want to create scorecards, elements, and cell values. ■ You want to change or delete cell values. ■ You prefer not to work with UUIDs. ■ You can accept somewhat slower throughput performance than regular BMF.	You want to create a SAS Strategy Management template, project, ranges, cell formats, or attributes. Use either the BMF CREATE action or the BMF MODIFY action.

Quick-entry mode uses one input file. Each line in the file refers to a specific scorecard, element, and cell. BMF uses the numeric value that is supplied in a column in this file to replace or create the value that is pointed to by the scorecard and element. No UUID values are used in this file. For detailed information and examples of using quick-entry mode, see Chapter 19, “Modifying an Existing Project and Its Data Using Quick-Entry Mode,” on page 163.

Define the BMF Macro to the SAS Client

Before you can use the BMF macro, you must make sure that the SAS client can find the macro.

TIP This step is required only once during a SAS client session.

To define the macro:

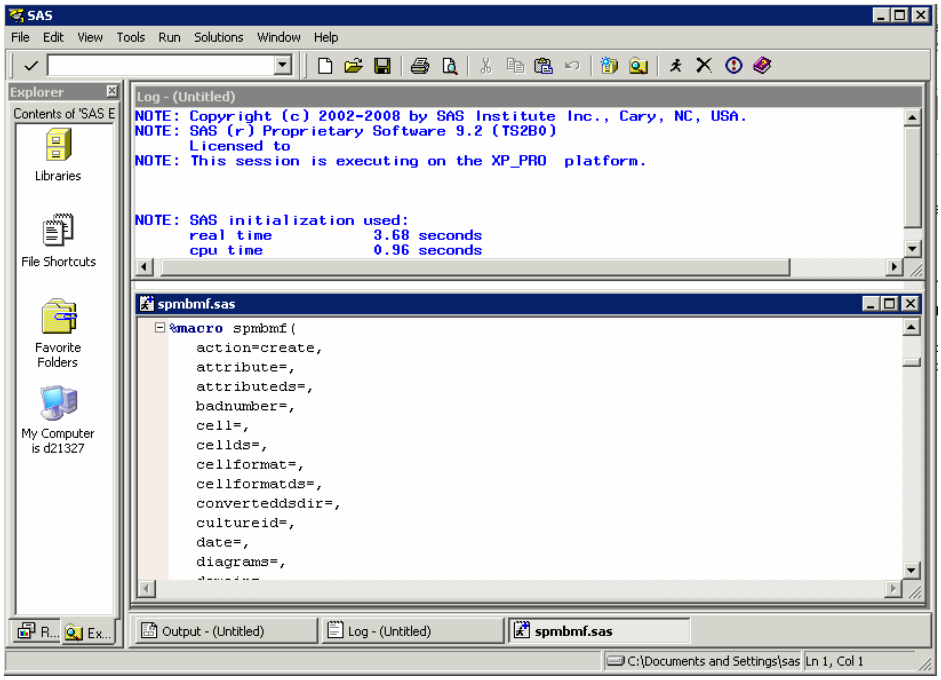
1 Start a SAS client session. The SAS Display Manager appears.

2 In the Program Editor window, enter the macro without any arguments: `%STMBMF();`.

If the macro is found, an error message about missing arguments appears. Go to step 3.

If the macro is not found, error messages appear about the macro invocation failing to resolve and about the statement not being valid. To resolve the problem, you must define the macro to SAS. Copy the macro into a Program

Editor window.



Submit the macro to SAS. The SAS log reports that the macro was read.

Note: This step is required only once during a SAS client session.

3 Enter and submit the following code into the Program Editor window:

```
options metaserver=server  metaport=8561 metarepository=Foundation;
```

where *server* is the value for your metadata server.

Note: If you do not submit this global SAS options statement, you are prompted for this information after you run the BMF macro.

4 (Optional) If you want extra debugging statements to be written to the SAS log, submit the following code:

```
%let debug=Y
```

You are now ready to invoke the %STMBMF macro.

13

Setting Up Your Data Files

Overview

Where Do You Want the Data to Go?

How you set up your data depends on where you need to put the data. Do you need to take the data out of SAS Strategy Management or put it into SAS Strategy Management?

Putting Data into SAS Strategy Management

You might use BMF to put data into SAS Strategy Management to solve the following problems:

- You have regular or monthly updates of data that you want to add to a project.
- You want to add scorecards and data for new geographies to an existing project.
- You have data from another SAS program that you want to use in a new corporate strategy.

In these situations, you want to set up your data by using the data model that SAS Strategy Management expects.

- You can create CSV files by using an application such as Microsoft Excel, Perl, or Notepad.

- You can acquire SAS data sets from another SAS program and transform the data sets to use the SAS Strategy Management data model.
- You can acquire CSV files from another program and transform the files to use the SAS Strategy Management data model.
- You can extract data from a database and create either CSV files or SAS data sets that use the SAS Strategy Management data model.

Getting Data from SAS Strategy Management

You might use BMF to get data from SAS Strategy Management to solve the following problems:

- You want to modify an existing SAS Strategy Management template or project.
- You want to analyze the SAS Strategy Management data by using another SAS program.
- You want to learn how to use BMF by using a project with a small set of data.

In these situations, you want to set up your data in the following ways:

- Use the BMF GET action to get your data and then use the BMF MODIFY action to modify the data.

  Note: Modifying an existing template or project can include creating new values with cells or creating new links. If you want to create a new SAS Strategy Management project and its data *as a whole*, use the BMF CREATE action.

- Use the BMF GET action to get data from an existing SAS Strategy Management project.

  TIP This is the easiest way to set up your data. If you want to practice using BMF, use BMF GET to set up your test data.

Data File Requirements

Overview

The data files must comply with the data model required by BMF.

- See Appendix 3, “Data Model for the GET and MODIFY Actions,” on page 191 for more information about required column order and column content when you are using the GET and MODIFY actions.
- See Appendix 4, “Data Model for the CREATE Action,” on page 217 for information about required column order and column content when you are using the CREATE action.

In the data files, each row must meet one of the following requirements:

- contain column headings. A column heading row is defined as a row where the first column contains the word KEYWORD.
- represent the data in a Strategy Management object.
- be blank. A blank row is ignored when it is processed.

CSV Files

Requirements

When you are working with CSV data files, remember the following requirements:

- To specify embedded commas in a column value in a CSV file, you must enclose the entire value in quotation marks. For example, a scorecard that is named Time,Mileage must be specified as `"Time,Mileage"` in the CSV file.
- To specify embedded quotation marks in a column value in a CSV file, you must enclose the entire value in two sets of quotation marks. For example, an element that is named "My Element" must be specified as `"""My Element"""` in the CSV file.

  TIP When in doubt about how use quotation marks in your data, enter a data row into Microsoft Excel and then save the spreadsheet as a CSV file. Excel correctly formats the data row.

- The data type for all columns of all input CSV files is string. If you are using Microsoft Excel, be aware that the resulting CSV file shows the string representation of the data in each cell.
- Excel converts dates to its own internal format. It does not display the SAS date format.

  TIP You can apply a custom format to the date, save the file, and BMF will process the file successfully. However, when you open the file in Excel again, the custom formatting is lost. You must apply the custom format to the file again.

- Each data file has a required number of columns. The columns must be present even if the column is empty because the data is optional. There must be a placeholder comma for all of the columns for each row.
- When you specify access permissions, you are *replacing* the access permissions that are in effect for the object, *not* adding to them. For example, if you set an access permission of Update (U) for a scorecard and then run BMF after specifying an access permission of Read (R), then the scorecard has a resulting access permission of Read.
- Strategy Management uses universal unique identifiers (UUIDs) to identify objects. The BMF MODIFY action requires that you identify existing objects by using UUIDs, unless you are using the QUICKENTRYMODE argument. The BMF GET action returns the UUID values for most Strategy Management objects if that is how the objects are identified.

  You can find the UUID for many Strategy Management objects in the SAS Strategy Management Builder. Each object has its own properties. To see the properties, view the Properties page for an object. The UUID is labeled **Internal Identifier** on that page.
- When *creating* Strategy Management objects, you use integers called *reference numbers* to identify the objects. For some column data, you must make sure the data has been defined previously in the data model. This means that the object's definition must have occurred earlier in the data files than this current reference

to it. For more information, see Appendix 7, “Identifying New Strategy Management Objects,” on page 247.

Specifying CSV Files as Input to BMF

You can specify CSV files as input for the %STMBMF macro in the following ways:

- **Individually.** Use the SETUP, PROJECT, SCORECARD, RANGE, ELEMENT, ATTRIBUTE, CELL, CELLFORMAT, or LINK arguments to specify each CSV file.
- **As a group.** Use the INPUTDIR argument to specify a directory in which all the CSV files are located. BMF searches the specified directory for a subdirectory that uses the name that is specified by the TEMPLATENAME argument. If this subdirectory contains a file named *templatename*_Setup.csv, where *templatename* is specified by the TEMPLATENAME argument, that CSV file is used. If the subdirectory contains a subdirectory that uses the name specified by the PROJECTNAME argument and that subdirectory contains the following CSV files, these files are used as input files:
  - *projectname*_Attribute.csv
  - *projectname*_Cell.csv
  - *projectname*_CellFormat.csv
  - *projectname*_Diagrams.xml
  - *projectname*_Element.csv
  - *projectname*_Link.csv
  - *projectname*_Project.csv
  - *projectname*_Range.csv
  - *projectname*_Scorecard.csv

  Note: The CSV files must be named correctly.
- **Individually and as a group.** A CSV file in the directory that is specified by the INPUTDIR argument is used only if an analogous CSV file is *not specified individually*. For example, although a file named *projectname*_Scorecard.csv is present in the specified directory, the file is not used if you specify a CSV file using the SCORECARD argument.

SAS Data Sets

Requirements

When working with SAS data set files, remember the following requirements:

- You must run BMF synchronously for any invocation involving SAS data sets.
- If you are using the MODIFY or CREATE action, you must specify the CONVERTEDDSDIR argument. Because the BMF code on the server can read only CSV files, the BMF macro must convert the SAS data sets to CSV files. The CONVERTEDDSDIR argument specifies the writeable location where the STMBMF macro can convert the SAS data sets to CSV files.

TIP You can specify the same location for this argument that you specify for the OUTPUTDIR argument.

- Each data file has a required number of columns. The columns must be present even if the column is empty because the data is optional. There must be a placeholder comma for all of the columns for each row.
- When you specify access permissions, you are *replacing* the access permissions that are in effect for the object, *not* adding to them. For example, if you set an access permission of Update (U) for a scorecard and then run BMF after specifying an access permission of Read (R), then the scorecard has a resulting access permission of Read.
- Strategy Management uses universal unique identifiers (UUIDs) to identify objects. The BMF MODIFY action requires that you identify existing objects by using UUIDs, unless you are using the QUICKENTRYMODE argument. The BMF GET action returns the UUID values for most Strategy Management objects if that is how the objects are identified.

  You can find the UUID for many Strategy Management objects in the SAS Strategy Management Builder. Each object has its own properties. To see the properties, view the Properties page for an object. The UUID is labeled **Internal Identifier** on that page.
- When *creating* Strategy Management objects, you use integers called *reference numbers* to identify the objects. For some column data, you must make sure the data has been defined previously in the data model. This means that the object's definition must have occurred earlier in the data files than this current reference to it. For more information, see Appendix 7, “Identifying New Strategy Management Objects,” on page 247.

Specifying SAS Data Sets as Input to BMF

You can specify SAS data sets as input for the %STMBMF macro in the following ways:

- **Individually.** Use the SETUPDS, PROJECTDS, SCORECARDDS, RANGEDS, ELEMENTDS, ATTRIBUTEDS, CELLDS, CELLFORMATDS, or LINKDS arguments to specify each data set.
- **As a group.** Use the INPUTDSLIB argument to specify a library in which all the data sets are located. BMF searches the specified library for a file named *templatename*_Setup, where *templatename* is specified by the TEMPLATENAME argument. If the library contains this setup file and the following data sets, these data sets are used as input:
  - *projectname*_Attribute
  - *projectname*_Cell
  - *projectname*_CellFormat
  - *projectname*_Element
  - *projectname*_Link
  - *projectname*_Project
  - *projectname*_Range
  - *projectname*_Scorecard

  In SAS data set names, *projectname* is specified by the PROJECTNAME argument.

  Note: The SAS data sets must be named correctly.

- **Individually and as a group.** A SAS data set in the library that is specified by the INPUTDSLIB argument is used only if an analogous data set is *not specified individually*. For example, although a data set named *projectname*_Scorecard is present in the specified library, the data set is not used if you specify a data set using the SCORECARDDS argument.

Example: Create SAS Data Set Input for BMF

The following example shows how to create SAS data sets to use as input for the BMF macro. The example uses the following assumptions:

- the SAS client session is running on Windows.
- a shareable folder exists at **C:\public**.

1 Create a library in a location that the SAS Application Server can find. In the SAS client, submit a LIBNAME statement:

```
libname dsets "c:\public";
```

2 Create a template and its contents by creating a Setup data set. When you are creating a SAS data set, note the following considerations:

   - The name of the SAS data set is not important.
   - All the variables are created as character variables.
   - You can create more variables than some of the input rows require. For example, the TEMPLATE row requires only three columns of data. However, you can set all of the other variables to be empty strings. After you set the variable values, the BMF macro includes each row of data in the output.

   After you submit the following statements, the SAS data sets are created in **C:\public**.

```
data dsets.setup;
length var1 $ 40 var2 $ 8 var3 $ 40 var4 $ 60 var5 $ 60 var6 $ 60 var7
$ 60 var8 $ 60 var9 $ 60 var10 $ 60 var11 $ 60 var12 $ 60;

var1="TEMPLATE";
var2="1";
var3="MyNewTemplate";
var4="";
var5="";
var6="";
var7="";
var8="";
var9="";
var10="";
var11="";
var12="";
output;

var1="ELEMENT TYPE";
var2="1";
var3="ScorecardET";
var4="Scorecard ET Description";
var5="SCORECARD";
var6="/Lightbulb.gif";
var7="00FFFF";
```

```
var8="B0E0E6";
var9="diamond";
var10="";
var11="";
var12="";
output;

var1="METRIC ATTRIBUTE";
var2="1";
var3="FooMetric1";
var4="_NUM_SAS_NUMX";
var5="Number";
var6="";
var7="";
var8="";
var9="";
var10="";
var11="";
var12="";
output;

var1="ATTRIBUTE DEFINITION";
var2="1";
var3="1";
var4="MyText";
var5="Text Description";
var6="TEXT";
var7="0";
var8="NO";
var9="";
var10="";
var11="";
var12="";
output;

run;
```

3 Depending on your task, you might create multiple SAS data sets. In this example, the additional SAS data sets might include one for the project, one for scorecards, one for elements, and so on.

4 Submit the BMF macro by using the SAS data sets that you have created:

```
%stmbmf(action=create,
          user=sasdemo,
          pw=<password>,
          templatename=MyNewTemplate,
          projectname=MyNewProject,

          setupds=dsets.setup,
          projectds=dsets.project,
          scorecardds=dsets.scorecard,
          elementds=dsets.elements,
          attributeds=dsets.attribute,
              cellds=dsets.cell,

          converteddsdir=\\<my_computer_network_path>\public,
```

```
synchronous=yes,

outputdir=\\<my_computer_network_path>\public
);
```

The Diagram File

The BMF GET action creates a diagram data file if the project contains diagrams. The BMF GET action provides the only way to create a diagram data file. The data file that is returned is an XML file. The file contains XML nodes that represent diagrams. These diagrams are project- and possibly scorecard-specific. You cannot insert these diagrams into a project other than the one in which the diagrams were originally created (that is, one that has the identical UUID for project and scorecard).

CAUTION! Do not edit the diagram file. Editing the file can corrupt it.

The Range File

For information about the structure of the range file and how to create a range file, see Chapter 17, “Using Ranges in BMF,” on page 145.

Data Files and Internationalization

Specifying Character Encoding

BMF and Its Default Encoding

When you create text files, the files are saved using a specific character encoding (character set). Likewise, when a text file is displayed by software such as a text editor or word processor, the file contents are displayed using a character set. Typically, the user’s location determines the character set that is used. For example, in the United States, files are often created and displayed using the ASCII character set. In China, files might be created using Simplified Chinese.

By default, the files that are generated by BMF use UTF-8 encoding. BMF uses the UTF-8 character set internally, as does the Java language in which BMF is written. UTF-8 can display many characters that ASCII cannot display, including characters with additional glyphs such as the grave, acute, or circumflex.

When you create new data files (for use with BMF CREATE) or update data files generated by BMF (for use with BMF MODIFY), you must do one of the following to ensure that BMF can process the data files and any special characters:

- create and save the file by using the UTF-8 character set. BMF opens the data files by using UTF-8 character encoding. The data files are standard text files that do not contain any binary data.

  CAUTION! Do not edit data files by using word processor software. If you want to use special characters, either ensure that your software can save the files in the UTF-8 format or use the ENCODING argument to specify the character encoding that is being used.

- specify the character set used to create the file. The BMF macro provides the ENCODING argument for this purpose.

Using the ENCODING Argument

BMF enables you to create input files with a specific character set by using the ENCODING argument. BMF uses this information to open the data input files by using the specified encoding and to read the data by using Java I/O methods. These Java methods convert the data internally to UTF-8 encoding.

CAUTION! You must specify the correct name in the ENCODING argument for your character encoding. Any encoding name that is not recognized by Java causes BMF to unexpectedly end and to report a message indicating an unsupported encoding. If you specify a correct encoding name, but do not provide input data files that were created correctly with the specified encoding, BMF cannot detect the problem and produces unexpected results. For supported encoding names, see the Java documentation at `http://docs.oracle.com/javase/1.3/docs/guide/intl/encoding.doc.html`.

Determining Whether a File Uses the UTF-8 Character Set

Overview

Most editing software provides a way to determine how a file was created. You can use either of the following methods to determine whether your input file uses the UTF-8 character set.

Identify the Character Set with Microsoft Word

To determine whether a file uses the UTF-8 character set, open the file in Word. The File Conversion window appears. If the file uses UTF-8, **Other encoding** is selected and **Unicode (UTF8)** is selected in the list.

If the file does not use the UTF-8 character set and contains characters that the default character encoding setting in Word cannot display, the File Conversion window appears without any selection in the **Other encoding** list.

Identify the Character Set with TextPad

To identify the character set of a file:

1. Open the file in TextPad.
2. Click **View** ▸ **Document Properties**.
3. Click the **Document** tab.

The **Code Set** field identifies the character set that the file uses.

Replacing Keywords with Integers in Data Files

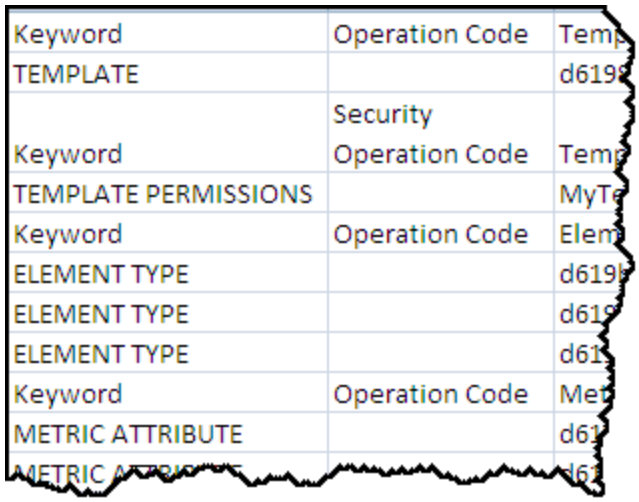
BMF uses the concept of keywords in its input data files to indicate how BMF should act upon the data on each line. For example, the input files for template data (Setup files), projects, and ranges use keywords in the first column to tell BMF what type of

data the rest of the row contains. Keywords are also used to indicate values such as colors, link types, and other information.

These keywords are in English, and many BMF users do not use English. To accommodate non-English users, the BMF macro provides the INTEGERKEYWORDS argument. By default, BMF returns data files with keywords. However, if you specify `integerkeywords=yes`, BMF returns integer values instead. The following example of the BMF macro shows this new argument:

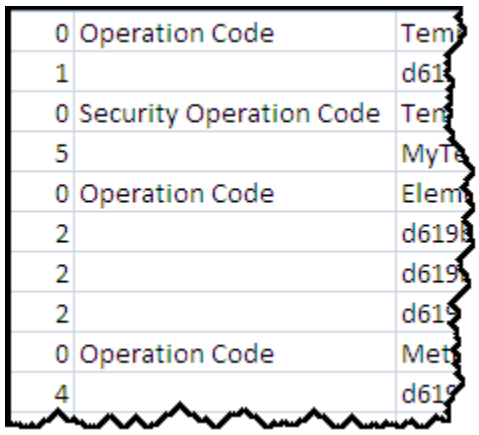
```
%stmbmf(action=GET,
        user=sasdemo,
        pw=DemoDemo1,
        templatename=MyTemplate,
        projectname=MyProject,
        outputdir=\\mypublic\public
        integerkeywords=yes
        );
```

The following figure shows a Setup file returned by BMF GET. The file uses keywords in the first column, and they are in English.



Keyword	Operation Code	Tem
TEMPLATE		d619
Keyword	Security Operation Code	Tem
TEMPLATE PERMISSIONS		MyTe
Keyword	Operation Code	Elem
ELEMENT TYPE		d619
ELEMENT TYPE		d619
ELEMENT TYPE		d61
Keyword	Operation Code	Met
METRIC ATTRIBUTE		d61
METRIC ATTRIBUTE		d61

The following figure shows the same Setup file, but with integers in the first column.



0	Operation Code	Tem
1		d61
0	Security Operation Code	Tem
5		MyTe
0	Operation Code	Elem
2		d619
2		d619
2		d61
0	Operation Code	Met
4		d61

TIP BMF accepts either keywords or integers. However, you cannot use a mixture of both.

For more information about integers and their associated keywords, see the following topics:

See Also

- Appendix 3, “Data Model for the GET and MODIFY Actions,” on page 191
- Appendix 4, “Data Model for the CREATE Action,” on page 217
- Appendix 6, “Data Model Keywords,” on page 237

14

Getting a Project and Its Data

Example Data in SAS Strategy Management Builder

With the BMF GET action, you can get some or all of the SAS Strategy Management project data and write the data into comma-separated-value (CSV) files or SAS data sets.For information about the data files that are created by BMF GET, see"How the BMF Macro Processes the GET Action" on page 115.

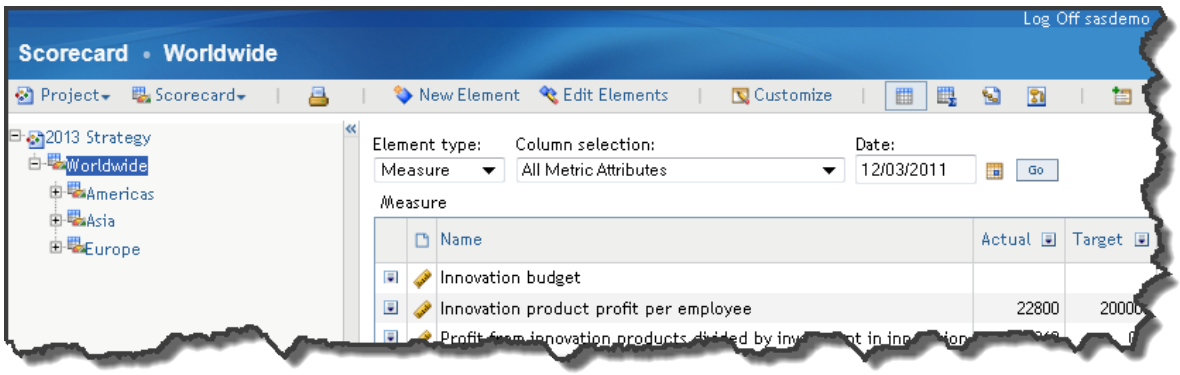
TIP Typically, you do not use the GET action to set up data for BMF. However, for the purposes of explaining the macro, this simple example does use the GET action to set up data.

The example in this chapter describes how to get the data from an existing template named Strategy and from a project named 2013 Strategy. The example writes the data into CSV files.

Display 14.1 *Strategy and 2013 Strategy Displayed in the Strategy Management Builder*

The project contains three scorecards. Each scorecard contains elements and cell values for the period of December 2011.

Display 14.2 *2013 Strategy and Its Scorecards Displayed in the Strategy Management Builder*



In this example, the BMF GET action gets the data and creates CSV files on a local computer named MYCOMPUTER. Then the files are saved in the `C:\public` directory on the local computer.

Invoke the Macro

To invoke the BMF GET action, you must specify the macro arguments that are listed in the following table.

TIP Before you can invoke the %STMBMF macro, ensure that you have defined the macro to the SAS client. See "Define the BMF Macro to the SAS Client" on page 98.

Argument	Value
ACTION	GET
USER	The user ID for a SAS user. **Note:** The user ID that is specified in the USER argument must have e-mail enabled for the notification to succeed. For more information, see "Information to Get from Your SAS Administrator" on page 95.
PW	The password for a SAS user.
TEMPLATENAME	The template that BMF will work with. BMF works with one template at a time.
PROJECTNAME	The project that BMF will work with. BMF works with one project at a time.

Argument	Value
OUTPUTDIR	Where to write the output data files. For more information, see "determine the folder locations to specify for BMF." on page 96. **Note:** By default the files that BMF creates are comma-separated-value (CSV) files. However, BMF can create SAS data sets for each object type. For more information, see "Writing Data into SAS Data Sets" on page 158.

The following macro statement shows the argument values for this example:

```
%STMBMF(action=get,
        user=sasdemo,
        pw=DemoDemo1,
        templatename=Strategy,
        projectname=2013 Strategy,
        outputdir=\\MYCOMPUTER\public
        );
```

Submit the macro statement to the SAS client. To confirm that the command was successfully sent to the SAS middle tier and to the BMF system, view the SAS log and locate the following messages:

```
NOTE: Event begin successful.
NOTE: Event body successful.
NOTE: Event publish successful.
NOTE: Event end successful.
NOTE: DATA statement used (Total process time):
        real time                0.12. seconds
        cpu time                    0.00 seconds

NOTE: Event SAS.Solutions.SpmBOBInterface published successfully.
NOTE: STMBMF 5.4 has ended but some STMBMF processes may still be running
asynchronously.
```

How the BMF Macro Processes the GET Action

Sending Notification

When the command completes processing on the SAS middle tier, an e-mail notification is generated by SAS Management Console and is sent to the specified user (in this example, sasdemo). The e-mail indicates that the command was completed and reports how long the process took.

Note: If you want the user to receive e-mail notifications when the BMF jobs are completed, make sure that the specified user ID has been enabled to receive e-mail. This setting is set in SAS Management Console.

Creating the Output Directories

The CSV files that contain the data for Strategy and 2013 Strategy are written to the directory `\\MYCOMPUTER\public`.

BMF creates two directories to organize the returned data files:

- **Template.** This directory contains the template data in a file named *templatename*_Setup.csv. In this example, the file is called Strategy_Setup.csv.
- **Project.** This is a subdirectory of `Template`. The `Project` directory contains all of the remaining data files.

Creating the Data Files

Depending on the options that you use when you invoke BMF GET, several more files are created in addition to *templatename*_Setup.csv. When you review your data files, remember the following considerations:

- Typically, one file is created for each SAS Strategy Management object type. However, some files contain multiple related objects. For more information, see "Understanding the Data File Structure" on page 117.
- The GET action creates data files only for objects that are contained in the project. For example, if the project does not contain any diagrams, ranges, or links, then these files are not created.
- If you use the GET action for a project that is new or that does not contain any data in SAS Strategy Management, only the template and setup data files are created.
- You can specify that the GET action return a subset of the data in a project. For more information, see "Filtering Output Returned by the BMF GET Action" on page 153.
- The data files are named *projectname_dataType*.csv. In this example, the project data file is named 2013 Strategy_Project.csv. For more information, see "Data File Requirements" on page 102.

The following table lists the possible data type files that are created by BMF GET.

Data Type Files	Description
Setup	Contains information about the template, template permissions, element types, metric attributes, column formatting, and attribute definitions.
Project	Contains information about the project and project permissions.
Range	Contains information about project ranges and range intervals.
Scorecard	Contains information about project scorecards.
Element	Contains information about elements, both project and scorecard level.
Element attribute	Contains information about the attributes of each element.
Cell	Contains information about the cells of each element.

Data Type Files	Description
Cell format	Contains information about the cell formats of each cell.
Diagram	An XML file. Contains information that describes the project diagrams.
Link	Contains information about the links associated with an element.

Understanding the Data File Structure

The Setup, Project, Range, and Link files contain more than one object type, but the objects are all related. For example, the Setup file contains data for the template, template permissions, element types, metric attributes, and attribute definitions. All of this data is contained in the template. The other files contain only data for that object type.

Within each data file are multiple rows and columns of text. Each row represents one SAS Strategy Management object, and each column represents the data values of that object. For example, the following figure shows an excerpt of a scorecard CSV file displayed in Microsoft Excel.

Figure 14.1 *Scorecard CSV File Displayed in Microsoft Excel*

Scorecard ID	Scorecard Name	Scorecard Parent ID	Own
48e1723a-0a10-1105-37b0-33a12824c981	Worldwide	0	sasd
48e1aafa-0a10-1105-37b0-33a16cfc9391	Americas	48e1723a-0a10-1105-37b0-33a12824c981	sasd
48e1d2c3-0a10-1105-37b0-33a19105b5e5	Canada	48e1aafa-0a10-1105-37b0-33a16cfc9391	sasd
48e200fd-0a10-1105-37b0-33a1bd74020e	Latin America	48e1aafa-0a10-1105-37b0-33a16cfc9391	sasd

The files include column headings that describe the type of data that is contained in each column. The heading row is not used by BMF. The row is provided only for informational purposes. BMF uses the position of each column in the file to identify the data that the column contains.

TIP The output data files use the file format that is required by the BMF MODIFY action. That is, you can edit and use these files as input for a subsequent BMF MODIFY operation in order to modify the SAS Strategy Management data in a project. For more information, see Appendix 3, “Data Model for the GET and MODIFY Actions,” on page 191.

Note:

- Cells are components of elements and are where values for each period of the element are kept. When you view the SAS Strategy Management table view, a table of elements for a scorecard is displayed in the right pane. Depending on the display options that you have selected, the values for that element for a specific date and Metric Attribute column are displayed. A cell is defined as this value. The cell can be empty, set to a constant numeric value, or determined by a formula.

- These files are created in UTF-8 character encoding. If you have special characters in your SAS Strategy Management data and you want to use these files to modify that data, you must preserve this character encoding when you edit the files. Otherwise, you must use the ENCODING argument to specify the character encoding that is used. For more information, see “Specifying Character Encoding” on page 108.

15

Modifying an Existing Project and Its Data

Overview

Using the BMF MODIFY action, you can add, modify, or delete the SAS Strategy Management data in an existing project.

Modifying a Project By Using the BMF MODIFY Action

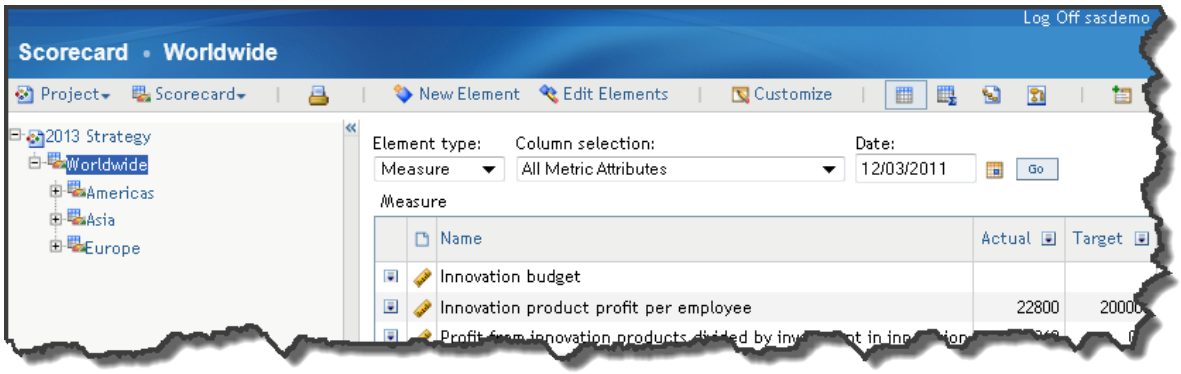
Overview

The following example builds upon the example that is used for the BMF GET action. From that example, use the template called Strategy and the project called 2013 Strategy. The example expects the files from the BMF GET action example to be on your local computer (MYCOMPUTER) and located in the directory `C:\public`. For more information about the BMF GET example, see “Invoke the Macro” on page 114.

Display 15.1 *Template and Project Used in the BMF GET Action Exercise*

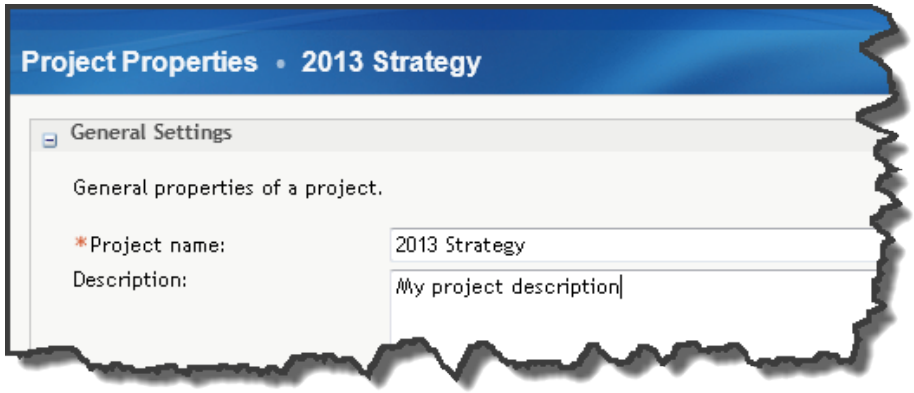
The project contains three scorecards. Each scorecard contains elements and cell values for the period of December 2011.

Display 15.2 *Scorecards Used in the BMF GET Action Exercise*

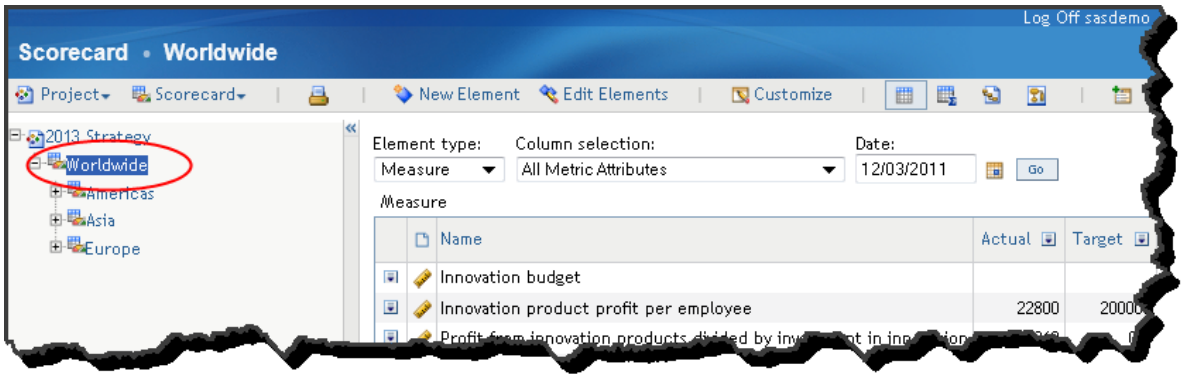


In this example, the following changes are implemented:

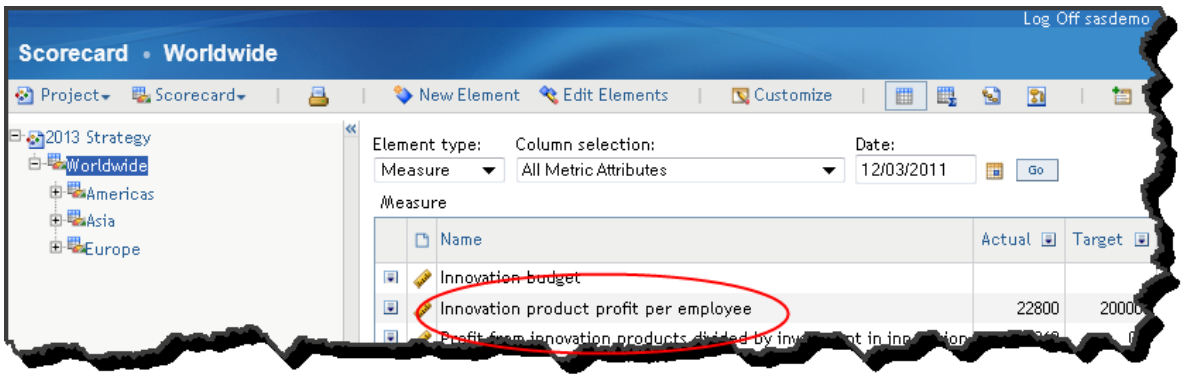
- Change the project description to `BMF Set This Description`.



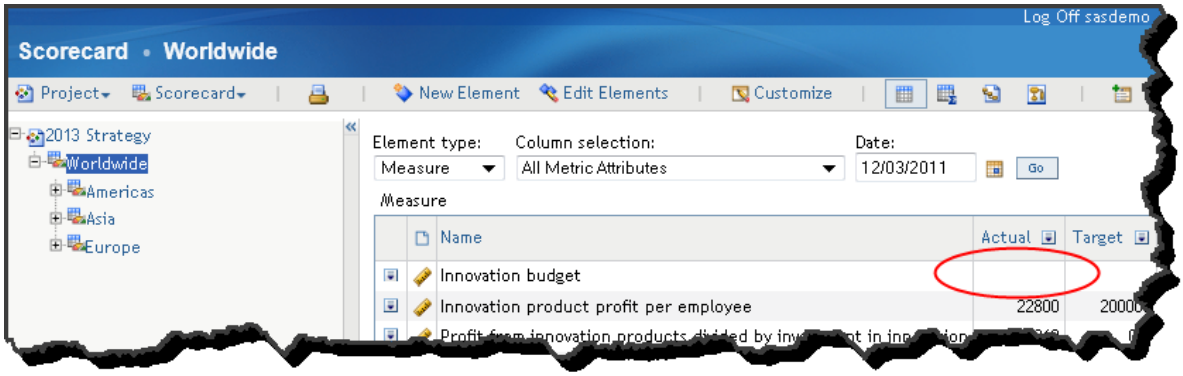
- Change the scorecard name from Worldwide to `Corporate`.



- Delete the element called **Innovation product profit per employee** from the Worldwide scorecard.



- In the Worldwide scorecard, add the value `43000` for the element called “Innovation budget” in the Actual column for the month of December 2011.



Edit the Affected Input Files

Copy the affected input files from the directory **C:\public\Strategy\2013 Strategy** to a new directory called **C:\public\inputfiles**.

Note: Ensure that BMF can find the new directory. For more information, see "determine the folder locations to specify for BMF." on page 96.

Files Required for the Example	Files from the GET Example
Project	2013 Strategy_Project.csv
Scorecard	2013 Strategy_Scorecard.csv
Element	2013 Strategy_Element.csv
Cell	2013 Strategy_Cell.csv

- To change the project description, open the file **C:\public\inputfiles\2013 Strategy_Project.csv** in Microsoft Excel or in a text editor. The Project file contains rows with different column formats. There is only one row with the GENERAL keyword. In this row, make the following changes:
  - In the Operation Code column, enter **1**, which is the value for modify.
  - In the New Project Description column, enter **BMF Set This Description**.
- To change the scorecard name, open the file **C:\public\inputfiles\2013 Strategy_Scorecard.csv** in Excel.

  Note: The scorecard file does not contain a Keyword column. Instead, the file has one row per scorecard in the project. The scorecard rows are in a specific order. If a scorecard has a dependency on another scorecard, the dependent scorecard row is located later in the file than the parent scorecard.

  In the row that contains Worldwide in the Scorecard Name column, make the following changes:
  - In the Operation Code column, enter **1**, which is the value for modify.
  - In the Scorecard Name column, change the scorecard name from Worldwide to **Corporate**.
- To delete the element called **Innovation product profit per employee** from Worldwide, open the file **C:\public\inputfiles\2013**

`Strategy_Element.csv` in Excel. In the row that contains **Innovation product profit per employee**, in the element Name column, enter `2` in the Operation Code column. This is the value for delete.

- To add the new value in Worldwide, open the file `C:\public\inputfiles\2013 Strategy_Cell.csv` in Excel. Copy the row for **Innovation budget**. In the new row, make the following changes:
  - In the Operation Code column, enter `3`, which is the value for add.
  - In the Metric Attribute (No Modify) column, change the value to `Actual`.

    Note: The notation (No Modify) in the column heading indicates that it is not valid to change the Metric Attribute value of a cell when you modify that cell's row.
  - In the Value column, change the value to `43000`.

Invoke the Macro

TIP Before you can invoke the %STMBMF macro, ensure that you have defined the macro to the SAS client. See "Define the BMF Macro to the SAS Client" on page 98.

To invoke the BMF MODIFY action, you must specify the following macro arguments:

Argument	Value
ACTION	MODIFY
USER	Specify the user ID for a SAS user. **Note:** The user ID that is specified in the USER argument must have e-mail enabled for the notification to succeed. For more information, see "Information to Get from Your SAS Administrator" on page 95.
PW	Specify the password for a SAS user.
TEMPLATENAME	BMF works with one template at a time. Specify the template.
PROJECTNAME	BMF works with one project at a time. Specify the project.
■ PROJECT ■ SCORECARD ■ ELEMENT ■ CELL	Specify the edited input data files, one for each type of SAS Strategy Management object that you want to modify. In this example, four SAS Strategy Management objects are being modified: PROJECT, SCORECARD, ELEMENT, and CELL. ■ You can specify any combination of input data files. ■ You are not required to specify every file, only the files that you need to perform your task. For information about data files, see Chapter 13, "Setting Up Your Data Files," on page 101. For more information, see "determine the folder locations to specify for BMF." on page 96.

Argument	Value
OUTPUTDIR	Specify where to write the output data files. For more information, see “determine the folder locations to specify for BMF.” on page 96. For more information about error files, see Chapter 21, “Debugging BMF,” on page 175.

The following macro statement shows the argument values for this example.

```
%STMBMF(action=modify,
        user=sasdemo,
        pw=DemoDemo1,
        templatename=Strategy,
        projectname=2013 Strategy,
        project=\\MYCOMPUTER\public\inputfiles\2013 Strategy_Project.csv,
        scorecard=\\MYCOMPUTER\public\inputfiles\2013 Strategy_Scorecard.csv,
        element=\\MYCOMPUTER\public\inputfiles\2013 Strategy_Element.csv,
        cell=\\MYCOMPUTER\public\inputfiles\2013 Strategy_Cell.csv,
        outputdir=\\MYCOMPUTER\public
        );
```

Submit the macro statement to the SAS client. To confirm that the command was successfully sent to the SAS middle tier and to the BMF system, view the SAS log and locate the following messages:

```
NOTE: Event begin successful.
NOTE: Event body successful.
NOTE: Event publish successful.
NOTE: Event end successful.
NOTE: DATA statement used (Total process time):
        real time                0.12. seconds
        cpu time                    0.00 seconds

NOTE: Event SAS.Solutions.SpmBOBInterface published successfully.
NOTE: STMBMF 5.4 has ended but some STMBMF processes may still be running
asynchronously.
```

For information, see “How the BMF Macro Processes the MODIFY Action” on page 124.

How the BMF Macro Processes the MODIFY Action

The BMF MODIFY action processes the input files in the following order.

Note: All of these file types might not be part of a specified job.

1. Template input file (setup file). This file is processed for any information about the template itself. This file is not processed for any information that it contains about the objects described in the template. (See item 2.) If an unrecoverable error is detected, BMF terminates the process and indicates that it failed.
2. Template objects. These objects include the template permissions, element types, metric attributes, and attribute definitions.
3. Project input file. If an unrecoverable error is detected, BMF terminates the process and indicates that it failed.
4. Ranges.

5 Links.

6 Scorecards.

7 Elements.

8 Element attributes.

9 Cells.

10 Cell formats.

11 Diagrams.

Each of these files is processed in its own database transaction. If an error is found for a specific data row in one of the files, BMF performs the following tasks:

- copies the affected row to a corresponding error file
- generates an error message in the BMF server-side log

If the error is not an unrecoverable error, BMF continues to process the files.

These objects have various dependencies that can generate errors. Consider the following example:

- You specify that a new scorecard be created. However, the creation fails.
- You specify a new element be created and that it belongs to the new scorecard.

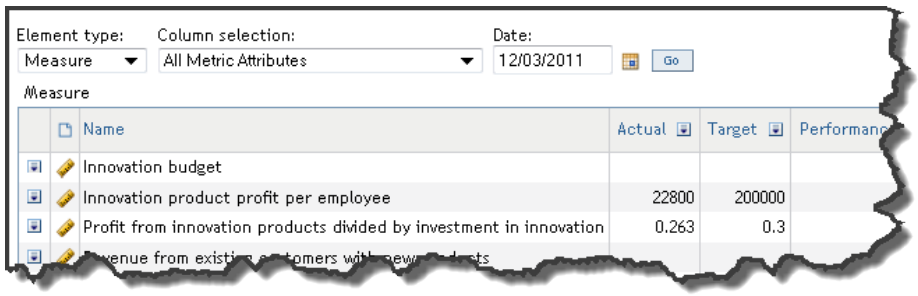
This example generates not one, but two errors. The first error is for the scorecard creation problem, and the second error is for creating an element in a scorecard that does not exist. For more information about error files, see Chapter 21, “Debugging BMF,” on page 175.

Modifying Values and Adding New Values in Cells

What Is a Cell?

The following figure shows a table of rows and columns in the scorecard called Worldwide.

Figure 15.1 *The Table View of the Worldwide Scorecard*



- The rows display the different elements that are contained in the currently selected scorecard.
- The columns display the metric attributes for the currently selected element type.

- The intersection of a row and a column shows the individual value of an element for a specific metric attribute and period. The value in the intersection is called a *cell*.

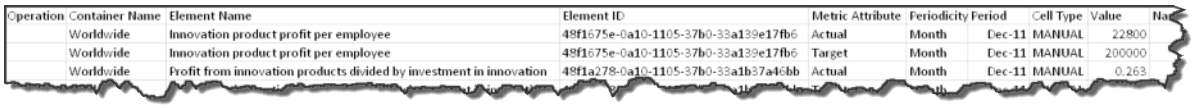
A cell can exist for each combination of an element, a metric attribute, and a period. SAS Strategy Management Builder shows either of the following:

- a numeric value
- a blank, which indicates that the cell has no value

Identifying a Cell in the Input File

The following figure is an example of a cell comma-separated-values (CSV) file. This file belongs to a project that has two cell values. Note that some of the columns in the cell file are not shown due to space considerations.

Figure 15.2 *Example of a Cell in a CSV File*



Operation	Container Name	Element Name	Element ID	Metric Attribute	Periodicity	Period	Cell Type	Value	Na
	Worldwide	Innovation product profit per employee	48f1675e-0a10-1105-37b0-33a139e17fb6	Actual	Month	Dec-11	MANUAL	22800	
	Worldwide	Innovation product profit per employee	48f1675e-0a10-1105-37b0-33a139e17fb6	Target	Month	Dec-11	MANUAL	200000	
	Worldwide	Profit from innovation products divided by investment in innovation	48f1a278-0a10-1105-37b0-33a1b37a46bb	Actual	Month	Dec-11	MANUAL	0.263	

BMF uses the Container Name and Element Name columns to identify the scorecard or project and element that contains this cell. The cell itself is identified by the following columns:

- Element ID
- Metric Attribute
- Period

For example, the first row of the file refers to a cell that is in a scorecard named Worldwide and an element named “Innovation product profit per employee.”

- The element has a UUID of 48f1675e-0a10–1105–37b0–33a139e17fb6. Figure 15.1 shows the row that corresponds to this element. The row uses the name, not the UUID. You can view the UUID by viewing the properties for that row.
- The metric attribute of this cell is named “Actual.” Figure 15.1 shows the Actual column that corresponds to this metric attribute.
- The Period column in the file has the value Dec-11. The date that is shown in Figure 15.1 corresponds to this date.

These three values identify a specific cell in the Worldwide scorecard. The value 22800 appears in this cell in Figure 15.1.

CAUTION! Do not modify any of the values in these three columns. Each of these columns include the notation **(no modify)** in their column headings. The notation reminds you to not modify the values in these columns. If you did modify any values in these columns, enter `1` (indicating modify) in the Operation Code column, and then submit the file to the BMF macro, the result is that the affected cells would not be found.

Modifying an Existing Cell Value

Modify a Manually Entered Value

In Figure 15.2, the Value column in the first row shows the value 22800. Figure 15.1 also shows the value 22800. This value is a manually entered value. It was entered by a user instead of being calculated by a formula or determined by a metric. BMF records this information in the Cell Type column. In Figure 15.2, this column reports **`MANUAL`** for the value.

To change the value:

1. Enter the new value in the Value column.
2. In the Operation Code column in the first row, enter `1` (for modify).
3. Save the cell input file and submit it to BMF using the BMF MODIFY action.

```
%STMBMF(action=modify,
        user=sasdemo,
        pw=DemoDemo1,
        templatename=Strategy,
        projectname=2013 Strategy,
        cell=\\MYCOMPUTER\public\inputfiles\2013 Strategy_Cell.csv,
        outputdir=\\MYCOMPUTER\public
        );
```

Modify a Formula-Based Value

A cell value can also be calculated from a formula instead of the value being manually entered by a user. In this case, the Cell Type column reports that the value is a formula.

TIP When a cell's value is calculated from a formula, the Cell Type column must contain **`FORMULA`** and the Value column must contain a valid formula.

To change the value:

1. In the Value column, enter a new, valid formula.

   CAUTION! Make sure that the new formula is valid. BMF verifies that this formula compiles correctly. If the formula does not, a BMF error occurs.

2. In the Operation Code column, enter `1` (for modify).
3. Save the cell input file and submit it to BMF using the BMF MODIFY action.

```
%STMBMF(action=modify,
        user=sasdemo,
        pw=DemoDemo1,
        templatename=Strategy,
        projectname=2013 Strategy,
        cell=\\MYCOMPUTER\public\inputfiles\2013 Strategy_Cell.csv,
        outputdir=\\MYCOMPUTER\public
        );
```

Modify an Existing Value and Its Type

You can modify a cell value and its type. You can change a manually entered value to a formula-based value, and vice versa.

To change a manually entered value to a formula-based value:

1. In the Value column, replace the value by entering the new formula.

   CAUTION! Make sure that the new formula is valid. BMF verifies that this formula compiles correctly. If the formula does not, a BMF error occurs.

2. In the Cell Type column, enter **`FORMULA`**.
3. In the Operation Code column, enter `1` (for modify).
4. Save the cell input file and submit it to BMF using the BMF MODIFY action.

```
%STMBMF(action=modify,
        user=sasdemo,
        pw=DemoDemo1,
        templatename=Strategy,
        projectname=2013 Strategy,
        cell=\\MYCOMPUTER\public\inputfiles\2013 Strategy_Cell.csv,
        outputdir=\\MYCOMPUTER\public
        );
```

To change a formula-based value to a manually entered value:

1. In the Value column, replace the formula by entering a numerical value.
2. In the Cell Type column, enter **`MANUAL`**.
3. In the Operation Code column, enter `1` (for modify).
4. Save the cell input file and submit it to BMF using the BMF MODIFY action.

```
%STMBMF(action=modify,
        user=sasdemo,
        pw=DemoDemo1,
        templatename=Strategy,
        projectname=2013 Strategy,
        cell=\\MYCOMPUTER\public\inputfiles\2013 Strategy_Cell.csv,
        outputdir=\\MYCOMPUTER\public
        );
```

Creating a New Cell and Its Value in an Existing Project

Overview

If you want to create a new cell where one does not currently exist, you must add a new row to the cell input file. This row must contain a combination of values that identify the cell: element ID, metric attribute, and period.

CAUTION! The combination of these three values must be unique. The combination cannot exist elsewhere in the cell input file or in the SAS Strategy Management database. If the combination is not unique, a BMF error occurs.

In Figure 15.2, the element named “Innovation budget” does not have a cell value for December 2011 and metric attribute Actual. The following tables show an example of a new row in the input file. This row specifies a new cell and its value.

Note: For clarity, the new row is split into two tables.

Table 15.1 *Example of a New Row That Specifies a New Cell and Its Value*

Operation Code	Container Name	Element Name	Element ID (no modify)
3	Worldwide	Innovation budget	48f1675e-0a10–1105–37b0–33a1cae342c1

Table 15.2 *Continuation of a New Row That Specifies a New Cell and Its Value*

Metric Attribute (no modify)	Periodicity	Period (no modify)	Cell Type	Value
Actual	MONTH	Dec-11	MANUAL	97.9

Create a New Cell Value in an Existing Project

To add a new cell and its value to an existing project:

1. Add a new row to the cell input file.
2. In the Operation Code column, enter `3` (for add).
3. In the Container Name column, enter the scorecard that you want to contain the new cell.
4. In the Element Name column, enter the name of the element.
5. In the Element ID column, enter the UUID of the element.
6. In the Metric Attribute column, enter the name of the metric attribute for which you are creating the cell.
7. In the Periodicity column, enter the periodicity that is used by the element.
8. In the Period column, enter the period value.

   Note: Make sure that the period value uses the format that is expected by SAS Strategy Management Builder.
9. In the Cell Type column, enter **`FORMULA`** if the value is a formula. Enter **`MANUAL`** if the value is not a formula.
10. In the Value column, enter a valid formula if you want a formula-based value. Enter a numeric value for a manually entered value.
11. Save the cell input file and submit it to BMF using the BMF MODIFY action.

```
%STMBMF(action=modify,
        user=sasdemo,
        pw=DemoDemo1,
        templatename=Strategy,
        projectname=2013 Strategy,
```

```
cell=\\MYCOMPUTER\public\inputfiles\2013 Strategy_Cell.csv,
outputdir=\\MYCOMPUTER\public
);
```

BMF creates a new cell that contains the specified value.

Delete a Cell Value in an Existing Project

If you want to delete the value of a cell, enter a # (pound symbol) in the applicable column: Value or Cell Text. If BMF detects the specified value, the numeric or text value for that cell is deleted. The cell itself is not deleted.

If there are no values entered in the Cell data file in columns 9 (Value) through 15 (Cell Text), BMF does not create or replace values.

Linking Elements

Overview

In SAS Strategy Management, you can link certain elements together to create a logical association between them. These associations can then be viewed in an aggregate table. For example, you might associate a region's marketing expenses with the region's sales.

Note: Linked elements is *not* the same as associated element attributes or managed link definitions.

BMF provides you with a way to create or update element links. However, you must understand the rules that SAS Strategy Management and BMF use internally when they create these links.

TIP It is a recommended best practice to link elements by using SAS Strategy Management Builder. It is much easier to understand this concept by using the user interface. After you have linked the elements, perform a BMF GET to determine how BMF generates the element linking in the data file.

Rules for Linking

Requirements

Elements must be of the same type in order to be linked.

Hierarchy Rules

Refer to the following table while reviewing the hierarchy rules.

Note: The hierarchy presumes that each scorecard has one element.

Table 15.3 Simple Hierarchy

Scorecard A	Scorecard B1	Scorecard C1
		Scorecard C2
	Scorecard B2	Scorecard D1

- **Elements can be linked only within a scorecard hierarchy.** The elements contained in the preceding table cannot be linked to elements in scorecards that belong to another hierarchy.
- **Elements in a scorecard can be linked only to antecedent elements in the scorecard hierarchy.** For example:
  - The element in scorecard A *cannot* link to the elements in any of its children or grandchildren.
  - The elements in scorecards B1 and B2 *cannot* link to the elements in their children.
  - The elements in scorecards B1 and B2 can link to the element in their parent (scorecard A).
  - The elements in scorecards C1 and C2 can link to the element in their parent (scorecard B1).
  - The elements in scorecards C1 and C2 can link to the element in their grandparent (scorecard A).
  - The element in scorecard D1 can link to the element in its parent (scorecard B2).
  - The element in scorecard D1 can link to the element in its grandparent (scorecard A).
- **Elements that are in the same scorecard cannot be linked.** For example, if scorecard C1 had multiple elements, the elements could not be linked to each other.

Link Element ID Rules

Each element has an element ID and a link element ID. If an element is not linked to another element, the link element ID is `0`. When BMF links two elements, one of the following changes is made:

- If the target element is *not* currently linked, BMF sets the link element ID in the source element to the *element ID* of the target element.
- If the target element *is* currently linked, BMF sets the link element ID in the source element to the *link element ID* of the target element.

Refer to the hierarchy in the following table while you review the examples of the link element ID rules.

Note: For clarity, the table uses words for the element IDs instead of using UUIDs or integers. In practice, BMF accepts only integers and UUIDs for element IDs.

Table 15.4 Simple Hierarchy with Simple Element IDs

Scorecard A Element A1, ID=DOG	Scorecard B1 Element B1, ID=CAT	Scorecard C1 Element C1, ID=RAT
		Scorecard C2 Element C2, ID=SQUIRREL
	Scorecard B2 Element B2, ID=RABBIT	Scorecard D1 Element D1, ID=MOUSE

- If you link element C1 to element B1, the link element ID for element C1 changes to CAT.
- If you link element C1 to element A1, the link element ID for element C1 changes to DOG.
- If you link element B1 to element A1, the link element ID for element B1 changes to DOG. Then, if you link element C1 to element B1, the link element ID for element C1 changes to DOG also. Because element B1 is already linked, C1 uses the link element ID for B1.

Linking Elements By Using BMF

The following table shows part of an example element CSV file.

Note: Some of the columns have been omitted for clarity. Also, instead of using UUIDs, the following tables use integers for the Element IDs and Link Element IDs.

Operation Code	Element ID	Element Name	Container Name	Link Element ID
	1	Element A	Scorecard A	0
	2	Element B1	Scorecard B1	0
	3	Element B2	Scorecard B2	0
	4	Element C1	Scorecard C1	0
	5	Element C2	Scorecard C2	0
	6	Element D1	Scorecard D1	0

None of the elements are linked. All of the values in the Link Element ID column are `0`. The value `0` indicates that an element is not linked. Whenever you specify the value `0` in this column, it means that the element is not linked to any other element.

Suppose that you want to link element B1 to element A. According to the hierarchy rules, this link is permissible. Using the link element ID rule, enter the element ID of element A in the Link Element ID column of element B1.

Note: To add this link to element B1, remember to enter the operation code `1`, which indicates the MODIFY action.

Operation Code	Element ID	Element Name	Container Name	Link Element ID
	1	Element A	Scorecard A	0
1	2	Element B1	Scorecard B1	1
	3	Element B2	Scorecard B2	0
	4	Element C1	Scorecard C1	0
	5	Element C2	Scorecard C2	0
	6	Element D1	Scorecard D1	0

Suppose that you want to link element C1 to element B1. According to the hierarchy rules, this link is permissible. Using the link element ID rule, enter the linked element ID of element B1 in the Link Element ID column of element C1.

Operation Code	Element ID	Element Name	Container Name	Link Element ID
	1	Element A	Scorecard A	0
	2	Element B1	Scorecard B1	1
	3	Element B2	Scorecard B2	0
1	4	Element C1	Scorecard C1	1
	5	Element C2	Scorecard C2	0
	6	Element D1	Scorecard D1	0

Because element B1 is already linked to element A, element C1 must use the link element ID that is set for element B1.

Associating Element Types By Using the Element Type Element Attributes

Overview

SAS Strategy Management provides the ability to associate an element type to other element types. The element type attributes form an association that you can view in association tables. For example, you can have a scorecard with an element type called Measure and another called Objective. You can associate a Measure element called **Innovation product profit per employee** with an Objective element called **Wealth Creation**. Viewing the data of the two linked elements can give you insight into how innovation leads to wealth.

SAS Strategy Management enables element associations by way of an attribute value. In addition to cell values, elements can have other values associated with them by way of element attributes. One of the element attributes is called the *element type attribute*.

Note: Do not confuse this attribute with *element types*, which are defined in the template.

Note: Associated element attributes are *not* the same as linked elements or managed link definitions.

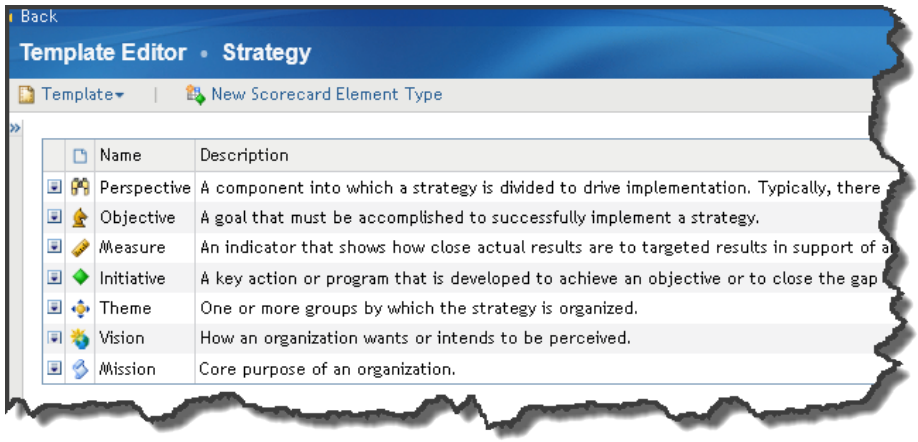
Requirements

To create these links, you must meet the following requirements:

- You can link only elements within the same scorecard.
- The template must contain the correct attribute definition.

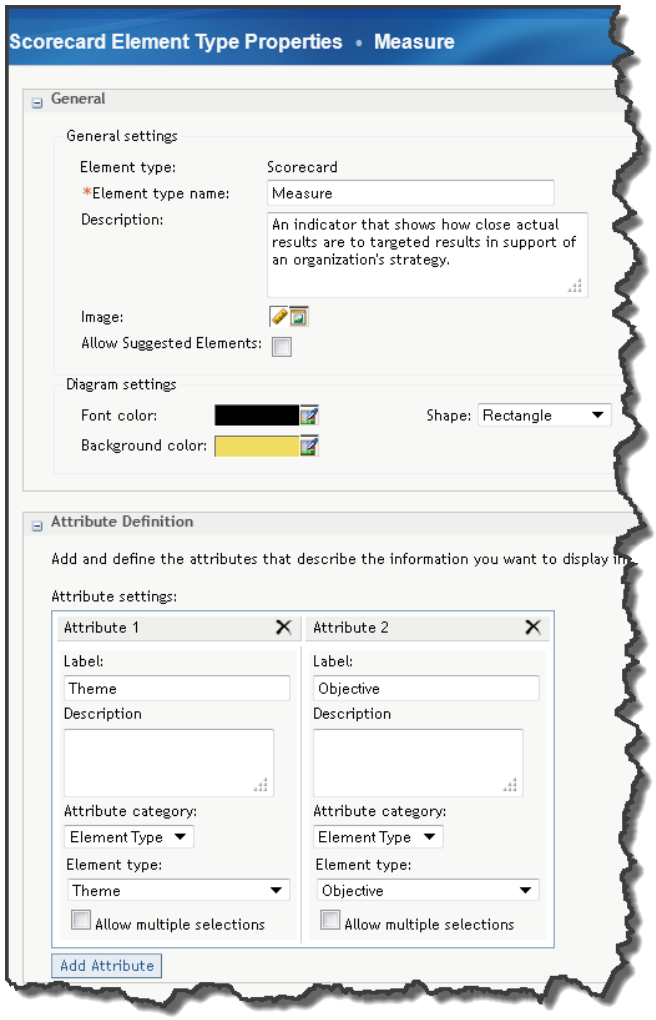
Associating Elements By Using SAS Strategy Management Builder

To understand the process of creating an association between two elements, it helps to review the procedure that you use in SAS Strategy Management Builder. In this example, the template is named Strategy. The following display shows the seven scorecard element types that are defined in this template.



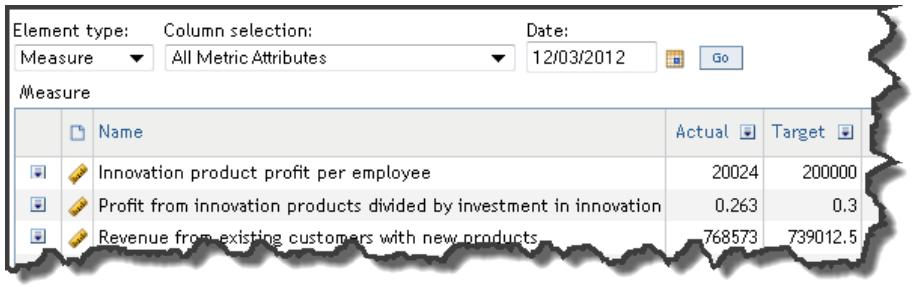
In the following display, the properties are shown for the scorecard element type called Measure. In the **Attribute Definition** section, note the following settings for **Attribute 2**:

- The attribute is labeled **Objective**. This label helps you remember the element type that you are linking to.
- The **Attribute Category** is set to **Element type**.
- The **Element type** is set to **Objective**.

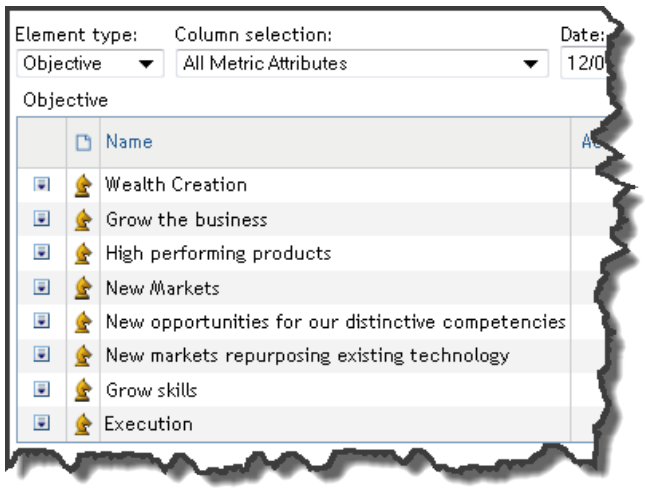


When you set the element attribute to the element type Objective, you define an association that can exist between elements of the type Measure and elements of the type Objective.

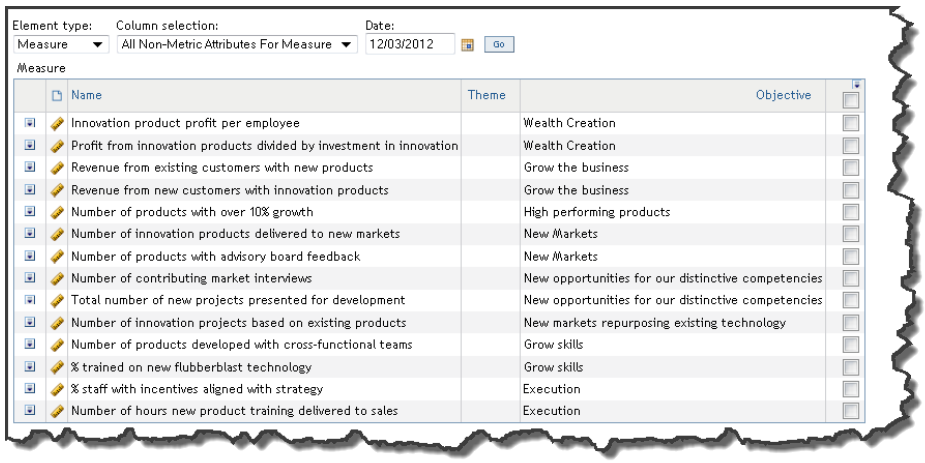
The example template contains a project named Strategy 2012. The project has a scorecard with several elements of the element type Measure. One of these elements is called **Innovation product profit per employee**.



The scorecard also has elements of the element type Objective. One of these elements is called **Wealth Creation**.



In the following section, the example uses BMF to add an element attribute value to the element called **Innovation product profit per employee**. Adding this attribute creates an association with the element called **Wealth Creation**.



Add an Element Type Attribute

Consider the element type in the example named Measure. You can associate a Measure, **Innovation product profit per employee**, with an Objective, **Wealth Creation**. The element attribute provides the association. In SAS Strategy Management Builder, you define the element attribute in the element properties as previously shown. In BMF, you add a new element attribute to the element by using MODIFY.

The following table shows the element attribute row in the CSV file called ModElement.csv. The UUIDs in the Element Name and Value columns have been

shortened for space considerations. Columns to the right of the Value column have been omitted.

Operation	Element ID	Element Name	Container Name	Category	Category Label	Value
3	48f16	Innovation product profit per employee	Worldwide	ELEMENT TYPE	Objective	48eee

The columns in this row provide the following information:

- **Operation:** The operation code 3 specifies ADD. This row modifies the element by adding an element attribute.
- **Element ID:** Specifies the element that you are modifying. This example modifies the element named **Innovation product profit per employee**.

  TIP You can obtain the UUID for the element either from the element's Properties page in SAS Strategy Management Builder or by performing a BMF GET.

- **Element Name:** Specifies the name of the element that you are modifying. In this example, BMF does not process this column.
- **Container Name:** In this example, BMF does not process this column.
- **Category:** Indicates that the attribute is an element type.
- **Category Label:** Specifies that the label for the new element attribute is `Objective`.
- **Value:** Specifies that the value of this element attribute is the UUID of the element named **Wealth Creation**.

Invoke %STMBMF with this data row in the file 2013 Strategy_ModElement.csv:

```
%stmbmf(action=MODIFY,
        user=sasdemo,
        pw=DemoDemo1,
        templatename=Strategy,
        projectname=2013 Strategy,
        attribute=\\localhost\public\data\2013 Strategy_ModElement.csv,
        outputdir=\\localhost\public
        );
```

After BMF completes, **Innovation product profit per employee** now has an element attribute of type ELEMENT TYPE. The element attribute has a value of **Wealth Creation**.

Modify an Element Type Attribute

Suppose you want to change the association for **Innovation product profit per employee**. This example uses BMF to change the associated element from **Wealth Creation** to another Objective element called **Grow the business**.

The following table shows the element attribute row in the CSV file called ModElement.csv. The UUIDs in the Element Name and Value columns have been

shortened for space considerations. Columns to the right of the Original Element Type Element Attribute ID column have been omitted.

Operation	Element ID	Element Name	Container Name	Category	Category Label	Value	Original Element Type Element Attribute ID
1	48f16	Innovation product profit per employee	Worldwide	ELEMENT TYPE	Objective	48ef2	48eee

The columns in this row provide the following information:

- **Operation:** The operation code 1 specifies MODIFY. This row modifies the element by modifying the element attribute.
- **Element ID:** Specifies the element that you are modifying. This example modifies the element named **Innovation product profit per employee**.
- **Element Name:** Specifies the name of the element that you are modifying. In this example, BMF does not process this column.
- **Container Name:** In this example, BMF does not process this column.
- **Category:** Indicates that the attribute is an element type.
- **Category Label:** Specifies that the label for the element attribute is `Objective`.
- **Value:** Specifies that the new element attribute value is the UUID of the element named **Grow the business**.
- **Original Element Type Element Attribute ID:** Specifies that the element attribute value that is being *replaced* is the UUID of the element named **Wealth Creation**. BMF requires this value in order to locate the entry in the database for the original element attribute to change.

After you invoke %STMBMF with this data row in the file ModElement.csv, **Innovation product profit per employee** still has an element attribute of type ELEMENT TYPE, but the element attribute has a value of **Grow the business**.

16

Creating a New Project and Its Data

Overview

Using the BMF CREATE action, you can create the Strategy Management data and objects for a project, including the template and project objects. The CREATE action is useful if you want to create a new Strategy Management project by using scripting languages to create new CSV files.

The following example uses the template called Strategy and the project called 2013 Strategy.

Within 2013 Strategy there are three scorecards, each with elements and cell values for the time period of December 2011. In this example, the following objects are created:

- The template and all Strategy Management objects that are contained within template, such as some element types, metric attributes, and attribute definitions.
- The project that contains the following objects:
  - Three scorecards: a root scorecard, a child scorecard, and a grandchild scorecard.
  - The root scorecard that contains four elements. There is one project-level element.
  - One element that contains five element attributes, one of each type.
  - One element that contains two cell values, one manual and one formula based.

Create the Required Input Files

Requirements

You can specify input files to the CREATE action by using the input file arguments. These input files describe the Strategy Management objects that you want to create. For information about the input files, see "How the BMF Macro Processes the GET Action" on page 115. For information about the macro arguments, see "The %STMBMF Macro" on page 87.

Before creating these files, review the following considerations:

- The input files must be CSV files or SAS data sets. You must create a file for each Strategy Management object. For more information about the input files, see "How the BMF Macro Processes the GET Action" on page 115.
- These files are standard text files that do not contain any binary data. Do not edit these files using word processor software.
- If you want to use special characters, you must make sure that the files use UTF-8 encoding or specify the encoding that you used with the ENCODING argument.
- You can create these files using any appropriate software as long as that software meets the described limitations.

For the following example, create the input files in the directory called **`C:\public\inputfiles`**.

Note: Ensure that BMF can find the directory. For more information, see "determine the folder locations to specify for BMF." on page 96.

The CREATE action uses reference numbers to identify Strategy Management objects. For more information, see Appendix 7, "Identifying New Strategy Management Objects," on page 247.

Setup File

To create the setup file, open a text file and enter the following data:

```
TEMPLATE,1,Strategy,,,,,,,,
ELEMENT TYPE,1,ProjET,P element type,PROJECT,arrow_slightlyup_green.gif,00FFFF,B0E0E6,diamond,,,
ELEMENT TYPE,2,ScorecardET,S element type,SCORECARD,ElGeneric.gif,00FF00,CCCCCC,trapezoid,,,
ELEMENT TYPE,3,NewElementType,New Element Type,SCORECARD,ElGeneric.gif,00FF00,CCCCCC,trapezoid,,,
METRIC ATTRIBUTE,1,FooMetric1,,,,,,,,
METRIC ATTRIBUTE,2,FooMetric2,,,,,,,,
ATTRIBUTE DEFINITION,1,2,MyText,TestDescription,TEXT,0,NO,,,,
ATTRIBUTE DEFINITION,2,2,MyEmail,Another Description,EMAIL,0,,,,,
ATTRIBUTE DEFINITION,3,2,MyDate,Another Description,DATE,0,,,,,
ATTRIBUTE DEFINITION,4,2,MyLink,Another Description,URL,0,,,,,
ATTRIBUTE DEFINITION,5,2,MyElement,Another Description,ELEMENT TYPE,3,,,,,
```

Then save the file as **`C:\public\inputfiles\2013 Strategy_Setup.csv`**.

Project File

To create the project file, open a text file and enter the following data:

```
GENERAL,2013 Strategy,2013 Strategy description,,,STM_TIME_STD, STM_TIME_STD
```

Then save the file as **C:\public\inputfiles\2013 Strategy_Project.csv**

Scorecard File

To create the scorecard file, open a text file and enter the following data:

```
1,Worldwide,0,sasdemo,0,Worldwide scorecard description,code1
2,Americas,1,sastrust,0,Americas scorecard description,code2
3,Canada,2,sasdemo,0,,code3
```

Then save the file as **C:\public\inputfiles\2013 Strategy_Scorecard.csv**.

Element File

To create the element file, open a text file and enter the following data:

```
1,Element 12,Test description,1,ScorecardET,Month,float,float,,sasdemo,0
2,Element 22,,1,ScorecardET,Month,JAN2011,DEC2011,,sasdemo,0
3,Element 32,New Element 3,1,NewElementType,Month,Float,Float,,sasdemo,0
4,Element 42,,1,ScorecardET,Year,2011,2012,,sastrust,0
5,ProjElement,,0,ProjET,Month,Float,Float,,sasdemo,0
```

Then save the file as **C:\public\inputfiles\2013 Strategy_Element.csv**.

Element Attribute File

To create the element attribute file, open a text file and enter the following data:

```
1,text,MyText,MyLabel
1,email,MyEmail,aUser@company.com
1,date,MyDate,12/24/2011
1,url,MyLink,www.yahoo.com
1,Element Type,MyElement,3
```

Then save the file as **C:\public\inputfiles\2013 Strategy_ElementAttribute.csv**.

Cell File

To create the cell file, open a text file and enter the following data:

```
1,FooMetric1,Month,DEC2011,manual,5,,,2,VALUE,>,some text
2,FooMetric1,Month,DEC2011,formula,"[ELE=""2013 Strategy|Worldwide|ScorecardET|Element 12""]
```

Then save the file as **C:\public\inputfiles\2013 Strategy_Cell.csv**.

Invoke the Macro

TIP Before you can invoke the %STMBMF macro, ensure that you have defined the macro to the SAS client. See "Define the BMF Macro to the SAS Client" on page 98.

To invoke the BMF CREATE action, you must specify the following macro arguments:

Argument	Value
ACTION	CREATE
USER	Specify the user ID for a SAS user. **Note:** The user ID that is specified in the USER argument must have e-mail enabled for the notification to succeed. For more information, see "Information to Get from Your SAS Administrator" on page 95.
PW	Specify the password for a SAS user.
TEMPLATENAME	BMF works with one template at a time. Specify the template.
PROJECTNAME	BMF works with one project at a time. Specify the project.
INPUTDIR	Specify the input data files, one for each type of Strategy Management object that you want to create. In this example, all files are located in the same directory. Instead of specifying each data file by using its own argument, this example specifies the input file directory location using the INPUTDIR argument. ■ You can specify any combination of input data files. ■ You are not required to specify every file, only the files that you need to perform your task. For information about data files, see Chapter 13, "Setting Up Your Data Files," on page 101. For more information, see "determine the folder locations to specify for BMF." on page 96.
OUTPUTDIR	Specify where to write the output data files. For more information, see "determine the folder locations to specify for BMF." on page 96. For more information about error files, see Chapter 21, "Debugging BMF," on page 175.

The following macro statement shows the argument values for this example:

```
%STMBMF(action=create,
        user=sasdemo,
        pw=DemoDemo1,
        templatename=Strategy,
        projectname=2013 Strategy,
        inputdir=\\MYCOMPUTER\public\inputfiles,
        outputdir=\\MYCOMPUTER\public
```

```
);
```

Submit the macro statement to the SAS client. To confirm that the command was successfully sent to the SAS middle tier and to the BMF system, view the SAS log and locate the following messages:

```
NOTE: Event begin successful.
NOTE: Event body successful.
NOTE: Event publish successful.
NOTE: Event end successful.
NOTE: DATA statement used (Total process time):
      real time                0.12. seconds
      cpu time                    0.00 seconds

NOTE: Event SAS.Solutions.SpmBOBInterface published successfully.
NOTE: STMBMF 5.4 has ended but some STMBMF processes may still be running
asynchronously.
```

Macro Results and Output Files

The BMF CREATE action creates the new template and project in the database as described by the input CSV files. If any problems occur, BMF might generate error files. For more information about error files, see Chapter 21, “Debugging BMF,” on page 175.

17

Using Ranges in BMF

Using Ranges in BMF

Overview

The format of the Range input data file in BMF differs from other Strategy Management objects. There are three types of data rows identified by one of the following values in the Keyword column:

- GENERAL (or 6)
- INTERVAL (or 8)
- SPECIAL (or 9)

General Data Row

This Range file can specify information for multiple Strategy Management ranges. To distinguish which data belongs to a range, view the rows that have GENERAL in the Keyword column. A GENERAL row exists for each range. In the GENERAL row is a Range ID column that contains either a unique integer value for that range or the range UUID.

Note: The INTERVAL and SPECIAL rows also include the Range ID column so that these rows can identify the range for which they hold data.

When working with GENERAL data rows, remember the following considerations:

- Although it is not required, it is a best practice to locate all of the GENERAL rows in the file before any of the INTERVAL or SPECIAL rows.
- There must be only one GENERAL row for each range ID.
- Typically, ranges have intervals although you are not required to specify intervals in either the Strategy Management application or BMF.
- You create the range itself with a GENERAL data row. This creates a range with a set of default intervals.

For more information about GENERAL row data, see Table A3.8 on page 201.

Interval Data Row

The range intervals are created by using the INTERVAL data row. The range that each interval is assigned to is determined by the Range Reference Number column that points back to the Reference Number that is indicated by the GENERAL data row. The Range Interval Number column indicates in what order the intervals are arranged. Special significance is given to interval 1. This is the Lower Bound interval (that is, it is the lower limit of the range). You do not assign it a numeric value or an operator, but you can assign values for interval grade, interval icon, and so forth. For more information about INTERVAL row data, see Table A3.9 on page 201.

Special Data Row

The SPECIAL data row specifies two special range intervals for MISSING and UNRESOLVED values. These values are determined by the value in the Special Range Value Type column. There must be only one row for MISSING and one row for UNRESOLVED for a given range. There must be no data values in the Bound, Operator, and Label columns (labeled Placeholder in the documentation). These intervals do not have these values. For more information about SPECIAL row data, see Table A3.10 on page 202.

Formula-Based Ranges

If you are creating a formula-based range, you must supply a formula for every interval except the lower-bound interval. Although you can include a value for the interval bound, BMF ignores it.

Working with Ranges and Intervals

The data model format for the MODIFY action does not include the Operation Code column for the INTERVAL and SPECIAL data rows. Only the GENERAL data row includes the Operation Code column. Therefore, you use the GENERAL data row to specify the type of changes that you want to make to the GENERAL data row and all associated INTERVAL and SPECIAL rows. The Range ID value that is used in the GENERAL, INTERVAL, and SPECIAL data rows identifies the affected range. When you specify modify (that is, 1) in the Operation Code column, you can modify any value in the range, such as the range name, interval value, special interval value, and so forth. Specifying delete (2) indicates that you want to delete the entire range and all its intervals. Specifying add (3) indicates that you want to add a new range.

For example, to add a new range, complete the following steps:

1. Specify 3 in the Operation Code column in a new GENERAL data row.
2. Specify the new range with a new integer identifier for the Range ID.
3. Specify any number of INTERVAL data rows for the new range.

To modify, add, or remove intervals (both regular and special), specify the modify (1) operation code in the GENERAL data row of the range that contains the affected interval. You do not add or delete intervals by specifying the delete (2) or add (3) operation codes in the GENERAL data row. You must use the modify (1) operation code in the GENERAL data row. If you want to modify an interval bound, you must change the bound value and specify modify (1) in the GENERAL row of the range that contains that interval.

CAUTION! When specifying a modify, you must include all the range intervals even if you are modifying only one. Excluding any interval indicates to BMF that you want to delete the excluded interval.

To delete an interval, complete the following steps:

1. Specify modify (1) in the GENERAL data row of the range that contains that interval.
2. Delete the row that contains the interval to delete.

For example, to delete interval B, complete the following steps:

1. Specify modify (1) in the GENERAL data row of the range that contains interval B.
2. Delete the row for interval B.

To add an interval, complete the following steps:

1. Specify modify (1) in the GENERAL data row of the range that contains that interval.
2. Insert a new row after the keyword=INTERVAL row.
3. Enter the interval information (for example, range ID; range interval number; interval bound; interval operator and label; grade; normalized value, color, and icon).

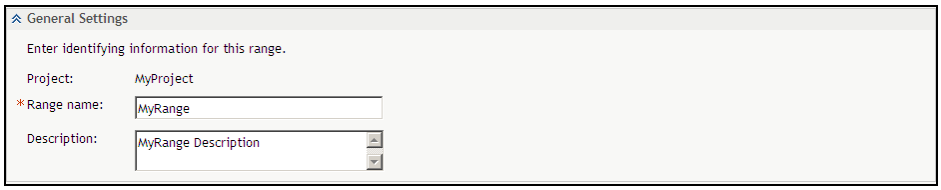
For example, you have a range with intervals A, B, and C. To add the new interval D, complete the following steps:

1. Specify modify (1) in the GENERAL data row of the range.
2. Add a new interval row with all the data for interval D.
3. Make sure that the interval rows for A, B, and C are present in the file. If they are not, BMF deletes these intervals.

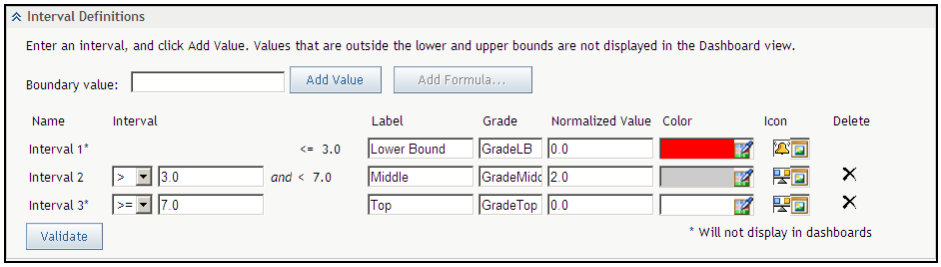
A Basic Range Defined in SAS Strategy Management Builder

Before examining how BMF defines range data, consider how Strategy Management Builder defines ranges. In the Web application, a range is defined by using the following types of information:

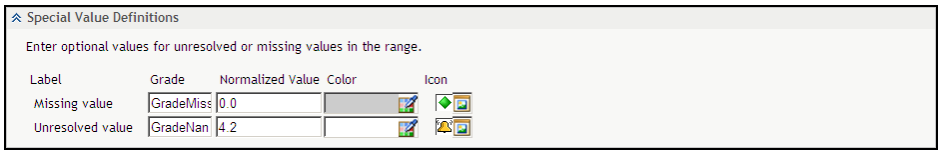
- General information.



- Interval definitions. In this section you can add or remove intervals. Also, you can assign attributes such as colors, icons, and labels.



- Special values definitions. In this section you can set the MISSING and UNRESOLVED values. Also, you can assign attributes such as colors, icons, and labels.



A Basic Range Defined in a BMF Data File

In the following example, a Range CSV file shows the BMF data representation of the same range that is described above.

The row with the keyword GENERAL describes the general settings of the range including the name, description, and the interval UUID.

Display 17.1 *The GENERAL Row with the Interval UUID Circled*

KEYWORD	Operation Code	Range ID	Range Name	Range Description
GENERAL		42ba7563-0a15-1367-30f5-18624fc92316	MyRange	MyRange Description
KEYWORD	Range ID	Range Interval Number	Interval Bound	Interval Operator
INTERVAL	42ba7563-0a15-1367-30f5-18624fc92316	1	-1.80E+307	<=
INTERVAL	42ba7563-0a15-1367-30f5-18624fc92316	2	3	>
INTERVAL	42ba7563-0a15-1367-30f5-18624fc92316	3	7	>=
KEYWORD	Range ID	Special Range Value Type	Not Used	Not Used
SPECIAL	42ba7563-0a15-1367-30f5-18624fc92316	UNRESOLVED		
SPECIAL	42ba7563-0a15-1367-30f5-18624fc92316	MISSING		

This file could contain data for multiple ranges instead of just the one shown here. BMF GET returns a GENERAL row for every range within the project.

Note: The Operation Code column is always blank when a CSV file is created by using BMF GET.

The rows with the keyword INTERVAL describes the same information that the Interval Definitions section does in the Builder. Note that the Range ID column of the INTERVAL rows contains the same interval UUID as shown in the GENERAL row. This is how each interval is mapped to the containing range.

Display 17.2 *The INTERVAL Rows with the Range ID UUIDs Circled*

KEYWORD	Operation Code	Range ID	Range Name	Range Description
GENERAL		42ba7563-0a15-1367-30f5-18624fc92316	MyRange	MyRange Description
KEYWORD	Range ID	Range Interval Number	Interval Bound	Interval Operator
INTERVAL	42ba7563-0a15-1367-30f5-18624fc92316	1	-1.80E+307	<=
INTERVAL	42ba7563-0a15-1367-30f5-18624fc92316	2	3	>
INTERVAL	42ba7563-0a15-1367-30f5-18624fc92316	3	7	>=
KEYWORD	Range ID	Special Range Value Type	Not Used	Not Used
SPECIAL	42ba7563-0a15-1367-30f5-18624fc92316	UNRESOLVED		
SPECIAL	42ba7563-0a15-1367-30f5-18624fc92316	MISSING		

The Range Interval Number column corresponds to the Name column in the **Interval Definitions** section of the Strategy Management Builder. These values accomplish the following goals:

- They facilitate the sorting of the intervals.
- The value `1` is reserved to indicate that this interval is the *lower bound interval*.

In the Strategy Management Builder, the lower bound interval is automatically created when you create a range. You cannot assign a value to the bound because it is preset to a very low number (usually the smallest value for a double on the system). The INTERVAL rows also display the bound and operator values.

The following display shows the remaining columns in the INTERVAL rows. These columns display the remaining attributes that you can set for each interval. Note that the Interval Formula column is blank, indicating that none of the intervals are formula-based intervals.

Display 17.3 *The Remaining Columns in the INTERVAL Rows*

Interval Label	Interval Grade	Normalized Value	Interval Color	Interval Icon	Interval Formula
Lower Bound	GradeLB	0	#ff0000	/bell.gif	
Middle	GradeMiddle	2	#cccccc	/balance.gif	
Top	GradeTop	0		/balance.gif	

The rows with the keyword SPECIAL describes the same information that the Special Interval Definitions section does in the Builder. Note that the Range ID column in the SPECIAL rows contains the same interval UUID as shown in the GENERAL row. Again, this is how each interval is mapped to the containing range. The three columns that are labeled Not Used are ignored. These columns exist to make these rows align with the additional columns in the INTERVAL rows.

Display 17.4 *The SPECIAL Rows in the CSV File*

KEYWORD	Range ID	Special Range Value Type	Not Used	Not Used	Not Used
SPECIAL	42ba7563-0a15-1367-30f5-18624fc92316	UNRESOLVED			
SPECIAL	42ba7563-0a15-1367-30f5-18624fc92316	MISSING			

Modifying Ranges Using the MODIFY Action

Overview

When the BMF GET action creates a Range CSV file, the Operation Code column in the GENERAL row is always blank. The operation that you specify in this column is applied to the range *only*. Then, BMF processes all the INTERVAL and SPECIAL rows for that range accordingly.

Modify a Range

The operation code for modify is `1`. Using this value and the input file that is shown above, you can change the basic range attributes such as name and description. You can also change attributes of existing intervals, add intervals, and remove intervals. The following display shows an example of removing the middle interval with the label `Middle`.

Display 17.5 *Removing the Middle Interval*

KEYWORD	Operation Code	Range ID	Range Name	Range Description
GENERAL	1	433fb3a0-0a15-1367-30f5-18629d22caae	MyRange	MyRange Description
KEYWORD	Range ID	Range Interval Number	Interval Bound	Interval Operator
INTERVAL	433fb3a0-0a15-1367-30f5-18629d22caae	1	-1.80E+307	<=
INTERVAL	433fb3a0-0a15-1367-30f5-18629d22caae	2	7	>=
KEYWORD	Range ID	Special Range Value Type	Not Used	Not Used
SPECIAL	433fb3a0-0a15-1367-30f5-18629d22caae	UNRESOLVED		
SPECIAL	433fb3a0-0a15-1367-30f5-18629d22caae	MISSING		

In the Range CSV, delete the row that is labeled `Middle`. See the INTERVAL row displays in the previous section. Then, set the Operation Code column to `1`. Optionally, for the third interval row, you can change the Range ID value to `2`. This value indicates that the third interval row is now the second interval row. This step is optional because BMF automatically renumbers and sorts the intervals. When BMF processes the changes in this file, the middle interval is removed.

CAUTION! When using operation code 1, you must specify all the INTERVAL and SPECIAL row values that you want to be associated with this range, even if you are modifying only the range name. Leaving any INTERVAL or SPECIAL row out of the CSV file causes that row to be removed from the range.

Add a Range

The operation code for an addition is 3. Using this operation code in a GENERAL row adds a new range. Because the range does not yet have a UUID, you must specify an integer reference number in the Range ID column. Typically, the reference number is 1, although it can be any integer that is greater than zero. Also, the name must be unique among existing ranges in the project.

When you add an interval, you must create the INTERVAL and SPECIAL rows also. You must use the reference number in the Range ID column in the INTERVAL and

SPECIAL rows. After you create the range with BMF MODIFY and then perform a BMF GET action, the interval is assigned a UUID that you can use as the Range ID.

When specifying the SPECIAL rows, remember that there are only two SPECIAL values for a Range: UNRESOLVED and MISSING. If you add multiple values, BMF generates errors.

Delete a Range

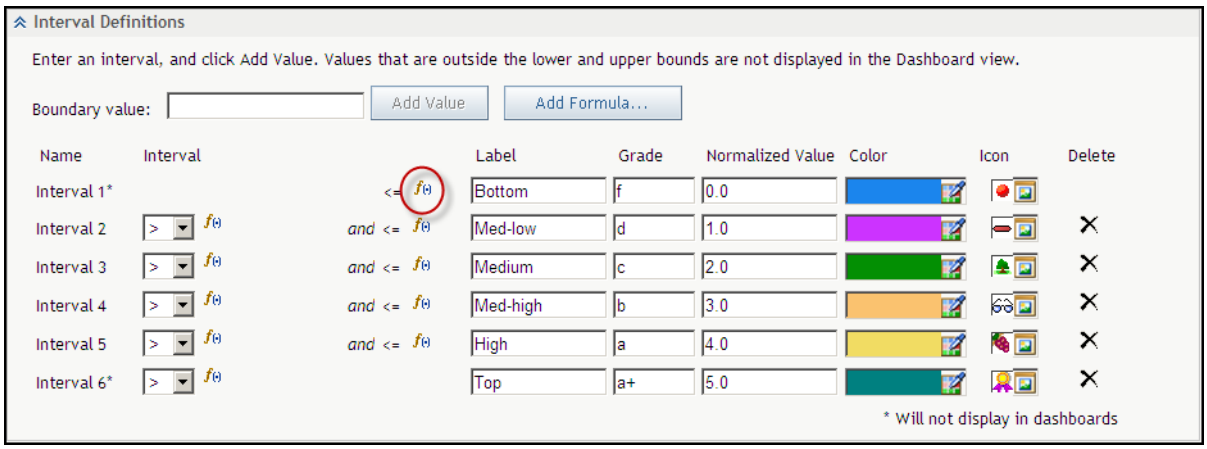
The operation code for delete is `2`. Using this operation code in a GENERAL row deletes the entire range and all interval and special values.

Defining Formula-Based Ranges Using BMF

The preceding examples of ranges in this chapter used discrete numerical values for the interval bounds. Strategy Management and BMF also support formula-based interval bounds.

The following display shows the Formula icon. This icon indicates that the interval is formula-based. In a formula-based range, all intervals must be formula-based. You cannot create a range that has some intervals that are defined by discrete values and some intervals that are defined by formula. Both the Strategy Management Builder and BMF enforce this rule.

Display 17.6 *The Interval Definitions Section with a Formula-Based Interval Bound Circled*



The following displays show a CSV data file that corresponds to the previous display. All the intervals have formulas except for the lower bound interval. Recall that the lower bound interval is set automatically. If you attempt to modify this range by adding an interval without a formula in the Interval Formula column, BMF generates an error. Also, the formula must be a valid formula. If the formula does not compile successfully, BMF generates an error.

Note: The following displays show the left and right columns of a range CSV file. The right-most columns, Normalized Value and Interval Color, are not shown.

Display 17.7 *The Same Formula-Based Intervals in a Range CSV File*

KEYWORD	Operation Code	Range ID	Range Name	Range Description		
GENERAL		43588f17-0a15-1367-30f5-186227b01a60	FormulaRange	Formula Range		
KEYWORD	Range ID	Range Interval Number	Interval Bound	Interval Operator	Interval Label	Interval Grade
INTERVAL	43588f17-0a15-1367-30f5-186227b01a60	1	-1.80E+307	<=	Bottom	f
INTERVAL	43588f17-0a15-1367-30f5-186227b01a60	2	4	>	Med-low	d
INTERVAL	43588f17-0a15-1367-30f5-186227b01a60	3	5	>	Medium	c
INTERVAL	43588f17-0a15-1367-30f5-186227b01a60	4	6	>	Med-high	b
INTERVAL	43588f17-0a15-1367-30f5-186227b01a60	5	7	>	High	a
INTERVAL	43588f17-0a15-1367-30f5-186227b01a60	6	8	>	Top	a+

Display 17.8 *More Columns in the Range CSV File*

Interval Icon	Interval Formula
images/circle06_red.gif	
images/noentry03.gif	[ELE=current('ELE')][COL='FooMetric1'][PER=current('PER')] / [ELE=current('ELE')][COL='FooMetric2'][PER=current('PER')]
images/tree_summer.gif	[ELE=current('ELE')][COL='FooMetric1'][PER=current('PER')] / [ELE=current('ELE')][COL='FooMetric2'][PER=current('PER')]+1
images/sunglasses.gif	[ELE=current('ELE')][COL='FooMetric1'][PER=current('PER')] / [ELE=current('ELE')][COL='FooMetric2'][PER=current('PER')]+2
images/fruit_grapes.gif	[ELE=current('ELE')][COL='FooMetric1'][PER=current('PER')] / [ELE=current('ELE')][COL='FooMetric2'][PER=current('PER')]+3
images/ribbon_pink.gif	[ELE=current('ELE')][COL='FooMetric1'][PER=current('PER')] / [ELE=current('ELE')][COL='FooMetric2'][PER=current('PER')]+4

18

Additional Macro Options

Filtering Output Returned by the BMF GET Action

Why Filter the Output?

The BMF GET action returns the data from a specific SAS Strategy Management template and project. By default, BMF GET returns *all associated data*. What if you don't need all of the data? For example, you might want to get only the following data:

- the values from a specific scorecard
- the values from a specific date range
- the data for measures, not the data for goals

By using the FILTER option, you can instruct the BMF GET action to filter the output that it returns.

The Filter Option

By default, BMF GET returns data for all SAS Strategy Management objects in a template and project. However, you can limit (that is, filter) the data that is returned by specifying filtering criteria in an input filter CSV file or SAS data set. The filter CSV file or SAS data set contains the criteria for filtering the SAS Strategy Management objects that you want to be returned.

You can use either the FILTER argument (`filter=file.csv`, where *file* is the name of your CSV filter file) or the FILTERDS argument (`filterds=dataset`, where *dataset* is the name of your SAS data set filter) to specify the CSV file or SAS data set that contains your filtering criteria.

In the CSV filter file, you can specify the filtering criterion. Each criteria is identified by the keyword in the first column (the Keyword column) and must be one of the following keywords: SCORECARD, FROMDATE, TODATE, PERIODICITY, or PROJECT_ELEMENTS.

Table 18.1 *Filter Criteria Keywords and Value Descriptions*

Keyword	Description	Required
SCORECARD	The UUID that specifies the scorecard for which you require data. You can limit the scorecard data that is returned by specifying one or more scorecards. If you do not specify any scorecards, data is returned for all scorecards.	Optional
FROMDATE	The beginning date of a date range. The date value must be in the format MM/DD/YYYY or the word FLOAT (not case sensitive). The value for FROMDATE must not occur later than the value for TODATE. You must specify both a FROMDATE and TODATE value. You can specify only one set of values. Multiple date ranges are not permitted. The specified date range limits the element, element attribute, cell, and cell format data that is returned by BMF. Specifying a date range causes BMF to check the start and end date values of each element within a project or scorecard. If either date falls within the specified date range, BMF returns data for that element. If you specify one or more scorecards by using the SCORECARD keyword, BMF checks the dates only for the specified scorecards. Otherwise, all scorecards are checked.	Required if TODATE is specified. Otherwise, it is optional.
TODATE	The ending date of a date range. The date value must be in the format MM/DD/YYYY or the word FLOAT (not case sensitive). The value for TODATE must not occur earlier than the value for FROMDATE. You must specify both a FROMDATE and TODATE value. You can specify only one set of values. Multiple date ranges are not permitted. For more information, see FROMDATE.	Required if FROMDATE is specified. Otherwise, it is optional.
PROJECT_ELEMENTS	Specifies that you want data from project-level elements. Valid values are **`Yes`** and **`No`**. Values are case insensitive. The default is **`No`**, which indicates that project-level elements are not included. **Note:** Only Scorecard, Element, Element Attribute, Cell, and Cell Format objects are returned when you use a filtered GET action.	Optional

Keyword	Description	Required
PERIODICITY	Specifies the type of period (periodicity) for which you want data. Valid values are **MONTH**, **YEAR**, and **ALL**. Values are case insensitive, and the default is **ALL**. If you specify one or more scorecards using the SCORECARD keyword, BMF checks the periodicity only for the specified scorecards. Otherwise, all scorecards are checked. If you specify the FROMDATE and TODATE keywords, BMF checks only elements within that date range.	Optional
KEYWORD or <blank>	Specifies to ignore this row.	Optional

When you are creating a filter file, remember the following requirements:

- The filter file consists of one or more rows.
- Each row has two columns.
- The keyword in column 1 specifies how BMF interprets the row. Column 1 is separated from column 2 in the following ways:
  - If the filter file is a CSV file, column 1 values are separated from column 2 by commas.
  - If the filter file is a SAS data set, column 1 values are separated from column 2 by blanks.
- Include only the criteria that you want to filter. For example, if you are filtering only on scorecards, do not include keyword-value pairs for date range, periodicity, or project elements in the filter file
- Filter criteria can be specified in any order in the file.
- All keywords are case insensitive.

When you use the FILTER option, BMF generates only the following data files:

- scorecard
- element
- element attributes
- cell
- cell format

No template, project, range, or diagram CSV files or SAS data sets are created.

Examples of the Filter Keywords

Filtering by Scorecard

You can direct BMF to return data for one or more specific scorecards only.

- In column 1, enter the keyword SCORECARD.
- In column 2, enter the UUID of the scorecard that you want the filter to output.

For example, if your project contains a scorecard named “North America” with the UUID 50d0c66a-0a28-0d9b-0018-37ec2c8ebca4, the filter file would require the following row:

```
SCORECARD,50d0c66a-0a28-0d9b-0018-37ec2c8ebca4
```

Note:

- The number of SCORECARD rows that you can include in the filter file is limited by the number of scorecards that are in the project.
- If you do not specify a SCORECARD filter, then all of the scorecards in the project are returned.

Filtering by Element Periods (Date Ranges)

SAS Strategy Management elements are assigned a start date and end date period. You can direct BMF to filter by element start date and end date by specifying the date range in which the elements occur.

- In column 1, enter the keyword FROMDATE or TODATE.
- In column 2, enter a date value in the format MM/DD/YYYY.

For example, suppose a project has one or more scorecards or project-level elements. You want BMF GET to return only the elements for the month of March 2010. The filter file requires the following rows:

```
FROMDATE,3/1/2010
TODATE,3/31/2010
```

This filter file directs BMF GET to return only the elements that have a start or end date that occurs in the month of March.

You can specify FLOAT for either value. FLOAT is like a wildcard. FLOAT directs BMF to pass all dates through the filter. In the following example, specifying FLOAT for TODATE directs BMF to return all of the elements with a start or end date of March 1, 2010 or later.

```
FROMDATE,3/1/2010
TODATE,FLOAT
```

Note:

- You must include a row for *both* FROMDATE and TODATE. If you do not, BMF generates an error.
- The FROMDATE and TODATE row can be in any order. However, it is recommended that you specify the FROMDATE row first.

If you specify only an element date range filter, BMF returns all of the scorecard-level elements that fall within the specified date range. If you specify a scorecard filter *in addition* to an element date range filter, then only elements that fall within the specified date range and are contained in the specified scorecards are returned.

Filtering by Element Periodicity

SAS Strategy Management elements are assigned a period type, also called periodicity. MONTH and YEAR are examples of a period type. You can direct BMF to filter by element period type by specifying the period type.

- In column 1, enter the keyword PERIODICITY.
- In column 2, enter the period type MONTH, YEAR, or ALL.

For example, suppose a project has one or more scorecards or project-level elements. You want BMF GET to return only the elements that have a period type of MONTH. The filter file requires the following row:

```
PERIODICITY,MONTH
```

Note: If you do not specify a PERIODICITY filter, then all of the period types are returned.

If you specify a periodicity filter *in addition* to an element date range filter, then only elements that fall within the date range *and* are of the specified periodicity are returned.

Including Project-level Elements in the Filtered Output

By default a filtered BMF GET does not return project-level elements. If you want BMF to return project-level elements, the filter file requires the following row:

```
PROJECT_ELEMENTS,YES
```

If you specify this filter *in addition* to an element date range and a periodicity filter, then only project-level elements that fall within the date range *and* are of the specified periodicity are returned.

Example

This example uses a project called Global Sales. The project includes four scorecards:

- Asia (UUID=50d0c66a-0a28-0d9b-0018-37ec2c8ebca4)
- Europe (UUID=982f87dc-0a28-0d9b-0071-eb2448bf9d6b)
- North America (UUID=98306a18-0a28-0d9b-0071-eb24643d2045)
  - United States (UUID=9830f06f-0a28-0d9b-0071-eb244b097ca3)

Each scorecard includes an element called Sales. The following table shows these elements and their date settings:

Element	Scorecard	Start Date	End Date	Periodicity
Sales — Asia	Asia	SEP2009	DEC2009	Month
Sales — Europe	Europe	2007	2008	Year
Sales — North America	North America	Float	Float	Month
Sales — United States	United States	2009Q2	2009Q3	Quarter Year

In this example, you want to get data from:

- only three of the four scorecards: North America, Europe, and United States
- only the elements that fall in the date range April 1–May 30, 2009

The CSV filter file requires the following rows:

```
SCORECARD,98306a18-0a28-0d9b-0071-eb24643d2045
SCORECARD,982f87dc-0a28-0d9b-0071-eb2448bf9d6b
SCORECARD,9830f06f-0a28-0d9b-0071-eb244b097ca3
FROMDATE,04/1/2009
TODATE,05/30/2009
```

The following code is the example BMF macro invocation:

```
%stmbmf(action=get,
                user=sasdemo,
                pw=DemoDemo1,
                templatename=MarketingTemplate,
                projectname=Global Sales,
                filter=\\<my_computer>\Public\filter.csv,
                outputdir=\\<my_computer>\MyPublic
                );
```

BMF returns a scorecard and elements CSV file.

The scorecard CSV file has the following results:

Scorecard ID	Scorecard Name	Scorecard Parent ID
98306a18-0a28-0d9b-0071-eb24643d2045	North America	
9830f06f-0a28-0d9b-0071-eb244b097ca3	United States	98306a18-0a28-0d9b-0071-eb24643d2045
982f87dc-0a28-0d9b-0071-eb2448bf9d6b	Europe	

Only three scorecards were returned, as specified.

The element CSV file has the following results:

Element ID	Element Name	Element Description	Container ID
9835f846-0a28-0d9b-0071-eb24c13d36ca	Sales — North America		98306a18-0a28-0d9b-0071-eb24643d2045
983df22f-0a28-0d9b-0071-eb24a773f867	Sales — United States		9830f06f-0a28-0d9b-0071-eb244b097ca3

Only two rows are returned:

1. The scorecard filter causes Sales — Asia to be filtered out regardless of its date properties.
2. The date range filter causes Sales — Europe to be filtered out.

Writing Data into SAS Data Sets

To receive data from a BMF GET in SAS data sets, you must create a SAS library in which to write the data sets. For example, if your local system is called MYCOMPUTER, submit the following statement to SAS:

```
libname myLibrary "\\MYCOMPUTER\myPublic\datasets";
```

Then include the CONVERTEDDSDIR and OUTPUTDSLIB arguments in your BMF GET invocation:

```
converteddsdir=\\MYCOMPUTER\myPublic\converteddsets,
```

```
outputdslib=output,
```

For more information, see “determine the folder locations to specify for BMF.” on page 96.

Providing Output to Another Program

BMF jobs can be processed in two ways: asynchronous and synchronous.

Asynchronous processing is a type of server processing that enables you to submit multiple tasks to one or more server sessions that execute in parallel. This kind of processing makes more efficient use of time and resources. Client processing resumes immediately. That is, you do not wait for the server processing to finish executing before control is returned to the client session.

Synchronous processing is a type of processing in which a BMF job must finish executing before control is returned to a client session.

By default, BMF runs in asynchronous mode. However, if a BMF job is part of another program and the program logic requires the output from the BMF job before proceeding, you must specify that the BMF job run synchronously. Typically, this requirement also affects BMF jobs that are used in SAS Data Integration Studio. For more information, see Chapter 20, “Using BMF with SAS Data Integration Studio,” on page 171.

TIP Synchronous mode is required if you use SAS data sets as input or output.

In the following example, the %CALLSOMEOTHERMACRO macro requires that BMF complete processing. Therefore, you must include the SYNCHRONOUS argument in the BMF macro.

```
%local myVariable1 myVariable2;
%let flag=%qupcase(&flag);
%stmbmf(action=GET,
        user=sasdemo,
        pw=DemoDemo1,
        templatename=MyTemplate,
        projectname=MyProject,
        synchronous=YES,
        outputdir=\\myComputer\public
        );
%callSomeOtherMacro():
```

Migrating a Project

What is Migration?

Project *migration* is the act of copying or moving a SAS Strategy Management project from one system to another. The goal of migration is to create a project with identical content on another server.

What Can I Migrate?

SAS Strategy Management has the following restrictions on what you can migrate:

- The migration option is not supported for SAS Strategy Management 2.4 or earlier.
- You can move project data from one installation to another as long as both installations are the same version of SAS Strategy Management. For example, you can move data from a 5.2 installation to another 5.2 installation.
- You cannot move project data from a later version installation to an earlier version installation. For example, you cannot move data from a 5.2 installation to a 5.1 installation.
- You can move project data from an earlier version installation to a later version installation, but you must manually update the migrated data file to incorporate any data model changes in the later version. For example, you can move data from a 5.1 installation to a 5.2 installation, but you must manually update the cell data file to reflect the data model changes in that file in version 5.2.

BMF and the Migration Process

BMF provides the MIGRATE argument. You can use this argument with the GET and MODIFY actions to create CSV and XML files that contain project data. Then you can use these files to copy the project to another SAS Strategy Management installation. The migration process includes the following steps:

1. Retrieve the data files for a specific project by using the MIGRATE argument with the BMF GET action. When you invoke a BMF GET action with MIGRATE=YES, BMF creates the same data files as without the MIGRATE argument except that the action code is set to 3 (that is, add) for all the objects.
2. Make the data files available to the SAS Strategy Management server on the target system. You can do this either by setting folder permissions or by copying the data files to the target system.
3. Read the data files by using the MIGRATE argument with the BMF MODIFY action. When you invoke a BMF MODIFY action with MIGRATE=YES on the data files, BMF creates all the objects by using the same UUIDs that were used on the source system.

When you use the MIGRATE argument, remember the following restrictions:

- Use this option *only* for project migration.

  CAUTION! After you create the data files with BMF GET, do not edit the data files during the migration process.

- Perform the migration in one pass. Do *not* attempt to perform an incremental migration.
- If you use the MIGRATE argument to create and delete certain SAS Strategy Management objects multiple times on the same system, these actions might fail. This failure is caused by the SAS Metadata Server and how it handles security. SAS generates an exception if the following sequence occurs:

  1. You create an object (for example, the template).
  2. You perform a GET action with the MIGRATE argument.

3 You delete the template.

4 You create the template again by using the MIGRATE argument.

This exception occurs because the original template UUID is saved in metadata and cannot be used again until you log off from Strategy Management Builder (the web application).

- In Strategy Management Builder, you can create a template and not assign an owner to it. This is also true when you create a template by using BMF. However, when you create a template with the BMF MIGRATE argument, you *must* specify an owner for the template. BMF GET uses the user ID that is specified in the template Owner field. If no template owner is specified, the GET action uses the user ID of the user who is invoking BMF.

Import a Configuration

BMF provides the IMPORTCONFIG argument that you can use to import data into SAS Strategy Management. To import data:

1 Make sure your source data files are set up correctly. For more information, see "Importing Data into a Strategy Management Project" in the *SAS Strategy Management: User's Guide*.

2 Create an import configuration by using the Manage Import Options feature in the SAS Strategy Management Builder. For more information, see "Importing Data into a Strategy Management Project" in the *SAS Strategy Management: User's Guide*.

3 When the import configuration is complete, open the configuration again and view the **Identification** page.

4 The **Import Configuration ID** is a UUID that identifies this import configuration file. Record this ID. BMF uses this ID as the value for the IMPORTCONFIG argument.

5 Construct the BMF invocation to import the data. Specify the import configuration ID for the IMPORTCONFIG argument. Because you are using the IMPORTCONFIG argument, you do not specify any data files.

```
%STMBMF( Action = MODIFY,
         User = sasdemo,
         Pw = Orion123,
         Templatename = Import Wizard E2,
         Projectname = Project BMF E5,
         Outputdir = D:\BMF\hold,
         Importconfig = a977ba2c-0a15-0c46-039f-ae86b062dec9,
         Synchronous - YES,
         attachLocalLog = YES
);
```

Note: SYNCHRONOUS = YES is not required for importing a configuration.

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Modifying an Existing Project and Its Data Using Quick-Entry Mode

Overview

Description

Quick-entry mode is an alternative to using the MODIFY action. Using quick-entry mode, you can create and update a subset of the Strategy Management objects by using the object name instead of its universal unique identifier (UUID). This mode also enables you to do the following tasks:

- create only a scorecard with no elements or values
- create only an element with no values
- create or update cell values

Quick-entry mode is invoked using the %STMBMF macro.

Prerequisites

You must meet the following prerequisites to use quick-entry mode:

- The user account that you specify when invoking BMF must have the correct permissions to create or modify anything in Strategy Management. The user must be a member of the Strategy Management Users group. Any attempt to use quick-entry mode without being a member of an appropriate group causes BMF to issue an error message and end.
- The user role must be assigned the appropriate BMF capabilities. For information, see "Securing Access to SAS Strategy Management" on page 24.
- The template, template objects (or objects contained within the templates), and project must exist and must be specified in the %STMBMF macro invocation.

Performance Limitations

Quick-entry mode identifies Strategy Management objects by using their names in the default language. Because quick-entry mode does not use UUIDs to identify objects, BMF must perform more database processing to locate and identify Strategy Management objects. Because quick-entry mode does not use UUIDs, this mode has performance limitations when compared with standard BMF. Although UUIDs can be difficult to use, they do provide processing efficiency.

Requirements

Quick-entry mode performs a subset of the existing MODIFY functionality according to the following requirements:

- There is only one input file or data set.
- Each row must correspond to one of the following items:
  - a scorecard
  - a scorecard and an element
  - a scorecard, an element, and a cell
- The element type, column (metric attribute), and period type must already be defined within the template and project.
- Date values must be defined as a time period in the time definitions table in SAS Strategy Management. These values include calendar dates and SAS period dates.

Quick-Entry Mode Errors and Logging

Error logging and e-mail notification work the same for quick-entry mode as they do for the standard MODIFY action.

Each row either creates or updates one of the following:

- a scorecard
- a scorecard and an element
- a scorecard, an element, and a cell

If one of these combinations cannot be found or created with the information in this row, the following actions occur:

- The row data is written to an error file.
- An error message explaining the problems that occurred is written to the local error log.

Note: BMF continues to process the subsequent rows of data.

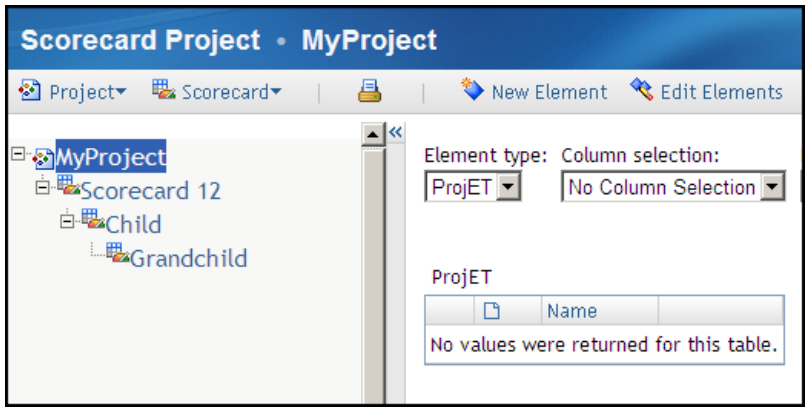
The following mistakes can cause errors when using quick-entry mode:

- Specifying element properties (Periodicity, Start Period, End Period) for an element that already exists.
- Specifying the Cell Date using a date that is not in the currently specified SAS short date format.

Creating a Scorecard Hierarchy

Overview

This example shows how to create a scorecard hierarchy without element or cell values using quick-entry mode.



Create the Required Input Files

Create a CSV file, the same way you do with standard BMF. You still specify a header row that is ignored, and each column still represents an aspect of your data. In the quick-entry data model, the first column represents scorecards. BMF interprets the input as an instruction to create a root-level scorecard named Scorecard12 in the template and project that you specify in the macro invocation. In this example, that is all that BMF does. If the scorecard already exists, nothing is done. You cannot set or modify any scorecard properties by using quick-entry mode.

To create one scorecard named Scorecard12, create an input file that contains the following data:

Note: Not all columns are shown in the following displays.

Scorecard	Element Type	Element	Period	Column	Value	Text
Scorecard 12						

To create a hierarchy of three scorecards, you can specify all the scorecard names separated by a delimiter, the vertical bar (|). In the following example, each scorecard has its own row of data. The non-root-level scorecards are indicated by the delimiter separating the scorecard names.

Scorecard	Element Type	Element	Period	Column	Value	Text
Scorecard 12						
Scorecard 12|Child						
Scorecard 12|Child|Grandchild						

You can also specify the same hierarchy by using only one row of data. The following example creates the same three scorecards as the previous example.

Scorecard	Element Type	Element	Period	Column	Value	Text
Scorecard 12|Child|Grandchild						

For information about the data model, see Appendix 5, “Data Model for Quick-Entry Mode,” on page 233.

Invoke the Macro

TIP Before you can invoke the %STMBMF macro, ensure that you have defined the macro to the SAS client. See “Define the BMF Macro to the SAS Client” on page 98.

To invoke the BMF MODIFY action in quick-entry mode, you must specify the following macro arguments:

Argument	Value
ACTION	MODIFY
USER	Specify the user ID for a SAS user. **Note:** The user ID that is specified in the USER argument must have e-mail enabled for the notification to succeed. For more information, see “Information to Get from Your SAS Administrator” on page 95.
PW	Specify the password for a SAS user.
TEMPLATENAME	BMF works with one template at a time. Specify the template.
PROJECTNAME	BMF works with one project at a time. Specify the project.
QUICKENTRYMODE	Specify `YES`.
QUICKENTRY	Specify the input data file that you created using the quick-entry data model.For more information, see “determine the folder locations to specify for BMF.” on page 96.

Argument	Value
OUTPUTDIR	Specify where to write the output data files. For more information, see “determine the folder locations to specify for BMF.” on page 96.

The following macro statement shows the argument values for this example:

```
%STMBMF(action=modify,
        user=sasdemo,
        pw=DemoDemo1,
        templatename=MyTemplate,
        projectname=MyProject,
        quickentrymode=YES,
        quickentry=\\MYCOMPUTER\public\inputfiles\MyValues.csv,
        outputdir=\\MYCOMPUTER\public
        );
```

Submit the macro statement to the SAS client. To confirm that the command was successfully sent to the SAS middle tier and to the BMF system, view the SAS log and locate the following messages:

```
NOTE: Event begin successful.
NOTE: Event body successful.
NOTE: Event publish successful.
NOTE: Event end successful.
NOTE: DATA statement used (Total process time):
        real time                0.12. seconds
        cpu time                    0.00 seconds

NOTE: Event SAS.Solutions.SpmBOBInterface published successfully.
NOTE: STMBMF 5.4 has ended but some STMBMF processes may still be running
asynchronously.
```

Macro Results

BMF interprets the input file in the following way:

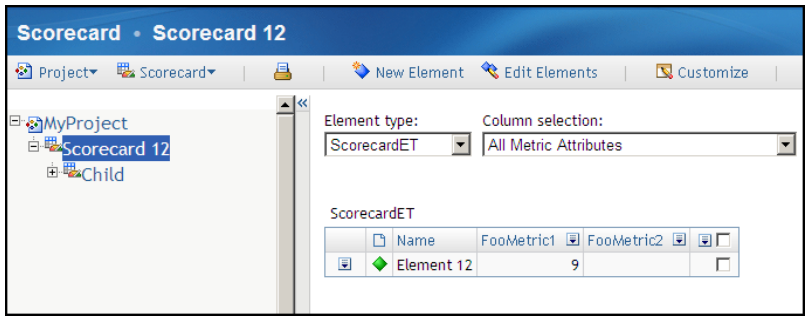
1. Determine whether a root-level scorecard named Scorecard12 already exists.
   a. If it does not exist, create the root-level scorecard named Scorecard12.
   b. If it does already exist, ignore the statement.
2. Determine whether Scorecard12 has a child scorecard named Child.
   a. If it does not exist, create the child scorecard named Child.
   b. If it does already exist, ignore the statement.
3. Determine whether Child has a child scorecard named Grandchild.
   a. If it does not exist, create the child scorecard named Grandchild.
   b. If it does already exist, ignore the statement.

Adding Elements and Cell Values

Overview

This example shows how to add elements and cell values using quick-entry mode. Using the scorecard hierarchy that was created in the previous example, add an element named Element 12 with a value of 9 for the displayed period and column FooMetric1.

Note: A scorecard element type, ScorecardET, and a metric attribute, FooMetric1, must already be defined in the template before invoking the macro using quick-entry mode.



Create the Required Input File

To add an element and cell values, create the following input:

- In the Element Type column, specify the scorecard element type named **`ScorecardET`**.
- In the Element column, specify the element named **`Element12`** for the scorecard Scorecard12.
- In the Cell Date column, specify the date to associate with the element.

  Quick-entry mode expects the date in the Period column to be given in the currently specified SAS short date format. This format is set on the Preferences page in the Strategy Management Web application. You can choose from different date formats, such as 06/03/2010 or 2010-60-03.

  Note: If you do not use the currently specified SAS short date format, BMF generates an error.
- In the Column column, specify the metric attribute **`FooMetric1`**.
- In the Value column, specify **`100`**.
- In the Text column, do not specify a value. The cell does not have a text value.
- In the Periodicity column, specify the periodicity **`Month`**.
- In the Element Start Period column, specify the starting month **`JAN2012`**.
- In the Element End Period column, specify the ending month **`DEC2012`**.

The following example shows data that adds element and cell values for additional scorecards in the hierarchy. This input file creates the scorecards, if they do not already exist, as well as the elements and cells. You can also add cell text values.

Scorecard	Element type	Element	Cell Date	Column	Value	Text	Periodicity	Element Start Period	Element End Period
Scorecard12	ScorecarET	Element12	5/1/2012	FooMetric1	100		Month	JAN2012	DEC2012
Scorecard12|Child	ScorecarET	Element Child	5/1/2012	FooMetric2	33		Month	JAN2012	DEC2012

Invoke the Macro

Assuming that the new data is added to the MyValues.csv input file, the macro invocation is unchanged from the previous example. See "Invoke the Macro" on page 166 for that macro invocation.

Macro Results

BMF creates the elements if they do not exist and gives them start and end periods of Float. If the cells do not exist, they are also created and the values are set as specified.

Using the Wildcard Token in the Scorecard Column

Overview

If you want to create the same element, cell value, or both in every scorecard in a part of the scorecard hierarchy, quick-entry mode provides a wildcard token for use in the input file. In the Scorecard column, you can specify the wildcard token (*) as part of the scorecard value. You can use the wildcard as the entire scorecard value or you can place it at the end of the scorecard value.

The wildcard directs BMF to apply the values from the row to every scorecard that matches the wildcard. If the row contains information about an element or cell, that element or cell is created or updated for every scorecard that matches the wildcard. All elements in the resulting scorecard hierarchy are linked.

Note: The scorecard hierarchy that is located where the asterisk is placed must already exist.

Examples of Using the Wildcard Token

If you want the same element to appear in all of the scorecards in the hierarchy, you can specify the wildcard character in the Scorecard column. If you want to specify Element 12 and cell value `9` for the current Period in column FooMetric1 in every scorecard in the example hierarchy, you use *only* the wildcard character in the Scorecard column as shown in the following display:

Scorecard	Element Type	Element	Period	Column	Value	Text
*	ScorecardET	Element 12	5/1/2010	FooMetric1	9	

If you want to specify Element Child and cell value 6 for the current Period in column FooMetric1 in all the child scorecards of Scorecard 12 and their descendants, you use the wildcard character after the root-level scorecard and the delimiter (|) in the Scorecard column:

Scorecard	Element Type	Element	Period	Column	Value	Text
Scorecard 12|*	ScorecardET	Element Child	5/2/2010	FooMetric2	6	

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Using BMF with SAS Data Integration Studio

Overview

BMF in SAS Strategy Management provides a BMF-specific transformation for use in SAS Data Integration Studio. You can use this transformation to perform BMF tasks in SAS Data Integration Studio instead of invoking the %STMBMF macro in a SAS client session.

Note: For information about SAS Data Integration Studio, see the *SAS Data Integration Studio: User's Guide*. (See "Additional Documentation" on page 4.)

Using SAS Data Integration Studio, you can create multiple jobs that use the BMF transformation. For each job that you create, you can specify and save settings in the BMF transformation properties. Doing so enables you to easily create, customize, and save BMF jobs.

Start SAS Data Integration Studio and Locate the Samples

To start SAS Data Integration Studio:

1 Obtain the following information from an administrator:

- the network name of the metadata server
- the port number used by the metadata server
- a user name and password for the metadata server

Note: The server name and port number is the same information that you submit with the macro definition. See "Define the BMF Macro to the SAS Client" on page 98.

2 Start SAS Data Integration Studio.

3 In the Connection Profile window, click **Create a new connection profile**. A connection profile enables you to connect to a SAS Metadata Server. You cannot do any work until you open an existing profile or create a new profile.

4 In the New Connection Profile wizard, click **Next**, and type a name for the profile.

5 Click **Next**, and type a machine address, port, user name, and password that enables you to connect to the appropriate SAS Metadata Server.

6 Click **Finish** to exit the New Connection Profile wizard, connect to the metadata server, and display the server's metadata in SAS Data Integration Studio.

7 Click **OK** in the Connection Profile window. The SAS Data Integration Studio desktop appears.

8 In the left panel, click the **Transformations** tab to view the **Transformations** tree.

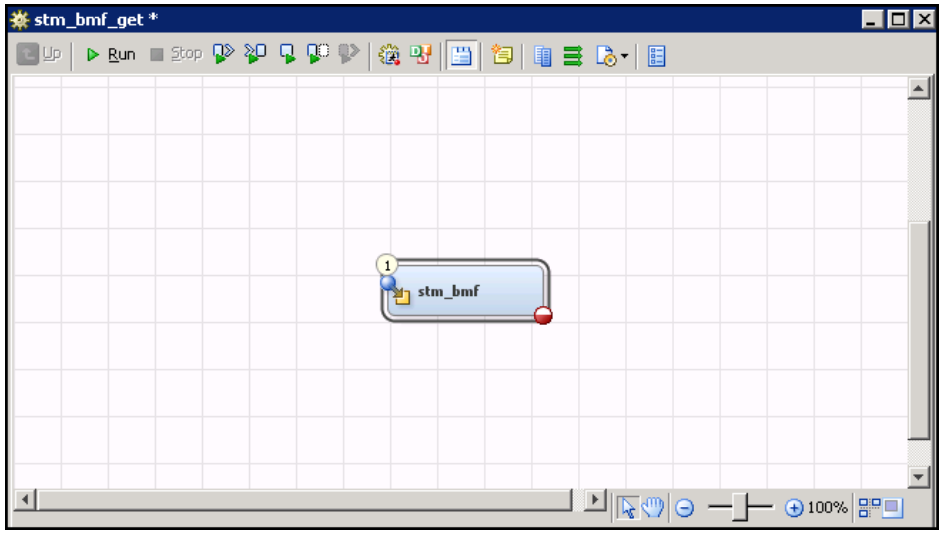
9 Expand **Strategy Management** and locate the BMF transformation named stm_bmf.

10 In the left panel, click the **Folders** tab and locate your job in the **Folders** tree.

Run Your Job

To run your job, complete the following steps:

1 In the **Folders** tree, double-click your job. The job appears on the Diagram page and the stm_bmf transformation icon is displayed.



2 On the Diagram page, double-click the stm_bmf transformation icon.

3 In the Properties window, click the **Options** tab.

4 On the BMF Options page, complete the following steps:

a In the **StM User** field, specify the user ID of a SAS user.

   Note: If you want the user to receive e-mail notifications when the BMF jobs are completed, make sure that the specified user ID has been enabled to receive e-mail. This setting is set in SAS Management Console.

b In the **StM Password** field, specify the password for the SAS user.

c In the **Output Directory** field, specify a folder in which BMF can write the output.

d In the **Template name** field, enter the name of the template to use.

e In the **Project name** field, enter the name of the project to use.

f From the **Quickentry mode** list, select whether you are using are the quickentry mode option.

g From the **Action** list, select the BMF action that you want to use.

h (CREATE or MODIFY actions only) Enter the names of any input files required for the job. Make sure you enter the file names in the applicable fields.

i (Optional) If the job requires additional BMF arguments, enter the required information in the applicable fields.

5 Click **OK**. The stm_bmf icon displays a green circle with a check mark that indicates all the required information has been provided.

6 On the menu bar, click **Run**. When the job is complete, the Details pane displays status information. However, you must still check the BMF log or see the BMF e-mail notification to determine whether the BMF job completed successfully.

   Note: The Details pane information is displayed only if there was no error in the job submission.

Create Custom Jobs

You can use the stm_bmf transformation to create your own custom jobs in SAS Data Integration Studio. For each job, edit the transformation properties and specify the BMF argument values that are required for that job.

TIP If your SAS Data Integration Studio job contains multiple jobs, and later jobs rely on output from a BMF job, make sure that you specify that BMF run synchronously. See “Providing Output to Another Program” on page 159.

Note: For more information about creating jobs, editing transformation properties, and running jobs in SAS Data Integration Studio, see the *SAS Data Integration Studio: User's Guide*.

21

Debugging BMF

Overview

BMF generates errors that you can review in log and error files. These errors can help you identify what you must change so that the BMF job can succeed. This chapter describes the files available for use, how BMF generates its errors, and troubleshooting tips.

BMF Log Files and Error Files

Available Files

You can use the following files to debug your BMF jobs:

server-side log
: a detailed BMF log file that is generated by and located on the SAS middle tier application server. The server-side log differs from the local log. The server-side log contains a lot of debugging information from each invocation of the BMF macro that occurs during a set period of time. At the end of the time period, the server-side log is saved and another server-side log is started. The time period is set by the SAS administrator.

Typically, the log file is named sas_bmf.log. However, you can configure the location and name of the log file. Contact your SAS administrator for this information.

local log
a BMF log file that is located on the local system from which you are issuing the %STMBMF macro. The local log does not contain the large volume of debugging messages and code information that the server-side log contains. Instead, the local log contains single-line error messages that explain the BMF error that has occurred.

TIP You do not have to set the logging level for the BMF packages in order to use the local log.

data-type error files
When an error occurs in a data-type file, BMF generates an associated error file.

The location of these error files is specified by the OUTPUTDIR argument. An error file is named *data_type*_Errors.csv where *data_type* is the data-type input file that is associated with the errors. For example, if the scorecard data-type file generates an error, the error file is named scorecard_Errors.csv.

SAS log
This log is provided by the SAS client. You must enable this log for it to be available.

Enabling the SAS Log

BMF can write additional debugging information to the SAS log. If you want this information, you must specify the following code when you submit the macro:

```
%let debug=Y
```

For information about submitting the %STMBMF macro, see “Macro Arguments ” on page 87.

Saving the Local Log Information

The local log is created with each invocation of BMF. If a previous log exists, that log is overwritten. However, you can direct BMF to save the local log. Instead of overwriting the log, BMF appends new log output to the existing local log.

Note: The server-side log is still available. It is not overwritten.

BMF provides the APPENDLOCALLOG argument that you can use to enable this option.

The local log is written to the location that is specified by the OUTPUTDIR argument. The log is located in the subdirectory named *template_name*, where *template_name* is the name of the SAS Strategy Management template that the BMF job is using. The log filename is *template_name*_LOG.txt.

Sending the Local Log by E-mail

You can attach the local log file to an e-mail notification. This option is useful when BMF is installed on a middle-tier system that is running UNIX. The local log is located on your local system that runs Windows. On UNIX, you cannot specify a Windows file path. Therefore, you cannot specify the location to write the log file. In

this situation, you can use this option to attach the log file to an e-mail notification instead.

BMF provides the ATTACHLOCALLOG argument that you can use to enable this option. The option is disabled by default.

Note: The user ID that is specified in the USER argument must have e-mail enabled for the notification to succeed. For more information, see "Information to Get from Your SAS Administrator" on page 95.

BMF Failure Scenarios

Overview

When you invoke BMF, the following conclusions are possible:

- The command succeeded with no errors.
- The macro invocation was incorrect, and the command was not sent to the SAS middle tier.
- The macro invocation succeeded, and the command was sent to the SAS middle tier. However, an unrecoverable error occurred, and none of the BMF changes were made.
- The macro invocation succeeded, and the command was sent to the SAS middle tier. However, some errors occurred, and only some of the BMF changes were made.

Note: For information about these files and logs, see "BMF Log Files and Error Files" on page 175.

The Macro Invocation Failed

If you make a semantic error when you compose your %STMBMF macro invocation, the macro rejects your invocation and does not send any BMF event to the SAS middle tier. You must correct any mistakes and resubmit the invocation.

TIP A typical mistake is misspelling an argument.

The Macro Invocation Succeeded, but the BMF Job Failed

Some errors are considered unrecoverable and BMF stops performing all tasks. Unrecoverable errors are typically problems with the template or project that cause one or both files to be invalid. Because all SAS Strategy Management objects depend on these two files, BMF ends and restores all changes to their previous state if an unrecoverable error occurs.

Suppose, for example, that in the project file you replace the project UUID with `1` and set the operation code to `1` (modify). When you run BMF MODIFY, the following message is sent to the specified user if that user has e-mail enabled: `The submitted BMF MODIFY job has finished and failed completely`

```
with an elapsed time of 1264 milliseconds. Consult BMF server
log for error details.
```

When you view the BMF server-side log, the following error messages are reported:

```
09-24 10:45:21, 701 ERROR BatchProjectFileIO ERROR: invalid value for GUID
in input file for Project on line 1,value=1
09-24 10:45:21, 842 ERROR BatchBrokerUtilProject ERROR: invalid value for
GUID in input file for Project on line 2,value=1
com.sas.solutions.spm.core.persistence.batch.exception.
BatchInvalidGUIDException:
ERROR: invalid value for GUID in input file for Project on line 2,value=1
at com.sas.solutions.spm.core.persistence.batch.project.BatchProjectFileIO.
confirmProjectGUID(BatchProjectFileIO.java:881)
```

The Macro Invocation Succeeded, and the Job Partially Succeeded

BMF attempts to perform as much of the job that you sent as possible. However, some parts of the BMF job are not always completed due to an error. BMF processes each of the input files in its own database transaction. When an error is found for a specific data row in one of the files, BMF performs the following tasks:

- copies the affected row to a corresponding error file
- generates an error message in the BMF server-side log and the BMF local log
- generates an e-mail indicating that errors were found

  Note:

  - The user ID that is specified in the USER argument must have e-mail enabled for the notification to succeed. For more information, see “Information to Get from Your SAS Administrator” on page 95.
  - You can also attach the local log to an e-mail notification. For more information, see “Sending the Local Log by E-mail” on page 176.

BMF processes the input files in a specific order. For more information, see “How the BMF Macro Processes the GET Action” on page 115.

Troubleshooting Tips

When you are debugging errors, consider the following troubleshooting tips:

- Do not run multiple instances of BMF where you are changing data values. Running more than one instance might cause loss of data integrity and other complications.
- When a SAS Strategy Management object is dependent on another SAS Strategy Management object, multiple errors might be generated. For example, if a scorecard fails to be created, an error is generated. Because the scorecard does not exist, any new elements for that scorecard also fail to be created and generate errors.
- The user ID that is specified in the USER argument must be assigned a role and permissions that permit it to change the affected SAS Strategy Management

data. The user role must be assigned the appropriate BMF capabilities. For information, see “Securing Access to SAS Strategy Management” on page 24.

- Microsoft Excel has a limitation for the size of a file that it can display. Determine the limitation for your version of Excel and be aware of the size of the files that you want to load.
- Excel might convert values such as dates to its own internal format. You must format the affected columns as simple text to prevent this conversion.
- You must use quotation marks correctly in the input files, or errors can result. Because Excel uses quotation marks for values correctly, consider using Excel to save your files to the CSV file format.
- You must have the correct authorizations to update SAS Strategy Management objects that you might not own or that you do not have a specific permission to update.

  Note: To ensure that you have authorization to make updates, verify that you are a member of the Strategy Management Users group and the Strategy Management Modeler group.
- BMF can run asynchronously or synchronously. Synchronous mode is useful when you want to use BMF in a program that has several steps that must be run one after the other, especially when requesting SAS data set input or output. See “Providing Output to Another Program” on page 159.

Part 3

Appendices

Appendix 1

Default Port Usage

Overview

The servers in the SAS Intelligence Platform communicate with clients and other servers using TCP/IP. Each server listens on a particular port or ports for incoming requests. During installation, the SAS Deployment Wizard enables you to either accept the default ports or to specify different port numbers for some servers.

Default Port Numbers for SAS Servers and Spawners

The following table shows the default port numbers for SAS servers and spawners that are installed in a `Lev1` SAS environment that includes the SAS Performance Management solutions. The table also includes default third-party ports.

Your site might use different port numbers than the ones that are shown here. For a complete list, see the pre-installation checklist for your site.

Table A1.1 *Default Port Numbers and Descriptions*

Port Number	Description
25	SMTP mail: Port used by mailhost or Simple Mail Transfer Protocol (SMTP). Used to send administrative e-mail notices and end-user alert notifications.
80	HTTP Server: Handles proxy requests to application server. Also used for static assets such as themes, style sheets, and images.
2171	SAS Table Server port.
3306	Database server port. All JDBC access from the managed servers goes through this port to the MySQL server. SAS/ACCESS Interface to MySQL also uses this port.
5091	SAS Remote Services application port. All client access to remote Foundation Services is directed through this port. In solutions deployments, only middle-tier clients communicate via RMI. Therefore, it is not necessary to open this port to external access (that is, to other clients on the network) in a firewall-protected environment.
5451	SAS OLAP Server port.
5556	(Oracle WebLogic Server) NodeManager port.
6051	Event Broker service: Listen port for administrator.

Port Number	Description
7001, 7101, 7201, 7301, 7401	(Oracle WebLogic Server) Nonsecure listen ports for managed servers. Additional managed server port numbers are incremented by 100. Used by web applications and by many of the client applications, such as SAS Strategy Management.
7002, 7102, 7202, 7302, 7402	(Oracle WebLogic Server) Secure listen ports for managed servers. Additional managed server port numbers are incremented by 100.
7501	(Oracle WebLogic Server) Listen port for the administration server.
7551	SAS/CONNECT Server port.
8111	Event Broker service: Used by SAS Solutions Services for HTTP transports into the Foundation Services Event Broker. Events fired by SAS code into the middle tier are communicated via this port.
8451	Operating System Services scheduler port.
8551	SAS/SHARE Server.
8561	SAS Metadata Server: Default port for metadata access. This is also the default multicast UDP port number.
8571	SAS object spawner load balancing: Load-balancing requests from SAS object spawner go through this port.
8581	SAS object spawner: Operator port.
8591	SAS Workspace Server port. Might also be shared by metadata utilities SAS Workspace Server port.
8601	SAS Stored Process Server: bridge connection.
8611, 8621, 8631	SAS Stored Process Server: load balancing connections 1, 2, and 3 (MultiBridge).
8701	SAS Pooled Workspace Server port.
8801, 8811, 8821	SAS object spawner: pooled workspace server port banks 1, 2, and 3.
9000	Port used to register SAS BI portlets with the portal.
10021	SAS Deployment Tester server port.

When you set up a multiple-level SAS environment (for example, an environment that consists of separate levels for development, test, and production), the SAS Deployment Wizard increments each port number by 1 for each level. For example, the default `Lev1` port number for the SAS Metadata Server is 8561. A `Lev2` environment would use port 8562.

Note: SAS PC Files Server uses port 8621 by default, but this port is also used by the SAS Stored Process Server. If you installed SAS PC Files Server and need to change its port number, see “Configure PC Files Server” on page 6.

For additional information, see the “Default SAS Ports” appendix of the *SAS Intelligence Platform: System Administration Guide*. (See “Additional Documentation” on page 4.)

Default Port Numbers for Third-Party Software

The following table shows the default port numbers for third-party software.

Table A1.2 *Default Port Numbers and Descriptions for Third-Party Software*

Software	Port Number	Description
Oracle WebLogic Server	5556	NodeManager port.
	7001, 7101, 7201, 7301, 7401	Nonsecure listen ports for managed servers. Additional managed server port numbers are incremented by 100. Used by Web applications and by many of the client applications, such as SAS Financial Management Studio.
	7002, 7102, 7202, 7302, 7402	Secure listen ports for managed servers. Additional managed server port numbers are incremented by 100.
	7501	Listen port for the administration server.
IBM WebSphere Application Server	8879	SOAP port for administrative console.
	8880, 8881	SOAP port for application servers (additional application servers increment by 1).
	9043	Secure HTTPS port for administrative console.
	9044, 9045, 9046, 9047, 9048	Secure HTTPS ports for application server (additional application servers increment by 1).
	9060	Non-secure HTTP port for administrative console.
	9080, 9081, 9082, 9083, 9084	Non-secure HTTP ports for application server (additional application servers increment by 1).
	9809	Remote Method Invocation (RMI) port for administrative console (additional administrative consoles increment by 1).
	9811, 9812	RMI ports for application servers.
JBoss Server	1099, 1199, 2099	RMI port for application servers.
	2199	RMI port for the optional SAS Visual Analytics Reports Services package.
	8080, 8180, 9080	Non-secure HTTP ports for application server.
	9180	Non-secure HTTP port for the optional SAS Visual Analytics Reports Services package.
	8443, 8543, 9443	Secure HTTPS ports for application server.
	9543	Secure HTTPS port for the optional SAS Visual Analytics Reports Services package.

Appendix 2

PROJCALC Macro

Overview of the %PROJCALC Macro

The %PROJCALC macro starts the calculation process on a SAS Strategy Management project. Use the %PROJCALC macro to calculate all of the formulas in a project or scorecard without using the Strategy Management Builder. For example, you might have a SAS job that you run regularly to update SAS Strategy Management tables. You can use the %PROJCALC macro in the job to recalculate the formulas with any new values in the tables.

Macro Arguments

The header of the %PROJCALC macro documents all the macro arguments. All arguments use the keyword=value convention. Each keyword-value pair must be followed by a comma, except for the last pair before the closing parenthesis.

The following tables lists the arguments to use with the %PROJCALC macro.

Table A2.1 *%PROJCALC Macro Arguments*

Argument	Description	Required
PROJECTID	The UUID of the project that will undergo the calculation.	Yes
STARTDATE	The start date of the project. The argument expects the date in the mmddyyyy format (for example, 07012005 indicates July 12, 2005).	Required if PROJECTID is not specified.
ENDDATE	The end date of the project. The argument expects the date in the mmddyyyy format (for example, 12312005 indicates December 31, 2005).	Required if PROJECTID is not specified.

Argument	Description	Required
USER	A valid SAS user name for the SAS Strategy Management application. You assign the user name by using the User Manager feature in SAS Management Console. The user name is located in the metadata. **Note:** The USER argument is valid only when the SAS user name and the SAS login ID are the same value in the user definition that is in the metadata. If these values are not the same then use the USERID argument. The USER argument is retained only for use by preexisting %PROJCALC references. For versions 5.4 and later, use the USERID argument.	Required if USERID is not specified. For versions 5.4 and later, the USERID argument is required. The USER argument is deprecated.
USERID	A valid SAS login ID for the SAS Strategy Management application. You assign the login ID by using the User Manager feature in SAS Management Console. **Note:** If the SAS user name and SAS login ID settings differ in the user definition in the metadata, then use the USERID argument. The USER argument is retained only for use by preexisting %PROJCALC references. For versions 5.4 and later, use the USERID argument.	Required if USER is not specified. For versions 5.4 and later, the USERID argument is required. The USER argument is deprecated.
PASSWORD	The password for that user.	Yes
SCORECARDID	The UUID of a scorecard. Specify this argument if you want to perform a calculate on the scorecard.	Optional
INCLUDECHILDREN	A setting that directs whether a calculate must include all of the child scorecards as well as the parent scorecard. The following values are valid: ■ TRUE, Y, or 1 ■ FALSE, N, or 0 By default, child scorecards are included in the calculate.	Optional
PERIODID	The UUID of the time period that is being used for the calculate.	Required if startdate and enddate are not specified.
EVENTNAME	A setting that directs PROJCALC to process its job synchronously. If set to synchronous, the job waits for PROJCALC to complete processing before allowing subsequent SAS statements to run. By default, PROJCALC jobs are processed asynchronously and the value defaults to SAS.Solutions.SpmValueChanged. To process synchronously, use the eventName SAS.Solutions.SpmValueChangedSynch.	Optional
SENTBY	By default, the value of this argument is CalculateRequest.sas. You can change the value to any arbitrary value.	Optional
DOMAIN	The login domain for the user. By default, the value is DefaultAuth.	Optional

Argument	Description	Required
LANGUAGEID	The language used by the project. By default, this setting is the default language specified for the template and its project and scorecard in SAS Strategy Management.	Optional

Note: The following arguments are no longer supported: MIGRATECELLS and REMOVEMIGRATEDCELLS.

Example Macro Call

To use %PROJCALC, you must specify at least the required arguments and the global macro variable called`eventserver`. The `eventserver` variable contains the Web address of the applicable event server. You can set the Web address by using the GETLSTNR macro. Typically, the GETLSTNR macro requires valid values for the following SAS options:

- metarepository
- metaserver
- metaport
- metaprotocol
- metauser
- metapass

The following example shows a call to the GETLSTNR macro and subsequently %PROJCALC:

```
options metaserver=seshp03 metaport=8561 metarepository=Foundation
   metauser=sasadm metapass=AdminPassword;
   %getlstnr;
   %ProjCalc(projectid=2fd65630-0a29-0ba4-014a-74b1e967da7c,
             startdate=07012005,
             enddate=12012005,
             user=saszjm@authldap,
             password=saszjm,
             domain=DefaultAuth);
```

Troubleshooting

If the SAS log does not contain error messages, but it appears that a project calculate did not occur, check the application server log for additional diagnostic information. For WebLogic servers, the log file is called WebLogicLog.txt.

Appendix 3

Data Model for the GET and MODIFY Actions

Setup File

The setup data file that is used for the GET and MODIFY actions specifies information about the following details:

- a template
- template access permissions
- element types
- metric attributes
- attribute definitions

Note: These files include column headings that describe the type of data that is contained in each column. The heading row is not used by BMF. The row is provided only for informational purposes. BMF uses the position of each column in the file to identify the data that the column contains. If this row is a header row or is blank it will be ignored in processing. In this file, the first column in a column heading row contains one of the following values:

- 0 (that is, zero)
- KEYWORD, a constant value that is case insensitive

Although most data files contain one type of data and a fixed number of columns, the setup data file can contain four types of data rows. Each type of data row requires a different number of columns.

Each type of data is identified by the value in the first column (the Keyword column) and must be one of the following values (either string or integer):

String	Integer
TEMPLATE	1
TEMPLATE PERMISSIONS	5
ELEMENT TYPE	2
METRIC ATTRIBUTE	4
ATTRIBUTE DEFINITION	3

The data column order for the TEMPLATE data type is described in the following table.

Table A3.1 *Keyword=Template Column Order and Descriptions*

Column Order	Column Name	Column Description	Required for MODIFY
1	Keyword	This value must be TEMPLATE (or 1). This value is case insensitive. **Note:** Specify only one row with the keyword TEMPLATE.	Required
2	Operation Code	■ For GET, this column is blank. ■ For MODIFY, this column specifies the operation to take. For more information, see "Operation Code Values" on page 243.	Optional **Note:** For GET, this value does not apply.
3	ID	The identifier for the template. When you modify or delete a template, this is a UUID that uniquely identifies the template. When you add a template, this is a reference number that uniquely identifies the template. For more information, see Appendix 7, "Identifying New Strategy Management Objects," on page 247. **Note:** The template that is identified must be the same template that is specified in the %STMBMF macro argument TEMPLATENAME.	Required
4	Name	The name of the template. This value must be in the default language, and can be no longer than 255 characters. When you modify or delete a template, this is the existing template name. If you add a template, this is the new template name. **Note:** The template that is identified must be the same template that is specified in the %STMBMF macro argument TEMPLATENAME.	Required
5	New Name	The name of the template after you modify a template name. This value must be in the default language, and can be no longer than 255 characters.	Required if you modify a template name. Otherwise, it is optional.

Column Order	Column Name	Column Description	Required for MODIFY
6	Owner	The valid SAS Strategy Management user ID of the owner of the template. This value can be no longer than 60 characters. A blank value indicates that the template owner is unchanged.	Optional
7	Description	The description of the template. This value must be in the default language, and can be no longer than 255 characters.	Optional

The data column order for the TEMPLATE PERMISSIONS data type is described in the following table.

Table A3.2 *Keyword=Template Permissions Column Order and Descriptions*

Column Order	Column Name	Column Description	Required for MODIFY
1	Keyword	This value must be TEMPLATE PERMISSIONS (or 5). This value is case insensitive.	Required
2	Security Operation Code	■ For GET, this column is blank. ■ For MODIFY, this column specifies the operation to take. For more information, see "Operation Code Values" on page 243.	Optional **Note:** For GET, this value does not apply.
3	Template Name	The name of the template. This value must be in the default language and can be no longer than 255 characters. **Note:** The template that is identified must be the same template that is specified in the %STMBMF macro argument TEMPLATENAME.	Required
4	Security ID	The ID of the user or user group for whom the template access permissions are specified. This value can be no longer than 60 characters.	Required
5	Security ID Type	The type of access permissions. This value must be either USER (or 1) or GROUP (or 2), and is case insensitive.	Required
6	Permissions	The specified permissions. For more information about access permissions, see "Access Permission Values" on page 237.	Required

The data column order for the ELEMENT TYPE data type is described in the following table. For version 5.4, the New Description column has been removed.

Table A3.3 *Keyword=Element Type Column Order and Descriptions*

Column Order	Column Name	Column Description	Required for MODIFY
1	Keyword	This value must be ELEMENT TYPE (or 2). This value is case insensitive.	Required

Column Order	Column Name	Column Description	Required for MODIFY
2	Operation Code	■ For GET, this column is blank. ■ For MODIFY, this column specifies the operation to take. For more information, see "Operation Code Values" on page 243.	Optional **Note:** For GET, this value does not apply.
3	ID	The identifier of the element type. When you modify or delete an element type, this is a UUID that uniquely identifies the element type. When you add an element type, this is a reference number that uniquely identifies the element type. For more information, see Appendix 7, "Identifying New Strategy Management Objects," on page 247.	Required
4	Name	The name of the element type. This value can be no longer than 255 characters.	Optional
5	New Name	When you are modifying an existing element type name, this is the new name of the element type. This value can be no longer than 255 characters.	Optional
6	Description	The description of the element type. This value can be no longer than 255 characters.	Optional
7	Type	The type of element to create: project level or scorecard level. The value must be either PROJECT (or 1) or SCORECARD (or 2).	For MODIFY, when you modify or add an element type, this value is required.
8	Image	The filename of the image to use as the icon for the element type. This value must not contain the file path, and can be no longer than 100 characters.	Optional
9	Text Color	The color of the text for the element type. For more information, see "Color Values" on page 239. To leave the color unchanged, specify a blank.	Optional
10	Background Color	The background color for the element type. For more information, see "Color Values" on page 239. To leave the color unchanged, specify a blank.	Optional
11	Shape	The shape for the element type. For more information, see "Shape Values" on page 244.	Optional

The data column order for the METRIC ATTRIBUTE data type is described in the following table.

Table A3.4 *Keyword=Metric Attribute Column Order and Descriptions*

Column Order	Column Name	Column Description	Required for MODIFY
1	Keyword	This value must be METRIC ATTRIBUTE (or 4). This value is case insensitive.	Required

Column Order	Column Name	Column Description	Required for MODIFY
2	Operation Code	■ For GET, this column is blank. ■ For MODIFY, this column specifies the operation to take. For more information, see "Operation Code Values" on page 243.	Optional **Note:** For GET, this value does not apply.
3	ID	The identifier of the metric attribute. When you modify or delete a metric attribute, this is a UUID that uniquely identifies the metric attribute. When you add a metric attribute, this is a reference number that uniquely identifies the metric attribute. For more information, see Appendix 7, "Identifying New Strategy Management Objects," on page 247.	Required
4	Name	The name of the metric attribute. This value can be no longer than 255 characters.	Optional
5	New Name	■ For GET, this column is blank. ■ For MODIFY, this value specifies the new name of the metric attribute. This value can be no longer than 255 characters.	Optional
6	Format	The name of the SAS format used by the metric attribute. This value can be no longer than 20 characters.	Optional
7	Format Type	The type of format of metric attribute. For more information, see "Format Type Values" on page 241.	Optional
8	Width	The integer that specifies the width of the metric attribute.	Optional
9	Decimal Width	The integer that specifies the number of decimal places in a metric attribute.	Optional
10	Alignment	The horizontal alignment of the text in the column. For more information, see "Alignment Values" on page 239.	Optional
11	Text Style	The style of text in the column. For more information, see "Text Style Values" on page 245.	Optional
12	Text Color	The color of the text in the column. For more information, see "Color Values" on page 239.	Optional
13	Background Color	The color of the background in the column. For more information, see "Color Values" on page 239.	Optional

The data column order for the ATTRIBUTE DEFINITION data type is described in the following table.

Table A3.5 *Keyword=Attribute Definition Column Order and Descriptions*

Column Order	Column Name	Column Description	Required for MODIFY
1	Keyword	This value must be ATTRIBUTE DEFINITION (or 3). This value is case insensitive.	Required
2	Operation Code	■ For GET, this column is blank. ■ For MODIFY, this column specifies the operation to take. For more information, see "Operation Code Values" on page 243. **Note:** You can add and delete, but you cannot modify, an existing attribute definition. If you want to change existing attribute definitions, you must delete the existing definition and then add the definition with the required changes.	Optional **Note:** For GET, this value does not apply.
3	ID	The identifier of the attribute definition. When you modify or delete an attribute definition, this is a UUID that uniquely identifies the attribute definition. When you add an attribute definition, this is a reference number that uniquely identifies the attribute definition. For more information, see Appendix 7, "Identifying New Strategy Management Objects," on page 247.	Required
4	Element Type Name	The name of element type for which the attribute definition is defined. This value can be no longer than 255 characters.	Optional
5	Element Type ID	The identifier of the element type for which the attribute definition is defined. When you modify or delete an element type, this is a UUID that uniquely identifies the element type. When you add an element type, this is a reference number that uniquely identifies the element type. For more information, see Appendix 7, "Identifying New Strategy Management Objects," on page 247.	Required
6	Label	The label for the attribute definition. This value can be no longer than 255 characters.	For MODIFY, when you delete or add an attribute definition, this value is required.
7	Description	The description of the attribute definition. This value can be no longer than 255 characters.	Optional
8	Category	The type of category for the attribute definition. For more information, see "Attribute Category Values" on page 238.	For MODIFY, when you add an attribute definition, this value is required.

Column Order	Column Name	Column Description	Required for MODIFY
9	Element Type Attribute ID	The identifier of the element type associated with the attribute definition. When you modify, delete, or migrate an attribute definition, this is a UUID that uniquely identifies the element type that is linked to this attribute definition. When you add an attribute definition, this is a reference number that uniquely identifies the element type that is linked to this attribute definition. For more information, see Appendix 7, "Identifying New Strategy Management Objects," on page 247.	When the value in the Category column is ELEMENT TYPE, this value is required.
10	Multiple Selections	Indicates whether the attribute definition allows multiple selections. This value is case insensitive, and must be one of the following values: ■ YES (or 1) ■ NO (or 2) **Note:** A blank is the same as NO.	Optional

Project File

This section describes the project data file format that is used for the GET and MODIFY actions. This file specifies information to modify general project information and project access permission.

Note: These files include column headings that describe the type of data that is contained in each column. The heading row is not used by BMF. The row is provided only for informational purposes. BMF uses the position of each column in the file to identify the data that the column contains. If this row is a header row or is blank it will be ignored in processing. In this file, the first column in a column heading row contains one of the following values:

- 0 (that is, zero)
- KEYWORD, a constant value that is case insensitive

Although other data files contain one type of data and a fixed number of columns, the project data file can contain two types of data rows. Each type of data row requires a different number of columns. Each type of data is identified by the value in the first column (the Keyword column) and must be one of the following (either string or integer):

String	Integer
GENERAL	6
PERMISSIONS	7

Note:

- If you use the add operation to create a new project, the project is not registered when it is created. It is not stored in the SAS Metadata Repository. You must register the project, and then the project is assigned to an object metadata repository.
- When you create a project by using the Strategy Management Builder, a default scorecard (Scorecard – 1) is created. However, when you create a project by using BMF, a default scorecard is *not* created. If you want a scorecard with this name, you must specify Scorecard 1 using the scorecard data file.

The data column order for the GENERAL data type is described in the following table.

Table A3.6 *Keyword=General Column Order and Descriptions*

Column Order	Column Name	Column Description	Required for MODIFY
1	Keyword	This value must be GENERAL (or 6). This value is case insensitive. **Note:** Only one data row that contains the keyword GENERAL is permitted.	Required
2	Operation Code	■ For GET, this column is blank. ■ For MODIFY, this column specifies the operation to take. For more information, see "Operation Code Values" on page 243.	Optional **Note:** For GET, this value does not apply.
3	ID	The identifier for the project. When you modify or delete a project, this is a UUID that uniquely identifies the scorecard. When you add a scorecard, this is a reference number that uniquely identifies the scorecard. For more information, see Appendix 7, "Identifying New Strategy Management Objects," on page 247. **Note:** The project identified must be the same project that is specified in the %STMBMF macro argument PROJECTNAME.	Required
4	Name	The name of the project. This value must be in the default language and can be no longer than 255 characters. **Note:** The project identified must be the same project that is specified in the %STMBMF macro argument PROJECTNAME.	Required
5	New Name	■ For GET, this column is blank. ■ For MODIFY, this value specifies the new description of the project. This value can be no longer than 255 characters.	Optional
6	Description	The description of the project. This value can be no longer than 255 characters.	Optional
7	New Description	■ For GET, this column is blank. ■ For MODIFY, this value specifies the new description of the project. This value can be no longer than 255 characters.	Optional

Column Order	Column Name	Column Description	Required for MODIFY
8	Dimension	The code for the SAS dimension. This value is case insensitive, and the default value is blank.	Optional
9	Hierarchy	The code for the SAS hierarchy. This value is case insensitive, and the default value is blank.	Optional
10	Time Dimension	The code for the SAS time dimension. This value is case insensitive, and the default value is STM_TIME_STD.	Optional
11	Time Hierarchy	The code for the SAS time hierarchy. This value is case insensitive, and the default value is STM_TIME_HIERARCHY. **Note:** After you create a project, you must register it. You must register the project using the SAS Strategy Management application. You cannot register the project by using BMF. Access permissions can be specified only after the project is registered.	Optional
12	Owner	The name of the project's owner as it appears in SAS Management Console, not as it appears in SAS Strategy Management. This value can be no longer than 60 characters.	Optional

The data column order for the PERMISSION data type is described in the following table.

Table A3.7 *Keyword=Permissions Column Order and Descriptions*

Column Order	Column Name	Column Description	Required for MODIFY
1	Keyword	This value must be PERMISSIONS. This value is case insensitive.	Required
2	Security Operation Code	■ For GET, this column is blank. ■ For MODIFY, this column specifies the operation to take. For more information, see "Operation Code Values" on page 243.	Optional **Note:** For GET, this value does not apply.
3	Project Name	The name of the project. This value must be in the default language, and can be no longer than 255 characters. **Note:** The project identified must be the same project that is specified in the %STMBMF macro argument PROJECTNAME.	Required
4	Security ID	The ID of the user or user group for whom the template access permissions are being specified. This value can be no longer than 60 characters.	Required
5	Security ID Type	The type of access permissions. This value must be either USER (or 1) or GROUP (or 2), and is case insensitive.	Required

Column Order	Column Name	Column Description	Required for MODIFY
6	Permissions	The specified permissions. For more information about access permissions, see “Access Permission Values” on page 237.	Required

Range File

This section describes the format of the range data file for the GET and MODIFY actions.

Note: For more information about modifying ranges, see Chapter 17, “Using Ranges in BMF,” on page 145.

The range data files can contain three types of data. Each type of data is identified by one of the following values (either string or integer) in the first column (the Keyword column).

Note: These files include column headings that describe the type of data that is contained in each column. The heading row is not used by BMF. The row is provided only for informational purposes. BMF uses the position of each column in the file to identify the data that the column contains. If this row is a header row or is blank it will be ignored in processing. In this file, the first column in a column heading row contains one of the following values:

- 0 (that is, zero)
- KEYWORD, a constant value that is case insensitive

String	Integer
GENERAL	6
INTERVAL	8
SPECIAL	9

The GENERAL row must be first in the file, then the INTERVAL rows, and then the SPECIAL rows. BMF collects INTERVAL and SPECIAL data only if there is a corresponding GENERAL row (that is, the Range Reference Numbers match).

Note: Although the operation code of IGNORE prevents BMF from validating any columns or operate on the data, you still must specify valid keywords (GENERAL, INTERVAL, or SPECIAL) in column 1.

The data column order for the GENERAL data type is described in the following table.

Table A3.8 *Keyword=General Range Data Column Order and Descriptions*

Column Order	Column Name	Column Description	Required for MODIFY
1	Keyword	This value must be GENERAL (or 6). This value is case insensitive.	Required
2	Operation Code	■ For GET, this column is blank. ■ For MODIFY, this column specifies the operation to take. For more information, see "Operation Code Values" on page 243.	Optional **Note:** For GET, this value does not apply.
3	Range ID	An integer that is greater than zero that identifies the range. When you modify or delete a range, this is a UUID that uniquely identifies it. When you add a range, this is a reference number that uniquely identifies it. For more information, see Appendix 7, "Identifying New Strategy Management Objects," on page 247. **Note:** Each range reference number can be used only once.	Required
4	Range Name	The name of the range. This value can be no longer than 255 characters.	Required
5	Range Description	The description of the range. This value can be no longer than 255 characters.	Optional

Note: For more information about modifying ranges, see Chapter 17, "Using Ranges in BMF," on page 145.

The data column order for the INTERVAL data type is described in the following table.

Table A3.9 *Keyword=Interval Data Column Order and Descriptions*

Column Order	Column Name	Column Description	Required for MODIFY
1	Keyword	This value must be INTERVAL (or 8). This value is case insensitive.	Required
2	Range ID	The UUID that identifies the range to which the interval belongs. For MODIFY, specify a value of zero to ignore this data row.	Required

Column Order	Column Name	Column Description	Required for MODIFY
3	Range Interval Number	An integer that is greater than zero that identifies the interval within the range. **Note:** The lower bound interval number must always be 1. All other bound numbers must be greater than 1, and their numbers are based on their order in the range. Subsequent intervals are numbered 2-*n* (in sorted order) based on their specific bound value.	Required
4	Interval Bound	The double word that represents the bound of the interval. This value is required for all intervals other than the lower bound interval.	Required for all intervals except the lower bound interval.
5	Interval Operator	The operator for the interval. Valid values are > (greater than) or >= (greater than or equal to).	Required for all intervals except the lower bound interval.
6	Interval Label	The label for the interval. This value can be no longer than 255 characters.	Optional
7	Interval Grade	The grade of the interval. This value can be no longer than 255 characters.	Optional
8	Normalized Value	The double word that represents the normalized value of the interval.	Optional
9	Interval Color	The color of the text for the interval. For more information, see “Color Values” on page 239.	Optional
10	Interval Icon	The image filename to use as the icon for the interval. This value can be no longer than 100 characters.	Optional
11	Interval Formula	A string that represents a valid formula.	Required for all intervals except the lower bound interval if this is a formula-based range.

Note: For more information about modifying ranges, see Chapter 17, “Using Ranges in BMF,” on page 145.

The data column order for the SPECIAL data type is described in the following table.

Table A3.10 *Keyword=Special Data Column Order and Descriptions*

Column Order	Column Name	Column Description	Required for MODIFY
1	Keyword	This value must be SPECIAL (or 9). This value is case insensitive. **Note:** There can be no more than two rows of data that specify the SPECIAL keyword for a single range: one row for the MISSING interval and one row for the UNRESOLVED interval. You do not have to specify both intervals.	Required

Column Order	Column Name	Column Description	Required for MODIFY
2	Range ID	The UUID that identifies the range to which the interval belongs. For MODIFY, specify a value of zero to ignore this data row.	Required
3	Special Range Value Type	The value that indicates to which special interval the row of data applies. This value must be either MISSING (or 1) or UNRESOLVED (or 2).	Required
4	Placeholder	■ For GET, this column is blank. ■ For MODIFY, this value is unused but the data column must exist.	Required
5	Placeholder	■ For GET, this column is blank. ■ For MODIFY, this value is unused but the data column must exist.	Required
6	Placeholder	■ For GET, this column is blank. ■ For MODIFY, this value is unused but the data column must exist.	Required
7	Interval Grade	The grade of the interval. This value can be no longer than 255 characters.	Optional
8	Normalized Value	The double word that represents the normalized value of the interval.	Optional
9	Interval Color	The color of the text for the interval. For more information, see “Color Values” on page 239.	Optional
10	Interval Icon	The image filename to use as the icon for the interval. This value can be no longer than 100 characters.	Optional

Scorecard File

This section describes the scorecard data file format that is used for the GET and MODIFY actions.

Note: (MODIFY action only) BMF always ignores the first row in this file. BMF expects this row to be a column heading row. You must include the column heading row. If you do not, BMF discards the first line of your data. The column heading row must exist. However, the content of this row can be anything.

Scorecards must be defined in the correct order in this file. Any scorecard that has a dependency on another scorecard must be defined later in the file after that parent scorecard.

Table A3.11 Scorecard File Column Order and Descriptions

Column Order	Column Name	Column Description	Required for MODIFY
1	Operation Code	■ For GET, this column is blank. ■ For MODIFY, this column specifies the operation to take. For more information, see "Operation Code Values" on page 243.	Optional **Note:** For GET, this value does not apply.
2	Scorecard ID	■ For GET, this is the identifier that uniquely identifies the scorecard. ■ For MODIFY, when you modify or delete a scorecard, this value is a UUID that uniquely identifies the scorecard. When you add a scorecard, this is a reference number that uniquely identifies the scorecard. For more information, see Appendix 7, "Identifying New Strategy Management Objects," on page 247.	Required
3	Scorecard Name	The name of the scorecard. This value must be specified in the default language and can be no longer than 255 characters.	For MODIFY, this value is required when you add a scorecard. Otherwise, it is optional.
4	Parent ID	■ For GET, the identifier for the scorecard's parent. A value of zero indicates that the scorecard is a root-level scorecard. ■ For MODIFY, to specify an existing scorecard as the parent, use the UUID of the parent scorecard. To specify a new scorecard as the parent, use the reference number for the new scorecard that was defined earlier in this data file. For more information, see Appendix 7, "Identifying New Strategy Management Objects," on page 247.	Required when you add a scorecard. Otherwise, it is optional.
5	Owner	The new name of the scorecard's owner as it appears in SAS Management Console, not as it appears in SAS Strategy Management. This value can be no longer than 60 characters.	For MODIFY, this value is required when you add a scorecard. Otherwise, it is optional.
6	Order	An integer that is greater than or equal to zero that indicates the sort position of the scorecard under the parent scorecard. You do not need to use consecutive numbers; the sibling scorecards are sorted by their numbers relative to each other. A value of zero indicates that the scorecard's order is determined by its position in the CSV file.	For MODIFY, this value is required when you add a scorecard. Otherwise, it is optional.
7	Description	A description of the scorecard. This value must be specified in the default language, and can be no longer than 255 characters.	Optional
8	Scorecard Code	The scorecard code value. This value is used by the import feature to identify a scorecard. This value must be specified in the default language, and can be no longer than 255 characters.	Optional

Column Order	Column Name	Column Description	Required for MODIFY
9	Security Operation Code	■ For GET, this column is blank. ■ For MODIFY, this column specifies the operation to take regarding permissions. For more information, see "Security Operation Code Values" on page 244. **Note:** To specify access permissions, set the Operation Code to 1. See the Operation Code information earlier in this table.	This value is not valid when you add an element. Otherwise, it is optional. **Note:** For GET, this value does not apply.
10	Security ID	The name of the user or user group to which the access permissions apply.	For MODIFY, this value is not valid when you add an element. Otherwise, it is optional.
11	Security ID Type	The type of access permissions. This value must be either USER (or 1) or GROUP (or 2), and is case insensitive.	For MODIFY, this value is not valid when you add an element. Otherwise, it is optional.
12	Permissions	The specified permissions. For more information about access permissions, see "Access Permission Values" on page 237.	For MODIFY, this value is not valid when you add an element. Otherwise, it is optional.

Element File

This section describes the element data file format used for the GET and MODIFY actions.

Note: (MODIFY action only) BMF always ignores the first row in this file. BMF expects this row to be a column heading row. You must include the column heading row. If you do not, BMF discards the first line of your data. The column heading row must exist. However, the content of this row can be anything.

Table A3.12 *The Element File Column Order and Descriptions*

Column Order	Column Name	Column Description	Required for MODIFY
1	Operation Code	■ For GET, this column is blank. ■ For MODIFY, this column specifies the operation to take. For more information, see "Operation Code Values" on page 243. **Note:** This column is new in BMF 5.4.	Optional **Note:** For GET, this value does not apply.

Column Order	Column Name	Column Description	Required for MODIFY
2	ID	The identifier that uniquely identifies the element. When you modify or delete an element, this is a UUID that uniquely identifies the element. When you add an element, this is a reference number that uniquely identifies the element. For more information, see Appendix 7, "Identifying New Strategy Management Objects," on page 247.	Required
3	Name	The name of the element. This value must be specified in the default language, and can be no longer than 255 characters.	For MODIFY, this value is required when you add an element. Otherwise, it is optional.
4	Description	The description of the element. This value must be specified in the default language, and can be no longer than 255 characters.	For MODIFY, this value is required when you modify or delete an element. Otherwise, it is optional.
5	Container ID	■ For GET, the identifier that uniquely identifies the element's container. If the element is a project-level element, this value is the project UUID. ■ For MODIFY, to specify an existing scorecard as the parent, use the UUID of the parent scorecard. To specify a new scorecard as the parent, use the reference number for the new scorecard that was previously defined. For more information, see Appendix 7, "Identifying New Strategy Management Objects," on page 247. When you modify an element, this column is used for informational purposes only; the value is ignored.	Required when you add an element. Otherwise, it is optional.
6	Container Name	The name of the scorecard or project that contains the element. This value is for informational purposes only; it is ignored. **Note:** This column is new in BMF 5.4.	Optional
7	Element Type	The element type. This value must be specified in the default language, and is case insensitive.	For MODIFY, this value is required when you add an element. Otherwise, it is optional.
8	Period Type	The periodicity of the element. This value must be specified in the default language, and is case insensitive.	For MODIFY, this value is required when you add an element. Otherwise, it is optional.
9	Start Period	The start period of the element. This value must be specified in the default language, and is case insensitive.	For MODIFY, this value is required when you add an element. Otherwise, it is optional.
10	End Period	The end period of the element. This value must be specified in the default language, and is case insensitive.	For MODIFY, this value is required when you add an element. Otherwise, it is optional.

Column Order	Column Name	Column Description	Required for MODIFY
11	Link ID	An integer that uniquely identifies an element to which this element is linked. A value of zero indicates no link. A value of –1 removes a previous link. To specify an existing element, use the UUID of the element. To specify a new element, use the reference number for the new element that was previously defined. For more information, see Appendix 7, "Identifying New Strategy Management Objects," on page 247.	Required when you add an element. Otherwise, it is optional.
12	Owner	The name of the element's owner as it appears in SAS Management Console, not as it appears in SAS Strategy Management. This value can be no longer than 60 characters.	For MODIFY, this value is required when you add an element. Otherwise, it is optional.
13	Order	An integer that is greater than or equal to zero that indicates the sort position of the element under the container. You do not need to use consecutive numbers; the sibling elements are sorted by their numbers relative to each other. A value of zero indicates that the element's order is determined by its position in the CSV file.	For MODIFY, this value is required when you add an element. Otherwise, it is optional.
14	Security Operation Code	■ For GET, this column is blank. ■ For MODIFY, this column specifies the operation to take regarding permissions. For information about specifying security operation codes, see "Security Operation Code Values" on page 244. **Note:** To specify access permissions, set the Operation Code to 1. See the Operation Code information earlier in this table. **Note:** This column is new in BMF 5.4.	This value is not valid when you add an element. Otherwise, it is optional. **Note:** For GET, this value does not apply.
15	Security ID	The name of the user or user group to which the access permissions apply. This value can be no longer than 60 characters. **Note:** This column is new in BMF 5.4.	For MODIFY, this value is not valid when you add an element. Otherwise, it is optional.
16	Security ID Type	The type of access permissions. This value must be either USER (or 1) or GROUP (or 2), and is case insensitive. **Note:** This column is new in BMF 5.4.	For MODIFY, this value is not valid when you add an element. Otherwise, it is optional.
17	Permissions	The specified permissions. For more information about access permissions, see "Access Permission Values" on page 237. **Note:** This column is new in BMF 5.4.	For MODIFY, this value is not valid when you add an element. Otherwise, it is optional.
18	Named Link	The UUID of an existing named link or the reference number of a named link created by this BMF invocation. A blank value indicates that there is no associated link. **Note:** This column is new in BMF 5.4.	Optional

Element Attribute File

This section describes the element attribute data file that is used by the GET and MODIFY actions.

Note: (MODIFY action only) BMF always ignores the first row in this file. BMF expects this row to be a column heading row. You must include the column heading row. If you do not, BMF discards the first line of your data. The column heading row must exist. However, the content of this row can be anything.

As with scorecards and elements, you can modify, delete, and add attributes. However, for the MODIFY action, you can change only the attribute value. Most of the provided attribute information identifies the attribute to modify. You cannot change the identifying information of an existing attribute. This information includes the Element ID, Category, and Category Label.

Table A3.13 *Element Attribute File Column Order and Descriptions*

Column Order	Column Name	Column Description	Required for MODIFY
1	Operation Code	■ For GET, this column is blank. ■ For MODIFY, this column specifies the operation to take. For more information, see "Operation Code Values" on page 243.	Optional **Note:** For GET, this value does not apply.
2	Element ID	The identifier that uniquely identifies the element that is associated with the attribute. When you modify or delete an element attribute, use the UUID of an existing element. When you add an element attribute, use the UUID of an existing element or the reference number for a new element that was previously defined. For more information, see Appendix 7, "Identifying New Strategy Management Objects," on page 247.	Required
3	Element Name	The name of the element, in the default language, that is associated with the attribute. This value is for informational purposes only; it is ignored.	Optional
4	Container Name	The name of the scorecard or project, in the default language, that contains the element. This value is for informational purposes only; it is ignored.	Optional
5	Category	■ For GET, the name of the element attribute category. ■ For MODIFY, when you modify an element attribute, this value must be the same as that used to create the attribute. For more information, see "Attribute Category Values" on page 238.	Required

Column Order	Column Name	Column Description	Required for MODIFY
6	Category Label	The label of the category for the element type. This value is case sensitive and must be specified in the default language. When you modify an element attribute, this value must be the same as the one that was used to create the attribute.	Required
7	Value	The value of the element attribute that is determined by the element attribute category. For more information, see "Attribute Category Values" on page 238.	Required
8	Original Element Type Element Attribute ID	The UUID of the element that was originally linked to this element attribute.	Required when you change the element to which this element attribute is linked. Otherwise, it is optional. For more information, see "Modify an Element Type Attribute" on page 137.
9	Named Link	The UUID of an existing named link or the reference number of a named link created by this BMF invocation. A blank value indicates that there is no associated link. **Note:** This column is new in BMF 5.4.	Optional

Cell File

This section describes the format of the cell data file for the GET and MODIFY actions.

Note: (MODIFY action only) BMF always ignores the first row in this file. BMF expects this row to be a column heading row. You must include the column heading row. If you do not, BMF discards the first line of your data. The column heading row must exist. However, the content of this row can be anything.

CAUTION! The following values identify the cell so the MODIFY action can operate on the cell: Element_ID, Metric_Attribute, Period_Type, and Period. After you get these values by using the GET action, do not change them.

Note: The ACTION and ACTIONPARMS columns no longer exist in this table. Instead, the table now includes the LINK column. For more information, see "Link File " on page 213.

Table A3.14 Cell File Column Order and Descriptions

Column Order	Column Name	Column Description	Required For MODIFY
1	Operation Code	■ For GET, this column is blank. ■ For MODIFY, this column specifies the operation to take. For more information, see "Operation Code Values" on page 243.	Optional **Note:** For GET, this value does not apply.
2	Container Name	The name of the scorecard or project, in the default language, that contains the cell. This value is for informational purposes only; it is ignored.	Optional
3	Element Name	The name of the element, in the default language, that contains the cell. This value is for informational purposes only; it is ignored.	Optional
4	Element ID	The identifier that uniquely identifies the element that contains the cell. When you modify or delete a cell, this value is the UUID for an element. When you add a cell, this value is the UUID for an existing element or the reference number for a new element that was previously defined. For more information, see Appendix 7, "Identifying New Strategy Management Objects," on page 247. **Note:** Do not change the value in this column.	Required
5	Metric Attribute	The name of the metric attribute for the cell. This value must be specified in the default language, and is case insensitive. **Note:** Do not change the value in this column.	Required
6	Period Type	The periodicity of the cell. This value must be specified in the default language, and is case insensitive. When you modify a cell, this value must be the same as when the cell was created.	Required
7	Period	The name of the period. This value must be specified in the default language and is case insensitive. When you modify a cell, this value must be the same as when the cell was created. For MODIFY, the period name must match the period names in the SAS Strategy Management program. **Note:** Do not change the value in this column.	Required

Column Order	Column Name	Column Description	Required For MODIFY
8	Cell Type	The type of value for the cell type. This value must be specified in the default language, is case insensitive, and must be either MANUAL (or 1) or FORMULA (or 2).	If you specify *Value*, this value is required. If you add a cell, this value is required. Otherwise, it is optional.
9	Value	The numeric value for the cell. BMF processes this value in the following ways: ■ If the cell type is MANUAL, this value is a number. ■ If the cell type is FORMULA, this value is a string that represents a formula. ■ If there is no value in the column (that is, the column is blank), BMF does nothing to the cell value. ■ If you specify the delete token (#) in this column, BMF deletes the cell value that already exists. BMF does not delete the cell; only the cell value.	For MODIFY, this value is required when you add or modify a cell. Otherwise, it is optional.
10	Named Link	Either the UUID of an existing link or the reference number of a link that you are creating in this invocation of BMF. For MODIFY, to remove an existing link, specify a blank.	Optional
11	Range	The name of a range that is applied to the cell. This value must be specified in the default language, and is case insensitive. For MODIFY, to remove an existing range, specify the delete token (#).	Optional
12	Global Threshold Value	The value of the global threshold. For more information, see “Global Thresholds and Cells” on page 241.	For MODIFY, if you specify *Threshold Type*, this value is required. Otherwise, it is blank.
13	Threshold Type	The type of global threshold. To specify no threshold, specify a blank. For more information, see “Global Thresholds and Cells” on page 241.	Optional
14	Threshold Operator	The threshold operator. For more information, see “Global Thresholds and Cells” on page 241.	For MODIFY, if you specify *Threshold Type*, this value is required. Otherwise, it is blank.

Column Order	Column Name	Column Description	Required For MODIFY
15	Cell Text	The text value for the cell. This value can be no longer than 65535 characters. BMF processes this value in the following ways: ■ If there is a value in the column, BMF updates the cell text value. ■ If there is no value in the column (that is, the column is blank), BMF does nothing to the cell value. ■ If you specify the delete token (#) in this column, BMF deletes the cell value that already exists. BMF does not delete the cell; only the cell value.	Optional

Cell Format File

This section describes the format of the cell format data file for the GET and MODIFY actions. Cell formats are applied to individual cells in the SAS Strategy Management application.

Note: (MODIFY action only) BMF always ignores the first row in this file. BMF expects this row to be a column heading row. You must include the column heading row. If you do not, BMF discards the first line of your data. The column heading row must exist. However, the content of this row can be anything.

Table A3.15 *Cell Format File Column Order and Descriptions*

Column Order	Column Name	Column Description	Required For MODIFY
1	Operation Code	■ For GET, this column is blank. ■ For MODIFY, this column specifies the operation to take. For more information, see "Operation Code Values" on page 243.	Optional **Note:** For GET, this value does not apply.
2	Element ID	An integer that is greater than zero that uniquely identifies the element that is associated with the cell. The element must have been previously defined in the input CSV file that specified the elements.	Required
3	Metric Attribute	The name of the metric attribute for the cell format. The element must have been previously defined in the input CSV file that specified the setup information. This value can be no longer than 255 characters.	Required

Column Order	Column Name	Column Description	Required For MODIFY
4	Format	The name of the SAS format that is used by the cell format. This value can be no longer than 100 characters. Valid values are available from the SAS Strategy Management application.	Optional
5	Format Type	The type of format of metric attribute. For more information, see “Format Type Values” on page 241.	Optional
6	Width	An integer that specifies the width of the numeric field.	Optional
7	Decimal Width	An integer that specifies the number of decimal places in a numeric field.	Optional
8	Alignment	The horizontal alignment of the text in the column. For more information, see “Alignment Values” on page 239.	Optional
9	Text Style	The style of text in the column. For more information, see “Text Style Values” on page 245.	Optional
10	Text Color	The color of the text in the column. For more information, see “Color Values” on page 239.	Optional
11	Background Color	The color of the background in the column. For more information, see “Color Values” on page 239.	Optional

Link File

This section describes the format of the link data file for the GET and MODIFY actions.

The link data file can contain two types of data. Each type of data is identified by one of the following values (either string or integer) in the first column (the Keyword column).

Note: These files include column headings that describe the type of data that is contained in each column. The heading row is not used by BMF. The row is provided only for informational purposes. BMF uses the position of each column in the file to identify the data that the column contains. If this row is a header row or is blank it will be ignored in processing. In this file, the first column in a column heading row contains one of the following values:

- 0 (that is, zero)
- KEYWORD, a constant value that is case insensitive

String	Integer
GENERAL	6
LINKPARM	17

The GENERAL row must be first in the file, then the LINKPARM rows. There can be zero or more LINKPARM rows for each link. BMF collects LINKPARM data only if there is a corresponding GENERAL row.

The data column order for the GENERAL data type is described in the following table.

Table A3.16 *Keyword=General Link Data Column Order and Descriptions*

Column Order	Column Name	Column Description	Value Required
1	Keyword	This value must be GENERAL (or 6). This value is case insensitive.	Required
2	Operation Code	■ For GET, this column is blank. ■ For MODIFY, this column specifies the operation to take. For more information, see "Operation Code Values" on page 243.	Required **Note:** For GET, this value does not apply.
3	Link ID	An integer that is greater than zero that identifies the link. When you modify or delete a link, this is a UUID that uniquely identifies it. When you add a link, this is a reference number that uniquely identifies it. For more information, see Appendix 7, "Identifying New Strategy Management Objects," on page 247. **Note:** Each link reference number can be used only once.	Required
4	Link Name	The name of the link. This value can be no longer than 255 characters.	Optional
5	Link Description	The description of the link. This value must be specified in the default language, and is case insensitive.	Optional
6	Link Type	The type of link. For more information, see "Link Type Values" on page 243.	Required
7	Target Current Page	Indicates whether the link appears in the current Web page or in a new Web page. This value is case insensitive, and must be one of the following values: ■ YES (or 42) ■ NO (or 43) **Note:** A blank is the same as NO.	Optional
8	Path Web Address	The Web address for the link. You can also specify a file path.	Optional
9	Advanced Parameters	The advanced parameters that are passed with the link to the target. This value must be specified in the default language, and is case insensitive. To specify no parameters, specify a blank.	Optional

The data column order for the LINKPARM data type is described in the following table.

Table A3.17 *Keyword=Linkparm Data Column Order and Descriptions*

Column Order	Column Name	Column Description	Value Required
1	Keyword	This value must be LINKPARM (or 17). This value is case insensitive.	Required
2	Link Reference Number	An integer that is greater than zero that identifies the link to which the link parameter belongs.	Required
3	Link Parameter Name	The name of the link parameter. For more information, see “Link Parameter Name Values” on page 242.	Required
4	Link Parameter Value	The value for the link parameter.	Required
5	Order	The sort order of this link parameter. The order determines where the link parameter appears in the list of link parameters in the Strategy Management Web application (Builder).	Required

Appendix 4

Data Model for the CREATE Action

Setup File

The setup data file that is used for the CREATE action specifies information about the following details:

- a template
- element types
- metric attributes
- attribute definitions

Note: These files include column headings that describe the type of data that is contained in each column. The heading row is not used by BMF. The row is provided only for informational purposes. BMF uses the position of each column in the file to identify the data that the column contains. If this row is a header row or is blank it will be ignored in processing. In this file, the first column in a column heading row contains one of the following values:

- 0 (that is, zero)
- KEYWORD, a constant value that is case insensitive

Although most data files contain one type of data and a fixed number of columns, the setup data file can contain four types of data rows. Each type of data row requires a different number of columns.

Each type of data is identified by the value in the first column (the Keyword column) and must be one of the following values (either string or integer):

String	Integer
TEMPLATE	1
ELEMENT TYPE	2
METRIC ATTRIBUTE	4
ATTRIBUTE DEFINITION	3

Note: The template owner is set to the user who is specified by the %STMBMF macro argument USER.

The data column order for the TEMPLATE data type is described in the following table.

Table A4.1 *Keyword=Template Column Order and Descriptions*

Column Order	Column Name	Column Description	Value Required
1	Keyword	This value must be TEMPLATE (or 1). This value is case insensitive. **Note:** Specify only one row with the keyword TEMPLATE.	Required
2	Reference Number	An integer greater than zero.	Required
3	Template Name	The name of the template. This value must be in the default language, and can be no longer than 255 characters. **Note:** The template that is identified must be the same template that is specified in the %STMBMF macro argument TEMPLATENAME.	Required
4	Template Description	The description of the template. This value must be in the default language, and can be no longer than 255 characters.	Optional

The data column order for the ELEMENT TYPE data type is described in the following table.

Table A4.2 *Keyword=Element Type Column Order and Descriptions*

Column Order	Column Name	Column Description	Value Required
1	Keyword	This value must be ELEMENT TYPE (or 2). This value is case insensitive.	Required
2	Reference Number	An integer that is greater than zero that identifies the element type. For more information, see Appendix 7, “Identifying New Strategy Management Objects,” on page 247.	Required
3	Element Type Name	The name of the element type. This value can be no longer than 255 characters.	Required

Column Order	Column Name	Column Description	Value Required
4	Description	The description of the element type. This value can be no longer than 255 characters.	Optional
5	Element Type	The type of element to create: project level or scorecard level. The value must be either PROJECT (or 1) or SCORECARD (or 2).	Required
6	Image	The filename of the image to use as the icon for the element type. This value must not contain the file path and can be no longer than 100 characters.	Required
7	Font Color	The color of the text for the element type. For more information, see “Color Values” on page 239.	Required
8	Background Color	The background color for the element type. For more information, see “Color Values” on page 239.	Required
9	Shape	The shape for the element type. For more information, see “Shape Values” on page 244.	Required

The data column order for the METRIC ATTRIBUTE data type is described in the following table.

Table A4.3 *Keyword=Metric Attribute Column Order and Descriptions*

Column Order	Column Name	Column Description	Value Required
1	Keyword	This value must be METRIC ATTRIBUTE (or 4). This value is case insensitive.	Required
2	Reference Number	An integer that is greater than zero that identifies the metric attribute. For more information, see Appendix 7, “Identifying New Strategy Management Objects,” on page 247.	Required
3	Metric Attribute Name	The name of the metric attribute. This value can be no longer than 255 characters.	Required
4	Format	The name of the SAS format that is used by the metric attribute. This value can be no longer than 20 characters.	Optional
5	Format Type	The type of format of metric attribute. For more information, see “Format Type Values” on page 241.	Optional
6	Width	An integer that specifies the width of the metric attribute.	Optional
7	Decimal Width	An integer that specifies the number of decimal places in a metric attribute.	Optional
8	Alignment	The horizontal alignment of the text in the column. For more information, see “Alignment Values” on page 239.	Optional
9	Text Style	The style of text in the column. For more information, see “Text Style Values” on page 245.	Optional

Column Order	Column Name	Column Description	Value Required
10	Text Color	The color of the text in the column. For more information, see “Color Values” on page 239.	Optional
11	Background Color	The color of the background in the column. For more information, see “Color Values” on page 239.	Optional

Every attribute is associated with an element type. Therefore, you must identify the associated element type in the attribute definition data file by using the Element Type Reference Number column.

The data column order for the ATTRIBUTE DEFINITION data type is described in the following table.

Table A4.4 *Keyword=Attribute Definition Column Order and Descriptions*

Column Order	Column Name	Column Description	Value Required
1	Keyword	This value must be ATTRIBUTE DEFINITION (or 3). This value is case insensitive.	Required
2	Reference Number	An integer that is greater than zero that identifies the attribute definition. For more information, see Appendix 7, “Identifying New Strategy Management Objects,” on page 247.	Required
3	Element Type Reference Number	An integer that is greater than zero that identifies the element type for which the attribute definition is specified. For more information, see Appendix 7, “Identifying New Strategy Management Objects,” on page 247.	Required
4	Label	The label for the attribute definition. This value can be no longer than 255 characters.	Required
5	Description	The description of the attribute definition. This value can be no longer than 255 characters.	Optional
6	Category	The type of category for the attribute definition. For more information, see “Attribute Category Values” on page 238.	Required
7	Element Type Attribute Reference Number	An integer that is greater than zero that identifies the element type that is linked to this attribute definition.	When the value in the Category column is ELEMENT TYPE, this value is required.
8	Multiple Selections	Indicates whether the attribute definition allows multiple selections. This value is case insensitive, and must be one of the following values: ■ YES (or 1) ■ NO (or 2) **Note:** A blank is the same as NO.	Optional

Project File

This section describes the project data file format that is used for the CREATE action. This file specifies general project information.

Note:

- The project owner is set to the user who is specified by the %STMBMF macro argument USER.
- When you create a project by using the Strategy Management Builder, a default scorecard (Scorecard – 1) is created. However, when you create a project by using BMF, a default scorecard is *not* created. If you want a scorecard with this name, you must specify Scorecard 1 using the scorecard data file.

Note: These files include column headings that describe the type of data that is contained in each column. The heading row is not used by BMF. The row is provided only for informational purposes. BMF uses the position of each column in the file to identify the data that the column contains. If this row is a header row or is blank it will be ignored in processing. In this file, the first column in a column heading row contains one of the following values:

- 0 (that is, zero)
- KEYWORD, a constant value that is case insensitive

Table A4.5 *Keyword=General Column Order and Descriptions*

Column Order	Column Name	Column Description	Value Required
1	Keyword	This value must be GENERAL (or 6). This value is case insensitive. **Note:** Only one data row that contains the keyword GENERAL is permitted.	Required
2	Name	The name of the project. This value must be in the default language, and can be no longer than 255 characters.	Required
3	Description	The description of the project. This value can be no longer than 255 characters.	Optional
4	Dimension	The code for the SAS dimension. This value is case insensitive, and the default value is blank.	Optional
5	Hierarchy	The code for the SAS hierarchy. This value is case insensitive, and the default value is blank.	Optional
6	Time Dimension	The code for the SAS time dimension. This value is case insensitive, and the default value is STM_TIME_STD.	Optional

Column Order	Column Name	Column Description	Value Required
7	Time Hierarchy	The code for the SAS time hierarchy. This value is case insensitive, and the default value is STM_TIME_HIERARCHY. **Note:** After you create a project, you must register it. You must register the project using the SAS Strategy Management Builder. You cannot register the project by using BMF.	Optional

Range File

This section describes the format of the range data file for the CREATE action. This file specifies the creation of ranges and range intervals.

Note: For information about creating ranges, see Chapter 17, "Using Ranges in BMF," on page 145.

Note: These files include column headings that describe the type of data that is contained in each column. The heading row is not used by BMF. The row is provided only for informational purposes. BMF uses the position of each column in the file to identify the data that the column contains. If this row is a header row or is blank it will be ignored in processing. In this file, the first column in a column heading row contains one of the following values:

- 0 (that is, zero)
- KEYWORD, a constant value that is case insensitive

The range data files can contain three types of data. Each type of data is identified by one of the following values (either string or integer) in the first column (the Keyword column).

String	Integer
GENERAL	6
INTERVAL	8
SPECIAL	9

The GENERAL row must be first in the file, then the INTERVAL rows, and then the SPECIAL rows. BMF collects INTERVAL and SPECIAL data only if there is a corresponding GENERAL row (that is, the Range Reference Numbers match).

The data column order for the GENERAL data type is described in the following table.

Table A4.6 *Keyword=General Range Data Column Order and Descriptions*

Column Order	Column Name	Column Description	Value Required
1	Keyword	This value must be GENERAL (or 6). This value is case insensitive.	Required
2	Reference Number	A reference number that is greater than zero that uniquely identifies the range. For more information, see Appendix 7, "Identifying New Strategy Management Objects," on page 247. **Note:** Each range reference number can be used only once.	Required
3	Range Name	The name of the range. This value can be no longer than 255 characters.	Required
4	Range Description	The description of the range. This value can be no longer than 255 characters.	Optional

The data column order for the INTERVAL data type is described in the following table.

Table A4.7 *Keyword=Interval Data Column Order and Descriptions*

Column Order	Column Name	Column Description	Value Required
1	Keyword	This value must be INTERVAL (or 8). This value is case insensitive.	Required
2	Range Reference Number	An integer that is greater than zero that identifies the range to which the interval belongs.	Required
3	Range Interval Number	An integer that is greater than zero that identifies the interval within the range. **Note:** The lower bound interval number must always be 1. All other bound numbers must be greater than 1, and their numbers are based on their order in the range. Subsequent intervals are numbered 2-*n* (in sorted order) based on their specific bound value.	Required
4	Interval Bound	The double word that represents the bound of the interval. This value is required for all intervals other than the lower bound interval.	Required for all intervals except the lower bound interval.
5	Interval Operator	The operator for the interval. Valid values are > (greater than) or >= (greater than or equal to).	Required for all intervals except the lower bound interval.
6	Interval Label	The label for the interval. This value can be no longer than 255 characters.	Optional

Column Order	Column Name	Column Description	Value Required
7	Interval Grade	The grade of the interval. This value can be no longer than 255 characters.	Optional
8	Normalized Value	The double word that represents the normalized value of the interval.	Optional
9	Interval Color	The color of the text for the interval. For more information, see "Color Values" on page 239.	Optional
10	Interval Icon	The image filename to use as the icon for the interval. This value can be no longer than 100 characters.	Optional
11	Interval Formula	A string representing a valid formula.	Required for all intervals except the lower bound interval if this is a formula-based range.

The data column order for the SPECIAL data type is described in the following table.

Table A4.8 *Keyword=Special Data Column Order and Descriptions*

Column Order	Column Name	Column Description	Value Required
1	Keyword	This value must be SPECIAL (or 9). This value is case insensitive. **Note:** There can be no more than two rows of data that specify the SPECIAL keyword for a single range: one row for the MISSING interval and one row for the UNRESOLVED interval.	Required
2	Range Reference Number	An integer that is greater than zero that identifies the range to which the interval belongs.	Required
3	Special Range Value Type	The value that indicates to which special interval the row of data applies. This value must be either MISSING (or 1) or UNRESOLVED (or 2).	Required
4	Placeholder	This value is unused but the data column must exist.	Required
5	Placeholder	This value is unused but the data column must exist.	Required
6	Placeholder	This value is unused but the data column must exist.	Required
7	Interval Grade	The grade of the interval. This value can be no longer than 255 characters.	Optional
8	Normalized Value	The double word that represents the normalized value of the interval.	Optional
9	Interval Color	The color of the text for the interval. For more information, see "Color Values" on page 239.	Optional
10	Interval Icon	The image filename to use as the icon for the interval. This value can be no longer than 100 characters.	Optional

Scorecard File

This section describes the scorecard data file format that is used for the CREATE action.

Note: (MODIFY action only) BMF always ignores the first row in this file. BMF expects this row to be a column heading row. You must include the column heading row. If you do not, BMF discards the first line of your data. The column heading row must exist. However, the content of this row can be anything.

Scorecards must be defined in the correct order in this file. Any scorecard that has a dependency on another scorecard must be defined later in the file after that parent scorecard.

Table A4.9 *Scorecard File Column Order and Descriptions*

Column Order	Column Name	Column Description	Value Required
1	Reference Number	An integer that is greater than zero that identifies the scorecard.	Required
2	Name	The name of the scorecard. This value must be specified in the default language, and can be no longer than 255 characters.	Required
3	Scorecard Parent Reference Number	An integer that is greater than or equal to zero that identifies the scorecard's parent. The parent scorecard must have been defined previously. A value of zero indicates that the scorecard is a root-level scorecard.	Required
4	Owner	The new name of the scorecard's owner as it appears in SAS Management Console, not as it appears in SAS Strategy Management. This value can be no longer than 60 characters.	Required
5	Order	An integer that is greater than or equal to zero that indicates the sort position of the scorecard under the parent scorecard. You do not need to use consecutive numbers; the sibling scorecards are sorted by their numbers relative to each other. A value of zero indicates that the scorecard's order is determined by its position in the CSV file.	Required
6	Description	A description of the scorecard. This value must be specified in the default language, and can be no longer than 255 characters.	Optional
7	Scorecard Code	The scorecard code value. This value is used by the import feature to identify a scorecard. This value must be specified in the default language, and can be no longer than 255 characters.	Optional

Element File

This section describes the element data file format that is used for the CREATE action.

Note: (MODIFY action only) BMF always ignores the first row in this file. BMF expects this row to be a column heading row. You must include the column heading row. If you do not, BMF discards the first line of your data. The column heading row must exist. However, the content of this row can be anything.

Table A4.10 *Element File Column Order and Descriptions*

Column Order	Column Name	Column Description	Value Required
1	Reference Number	An integer that is greater than zero that identifies the element. For more information, see Appendix 7, "Identifying New Strategy Management Objects," on page 247.	Required
2	Name	The name of the element. This value must be specified in the default language, and can be no longer than 255 characters.	Required
3	Description	The description of the element in the default language. This value must be specified in the default language, and can be no longer than 255 characters.	Optional
4	Container Reference Number	An integer that is greater than zero that identifies the scorecard that was specified in the scorecard.csv file. The container must have been previously defined.	Required
5	Element Type	The element type. This value must be specified in the default language, and is case insensitive.	Required
6	Period Type	The periodicity of the element. This value must be specified in the default language, and is case insensitive.	Required
7	Start Period	The start period of the element. This value must be specified in the default language, and is case insensitive.	Required
8	End Period	The end period of the element. This value must be specified in the default language, and is case insensitive.	Required
9	Link ID	An integer that uniquely identifies another element to which this element is linked. The linked element must have been previously defined. A value of zero indicates that there is no link.	Required
10	Owner	The name of the element's owner as it appears in SAS Management Console, not as it appears in SAS Strategy Management. This value can be no longer than 60 characters.	Required

Column Order	Column Name	Column Description	Value Required
11	Order	An integer that is greater than or equal to zero that indicates the sort position of the element under the container. You do not need to use consecutive numbers; the sibling elements are sorted by their numbers relative to each other. A value of zero indicates that the element's order is determined by its position in the CSV file.	Required
12	Named Link	An integer that is greater than zero that indicates the reference number of a named link created by this BMF invocation. An association is created between the named link and this element. A value of zero indicates that there is no associated link. **Note:** This column is new in BMF 5.4.	Optional

Element Attribute File

This section describes the element attribute data file that is used by the CREATE action.

Note: (MODIFY action only) BMF always ignores the first row in this file. BMF expects this row to be a column heading row. You must include the column heading row. If you do not, BMF discards the first line of your data. The column heading row must exist. However, the content of this row can be anything.

Table A4.11 *Element Attribute File Column Order and Descriptions*

Column Order	Column Name	Column Description	Value Required
1	Element Reference Number	An integer that is greater than zero that identifies the element that is associated with the element attribute. The element must have been previously defined.	Required
2	Category	Specifies the category. For more information, see “Attribute Category Values” on page 238.	Required
3	Category Label	The label of the category for the element type. This value is case insensitive, and must be specified in the default language.	Required
4	Value	The value of the element attribute that is determined by the category. For more information, see “Attribute Category Values” on page 238.	Required
5	Named Link	An integer that is greater than zero that indicates the reference number of a named link created by this BMF invocation. An association is created between the named link and this element attribute. A value of zero indicates that there is no associated link. **Note:** This column is new in BMF 5.4.	Optional

Cell File

This section describes the format of the cell data file for the CREATE action.

Note: (MODIFY action only) BMF always ignores the first row in this file. BMF expects this row to be a column heading row. You must include the column heading row. If you do not, BMF discards the first line of your data. The column heading row must exist. However, the content of this row can be anything.

Note: The ACTION and ACTIONPARMS columns no longer exist in this table. Instead, the table now includes the LINK column. For more information, see "Link File " on page 230.

Table A4.12 *Cell File Column Order and Descriptions*

Column Order	Column Name	Column Description	Value Required
1	Element Reference Number	An integer that is greater than zero that identifies the element that is associated with the cell. The element must have been previously defined in its data file.	Required
2	Metric Attribute	The name of the metric attribute for the cell. This value must be specified in the default language, and is case insensitive.	Required
3	Period Type	The periodicity of the cell. This value must be specified in the default language, and is case insensitive.	Required
4	Period	The name of the period. This value must be specified in the default language, and is case insensitive.	Required
5	Cell Type	The type of value for the cell type. This value must be specified in the default language, is case insensitive, and must be either MANUAL (or 1) or FORMULA (or 2).	Required
6	Value	The value for the cell. If the cell type is MANUAL, this value is a number. If the cell type is FORMULA, this value is a string that represents a formula. To specify no value, specify a blank.	Optional
7	Named Link	The reference number of the link to be applied to the cell value. To specify no link, specify a blank.	Optional
8	Range	The name of a range that is applied to the cell. This value must be specified in the default language, and is case insensitive. To specify no range, specify a blank.	Optional
9	Global Threshold Value	The value of the global threshold. For more information, see "Global Thresholds and Cells" on page 241.	If you specify *Threshold Type*, this value is required. Otherwise, it is blank.

Column Order	Column Name	Column Description	Value Required
10	Threshold Type	The type of global threshold. To specify no threshold, specify a blank. For more information, see "Global Thresholds and Cells" on page 241.	Optional
11	Threshold Operator	The threshold operator. For more information, see "Global Thresholds and Cells" on page 241.	If you specify *Threshold Type*, this value is required. Otherwise, it is blank.
12	Cell Text	The cell text value. This value can be no longer than 65535 characters.	Optional

Cell Format File

This section describes the format of the cell format data file for the CREATE action. Cell formats are applied to individual cells in the SAS Strategy Management application.

Note: (MODIFY action only) BMF always ignores the first row in this file. BMF expects this row to be a column heading row. You must include the column heading row. If you do not, BMF discards the first line of your data. The column heading row must exist. However, the content of this row can be anything.

Table A4.13 *Cell Format File Column Order and Descriptions*

Column Order	Column Name	Column Description	Value Required
1	Element Reference Number	A reference number (integer) that is greater than zero that uniquely identifies the element that is associated with the cell. The element must have been previously defined in this CSV file that specified the elements. For more information, see Appendix 7, "Identifying New Strategy Management Objects," on page 247.	Required
2	Metric Attribute	The name of the metric attribute for the cell format. The element must have been previously defined in the input CSV file that specified the setup information. This value can be no longer than 255 characters.	Required
3	Format	The name of the SAS format used by the cell format. This value can be no longer than 100 characters. Valid values are available from the SAS Strategy Management application.	Optional
4	Format Type	The type of format of metric attribute. For more information, see "Format Type Values" on page 241.	Optional
5	Width	An integer that specifies the width of the numeric field.	Optional

Column Order	Column Name	Column Description	Value Required
6	Decimal Width	An integer that specifies the number of decimal places in a numeric field.	Optional
7	Alignment	The horizontal alignment of the text in the column. For more information, see “Alignment Values” on page 239.	Optional
8	Text Style	The style of text in the column. For more information, see “Text Style Values” on page 245.	Optional
9	Text Color	The color of the text in the column. For more information, see “Color Values” on page 239.	Optional
10	Background Color	The color of the background in the column. For more information, see “Color Values” on page 239.	Optional

Link File

This section describes the format of the link data file for the CREATE action. This file specifies the creation of links and link parameters.

Note: These files include column headings that describe the type of data that is contained in each column. The heading row is not used by BMF. The row is provided only for informational purposes. BMF uses the position of each column in the file to identify the data that the column contains. If this row is a header row or is blank it will be ignored in processing. In this file, the first column in a column heading row contains one of the following values:

- 0 (that is, zero)
- KEYWORD, a constant value that is case insensitive

The link data file can contain two types of data. Each type of data is identified by one of the following values (either string or integer) in the first column (the Keyword column):

String	Integer
GENERAL	6
LINKPARM	17

The GENERAL row must be first in the file, then the LINKPARM rows. There can be zero or more LINKPARM rows for each link. BMF collects LINKPARM data only if there is a corresponding GENERAL row.

The data column order for the GENERAL data type is described in the following table.

Table A4.14 *Keyword=General Link Data Column Order and Descriptions*

Column Order	Column Name	Column Description	Value Required
1	Keyword	This value must be GENERAL (or 6). This value is case insensitive.	Required
2	Link Reference Number	An integer that is greater than zero that identifies this link.	Required
3	Link Name	The name of the link. This value can be no longer than 255 characters.	Required
4	Link Description	The description of the link. This value must be specified in the default language, and is case insensitive.	Optional
5	Link Type	The type of link. For more information, see "Link Type Values" on page 243.	Required
6	Target Current Page	Indicates whether the link appears in the current Web page or in a new Web page. This value is case insensitive, and must be one of the following values: ■ YES (or 42) ■ NO (or 43) **Note:** A blank is the same as NO.	Optional
7	Path Web Address	The Web address for the link. You can also specify a file path.	Optional
8	Advanced Parameters	The advanced parameters that are passed with the link to the target. This value must be specified in the default language, and is case insensitive. To specify no parameters, specify a blank.	Optional

The data column order for the LINKPARM data type is described in the following table.

Table A4.15 *Keyword=Linkparm Data Column Order and Descriptions*

Column Order	Column Name	Column Description	Value Required
1	Keyword	This value must be LINKPARM (or 17). This value is case insensitive.	Required
2	Link Reference Number	An integer that is greater than zero that identifies the link to which the link parameter belongs.	Required
3	Link Parameter Name	The name of the link parameter. For more information, see "Link Parameter Name Values" on page 242.	Required
4	Link Parameter Value	The value for the link parameter.	Required

Column Order	Column Name	Column Description	Value Required
5	Order	The sort order of this link parameter. The order determines where the link parameter appears in the list of link parameters in the Strategy Management Web application (Builder).	Required

Appendix 5

Data Model for Quick-Entry Mode

This section describes the format of the quick-entry mode data file.

Note:

- If you want to create only a scorecard or a scorecard hierarchy, you must specify values only in the Scorecard column.
- If you want to create only elements, you must specify values in the Scorecard, Element Type, and Element columns.

Table A5.1 *Quick-Entry Mode Data File Column Order and Descriptions*

Column Order	Column Name	Column Description	Value Required
1	Scorecard	The path and name of a scorecard that contains the data. The path indicates the scorecard location in the scorecard hierarchy, and is a concatenation of the scorecard names that are separated by a delimiter (|). Here is an example: `Scorecard_Root|Scorecard_Child` If the scorecard is a root-level scorecard, do not specify a path or delimiter. Any scorecard within this path must satisfy either of these conditions: ■ It already exists. ■ It is in the process of creation. **Note:** If this scorecard does not exist, it is created using default values for scorecard properties. This name and all scorecard names that are specified in the path must be in the default language. **Note:** This value can also contain the wildcard token (*). You can use the wildcard token either at the end of the path or as the only value in the Scorecard column itself. The wildcard token indicates that the remaining values in this data row apply to all scorecards that exist at this level of the scorecard hierarchy. For more information, see "Using the Wildcard Token in the Scorecard Column" on page 169.	Required
2	Element Type	The name of the element type of the element that is specified in the Element column. **Note:** The element type must already be defined within the template and project.	Required if specifying an element.

Column Order	Column Name	Column Description	Value Required
3	Element	The name of the element that contains the data. The element must be specified in the default language. If the element does not exist in the scorecard that is specified by the Scorecard column, it is created. The element can be created using default values for element properties, or you can specify the following values: ■ The value for the element's periodicity, such as YEAR, MONTH, and so forth. If you specify this value, it is located in the Periodicity column. If you do not specify this value, the default of MONTH is used. ■ The values for the start and end periods. If you specify these values, they are located in the Element Start Period and Element End Period columns. If you do not specify these values, the element is created with the special FLOAT value for both the start and end periods. **Note:** If the element does exist, you cannot specify these element properties. If you do, BMF generates errors.	Required if creating an element or specifying a cell value.
4	Cell Date	The date of the cell that contains this data. Quick-entry mode expects the date in the Period column to be given in the currently specified SAS short date format. This format is set on the Preferences page in the Strategy Management Web application. You can choose from different date formats, such as 06/03/2010 or 2010-60-03. **Note:** If you do not use the currently specified SAS short date format, BMF generates an error.	Required if specifying a cell value.
5	Column	The column (that is, metric attribute) of the cell that contains this data. **Note:** The metric attribute must already be defined within the template and project.	Required if specifying a cell value.

Column Order	Column Name	Column Description	Value Required
6	Value	The numeric value for the cell. If you specify this value, you must also specify valid Element, Periodicity, and Column values. A cell can have a numeric value, text value, or both. BMF processes cell data in the following ways: ■ If there is a value in either the Value or Text Value columns, BMF creates a cell for the specified Element, Period, and Column (metric attribute). If the cell did not exist previously, BMF sets the specified cell values. If the cell does exist, BMF replaces the specified cell values. ■ If there is no value in this column (that is, the column is blank), BMF does nothing to the cell value. ■ If you specify the delete token (#) in this column, BMF deletes the cell value that already exists. BMF does not delete the cell; it deletes only the cell value. **Note:** If you want to create a new cell, but do not want it to have a value, specify the delete token (#) in the Value or Text Value column.	Required if specifying a cell value.
7	Text Value	The text value for the cell. If you specify this value, you must also specify valid Element, Periodicity, and Column values. A cell can have a numeric value, text value, or both. BMF processes cell data in the following ways: ■ If there is a value in either the Value or Text Value columns, BMF creates a cell for the specified Element, Period, and Column (metric attribute). If the cell did not exist previously, BMF sets the specified cell values. If the cell does exist, BMF replaces the specified cell values. ■ If there is no value in this column (that is, the column is blank), BMF does nothing to the cell value. ■ If you specify the delete token (#) in this column, BMF deletes the cell value that already exists. BMF does not delete the cell; it deletes only the cell value. **Note:** If you want to create a new cell, but do not want it to have a value, specify the delete token (#) in the Value or Text Value column.	Required if specifying a cell text value.
8	Periodicity	The periodicity (period type) of the specified period that is associated with the specified element. **Note:** The period type must already be defined within the template and project.	Required if creating an element with a periodicity other than MONTH.

Column Order	Column Name	Column Description	Value Required
9	Element Start Period	The name of the start period that is associated with the specified element. This value must be specified in the default language and is case insensitive. Also, this value can be FLOAT (or 15). This special value matches all periods. Quick-entry mode uses SAS time period values. BMF expects a Start or End Period value that is appropriate for the periodicity of the element. If the element's periodicity is YEAR, you must specify a start or end period of 2009, 2010, and so forth. **Note:** If you do not specify the start period, it defaults to float.	Optional
10	Element End Period	The name of the end period that is associated with the specified element. This value must be specified in the default language and is case insensitive. Also, this value can be FLOAT (or 15). This special value matches all periods. Quick-entry mode uses SAS time period values. BMF expects a Start or End Period value that is appropriate for the periodicity of the element. If the element's periodicity is YEAR, you must specify a start or end period of 2009, 2010, and so forth. **Note:** If you do not specify the end period, it defaults to float.	Optional

Appendix 6

Data Model Keywords

Access Permission Values

To change security permissions, you must specify the Security Operation Code, Security ID, Security ID Type, and Security Permissions. Each of these values indicates changes to an individual Strategy Management user that is already defined in SAS Management Console. The following table describes valid values for the Security Permissions column. For more information about specifying security operation codes, see “Security Operation Code Values” on page 244.

When using the %STMBMF macro, there are several situations in which you specify or get access permissions. When you specify the access permissions, the access permissions replace, but do not add to, the existing access permissions. This value is case insensitive and must be any combination of the available values in the following table

Table A6.1 *Access Permission Values and Their Associated Permissions*

Value	Permission to Grant
R	Read access permission
U	Update access permission
D	Delete access permission
A	Administer access permission
ALL	All access permissions

Attribute Category Values

When using the %STMBMF macro, you can specify information to store with an element. This information is called an element attribute. This value is case insensitive and must be specified in the default language. When using either the BMF CREATE or MODIFY actions, you must indicate the category in which the attribute value belongs. The available category values are listed in the following table.

Table A6.2 *Attribute Category Values and Their Descriptions*

Value	Integer	Description
TEXT	1	Indicates that the attribute's Value column contains text data. This value can be no longer than 255 characters.
EMAIL	2	Indicates that the attribute's Value column contains an e-mail address. This value can be no longer than 255 characters.
DATE	3	Indicates that the attribute's Value column contains a date. The date value must be in the format expected by the SAS Strategy Management Web application.
URL	4	Indicates that the attribute's Value column contains a Web address. This value can be no longer than 255 characters.

Value	Integer	Description
ELEMENT TYPE	5	For the CREATE action, the attribute's Value column must contain the integer reference number of another previously defined element. For the MODIFY action, the attribute's Value column varies, depending on the operation code that you specified in this data row. ■ If the operation code is DELETE (or 2), then the Value column must be blank. ■ If the operation code is MODIFY (or 1), then the Value column must contain the UUID of a different element to associate. ■ If the operation code is ADD (or 3) and the element to associate is being created in the current BMF invocation, then the Value column must contain the integer reference number of that element. ■ If the operation code is ADD (or 3) and the element to associate is a different element that already exists, then the Value column must contain the UUID of that element.

Alignment Values

When using the %STMBMF macro, you might need to specify an alignment for text. You can use either the integer or keyword. The keywords are case insensitive. The available alignment values are in the following table.

Table A6.3 *Alignment Integer and Keywords*

Integer	Keyword
0	LEFT
1	CENTER
2	RIGHT

Color Values

Overview

BMF provides two ways to specify color values. Make sure that you use the correct method for the affected BMF object.

- Color values that are specified for element types (in the SETUP file) and range intervals (regular and special in the RANGE file) use the hexadecimal number string method. See “Specify a Hexadecimal Number String” on page 240.
- Color values that are specified for metric attributes (in the SETUP file) and cell formats (in the CELLFORMAT file) use the standard color name method. See “Specify a Standard Color Name” on page 240.

Specify a Hexadecimal Number String

Use these color values when working with the following objects:

- element types (in the SETUP file)
- range intervals (regular and special in the RANGE file)

To specify a hexadecimal number string, the value is case insensitive and must be one of the following:

- The standard color name WHITE.
- A seven-character hexadecimal number string that uses the RGB format. The first character must be the pound sign (#).

  For example, Blue is specified as #0000CC.

  Note: If you do not include the # character, BMF automatically includes the character for you.

Specify a Standard Color Name

Use these color values when working with the following objects:

- metric attributes (in the SETUP file)
- cell formats (in the CELLFORMAT file)

To specify a standard color name, use one of the following values, all of which are case insensitive.

- DEFAULT
- BLACK
- WHITE
- RED
- ORANGE
- YELLOW
- GREEN
- BLUE
- INDIGO
- VIOLET

Format Type Values

When using the %STMBMF macro, you might need to specify a format type. You can use either the integer or keyword. The keywords are case insensitive. The available format type values are in the following table.

Table A6.4 *Format Type Integer and Keywords*

Integer	Keyword
0	blank Indicates that you must use the current format type.
1	GENERAL
2	CURRENCY
3	NUMBER
4	PERCENTAGE
5	DATE
6	SAS BEST

Global Thresholds and Cells

You can attach different types of global thresholds to a cell value. The default is no threshold. The cell file data model includes the following columns that are used by BMF for specifying a threshold:

- global threshold value
- threshold type
- threshold operator

BMF checks the threshold type column first to determine whether you have specified a threshold. If you specify any of the following values in this column, BMF ignores the other threshold columns:

- a blank

  Note: For faster processing, specify a blank in this column to indicate no threshold.

- 0
- NONE

The following table describes the interval types that you can specify for global thresholds that are attached to a cell.

Note: The interval type values are case insensitive.

Table A6.5 Global Threshold Interval Types, Operators, and Descriptions

Type	Operator	Description
0, NONE, or blank	blank or NONE	blank
1 or VALUE	<, >, <=, >=	A numeric value
2 or LABEL	=, <>	The label value of one of the intervals attached to the cell.
3 or GRADE	=, <>	The grade value of one of the intervals attached to the cell.
4 or NORMALIZEDVALUE	=, <>	The normalized value of one of the intervals attached to the cell.

Link Parameter Name Values

When using the %STMBMF macro, you might need to specify link parameters that are associated with a link type. You can use either the integer or keyword. The keywords are case insensitive. The available link parameter name values are in the following table.

Table A6.6 Link Parameter Name Values

Integer	Keyword
25	NONE
26	ENTITYKEY
27	PROJECT
28	PROJECTID
29	SCORECARD
30	SCORECARDID
31	ELEMENT
32	ELEMENTID
33	COLUMN
34	COLUMNID
35	PERIOD
36	PERIODID
37	PERIODSTARTDATE

Integer	Keyword
38	PERIODENDDATE
39	DISPLAYDATE
40	METRICVALUE
41	METRICTEXT

Link Type Values

When using the %STMBMF macro, you might need to specify a link type. You can use either the integer or keyword. The keywords are case insensitive. The available link type values are in the following table.

Table A6.7 *Link Type Values*

Integer	Keyword
18	EXTERNAL
19	PROJECT
20	PORTAL
21	STOREDPROCESS
22	WEBREPORT
23	IMAP
24	FMREPORT
44	DIRECTIVE
45	FILE

Operation Code Values

When you modify model data, you can specify an operation code. The operation code is an integer that indicates the action to perform. The default value is blank. The available operation code values are in the following table.

Table A6.8 Operation Codes and Their Associated Actions

Code	Action to Perform
1	Modify the item.
2	Delete the item.
3	Add the item.
5	Ignore this row.
blank	Ignore this row.

Security Operation Code Values

To change security permissions, you must specify the Security Operation Code, Security ID, Security ID Type, and Security Permissions. Each of these values indicates changes to an individual Strategy Management user that is already defined in SAS Management Console. The following table describes valid values for the Security Operation Code column. For information about specifying security permissions, see “Access Permission Values” on page 237.

Table A6.9 Security Operation Codes and Their Associated Actions

Code	Action to Perform
1	Modify the permissions for the specified user.
2	Delete the specified user.
3	Add the specified user.
5	Ignore this row.
blank	Ignore this row.

Shape Values

When using the %STMBMF macro, you might need to specify a shape. You can use either the integer or keyword. The keywords are case insensitive. The following table describes the available shape values.

Table A6.10 Shape Integer and Keywords

Integer	Keyword
0	NONE

Integer	Keyword
1	RECTANGLE
2	ELLIPSE
3	DIAMOND
4	PENTAGON
5	OCTAGON
6	HEXAGON
7	TRAPEZOID
8	TRIANGLE
9	PARALLELOGRAM

Text Style Values

When using the %STMBMF macro, you might need to specify a text style. You can use either the integer or keyword. You can also combine styles. To combine styles, separate each value with a vertical bar (|), as in the following example:

```
bold|underline
```

This value can be no longer than 64 characters, and the keywords are case insensitive. The following table describes the available text style values.

Table A6.11 *Text Style Integer and Keywords*

Integer	Keyword
0	BOLD
1	ITALIC
2	UNDERLINE
3	STRIKEOUT
4	WRAP TEXT

Appendix 7

Identifying New Strategy Management Objects

Overview

When working with Strategy Management objects in CSV files, you identify each Strategy Management object with a universal unique identifier (UUID). Most Strategy Management objects are stored in the database with a UUID as a primary key. The UUID acts as the Strategy Management object's identifier. When a BMF GET action retrieves values for an object, a column is typically provided for the object identifier. When you modify or delete Strategy Management objects, BMF uses this identifier to locate the object.

However, if you want to identify a *new* object, that is, an object that does not exist in the Strategy Management database and therefore does not have a UUID, you must use a reference number. A *reference number* is an arbitrary integer that is greater than 0. The number must be unique among all new objects of the same type that you are defining in the same input file. If you are adding a new Strategy Management object, using either the MODIFY or CREATE action, you must assign a reference number as an identifier.

Note: BMF CREATE uses reference numbers exclusively to identify objects. When you use BMF CREATE, it is implied that everything that is specified in the input files is new.

Example

The following example uses a template called Strategy and a project called 2013 Strategy. The project contains existing scorecards. The example creates the following new objects:

- The root-level scorecard named Worldwide. This scorecard has an element named Root Element.
- A child scorecard named Americas. This scorecard has an element named Child Element.

Use the scorecard and element data files from the example in Chapter 14, “Getting a Project and Its Data,” on page 113.

Display A7.1 *Scorecard CSV Data from the GET Action Example*

Operation Code	Scorecard ID	Scorecard Name	Scorecard Parent ID	Owner	Orde
	48e1723a-0a10-1105-37b0-33a12824c981	Worldwide	0	sasdemo	
	48e1aafa-0a10-1105-37b0-33a16cfc9391	Americas	48e1723a-0a10-1105-37b0-33a12824c981	sasdemo	
	48e1d2c3-0a10-1105-37b0-33a19105b5e5	Canada	48e1aafa-0a10-1105-37b0-33a16cfc9391	sasdemo	
	48e200fd-0a10-1105-37b0-33a1bd74020e	Latin America	48e1aafa-0a10-1105-37b0-33a16cfc9391	sasdemo	
	48e22ff4-0a10-1105-37b0-33a115cdaf19	United States	48e1aafa-0a10-1105-37b0-33a16cfc9391	sasdemo	
	48e2569d-0a10-1105-37b0-33a13cf73cc5	Asia	48e1723a-0a10-1105-37b0-33a12824c981	sasdemo	
	48e284d6-0a10-1105-37b0-33a1c0539177	China	48e2569d-0a10-1105-37b0-33a13cf73cc5	sasdemo	
	48e2ab77-0a10-1105-37b0-33a178a0fa81	India	48e2569d-0a10-1105-37b0-33a13cf73cc5	sasdemo	
	48e2d958-0a10-1105-37b0-33a17740f940	Europe	48e1723a-0a10-1105-37b0-33a12824c981	sasdemo	

Note: This exercise concentrates on the columns shown. For information about other columns in the CSV file, see Appendix 4, “Data Model for the CREATE Action,” on page 217.

To add two scorecards to the project, add two data rows to this file. Enter the following data in the first row:

1. In the Operation Code column, enter `3`. This code indicates an addition.
2. In the Scorecard ID column, enter `1` for the reference number.
3. In the Scorecard Name column, enter **`New Scorecard 1`**.
4. In the Scorecard Parent ID column, enter `0` to indicate that this is a root-level scorecard.

   Note: This value is not a reference number. It is a Strategy Management indicator that BMF interprets as a root-level scorecard.

Enter the following data in the second row:

1. In the Operation Code column, enter `3`. This code indicates an addition.
2. In the Scorecard ID column, enter `2` for the reference number.
3. In the Scorecard Name column, enter **`New Scorecard 2`**.
4. In the Scorecard Parent ID column, enter `1` to indicate that the parent scorecard is Root Scorecard. The value that is entered is the reference number for Root Scorecard.

   Note: You must always define an object in the file before using that object reference number as a parent ID or container ID for another new object. For example, a scorecard parent must be defined in a file before its child.

Display A7.2 *Scorecard CSV Data with Two New Scorecards*

Operation	Scorecard ID	Scorecard Name	Scorecard Parent ID	Owner	Order	Scorec
	48e1723a-0a10-1105-37b0-33a12824c981	Worldwide	0	sasdemo	0	Not de
	48e1aafa-0a10-1105-37b0-33a16cfc9391	Americas	48e1723a-0a10-1105-37b0-33a12824c981	sasdemo	0	Not de
	48e1d2c3-0a10-1105-37b0-33a19105b5e5	Canada	48e1aafa-0a10-1105-37b0-33a16cfc9391	sasdemo	0	Not de
	48e200fd-0a10-1105-37b0-33a1bd74020e	Latin America	48e1aafa-0a10-1105-37b0-33a16cfc9391	sasdemo	0	Not de
	48e22ff4-0a10-1105-37b0-33a115cdaf19	United States	48e1aafa-0a10-1105-37b0-33a16cfc9391	sasdemo	0	Not de
	48e2569d-0a10-1105-37b0-33a13cf73cc5	Asia	48e1723a-0a10-1105-37b0-33a12824c981	sasdemo	0	Not de
	48e284d6-0a10-1105-37b0-33a1c0539177	China	48e2569d-0a10-1105-37b0-33a13cf73cc5	sasdemo	0	Not de
	48e2ab77-0a10-1105-37b0-33a178a0fa81	India	48e2569d-0a10-1105-37b0-33a13cf73cc5	sasdemo	0	Not de
	48e2d958-0a10-1105-37b0-33a17740f940	Europe	48e1723a-0a10-1105-37b0-33a12824c981	sasdemo	0	Not de
	48e30799-0a10-1105-37b0-33a1a4de0695	Western Europe	48e2d958-0a10-1105-37b0-33a17740f940	sasdemo	0	Not de
3	1	New Scorecard 1	0	sasdemo	0	
3	2	New Scorecard 2	1	sasdemo	0	

Note: Although you can choose to delete the three previously existing rows in this file, it is not required. When the Operation Code column is blank, the rows are ignored.

Next, use the element CSV file from the example in Chapter 14, “Getting a Project and Its Data,” on page 113. This file contains existing elements.

Display A7.3 *Element CSV Data from the GET Action Example*

Operation Code	Element ID	Element Name	Element Description	Container ID	Container Name	Ele
	6209a9e1-0a10-1105-0281-556b07b588e9	Innovation budget		48e1723a-0a10-1105-37b0-33a12824c981	Worldwide	M
	48f1675e-0a10-1105-37b0-33a139e17fb6	Innovation product profit per employee		48e1723a-0a10-1105-37b0-33a12824c981	Worldwide	M
	48f1a278-0a10-1105-37b0-33a1b37a46bb	Profit from innovation products divided by inv		48e1723a-0a10-1105-37b0-33a12824c981	Worldwide	M
	48f1dc94-0a10-1105-37b0-33a18106ca3f	Revenue from existing customers with new pr		48e1723a-0a10-1105-37b0-33a12824c981	Worldwide	M

To add two elements to the project, add two data rows to the elements file. Enter the following data in the first row:

1. In the Operation Code column, enter `3`. This code indicates an addition.
2. In the Element ID column, enter `1` for the reference number.
3. In the Element Name column, enter **`New measure`**.
4. In the Container ID column, enter `1` to indicate that the parent scorecard is New Scorecard. The value entered is the reference number for New Scorecard.

   Note: Because the new elements are scorecard elements, the parent must be a scorecard. However, elements can be contained by either a scorecard or a project (project-level elements). If these elements were contained by a project-level element, you would enter `0` in this column. This value is a Strategy Management indicator that BMF interprets as a project-level element. It is not a reference number.
5. In the Container Name column, enter **`New Scorecard 1`**.

Enter the following data in the second row:

1. In the Operation Code column, enter `3`. This code indicates an addition.
2. In the Element ID column, enter `2` for the reference number.
3. In the Element Name column, enter **`New measure 2`**.

4 In the Container ID column, enter `2` to indicate that the parent scorecard is New Scorecard 2. The value entered is the reference number for New Scorecard 2.

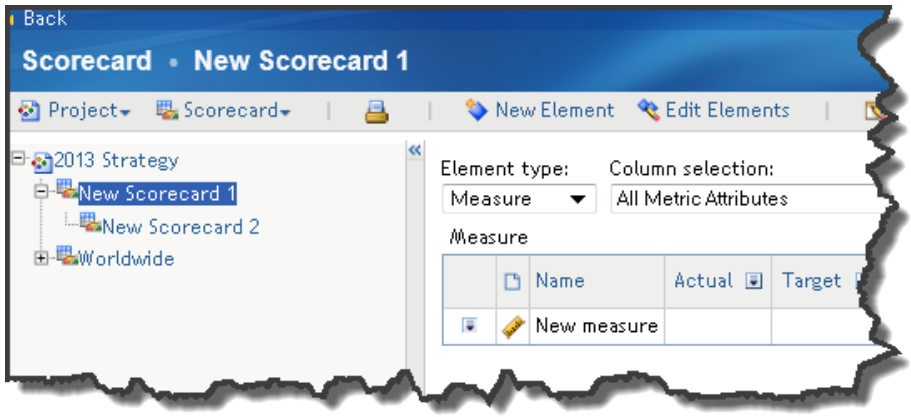
5 In the Container Name column, enter **`New Scorecard 2`**.

Display A7.4 *Element CSV Data with Two New Elements*

Operation	Element ID	Element Name	Element D	Container ID	Container Name	Element T	Perio
	6209a9e1-	Innovation budget		48e1723a-0a10-1105-37b0-33a12824c981	Worldwide	Measure	Month
	48f1675e-	Innovation product pi		48e1723a-0a10-1105-37b0-33a12824c981	Worldwide	Measure	Month
	48f1a278-	Profit from innovatio		48e1723a-0a10-1105-37b0-33a12824c981	Worldwide	Measure	Month
	48f1dc94-(	Revenue from existing		48e1723a-0a10-1105-37b0-33a12824c981	Worldwide	Measure	Month
	48f23432-	Revenue from new cu		48e1723a-0a10-1105-37b0-33a12824c981	Worldwide	Measure	Month
3	1	New measure		1	New Scorecard 1	Measure	Month
3	2	New measure 2		2	New Scorecard 2	Measure	Month
	48f269ac-(	Number of products v		48e1723a-0a10-1105-37b0-33a12824c981	Worldwide	Measure	Mon

Run BMF MODIFY with the edited CSV files. In the Strategy Management scorecard view, the new objects are displayed:

Display A7.5 *Updated Scorecard View*



If you run BMF GET on this project, the output CSV files contain rows for the scorecard and element objects that you added. Also, each object has a UUID in place of the reference number. If you want to modify or delete any of these objects using BMF, use the UUID.

Appendix 8

Limitations

Overview

SAS Strategy Management 5.4 has the following limitations and workarounds.

Data-Entry Form Feature

When two or more data-entry users submit a value in the same cell, the submitted value that is ultimately written to the SPM database is arbitrary.

Note: The affected cell is identified by the same element, same column, and same period.

Multiple Web Browser Instances and the Same Session ID

If you want to use SAS Strategy Management in more than one instance of a web browser at the same time, ensure that you start and log on to each instance of SAS Strategy Management in a new session of the browser. Failure to start a new session can cause unreliable results to occur in SAS Strategy Management.

For Microsoft Internet Explorer	Select **File** ▶ **New session**.
For Mozilla Firefox	Consult your system administrator about your organization's preferred way to open new sessions in Firefox.

Glossary

alert
an automatic notification of an electronic event that is of interest to the recipient.

Alerts portlet
a portlet that lists alert messages that have been issued to the user.

attribute
a property of an object, component, or other entity. Examples of attributes include name, size, or color.

audit
the formal examination and evaluation of an organization's controls to ensure organizational compliance.

dashboard
a view that displays ranges of data in a graphical format. Key performance indicators (KPIs) or any element can be displayed in a dashboard. Each element is represented by a gauge that displays the data ranges that are defined. Links to comments, trend data, and element properties can also be provided.

data node
a diagram component that contains all the data and metadata that are associated with an element, such as its labels, attributes, associations, and values.

data tier
in a SAS business intelligence system, the architectural layer in which SAS runs data-handling programs (including the logical servers for workspace and stored process servers). The data tier includes transformations, error tables, and jobs.

dimension
a data element that categorizes values in a data set into non-overlapping categories that can be used to group, filter, and label the data in meaningful ways. Hierarchies within a dimension typically represent different groupings of information that pertains to a single concept. For example, a Time dimension might consist of two hierarchies: (1) Year, Month, and Date, and (2) Year, Week, and Day.

element
a unit of data that is represented in a row in a scorecard table. Each element belongs to an element type. For example, the element type "Objective" might contain the elements "Expenses", "Create New Products", and "Profitability".

group
See user group

identity
See metadata identity

information map
a collection of data items and filters that provides a user-friendly view of a data source. When you use an information map to query data for business needs, you do not have to understand the structure of the underlying data source or know how to program in a query language.

key performance indicator
a measurement that shows whether an organization is progressing toward its stated goals. Short form: KPI.

KPI
See key performance indicator

locale
a setting that reflects the language, local conventions, and culture for a geographic region. Local conventions can include specific formatting rules for paper sizes, dates, times, and numbers, and a currency symbol for the country or region. Some examples of locale values are French_Canada, Portuguese_Brazil, and Chinese_Singapore.

metadata
descriptive data about data that is stored and managed in a database, in order to facilitate access to captured and archived data for further use.

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

metadata repository
a collection of related metadata objects, such as the metadata for a set of tables and columns that are maintained by an application.

metadata server
a server that provides metadata management services to one or more client applications.

metric
any standard of measurement that is used as a basis for evaluation or comparison. For example, ROI (return on investment) is a metric that is commonly used by businesses as a basis for making decisions, and bytes per second throughput is a common performance metric.

metric attribute
a value type that measures, groups, or tracks strategy results. A strategy uses metric attributes as a basis for evaluation and comparison of results. Actual, Target, and Status are examples of metric attributes.

middle tier
in a SAS business intelligence system, the architectural layer in which Web applications and related services execute. The middle tier receives user requests, applies business logic and business rules, interacts with processing servers and data servers, and returns information to users.

performance management framework
a management system that is supported by measures of performance. The framework can combine financial and nonfinancial measures of performance, as well as leading and lagging indicators. The framework enables optimization and testing of strategies, and evaluation of results.

permission
the type of access that a user or group has to a resource. The permission defines what the user or group can do with the resource. Examples of permissions are ReadMetadata and WriteMetadata.

portal
a Web application that enables users to access Web sites, data, documents, applications, and other digital content from a single, easily accessible user interface. A portal's personalization features enable each user to configure and organize the interface to meet individual or role-based needs.

role
a set of capabilities within an application that are targeted to a particular group of users.

rollback
a data recovery process that restores a database after a hardware or software failure, or that returns it to a state before changes were made.

SAS Stored Process
a SAS program that is stored on a server and defined in metadata, and which can be executed by client applications. Short form: stored process.

scorecard
a collection of content or information about a specific topic, such as a business unit or product. A scorecard tracks internal business processes and external outcomes as an aid to planning a strategy for an organization.

source system
the type of database from which operational loss data originates or to which it is being exported.

stored process
See SAS Stored Process

template
a collection of information that describes the key parts of a strategy. A template consists of element types, metric attributes, and a language setting. A template can be associated with one or more projects.

Time dimension
a dimension that divides time into levels such as Year, Quarter, Month, and Day.

time period level
a grouping of one or more time periods. For example, the time period level Day consists of the time periods Monday, Tuesday, Wednesday, Thursday, Friday, Saturday, and Sunday.

time period set
in a template or project, a grouping of one or more time period levels.

trend
a long-term consistent change, as measured by time series values.

Unicode Transformation Format 8
See UTF-8

universal unique identifier
a number that is used to uniquely identify information in distributed systems without significant central coordination. There are 32 hexadecimal digits in a UUID, and these are divided into five groups with hyphens between them as follows: 8-4-4-4-12. Altogether the 16-byte (128 bit) canonical UUID has 32 digits and 4 hyphens, or 36 characters.

user group
an organization of user roles within an entity organization. User groups contain the roles and access rights for the individuals assigned to the group.

user role
See role

UTF-8
a method for converting 16-bit Unicode characters to 8-bit characters. This format supports all of the world's languages, including those that use non-Latin 1 characters. Short form: UTF-8.

UUID
See universal unique identifier

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