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SAS®
Strategy Management 5.1
Batch Maintenance Facility
User's Guide

SAS® Documentation

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What's New?

Overview

Batch Maintenance Facility (BMF) 5.1 is enhanced by added functionality and improved performance.

Input File Specification

The INPUTDIR or INPUTDSLIB argument enables you to point to one location for input files used in CREATE and MODIFY jobs. Previously, you had to specify each file.

Output Filtering

The FILTER argument enables you to limit or filter the output produced by GET jobs. You provide filtering information in a file using this argument.

Range and Diagram Support

Support is now provided for ranges and diagrams.

SAS Data Set Support

Support is now provided to produce SAS data sets as output.

Authorization Enhancement

BMF users must have the correct authorizations to update Strategy Management objects that they might not own or do not have a specific permission to update. In version 5.1, in

order to have sufficient authorization to update anything, specify that the BMF user is a member of Solutions Administrators and Scorecard Modeler group.

Project Migration Support

Support is now provided to migrate a project from one version 5.1 installation to another version 5.1 installation.

Chapter 1

Overview of the Batch Maintenance Facility

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How to Use This Document

For an overview of SAS Strategy Management Batch Maintenance Facility (BMF) and details about the %STMBMF macro and its arguments, see Chapter 1, “Overview of the Batch Maintenance Facility,” on page 1.

For information about using the GET action, see Chapter 2, “Example: Getting Data,” on page 17.

For information about using the MODIFY action, see Chapter 3, “Example: Modifying Data,” on page 21.

For information about using the CREATE action, see Chapter 4, “Example: Creating Data,” on page 27.

For information about debugging BMF jobs, see Chapter 5, “Debugging BMF,” on page 31.

For information about data model files, comma-separated-value (CSV) files, and available values that you can specify in these files, see Appendix A1, “Data Model Considerations,” on page 35.

For information about the required data model file formats used for the GET and MODIFY actions, see Appendix A2, "Data Model for the GET and MODIFY Actions," on page 41.

For information about the required data model file formats used for the CREATE action, see Appendix A3, "Data Model for the CREATE Action," on page 63.

For information about how to identify new strategy management objects, see Appendix A4, "Identifying New Strategy Management Objects," on page 77.

For information about using ranges, see Appendix A5, "Using Ranges in BMF," on page 81.

What is the Batch Maintenance Facility?

The Strategy Management Batch Maintenance Facility (BMF) is a tool provided with the Strategy Management application. This tool enables you to get Strategy Management data into local files and use those files to create and maintain Strategy Management data in a batch manner. The tool consists of a SAS macro that you invoke in a SAS client. The client communicates with the server on which Strategy Management is running. Arguments that are provided to the macro pass data in comma-separated-value (CSV) files or SAS data sets as well as settings to tell the macro what to do.

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

BMF is primarily intended for Strategy Management scorecard modelers, that is, users of Strategy Management who create and maintain their organization's Strategy Management data. Understanding the Strategy Management data model is critical to effectively use this tool. 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.

The %STMBMF Macro

Overview

BMF is controlled by the %SPMBMF macro that is distributed in the 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 whether the macro is in your autocall path.

Note: 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.

Macro Actions

The %STMBMF macro provides three actions:

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

MODIFY
: Modifies existing Strategy Management project data by using changes identified in the affected CSV files or SAS data sets. Modifications can include adding, modifying, or deleting data.

CREATE
: Creates new Strategy Management project data.

Typically, the GET and MODIFY actions are used most.

Macro Arguments

The header of the %SPMBMF 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, and each keyword-value pair must be followed by a comma except for the last pair before the closing parenthesis.

Note: You can specify either CSV files or SAS data sets. However, you cannot specify *both* CSV files or SAS data sets in a macro invocation.

Table 1.1 *Arguments For Using CSV Files with the %STMBMF Macro*

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 either the Solutions Administrator Group or the Scorecard Modeler Group are sufficient. You can assign a user to these groups using SAS Management Console. *Note:* If you want this user ID to receive e-mail notifications from BMF, the user ID must have e-mail capabilities.	Yes
pw	The password for that user.	Yes
entitykey	An indicator that enables you to use the authentication credentials of a currently logged-in session. If you specify blank or X, BMF is forced to log in using credentials specified by the user and pw arguments. *Note:* This argument is not commonly used.	Required if the user and pw arguments are not specified and you want to use the authentication credentials of a currently logged-in session.
action	A value that indicates which action you want to perform: GET, MODIFY, or CREATE.	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 "Input Data Option" on page 8.	Required if you do not specify your CSV files individually, project_id is not specified, and action=MODIFY or CREATE.

Argument	Description	Required
outputdir	The name of a folder in which BMF can create output files	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. *Note:* Do not specify the templatename or projectname arguments if specifying project_id.	Optional
eventname	Specifies that the BMF job be processed synchronously. Valid values are SAS.Solutions.SpmBOBInterfaceSynch and SAS.Solutions.SpmBOBInterface. By default, BMF jobs are processed asynchronously (SAS.Solutions.SpmBOBInterface). For more information, see "Synchronous Processing Option" on page 12.	Optional
migrate	A setting that indicates the specified project is being migrated. Valid values are Yes and No. No is the default. For more information, see "Project Migration Option" on page 11.	Optional
filter	A CSV file that specifies filter data. For more information, see "Output Filter Option" on page 10.	Optional
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: • action=MODIFY and you are modifying data contained in this file • action=CREATE and you are using this file to create a project
project	The project file that contains information about the project and project permissions.	Required if inputdir is not specified and: • action=MODIFY and you are modifying data contained in this file • action=CREATE and you are using this file to create a project
range	The range file that contains information about project ranges and range intervals.	Required if inputdir is not specified and: • action=MODIFY and you are modifying data contained in this file • action=CREATE and you are using this file to create a project

Argument	Description	Required
scorecard	The scorecard file that contains information about project scorecards.	Required if inputdir is not specified and: • action=MODIFY and you are modifying data contained in this file • action=CREATE and you are using this file to create a project
element	The element file that contains information about elements, both project and scorecard level.	Required if inputdir is not specified and: • action=MODIFY and you are modifying data contained in this file • action=CREATE and you are using this file to create a project
attribute	The attribute file that contains information about the attributes of each element.	Required if inputdir is not specified and: • action=MODIFY and you are modifying data contained in this file • action=CREATE and you are using this file to create a project
cell	The cell file that contains information about the cells of each element.	Required if inputdir is not specified and: • action=MODIFY and you are modifying data contained in this file • action=CREATE and you are using this file to create a project
cellformat	The cell format file that contains information about the cell formats of each cell.	Required if inputdir is not specified and: • action=MODIFY and you are modifying data contained in this file • action=CREATE and you are using this file to create a project
diagrams	The diagrams file that contains information about the project diagrams.	Optional if action=MODIFY. *Note:* This is an XML file and it cannot be modified. However, the unmodified XML file is required to migrate projects containing diagrams.

Table 1.2 *Arguments for Using SAS Data Sets with the %STMBMF Macro*

Argument Keyword	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 either the Solutions Administrator Group or the Scorecard Modeler Group are sufficient. You can assign a user to these groups using SAS Management Console. *Note:* If you want this user ID to receive e-mail notifications from BMF, the user ID must have e-mail capabilities.	Yes
pw	The password for that user.	Yes
entitykey	An indicator that enables you to use the authentication credentials of a currently logged-in session. If you specify blank or X, BMF is forced to log in using credentials specified by the user and pw arguments. *Note:* This argument is not commonly used.	Required if the user and pw arguments are not specified and you want to use the authentication credentials of a currently logged-in session.
action	A value that indicates which action you want to perform: GET, MODIFY, or CREATE.	Yes
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 "Input Data Option" on page 8.	Required if you do not specify your SAS data sets individually, project_id is not specified, and action=MODIFY or CREATE.
converteddsdir	The directory in which the CSV files that are converted from the input SAS data sets are written. *Note:* For detailed information about specifying directory locations, see "Specifying Folder Locations to BMF" on page 14.	Required if action=MODIFY or CREATE and specifying SAS data sets as input, either individually or using the inputdslib argument.
outputdslib	The SAS library in which the output SAS data sets are stored. For more information, see "Output Data Option" on page 9. *Note:* For detailed information about specifying directory locations, see "Specifying Folder Locations to BMF" on page 14.	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. For more information about synchronous processing, see "Synchronous Processing Option" on page 12.
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.

Argument Keyword	Description	Required
project_id	The UUID of the project that is being used for a GET or MODIFY. *Note:* Do not specify the templatename or projectname arguments if specifying project_id.	Optional
eventname	Specifies that the BMF job be processed synchronously. Valid values are SAS.Solutions.SpmBOBInterfaceSynch and SAS.Solutions.SpmBOBInterface. By default, BMF jobs are processed asynchronously (SAS.Solutions.SpmBOBInterface). For more information, see "Synchronous Processing Option" on page 12.	Optional
migrate	A setting that indicates the specified project is being migrated. Valid values are Yes and No. No is the default. For more information, see "Project Migration Option" on page 11.	Optional
filterds	A data set that specifies filter data. For more information, see "Output Filter Option" on page 10.	Optional
setupds	The setup data set that contains information about the template, template permissions, element types, metric attributes, column formatting, and attribute definitions.	Required if: • action=MODIFY and you are modifying data contained in this data set • action=CREATE and you are using this data set to create a project
projectds	The project data set that contains information about the project and project permissions.	Required if: • action=MODIFY and you are modifying data contained in this data set • action=CREATE and you are using this data set to create a project
rangeds	The range data set that contains information about project ranges and range intervals.	Required if: • action=MODIFY and you are modifying data contained in this data set • action=CREATE and you are using this data set to create a project
scorecardds	The scorecard data set that contains information about project scorecards.	Required if: • action=MODIFY and you are modifying data contained in this data set • action=CREATE and you are using this data set to create a project

Argument Keyword	Description	Required
elementds	The element data set that contains information about elements, both project and scorecard level.	Required if: • action=MODIFY and you are modifying data contained in this data set • action=CREATE and you are using this data set to create a project
attributeds	The attribute data set that contains information about the attributes of each element.	Required if: • action=MODIFY and you are modifying data contained in this data set • action=CREATE and you are using this data set to create a project
cellds	The cell data set that contains information about the cells of each element.	Required if: • action=MODIFY and you are modifying data contained in this data set • action=CREATE and you are using this data set to create a project
cellformatds	The cell format data set that contains information about the cell formats of each cell.	Required if: • action=MODIFY and you are modifying data contained in this data set • action=CREATE and you are using this data set to create a project
diagrams	The diagrams file that contains information about the project diagrams.	Optional if action=MODIFY. *Note:* This is an XML file and it cannot be modified. However, the unmodified XML file is required to migrate projects containing diagrams.

Macro Processing Options

Input Data Option

CSV Files

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

- Individually. Use the setup, project, scorecard, range, element, attribute, cell, or cellformat 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*_Element.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 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

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

- Individually. Use the setupds, projectds, scorecardds, rangeds, elementds, attributeds, cellds, or cellformatds 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*_Project
  - *projectname*_Range
  - *projectname*_Scorecard

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

  Note: The data sets must be named correctly.
- Individually and as a group. A data set in the library 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.

Output Data Option

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 %SPMBMF GET invocation:

```
converteddsdir=\\MYCOMPUTER\myPublic\converteddsets,
outputdslib=output,
```

For detailed information about specifying library locations and output file locations, see "Specifying Folder Locations to BMF" on page 14.

Output Filter Option

By default, BMF GET returns data for all Strategy Management objects in a template and project. However, you can limit (that is, filter) the data returned by specifying filtering criteria in an input filter CSV file. The filter argument enables you to specify the CSV file that contains your filtering criteria, **`filter=`*`file`*`.csv`** where *file* is the name of your CSV filter file. In this file you can specify the filtering criteria and each criteria is identified by the value in the first column (the Keyword column) and must be one of the following values: SCORECARD, FROMDATE, TODATE, PERIODICITY, or PROJECT_ELEMENTS.

Note: All keywords are case insensitive.

Table 1.3 *Filter Criteria Keywords and Value Descriptions*

Keyword	Value Description	Required
SCORECARD	The UUID that specifies the scorecard for which you require data. You can limit the scorecard data returned by specifying one or more scorecards. If you do not specify any scorecards, data are 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 (any case). 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 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 (any case). 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.

Keyword	Value 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
PROJECT_ELEMENTS	Specifies that you want data from project-level elements. Valid values are YES and NO. Values are case insensitive and the default is NO indicating that project-level elements are not included. *Note:* Only Scorecard, Element, Element Attribute, Cell, and Cell Format objects are returned when you do a filtered GET.	Optional

The following example shows all filtering criteria. However, you should 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.

Note: The row headings are for informative purposes only. BMF ignores any row that starts with KEYWORD.

```
KEYWORD,SCORECARD
SCORECARD,c174b443-0a28-0ecd-0122-50ef845f44b6
SCORECARD,c174bef1-0a28-0ecd-0122-50ef15f05fb8
KEYWORD,FROM DATE
FROMDATE,08/26/2008
KEYWORD,TO DATE
TODATE,09/27/2008
KEYWORD,PERIODICITY
PERIODICITY,ALL
KEYWORD,PROJECT ELEMENTS
PROJECT_ELEMENTS,YES
```

Project Migration Option

Project *migration* is when you copy or move a Strategy Management project from one system to another. The goal of migration is to create a project with identical content on another server. The other server might be running a different version of Strategy Management than the version running on the original system where the project was created.

CAUTION:

The MIGRATE option is not recommended for moving Strategy Management projects from installations that are earlier than version 5.1 of Strategy Management. Use this option to move project data from one version 5.1 installation to another version 5.1 installation.

The %SPMBMF macro provides an option called MIGRATE. You can use this option 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 Strategy Management installation. The migration process includes the following steps:

1. Retrieve the data files for a specific project using the MIGRATE option with the BMF GET action. When you invoke a BMF GET with MIGRATE=YES, BMF creates the same data files as without the MIGRATE option except that the action code is set to 3 (that is, add) for all the objects.
2. Make the data files available to the Strategy Management server on the target system. You can do this either by folder permissions or copying the data files to the target system.
3. Read the data files by using the MIGRATE option with the BMF MODIFY action. When you invoke a BMF MODIFY 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 using the MIGRATE option, remember the following considerations:

- 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.
- Creating and deleting certain Strategy Management objects multiple times on the same system by using the MIGRATE option might fail. This failure is caused by the SAS Metadata server and how it handles security. SAS throws an exception if the following sequence occurs:

  1. You create an object (for example, the template).
  2. You perform a GET with the MIGRATE option.
  3. You delete the template.
  4. You create the template again using the MIGRATE option.

  This exception occurs because the original template UUID is saved in metadata and cannot be used again until you log off from the Strategy Management Web application.

- In the Strategy Management Web application, you can create a template and not assign an owner to it. This is true when creating a template using BMF also. However, when creating a template with the BMF MIGRATE option, 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 invoking BMF.

Synchronous Processing Option

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, thus making efficient use of time and resources. Client processing resumes immediately. That is, you do not wait for the server processing to complete 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.

Submit the Macro Definition

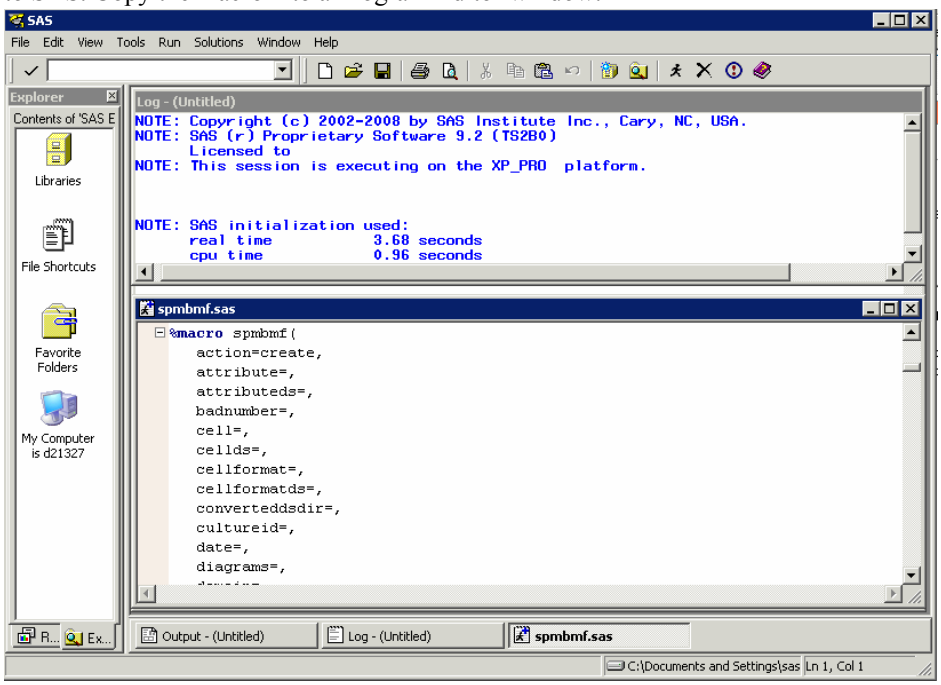
Before you can use the macro, you must submit the macro and set the SAS options.

Note: Before you start, the following conditions must be met:

- You must be a member of the Scorecard Modeler Group.
- Make sure you know the location of the metadata server. Contact your SAS administrator for this information.

If the macro is not installed in the autocall path, complete the following steps to submit the macro definition:

1. Start a SAS client session. When SAS Display Manager is running, define the macro to SAS. Copy the macro into a Program Editor window.



2. 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. In the %STMBMF macro statement, locate and copy the following line:

   ```
   options metaserver=server  metaport=8561
   metarepository=Foundation; %let debug=Y;
   ```

   The *server* argument is the value for your metadata server.

4. Paste the code into the Program Editor window. Replace *server* with the value of your metadata server.

5. If you want extra debugging statements written to the SAS log, specify the following code:

   ```
   %let debug=Y
   ```

6. Submit these lines to the SAS system. You are now ready to invoke the %STMBMF macro.

Macro Execution

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. The SAS system sends the argument values to the application server.

If any errors occur, the macro stops executing. See the SAS log to correct your errors. For more information, see Chapter 5, "Debugging BMF," on page 31.

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

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

The BMF code in Strategy Management on the application server now has control. BMF writes all further error messages to the BMF log. BMF performs the job or jobs that you submitted. After BMF has completed the jobs, it sends an e-mail notification.

Note: The user ID specified in the **user** argument must have e-mail capability for the notification to succeed.

Specifying Folder Locations to BMF

Typically, you want the output files written to a directory on the system running the SAS client. 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 example uses 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**

Prerequisites

To use BMF, all prerequisites for SAS Strategy Management 5.1 must be satisfied. See the *SAS Strategy Management 5.1: User's Guide* for information about prerequisites.

Chapter 2

Example: Getting Data

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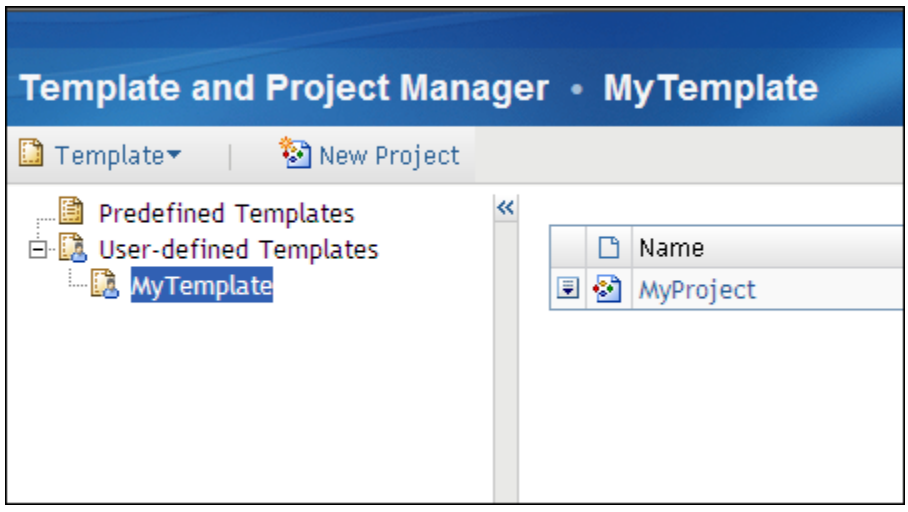
Overview

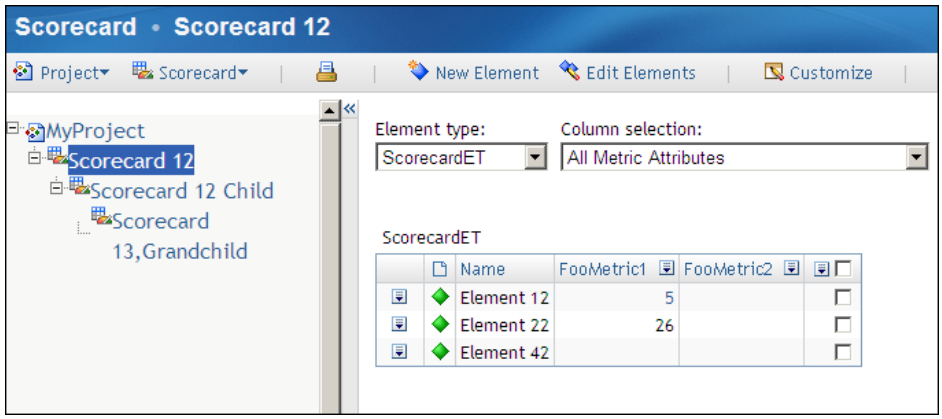
Using the BMF GET action, you can get some or all of the Strategy Management project data and write the data into comma-separated-value (CSV) files. The following example describes how to get the data from an existing template named MyTemplate and project named MyProject.

Figure 2.1 *MyTemplate and MyProject Displayed in the Strategy Management Application*



The project contains three scorecards. Each scorecard contains elements and cell values for the period of September 2009.

Figure 2.2 *MyProject and Scorecards Displayed in the Strategy Management Application*



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

Before you can invoke the %STMBMF macro, make sure you have submitted the macro. For more information, see "Submit the Macro Definition" on page 13.

To invoke the BMF GET action, you must specify the following macro arguments:

- Specify GET in the ACTION argument.
- Specify the user ID and password for a SAS user in the USER and PW arguments.

  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 e-mail capability.
- BMF works with one template and project at a time. Specify this information in the TEMPLATENAME and PROJECTNAME macro arguments.
- In the OUTPUTDIR argument, specify where to write the output CSV files. For detailed information about specifying file locations using the OUTPUTDIR argument, see "Specifying Folder Locations to BMF" on page 14.

Note: By default the files created are comma-separated-value (CSV) files. However, you can choose to have BMF create SAS data sets for each type. For more information, see "Output Data Option" on page 9.

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

```
%spmbmf(action=get,
        user=sasdemo,
        pw=DemoDemo1,
        templatename=MyTemplate,
        projectname=MyProject,
        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 the BMF system, view the SAS client 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 5.1 has ended but some StMBMF processes may still be running
asynchronously.
```

Macro Results and Output Files

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

The CSV files containing the data for MyTemplate and MyProject is written in 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 *template_name*_Setup.csv. In this example, the file is called MyTemplate_Setup.csv.
- Project. This is a subdirectory of Template. The Project directory contains all of the remaining data files and they are named *project_ name_data _type*.csv. In this example, the project data file is named MyProject_Project.csv.

Depending on the options that you use when you invoke BMF GET, several more files are created. The files typically are organized one file for each Strategy Management object type. However, some files can contain multiple related objects. The following table lists the possible data type files 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
Cell format	Contains information about the cell formats of each cell

Data Type Files	Description
Diagram	An XML File. Contains information describing the project diagrams

Note: In this example, all the template and project data are returned. However, you can specify GET to return subsets of the data of a project using the FILTER=*file* option where *file* is the location and name of a CSV file. The content of this CSV file specifies the information that you want filtered. The following example is content from a CSV file that filters on date range:

```
Keyword,From Date
FROMDATE,1/1/2009
Keyword,To Date
TODATE,1/30/2009
```

For detailed information about specifying file locations using the FILTER argument, see "Specifying Folder Locations to BMF" on page 14.

The Setup, Project, and Range 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.

Note: Cells are components of elements. When you view the 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.

The data files use the file format required by BMF MODIFY action. That is, you can edit and use these files in a subsequent BMF MODIFY operation to modify the Strategy Management data in a project. Within each data file are multiple rows and columns of text. Each row represents one Strategy Management object, 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:

Operation Code	Scorecard ID	Scorecard Name	Scorecard Parent ID
	e7451b3a-0a28-0d9b-01d2-da070fd82ea5	Scorecard 12	0
	e7451b3a-0a28-0d9b-01d2-da07dd8c929d	Scorecard 12 Child	e7451b3a-0a28-0d9b-01d2-da070fd82ea5
	e7451b4a-0a28-0d9b-01d2-da07e0ffa1ae	Scorecard 13,Grandchild	e7451b3a-0a28-0d9b-01d2-da07dd8c929d

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.

Note: These files are created in UTF-8 character encoding. If you have special characters in your Strategy Management data and you want to use these files to modify that data, you must preserve this character encoding when editing the files.

Chapter 3

Example: Modifying Data

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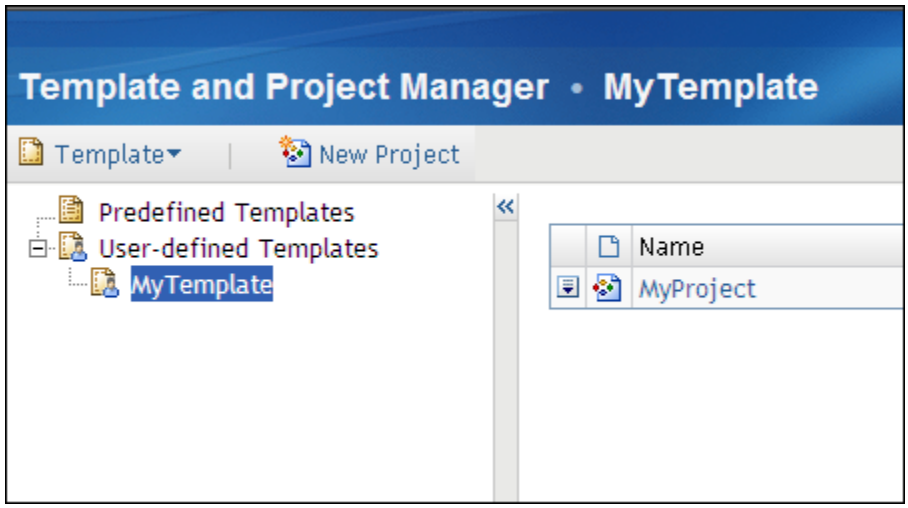
Overview

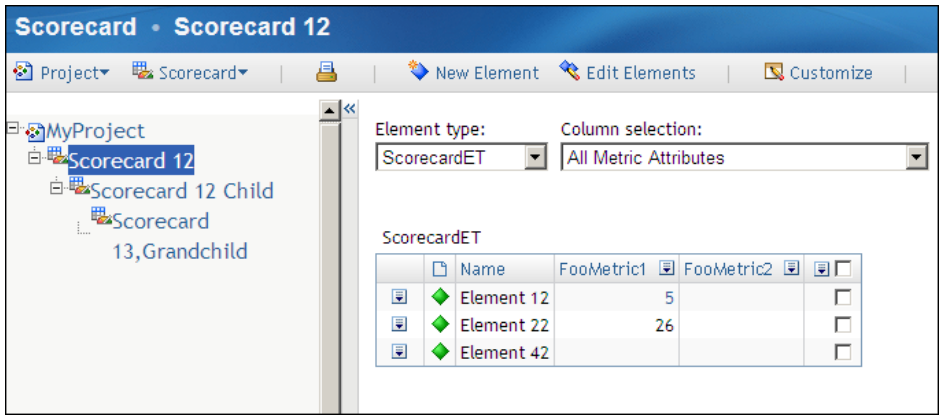
Using the BMF MODIFY action, you can add, modify, or delete the Strategy Management data from a project. The following example builds upon the example used for the BMF GET action. From that example, use the template called MyTemplate and the project called MyProject. The example expects the files from the BMF GET action example to be on your local computer (MYCOMPUTER) and located in the directory `C:\public`. For more information about the previous example, see Chapter 2, "Example: Getting Data," on page 17.

Figure 3.1 *Template and Project Used in the BMF GET Action Exercise*



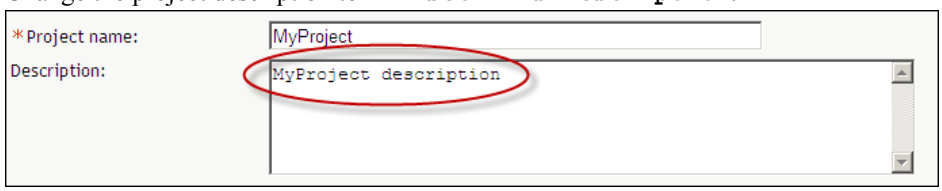
Within MyProject there are three scorecards, each with elements and cell values for the time period of September 2009.

Figure 3.2 *Scorecards Used in the BMF GET Action Exercise*

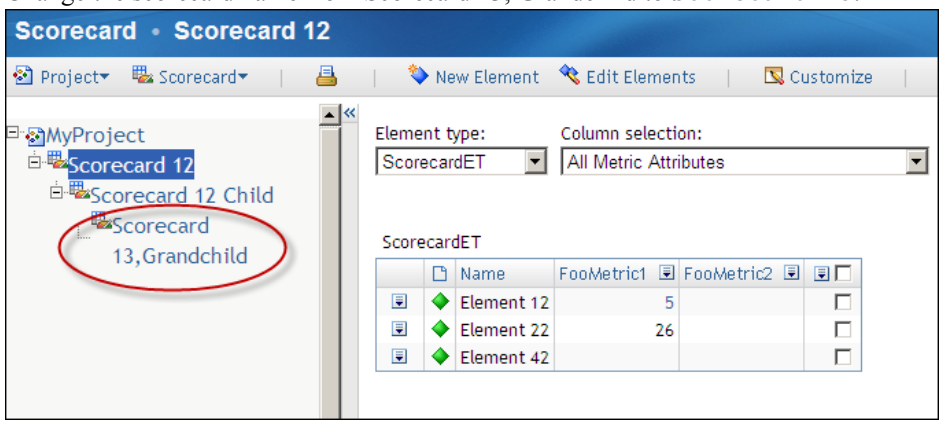


In this example, the following changes are implemented:

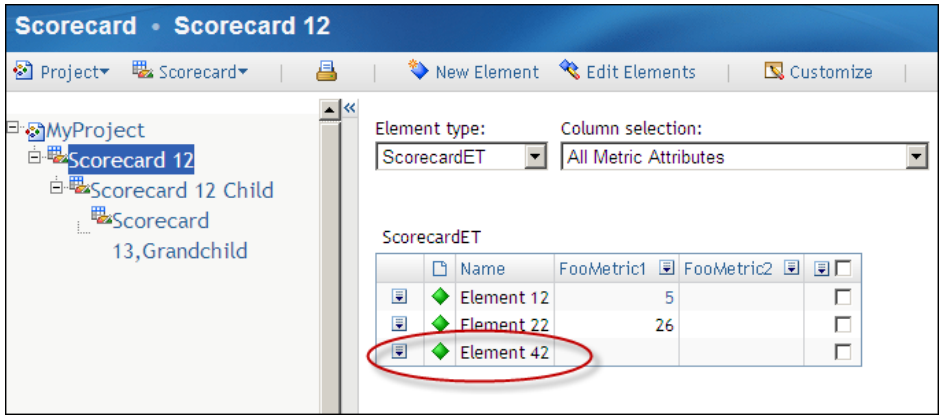
- Change the project description to **`BMF Set This Description`**.



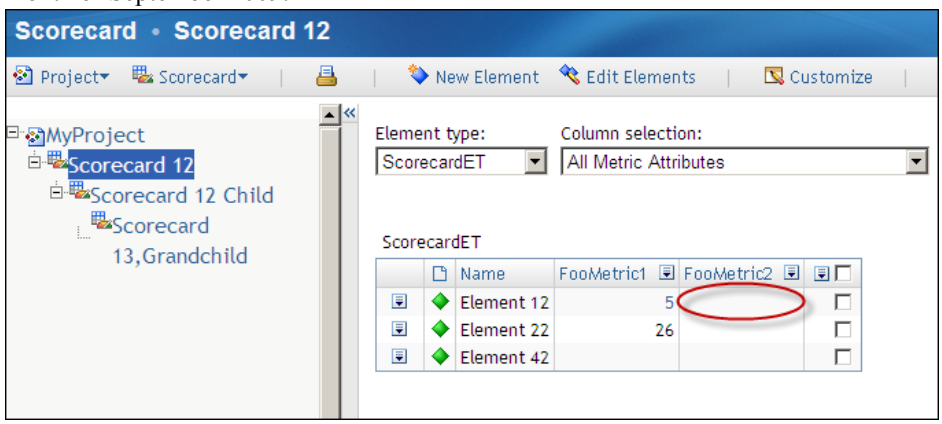
- Change the scorecard name from Scorecard 13, Grandchild to **`Scorecard 13`**.



- Delete Element 42 from Scorecard 12.



- In Scorecard 12, add the value **43** for Element 12 in the FooMetric2 column for the month of September 2009.



Edit the Affected Input Files

Copy the affected input files from the directory **C:\public\MyTemplate\MyProject** to a new directory called **C:\public\inputfiles**.

Note: Make sure BMF can find the new directory. For detailed information about specifying directories in these arguments, see "Specifying Folder Locations to BMF" on page 14.

Files Required for the Example	Files from the GET Example
Project	MyProject_Project.csv
Scorecard	MyProject_Scorecard.csv
Element	MyProject_Element.csv
Cell	MyProject_Cell.csv

- To change the project description, open the file C:\public\inputfiles\MyProject_Project.csv in Microsoft Excel. 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\MyProject_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 Scorecard 13, Grandchild 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 Scorecard 13, Grandchild to **Scorecard 13**.
- To delete Element 42 from Scorecard 12, open the file C:\public\inputfiles\MyProject_Element.csv in Excel. In the row that contains Element 42, in the Element Name column, enter **2** in the Operation Code column. This is the value for delete.
- To add the new value in Scorecard 12, open the file C:\public\inputfiles\MyProject_Cell.csv in Excel. Copy the row for Element 12. 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 **FooMetric2**.

      Note: (No Modify) in the column heading indicates that it is not valid to change the Metric Attribute value of a cell when modifying that cell's row.
    - In the Value column, change the value to **43**.

Invoke the Macro

Before you can invoke the %STMBMF macro, make sure you have submitted the macro. For more information, see "Submit the Macro Definition" on page 13.

To invoke the BMF MODIFY action, you must specify the following macro arguments:

- Specify MODIFY in the ACTION argument.
- Specify the user ID and password for a SAS user in the USER and PW arguments.

  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 e-mail capability.
- BMF works with one template and project at a time. Specify this information in the TEMPLATENAME and PROJECTNAME macro arguments.
- Specify where to write the output error files in the OUTPUTDIR argument. For detailed information about specifying file locations using the OUTPUTDIR argument, see "Specifying Folder Locations to BMF" on page 14. For information about error files, see Chapter 5, "Debugging BMF," on page 31.
- Specify the edited CSV files, one for each type of Strategy Management object that you want to modify. You can specify any combination of input files. You are not required to specify every file, only the files that you need to perform your task. You can create these files by using any appropriate software or by using BMF GET and then make your modifications to the files.
    - For more information about editing these files, see "Data File Considerations" on page 35.
    - For information about the expected file format defined by the BMF data model, see Appendix A2, "Data Model for the GET and MODIFY Actions," on page 41.
    - For more information about the input files, see "Macro Results and Output Files" on page 19.

In this example, specify the filenames by using the PROJECT, SCORECARD, ELEMENT, and CELL arguments. For more information about specifying file locations in these arguments, see "Specifying Folder Locations to BMF" on page 14.

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

```
%spmbmf(action=modify,
        user=sasdemo,
        pw=DemoDemo1,
        templatename=MyTemplate,
        projectname=MyProject,
        project=\\MYCOMPUTER\public\inputfiles\MyProject_Project.csv,
        scorecard=\\MYCOMPUTER\public\inputfiles\MyProject_Scorecard.csv,
        element=\\MYCOMPUTER\public\inputfiles\MyProject_Element.csv,
        cell=\\MYCOMPUTER\public\inputfiles\MyProject_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 the BMF system, view the SAS client 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 5.1 has ended but some StMBMF processes may still be running
asynchronously.
```

Macro Results and Output Files

BMF MODIFY 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 anything about the template itself and not the objects within 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. Scorecards.
5. Elements.
6. Element attributes.
7. Cells.
8. Cell formats.

9. Diagrams.
10. Ranges.

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:

- copies the affected row to a corresponding _Errors file
- generates an error message in the BMF log

If the error is not an unrecoverable error, BMF continues processing 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 5, “Debugging BMF,” on page 31.

Chapter 4

Example: Creating Data

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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 following example uses the template called MyTemplate and the project called MyProject.

Within MyProject there are three scorecards, each with elements and cell values for the time period of September 2009.

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 contains four elements. There is one project-level element.
  - One of the elements contains five element attributes, one of each type.
  - One of the elements contains two cell values, one manual and one formula based.

Create the Required Input Files

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 “Macro Results and Output Files” on page 19. For information about the macro arguments, see “Macro Arguments ” on page 3.

Before creating these files, review the following considerations:

- The input files must be CSV files. You must create a file for each Strategy Management object. For more information about the input files, see "Macro Results and Output Files" on page 19.
- 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.
- You can create these files using any appropriate software as long as that software meets the described limitations.

For this example, create the input files in the directory called **`C:\public\inputfiles`**.

Note: Make sure BMF can find the directory. For detailed information about specifying directories in these arguments, see "Specifying Folder Locations to BMF" on page 14.

The CREATE action uses reference numbers to identify Strategy Management objects. For information about reference numbers, see Appendix A4, "Identifying New Strategy Management Objects," on page 77.

To create the setup file, open a text file and enter the following data:

```
TEMPLATE,1,MyTemplate,,,,,,,,
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\MyProject_Setup.csv.

To create the project file, open a text file and enter the following data:

```
GENERAL,MyProject,MyProject description,,,TIME_Default,TIME_Default
```

Then save the file as C:\public\inputfiles\MyProject_Project.csv.

To create the scorecard file, open a text file and enter the following data:

```
1,Scorecard 12,0,sasdemo,0
2,Scorecard 12 Child,1,sastrust,0
3,Scorecard 13,Grandchild,2,sasdemo,0
```

Then save the file as C:\public\inputfiles\MyProject_Scorecard.csv.

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,JAN2009,DEC2009,,sasdemo,0
3,Element 32,New Element 3,1,NewElementType,Month,Float,Float,,sasdemo,0
4,Element 42,,1,ScorecardET,Year,2008,2009,,sastrust,0
5,ProjElement,,0,ProjET,Month,Float,Float,,sasdemo,0
```

Then save the file as C:\public\inputfiles\MyProject_Element.csv.

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,1/24/2009
1,url,MyLink,www.yahoo.com
1,Element Type,MyElement,3
```

Then save the file as C:\public\inputfiles\MyProject_ElementAttribute.csv.

To create the cell file, open a text file and enter the following data:

```
1,FooMetric1,Month,Sep2009,manual,5,"Manage Strategy Management Scorecard Projects and Templates",,,2,VALUE,>
2,FooMetric1,Month,Sep2009,formula,"[ELE=""MyProject|Scorecard 12|ScorecardET|Element 12""][COL=""FooMetric1""][PER=current('PER')] * 5 + 1"
```

Then save the file as C:\public\inputfiles\MyProject_Cell.csv.

Invoke the Macro

Before you can invoke the %STMBMF macro, make sure you have submitted the macro. For more information, see "Submit the Macro Definition" on page 13.

To invoke the BMF CREATE action, you must specify the following macro arguments:

- Specify CREATE in the ACTION argument.
- Specify the user ID and password for a SAS user in the USER and PW arguments.

  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 e-mail capability.
- BMF works with one template and project at a time. Specify this information in the TEMPLATENAME and PROJECTNAME macro arguments.
- Specify where to write the output error files in the OUTPUTDIR argument. For detailed information about specifying file locations using the OUTPUTDIR argument, see "Specifying Folder Locations to BMF" on page 14. For information about error files, see Chapter 5, "Debugging BMF," on page 31.
- Specify the CSV files, one for each type of Strategy Management object that you want to create. You can specify any combination of input files. You are not required to specify every file, only the files that you need to perform your task. For information about the expected file format that is defined by the BMF data model, see Appendix A3, "Data Model for the CREATE Action," on page 63. For more information about editing these files, see "Data File Considerations" on page 35.

  In this example, all files are located in the same directory. Instead of specifying each CSV file by using its own argument, this example, specifies the input file directory location using the inputdir argument. For more information about specifying file locations in these arguments, see "Specifying Folder Locations to BMF" on page 14.

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

```
%spmbmf(action=create,
        user=sasdemo,
        pw=DemoDemo1,
        templatename=MyTemplate,
        projectname=MyProject,
        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 the BMF system, view the SAS client 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 5.1 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 and debugging, see Chapter 5, “Debugging BMF,” on page 31.

Chapter 5

Debugging BMF

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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, a catastrophic problem 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.

Debug Scenarios

The Macro Invocation Failed

If you make a semantic error when composing 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. 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 Strategy Management objects depend on these two primary object files, BMF terminates and rolls back all changes if an unrecoverable error occurs.

For example, in the project file 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 capability:

```
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 log now, 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 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:

- Copies the affected row to a corresponding error file.

  The error files are 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. The location of these error files is specified in the OUTPUTDIR argument.

- Generates an error message in the BMF error log.

  The error log is generated by the SAS Middle Tier Application Server. Typically the log file is called sas_bmf.log. However, the location and name of the log file can be configured. Contact your SAS administrator for this information.

- Generate an e-mail indicating that errors were found.

  Note: The specified user ID must have e-mail capability to receive this notification.

BMF processes the input files in a specific order. For more information about this order, see "Macro Results and Output Files" on page 25.

Obtaining Additional Debugging Information

BMF can write additional debugging information to the SAS log. If you want this done you must specify the following code when you submit the macro:

```
%let debug=Y
```

For more information about submitting the %STMBMF macro, see "Macro Arguments " on page 3.

Considerations

When debugging errors, consider the following troubleshooting tips:

- Do not run more than one instance of BMF at a time. Running more than one instance might cause loss of data integrity and unforeseen complications.
- When a Strategy Management object is dependent on another 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 have a role and permissions that permit it to change the affected Strategy Management data.
- 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 files that you want to load and their size.
- Excel might convert values to its own internal format, especially dates. You must format the affected columns as simple text to avoid this conversion.
- You must use quotes correctly in the input files or errors can result. Because Excel uses quotes for values correctly, consider using it to save your files to CSV file format.
- You must have the correct authorizations to update Strategy Management objects that you might not own or do not have a specific permission to update.

  Note: To have authorization to update anything, make sure you are a member of Solutions Administrators and Scorecard Modeler group.
- BMF can run asynchronously or synchronously. The latter is useful when you want to use BMF in a program that has several steps that must be run one after the other. For more information, see the BMF macro API event_name argument.

Appendix 1

Data Model Considerations

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Data File Considerations

Data File Creation

Strategy Management model data must be provided in CSV files. The files must contain specific *columns* of data. See Appendix A2, "Data Model for the GET and MODIFY Actions," on page 41 for detailed information about required column order and column content when using the GET and MODIFY actions. See Appendix A3, "Data Model for the CREATE Action," on page 63 for the information required by the CREATE action.

In the data files each *row* might be:

- a row of column headings. A column heading row is defined as a row where the first column contains the word KEYWORD.
- a Strategy Management object.
- blank and is ignored when processed.

The easiest way to create these files is to get them from an existing project by using the BMF GET action. You can use Perl, Notepad, or Microsoft Excel to create the files and then create a new project by using the BMF CREATE action.

Character Encoding

The data files are standard text files that do not contain any binary data. The files use UTF-8 encoding.

CAUTION:

Do not edit data files using word processor software. Also, if you want to use special characters, make sure your software can save the files in the UTF-8 format.

Diagram File Creation

You must create the diagram data file using the BMF GET action. The data file 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. Doing so can corrupt it.

General Data File Requirements

- To specify embedded commas in a column value in a CSV file, you must surround the entire value with double quotes. For example, a scorecard named Time,Mileage must be specified as **`"Time,Mileage"`** in the CSV file.
- To specify embedded double quotes in a column value in a CSV file, you must surround the entire value with two sets of double quotation marks. For example, an element named "My Element" must be specified as **`"""My Element"""`** in the CSV file.
- 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.
- When you specify permissions, you are *replacing* the permissions that are in effect for the object, *not* adding to them. For example, if you set a permission of Update (U) for a scorecard and then run BMF specifying a permission of Read (R), the scorecard has a resulting permission of Read.
- Strategy Management uses universally unique identifiers (UUIDs) to identify objects. The BMF MODIFY action requires that you identify existing objects using UUIDs. 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 application. Select the **Properties** list and select **Internal Identifier** on the Web 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.
- 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.

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 indicate 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 information about specifying security operation codes, see "Security Operation Code Values" on page 39.

When using the %STMBMF macro, there are several situations in which you specify or get access permissions. When specifying 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.

Table A1.1 *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.

Table A1.2 *Attribute Category Values and their Descriptions*

Attribute Category Value	Description
TEXT	Indicate that the attribute contains text data. This value can be no more than 255 characters.
EMAIL	Indicate that the attribute contains an e-mail address. This value can be no more than 255 characters
DATE	Indicate that the attribute contains a date. The date value must be in the format expected by the SAS Strategy Management Web application.

Attribute Category Value	Description
URL	Indicate that the attribute contains a Web address. This value can be no more than 255 characters.
ELEMENT TYPE	The integer greater than zero that identifies another element type (besides the one that contains this attribute) that is linked to this attribute. Specify the element type in the Element Type Attribute Reference Number column.

Color Values

Specify a Hexadecimal Number String

To specify a hexadecimal number string, the value is case insensitive and must be one of the following:

- The keyword 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

To specify a standard color name, use one of the following values, which are case insensitive.

- DEFAULT
- BLACK
- WHITE
- RED
- ORANGE
- YELLOW
- GREEN
- BLUE
- INDIGO
- VIOLET

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.

Table A1.3 *Operation Codes and their Associated Actions*

Operation 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 the 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 37.

Table A1.4 *Security Operation Codes and Their Associated Actions*

Security Operation 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.

Appendix 2

Data Model for the GET and MODIFY Actions

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Setup File

The setup data file that is used for the GET and MODIFY actions specifies information about:

- a template
- template access permissions
- element types
- metric attributes
- attribute definitions

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: TEMPLATE, TEMPLATE PERMISSIONS, ELEMENT TYPE, METRIC ATTRIBUTE, or ATTRIBUTE DEFINITION.

The data column order for the TEMPLATE data type is described in the following table.

Table A2.1 *Keyword=Template Column Order and Descriptions*

Column Order	Column Name	Column Description	Required for MODIFY
1	Keyword	This value must be TEMPLATE. 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 39.	Optional *Note:* For GET, this value does not apply.
3	ID	The identifier for the template. When you are modifying or deleting a template, this is a UUID that uniquely identifies the template. When you are adding a template, this is a reference number that uniquely identifies the template. For more information, see Appendix A4, "Identifying New Strategy Management Objects," on page 77. *Note:* The template identified must be the same template 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 are modifying or deleting a template, this is the existing template name. If you are adding a template, this is the new template name. *Note:* The template identified must be the same template that is specified in the %STMBMF macro argument TEMPLATENAME.	Required
5	New Name	The name of the template. This value must be in the default language and can be no longer than 255 characters. When you are modifying a template name, this is the new template name.	Required if modifying a template name. Otherwise, it is optional.
6	Owner	The valid SAS Strategy Management user ID of the owner of the template. This value can be no more than 60 characters. A blank value indicates that the template owner is unchanged.	Optional

The data column order for the TEMPLATE PERMISSIONS data type is described in the following table.

Table A2.2 *Keyword=Template Permissions Column Order and Descriptions*

Column Order	Column Name	Column Description	Required for MODIFY
1	Keyword	This value must be TEMPLATE PERMISSIONS. 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 39.	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 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 more than 60 characters.	Required
5	Security ID Type	The type of access permissions. This value must be either USER or GROUP and is case insensitive.	Required
6	Permissions	The specified permissions. For information about specifying permissions, see "Access Permission Values" on page 37.	Required

The data column order for the ELEMENT TYPE data type is described in the following table.

Table A2.3 *Keyword=Element Type Column Order and Descriptions*

Column Order	Column Name	Column Description	Required for MODIFY
1	Keyword	This value must be ELEMENT TYPE. 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 39.	Optional *Note:* For GET, this value does not apply.

Column Order	Column Name	Column Description	Required for MODIFY
3	ID	The identifier of the element type. When you are modifying or deleting an element type, this is a UUID that uniquely identifies the element type. When you are adding an element type, this is a reference number that uniquely identifies the element type. For more information, see Appendix A4, "Identifying New Strategy Management Objects," on page 77.	Required
4	Name	The name of the element type. This value can be no more 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 more than 255 characters.	Optional
6	Description	The description of the element type. This value can be no more than 255 characters.	Optional
7	New Description	When you are modifying an existing description, this is the new description of the element type. This value can be no more than 255 characters.	Optional *Note:* For GET, this value does not apply.
8	Type	The type of element to create: project level or scorecard level. The value must be either PROJECT or SCORECARD.	For MODIFY, when modifying or adding an element type, this value is required.
9	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 more than 100 characters.	Optional
10	Text Color	The color of the text for the element type. For information about specifying a color value, see "Color Values" on page 38. To leave the color unchanged, specify a blank.	Optional
11	Background Color	The background color for the element type. For information about specifying a color value, see "Color Values" on page 38. To leave the color unchanged, specify a blank.	Optional

Column Order	Column Name	Column Description	Required for MODIFY
12	Shape	The shape for the element type. Specify one of the following values: • NONE • DIAMOND • ELLIPSE • HEXAGON • OCTAGON • PARALLELOGRAM • PENTAGON • RECTANGLE • TRAPEZOID • TRIANGLE	Optional

The data column order for the METRIC ATTRIBUTE data type is described in the following table.

Table A2.4 *Keyword=Metric Attribute Column Order and Descriptions*

Column Order	Column Name	Column Description	Required for MODIFY
1	Keyword	This value must be METRIC ATTRIBUTE. 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 39.	Optional *Note:* For GET, this value does not apply.
3	ID	The identifier of the metric attribute. When you are modifying or deleting a metric attribute, this is a UUID that uniquely identifies the metric attribute. When you are adding a metric attribute, this is a reference number that uniquely identifies the metric attribute. For more information, see Appendix A4, "Identifying New Strategy Management Objects," on page 77.	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 more than 255 characters.	Optional

Column Order	Column Name	Column Description	Required for MODIFY
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. This value is case insensitive and must be one of the following: GENERAL, CURRENCY, NUMBER, PERCENTAGE, DATE, or SAS BEST.	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. This value is case insensitive and must be one of the following values: LEFT, RIGHT, or CENTER.	Optional
11	Text Style	The style of text in the column. This value is case insensitive and can be any combination of the following: BOLD, ITALIC, UNDERLINE, STRIKEOUT, or WRAP TEXT. To combine styles, separate each value with a vertical bar (|) (for example, **`bold|underline`**). This value can be no longer than 64 characters.	Optional
12	Text Color	The color of the text in the column. For more information, see "Color Values" on page 38.	Optional
13	Background Color	The color of the background in the column. For more information, see "Color Values" on page 38..	Optional

The data column order for the ATTRIBUTE DEFINITION data type is described in the following table.

Table A2.5 *Keyword=Attribute Definition Column Order and Descriptions*

Column Order	Column Name	Column Description	Required for MODIFY
1	Keyword	This value must be ATTRIBUTE DEFINITION. 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 39. *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.

Column Order	Column Name	Column Description	Required for MODIFY
3	ID	The identifier of the attribute definition. When you are modifying or deleting an attribute definition, this is a UUID that uniquely identifies the attribute definition. When you are adding an attribute definition, this is a reference number that uniquely identifies the attribute definition. For more information, see Appendix A4, "Identifying New Strategy Management Objects," on page 77.	Required
4	Element Type Name	The name of element type for which the attribute definition is defined. This value can be no more than 255 characters.	Optional
5	Element Type ID	The identifier of the element type for which the attribute definition is defined. When you are modifying or deleting an element type, this is a UUID that uniquely identifies the element type. When you are adding an element type, this is a reference number that uniquely identifies the element type. For more information, see Appendix A4, "Identifying New Strategy Management Objects," on page 77.	Required
6	Label	The label for the attribute definition. This value can be no more than 255 characters.	For MODIFY, when deleting or adding an attribute definition, this value is required.
7	Description	The description of the attribute definition. This value can be no more than 255 characters.	Optional
8	Category	The type of category for the attribute definition. For more information, see "Attribute Category Values" on page 37.	For MODIFY, when adding an attribute definition, this value is required.
9	Element Type Attribute ID	The identifier of the element type associated with the attribute definition. When you are modifying, deleting, or migrating an attribute definition, this is a UUID that uniquely identifies the element type that is linked to this attribute definition. When you are adding 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 A4, "Identifying New Strategy Management Objects," on page 77.	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 must be one of the following: YES, NO, or blank (same as NO). All values are case insensitive.	Optional

Project File

This section describes the project data file format used for the GET and MODIFY actions. This file specifies information to modify general project information and project access permission.

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: GENERAL and PERMISSIONS.

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 SAS Metadata Repository. You must register the project and then the project is assigned to an object metadata repository.
- When creating a project, BMF does not create Scorecard 1. 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 A2.6 *Keyword=General Column Order and Descriptions*

Column Order	Column Name	Column Description	Required for MODIFY
1	Keyword	This value must be GENERAL. 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 39.	Optional *Note:* For GET, this value does not apply.
3	ID	The identifier for the project. When you are modifying or deleting a project, this is a UUID that uniquely identifies the scorecard. When you are adding a scorecard, this is a reference number that uniquely identifies the scorecard. For more information, see Appendix A4, "Identifying New Strategy Management Objects," on page 77. *Note:* The project identified must be the same project that is specified in the %STMBMF macro argument PROJECTNAME.	Required

Column Order	Column Name	Column Description	Required for MODIFY
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 more than 255 characters.	Optional
6	Description	The description of the project. This value can be no more 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 more than 255 characters.	Optional
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 TIME DEFAULT.	Optional
11	Time Hierarchy	The code for the SAS time hierarchy. This value is case insensitive and the default value is TIME_DEFAULT. *Note:* After you create a project, you must register it. You must register the project using the SAS Strategy Management application. You cannot register 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 A2.7 *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

Column Order	Column Name	Column Description	Required for MODIFY
2	Security Operation Code	• For GET, this column is blank. • For MODIFY, this column specifies the operation to take. For information about specifying security operation codes, see "Security Operation Code Values" on page 39.	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 more than 255 characters. *Note:* The project identified must be the same project 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 more than 60 characters.	Required
5	Security ID Type	The type of access permissions. This value is case insensitive and must be either USER or GROUP.	Required
6	Permissions	The specified permissions. For information about specifying permissions, see "Access Permission Values" on page 37.	Required

Range File

This section describes the format of the range data file for the GET and MODIFY actions.

The range data files can contain three types of data. Each type of data is identified by the value in the first column (the Keyword column). The data types are: GENERAL, INTERVAL, and SPECIAL. The GENERAL rows 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 specifying an operation code of IGNORE tells BMF to not validate any columns or operate on the data, you still must specify valid keywords (GENERAL, INTERVAL, or SPECIAL) in column 1.

For more information about ranges, see Appendix A5, "Using Ranges in BMF," on page 81.

The data column order for the GENERAL data type is described in the following table.

Table A2.8 *Keyword=General Range Data Column Order and Descriptions*

Column Order	Column Name	Column Description	Required for MODIFY
1	Keyword	This value must be GENERAL. 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 39.	Optional *Note:* For GET, this value does not apply.
3	Range ID	The integer greater than zero that identifies the range. When you are modifying or deleting a range, this is a UUID that uniquely identifies it. When you are adding a range, this is a reference number that uniquely identifies it. For more information, see Appendix A4, "Identifying New Strategy Management Objects," on page 77. *Note:* Each range reference number can be used only once.	Required
4	Range Name	The name of the range. This value can be no more than 255 characters.	Required
5	Range Description	The description of the range. This value can be no more than 255 characters.	Optional

The data column order for the INTERVAL data type is described in the following table. This table does not include the Operation Code column because you cannot modify existing intervals for a range. If you want to change the intervals, you must specify the intervals again.

Table A2.9 *Keyword=Interval Data Column Order and Descriptions*

Column Order	Column Name	Column Description	Required for MODIFY
1	Keyword	This value must be INTERVAL. 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
3	Range Interval Number	The integer 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.

Column Order	Column Name	Column Description	Required for MODIFY
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 more than 255 characters.	Optional
7	Interval Grade	The grade of the interval. This value can be no more 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 38.	Optional
10	Interval Icon	The image filename to use as the icon for the interval. This value can be no more 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.

The data column order for the SPECIAL data type is described in the following table. This table does not include the Operation Code column because you cannot modify existing intervals for a range. If you want to change the intervals, you must specify the intervals again.

Table A2.10 *Keyword=Special Data Column Order and Descriptions*

Column Order	Column Name	Column Description	Required for MODIFY
1	Keyword	This value must be SPECIAL. 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
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 UNRESOLVED.	Required

Column Order	Column Name	Column Description	Required for MODIFY
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 more 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 38.	Optional
10	Interval Icon	The image filename to use as the icon for the interval. This value can be no more than 100 characters.	Optional

Scorecard File

This section describes the scorecard data file format used for the GET and MODIFY actions.

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 A2.11 *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 39.	Optional *Note:* For GET, this value does not apply.

Column Order	Column Name	Column Description	Required for MODIFY
2	Scorecard ID	• For GET, this is the identifier that uniquely identifies the scorecard. • For MODIFY, when modifying or deleting a scorecard, this value is a UUID that uniquely identifies the scorecard. When you are adding a scorecard, this is a reference number that uniquely identifies the scorecard. For more information, see Appendix A4, "Identifying New Strategy Management Objects," on page 77.	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 are adding 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 A4, "Identifying New Strategy Management Objects," on page 77.	Required when you are adding 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 are adding a scorecard. Otherwise, it is optional.
6	Order	An integer 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 are adding a scorecard. Otherwise, it is optional.
7	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 39. *Note:* When specifying access permissions, the Operation Code must be set to 1. See the Operation Code information earlier in this table.	This value is not valid when adding an element. Otherwise, it is optional. *Note:* For GET, this value does not apply.
8	Security ID	The name of the user or user group to which the access permissions apply.	For MODIFY, this value is not valid when adding an element. Otherwise, it is optional.

Column Order	Column Name	Column Description	Required for MODIFY
9	Security ID Type	The type of access permissions to apply. This value must be USER or GROUP.	For MODIFY, this value is not valid when adding an element. Otherwise, it is optional.
10	Permissions	The specified permissions.For information about specifying security permissions, see "Access Permission Values" on page 37.	For MODIFY, this value is not valid when adding an element. Otherwise, it is optional.

Element File

This section describes the element data file format used for the GET and MODIFY actions.

Table A2.12 *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 39.	Optional *Note:* For GET, this value does not apply.
2	ID	The identifier that uniquely identifies the element. When you are modifying or deleting an element, this is a UUID that uniquely identifies the element. When you are adding an element, this is a reference number that uniquely identifies the element. For more information, see Appendix A4, "Identifying New Strategy Management Objects," on page 77.	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 are adding 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 are modifying or deleting an element. Otherwise, it is optional.

Column Order	Column Name	Column Description	Required for MODIFY
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 A4, "Identifying New Strategy Management Objects," on page 77. When you are modifying an element, this column is used for informational purposes only; the value is ignored.	Required when you are adding 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.	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 are adding 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 are adding 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 are adding 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 are adding an element. Otherwise, it is optional.
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 A4, "Identifying New Strategy Management Objects," on page 77.	Required when you are adding 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 are adding an element. Otherwise, it is optional.

Column Order	Column Name	Column Description	Required for MODIFY
13	Order	An integer 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 are adding 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 39. *Note:* When specifying access permissions, the Operation Code must be set to 1. See the Operation Code information earlier in this table.	This value is not valid when adding 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.	For MODIFY, this value is not valid when adding an element. Otherwise, it is optional.
16	Security ID Type	The type of access permissions to apply. This value must be USER or GROUP. This value is case insensitive.	For MODIFY, this value is not valid when adding an element. Otherwise, it is optional.
17	Permissions	The specified permissions. For information about specifying permissions, see "Access Permission Values" on page 37.	For MODIFY, this value is not valid when adding an element. Otherwise, it is optional.

Element Attribute File

This section describes the element attribute data file used by the GET and MODIFY actions.

As with scorecards and elements, you can modify, delete, and add attributes. However, for the modify operation 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 A2.13 *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 39.	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 are modifying or deleting an element attribute, use the UUID of an existing element. When you are adding 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 A4, "Identifying New Strategy Management Objects," on page 77.	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 are modifying 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 37.	Required
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 modifying an element attribute, this value must be the same as the one that was used to create the attribute.	Required

Column Order	Column Name	Column Description	Required for MODIFY
7	Value	The value of the element attribute, based on the element attribute category. If the element attribute category is TEXT, EMAIL, or URL, the value is a string of no more than 255 characters. If the element attribute category is DATE, the value is a date in the format expected by SAS Strategy Management. If the element attribute category is ELEMENT, the value is determined in the following ways. If you are modifying or deleting an existing Element Type attribute, complete the following steps: 1. Determine the UUID of the element *originally associated* with the element that is specified in the Element ID column (that is, column 2). 2. Specify the UUID for the value in the Original Element Type Element Attribute ID column (that is, column 8). If you are adding a new Element Type attribute, complete the following steps: 1. Determine the UUID of the element that you want to associate with the element that is specified in the Element ID column (that is, column 2). 2. Specify the UUID for the value in the Value column (that is, column 7).	Required
8	Original Element Type Element Attribute ID	The UUID of the element originally linked to this element attribute.	Required when you are changing the element to which this element attribute is linked. Otherwise, it is optional.

Cell File

This section describes the format of the cell data file for the GET and MODIFY actions.

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.

Table A2.14 *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 39.	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 are modifying or deleting a cell, this value is the UUID for an element. When you are adding 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 A4, "Identifying New Strategy Management Objects," on page 77.	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.	Required
6	Period Type	The periodicity of the cell. This value must be specified in the default language and is case insensitive. When you are modifying 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 are modifying 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.	Required
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 FORMULA.	If you specify *Value*, this value is required. If you are adding a cell, this value is required. Otherwise, it is optional.

Column Order	Column Name	Column Description	Required For MODIFY
9	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.	For MODIFY, this value is required when you are adding or modifying a cell. Otherwise, it is optional.
10	Action	The action of the directive to be applied to the cell value. This value must be exactly the text displayed in SAS Strategy Management in the default language and is case insensitive. For MODIFY, to remove an existing action, specify a blank.	Optional
11	Action Parms	The parameters that are used by the action. This value must be specified in the default language and is case insensitive. For MODIFY, to remove the existing parameters, specify a blank.	Optional
12	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 a blank.	Optional
13	Global Threshold	The value of the global threshold.	Optional
14	Threshold Type	Must be set to VALUE.	For MODIFY, if you specify *Global Threshold*, this value is required. Otherwise, it is optional.
15	Operator	The threshold operator. Valid values are >, <, >=, <=.	For MODIFY, if you specify *Global Threshold*, this value is required. Otherwise, it is 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.

Table A2.15 *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 39.	Optional *Note:* For GET, this value does not apply.
2	Element ID	An integer 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
4	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
5	Format Type	The type of format of metric attribute. This value is case insensitive and must be one of the following: GENERAL, CURRENCY, NUMBER, PERCENTAGE, DATE, or SAS BEST.	Optional
6	Width	The integer that specifies the width of the numeric field.	Optional
7	Decimal Width	The integer that specifies the number of decimal places in a numeric field.	Optional
8	Alignment	The horizontal alignment of the text in the column. This value is case insensitive and must be one of the following values: LEFT, RIGHT, or CENTER.	Optional
9	Text Style	The style of text in the column. This value is case insensitive and can be any combination of the following: BOLD, ITALIC, UNDERLINE, STRIKEOUT, or WRAP TEXT. To combine styles, separate each value with a vertical bar (|) (for example, **`bold|underline`**). This value can be no longer than 64 characters.	Optional
10	Text Color	The color of the text in the column. For more information, see "Color Values" on page 38.	Optional
11	Background Color	The color of the background in the column. For more information, see "Color Values" on page 38.	Optional

Appendix 3

Data Model for the CREATE Action

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Setup File

The setup data file that is used for the CREATE action specifies information about:

- a template
- element types
- metric attributes
- attribute definitions

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: TEMPLATE, ELEMENT TYPE, METRIC ATTRIBUTE, or ATTRIBUTE DEFINITION.

Note: The template owner is set to the user specified by the %STMBMF macro argument USER.

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	Value Required
1	Keyword	This value must be TEMPLATE. This value is case insensitive. *Note:* Specify only one row with the keyword TEMPLATE.	Required
2	Reference Number	An integer greater than 0.	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 identified must be the same template that is specified in the %STMBMF macro argument TEMPLATENAME.	Required

The data column order for the ELEMENT TYPE data type is described in the following table.

Table A3.2 *Keyword=Element Type Column Order and Descriptions*

Column Order	Column Name	Column Description	Value Required
1	Keyword	This value must be ELEMENT TYPE. This value is case insensitive.	Required
2	Reference Number	The integer greater than zero that identifies the element type. For more information, see Appendix A4, "Identifying New Strategy Management Objects," on page 77.	Required
3	Element Type Name	The name of the element type. This value can be no more than 255 characters.	Required
4	Description	The description of the element type. This value can be no more 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 SCORECARD.	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 more than 100 characters.	Required
7	Font Color	The color of the text for the element type. For information about specifying a color value, see "Color Values" on page 38.	Required
8	Background Color	The background color for the element type. For information about specifying a color value, see "Color Values" on page 38.	Required

Column Order	Column Name	Column Description	Value Required
9	Shape	The shape for the element type. Specify one of the following values: • NONE • DIAMOND • ELLIPSE • HEXAGON • OCTAGON • PARALLELOGRAM • PENTAGON • RECTANGLE • TRAPEZOID • TRIANGLE	Required

The data column order for the METRIC ATTRIBUTE data type is described in the following table.

Table A3.3 *Keyword=Metric Attribute Column Order and Descriptions*

Column Order	Column Name	Column Description	Value Required
1	Keyword	This value must be METRIC ATTRIBUTE. This value is case insensitive.	Required
2	Reference Number	The integer greater than zero that identifies the metric attribute. For more information, see Appendix A4, "Identifying New Strategy Management Objects," on page 77.	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 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. This value is case insensitive and must be one of the following: GENERAL, CURRENCY, NUMBER, PERCENTAGE, DATE, or SAS BEST.	Optional
6	Width	The integer that specifies the width of the metric attribute.	Optional
7	Decimal Width	The integer that specifies the number of decimal places in a metric attribute.	Optional
8	Alignment	The horizontal alignment of the text in the column. This value is case insensitive and must be one of the following values: LEFT, RIGHT, or CENTER.	Optional

Column Order	Column Name	Column Description	Value Required
9	Text Style	The style of text in the column. This value is case insensitive and can be any combination of the following: BOLD, ITALIC, UNDERLINE, STRIKEOUT, or WRAP TEXT. To combine styles, separate each value with a vertical bar (|) (for example, **`bold|underline`**). This value can be no longer than 64 characters.	Optional
10	Text Color	The color of the text in the column. For more information, see "Color Values" on page 38.	Optional
11	Background Color	The color of the background in the column. For more information, see "Color Values" on page 38.	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 A3.4 *Keyword=Attribute Definitions Column Order and Descriptions*

Column Order	Column Name	Column Description	Value Required
1	Keyword	This value must be ATTRIBUTE DEFINITION. This value is case insensitive.	Required
2	Reference Number	The integer greater than zero that identifies the attribute definition. For more information, see Appendix A4, "Identifying New Strategy Management Objects," on page 77.	Required
3	Element Type Reference Number	The integer greater than zero that identifies the element type for which the attribute definition is specified. For more information, see Appendix A4, "Identifying New Strategy Management Objects," on page 77.	Required
4	Label	The label for the attribute definition. This value can be no more than 255 characters.	Required
5	Description	The description of the attribute definition. This value can be no more than 255 characters.	Optional
6	Category	The type of category for the attribute definition. For more information, see "Attribute Category Values" on page 37.	Required
7	Element Type Attribute Reference Number	The integer 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.

Column Order	Column Name	Column Description	Value Required
8	Multiple Selections	Indicates whether the attribute definition allows multiple selections. This value must be one of the following: YES, NO, or blank (same as NO). All values are case insensitive.	Optional

Project File

This section describes the project data file format used for the CREATE action. This file specifies general project information.

Note:

- The project owner is set to the user that is specified by the %SPMBMF macro argument USER.
- When creating a project, BMF does not create Scorecard 1. You must specify Scorecard 1 by using the scorecard data file.

Table A3.5 *Keyword=General Column Order and Descriptions*

Column Order	Column Name	Column Description	Value Required
1	Keyword	This value must be GENERAL. This value is case insensitive. *Note:* Only one data row containing 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 more 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 TIME_DEFAULT.	Optional
7	Time Hierarchy	The code for the SAS time hierarchy. This value is case insensitive and the default value is TIME_DEFAULT. *Note:* After you create a project, you must register it. You must register the project using the SAS Strategy Management application. You cannot register using BMF. Access permissions can be specified only after the project is registered.	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.

The range data files can contain three types of data. Each type of data is identified by the value in the first column (the Keyword column). The data types are: GENERAL, INTERVAL, and SPECIAL. The GENERAL rows 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 A3.6 *Keyword=General Range Data Column Order and Descriptions*

Column Order	Column Name	Column Description	Value Required
1	Keyword	This value must be GENERAL. This value is case insensitive.	Required
2	Reference Number	A reference number greater than zero that uniquely identifies the range.For more information, see Appendix A4, "Identifying New Strategy Management Objects," on page 77. *Note:* Each range reference number can be used only once.	Required
3	Range ID	The name of the range. This value can be no more than 255 characters.	Required
4	Range Description	The description of the range. This value can be no more than 255 characters.	Optional

The data column order for the INTERVAL data type is described in the following table.

Table A3.7 *Keyword=Interval Data Column Order and Descriptions*

Column Order	Column Name	Column Description	Value Required
1	Keyword	This value must be INTERVAL. This value is case insensitive.	Required
2	Range Reference Number	The integer greater than zero that identifies the range to which the interval belongs.	Required

Column Order	Column Name	Column Description	Value Required
3	Range Interval Number	The integer 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 more than 255 characters.	Optional
7	Interval Grade	The grade of the interval. This value can be no more 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 38.	Optional
10	Interval Icon	The image filename to use as the icon for the interval. This value can be no more 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 A3.8 *Keyword=Special Data Column Order and Descriptions*

Column Order	Column Name	Column Description	Value Required
1	Keyword	This value must be SPECIAL. 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

Column Order	Column Name	Column Description	Value Required
2	Range Reference Number	The integer 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 UNRESOLVED.	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 more 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 38.	Optional
10	Interval Icon	The image filename to use as the icon for the interval. This value can be no more than 100 characters.	Optional

Scorecard File

This section describes the scorecard data file format used for the CREATE action.

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 A3.9 *Scorecard File Column Order and Descriptions*

Column Order	Column Name	Column Description	Value Required
1	Reference Number	The integer 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 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

Column Order	Column Name	Column Description	Value 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 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

Element File

This section describes the element data file format used for the CREATE action.

Table A3.10 *Element File Column Order and Descriptions*

Column Order	Column Name	Column Description	Value Required
1	Reference Number	The integer greater than zero that identifies the element. For more information, see Appendix A4, "Identifying New Strategy Management Objects," on page 77.	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 greater than zero that identifies the scorecard 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

Column Order	Column Name	Column Description	Value 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
11	Order	An integer 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

Element Attribute File

This section describes the element attribute data file used by the CREATE action.

Table A3.11 *Element Attribute File Column Order and Descriptions*

Column Order	Column Name	Column Description	Value Required
1	Element Reference Number	The integer 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 37.	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, based on the element attribute category. If the element attribute category is TEXT, EMAIL, or URL, the value is a string of no more than 255 characters. If the element attribute category is DATE, the value is a date in the format expected by SAS Strategy Management. If the element attribute category is ELEMENT TYPE, the value is the identifier for an element. When you are creating an attribute, the value is a reference number that uniquely identifies an element that was previously defined. For more information, see Appendix A4, "Identifying New Strategy Management Objects," on page 77.	Required

Cell File

This section describes the format of the cell data file for the CREATE action.

Table A3.12 *Cell File Column Order and Descriptions*

Column Order	Column Name	Column Description	Value Required
1	Element Reference Number	The integer 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 FORMULA.	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	Action	The action of the directive to be applied to the cell value. This value must be exactly the text displayed in SAS Strategy Management in the default language and is case insensitive. To specify no action, specify a blank.	Optional
8	Action Parms	The parameters that are used by the action. This value must be specified in the default language and is case insensitive. To specify no parameters, specify a blank.	Optional
9	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
10	Global Threshold	The value of the global threshold. To specify no threshold, specify a blank.	Optional
11	Threshold Type	Must be set to VALUE.	If you specify *Global Threshold*, this value is required. Otherwise, it is blank.

Column Order	Column Name	Column Description	Value Required
12	Operator	The threshold operator. Valid values are >, <, >=, <=.	If you specify *Global Threshold*, this value is required. Otherwise, it is blank.

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.

Table A3.13 *Cell Format File Column Order and Descriptions*

Column Order	Column Name	Column Description	Value Required
1	Element Reference Number	The reference number (integer) 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 A4, "Identifying New Strategy Management Objects," on page 77.	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. This value is case insensitive and must be one of the following: GENERAL, CURRENCY, NUMBER, PERCENTAGE, DATE, or SAS BEST.	Optional
5	Width	The integer that specifies the width of the numeric field.	Optional
6	Decimal Width	The integer that specifies the number of decimal places in a numeric field.	Optional
7	Alignment	The horizontal alignment of the text in the column. This value is case insensitive and must be one of the following values: LEFT, RIGHT, or CENTER.	Optional

Column Order	Column Name	Column Description	Value Required
8	Text Style	The style of text in the column. This value is case insensitive and can be any combination of the following: BOLD, ITALIC, UNDERLINE, STRIKEOUT, or WRAP TEXT. To combine styles, separate each value with a vertical bar (|) (for example, **`bold|underline`**). This value can be no longer than 64 characters.	Optional
9	Text Color	The color of the text in the column. For more information, see "Color Values" on page 38.	Optional
10	Background Color	The color of the background in the column. For more information, see "Color Values" on page 38.	Optional

Appendix 4

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 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 specified in the input files is new.

Example

The following example uses a template called MyTemplate and a project called MyProject. The example creates the following new objects:

- The root-level scorecard named Root Scorecard. This scorecard has an element named Root Element.
- A child scorecard named Child Scorecard. This scorecard has an element named Child Element.

Use the scorecard and element data files from the example in Chapter 2, "Example: Getting Data," on page 17.

Operation Code	Scorecard ID	Scorecard Name	Scorecard Parent ID	Owner	Order
	be07799a-0a28-0d9b-000d-a52583798a41	Scorecard 12	0	sasdemo	0
	be077a07-0a28-0d9b-000d-a5258527cfd7	Scorecard 12 Child	be07799a-0a28-0d9b-000d-a52583798a41	sastrust	0
	be077a17-0a28-0d9b-000d-a52509de3364	Scorecard 13,Grandchild	be077a07-0a28-0d9b-000d-a5258527cfd7	sasdemo	0

Note: This exercise concentrates on the six columns shown. For information about other columns in the CSV file, see Appendix A1, "Data Model Considerations," on page 35.

To add two scorecards to the project, add two data rows to this file. Enter the following data in the first row:

- In the Operation Code column, enter `3`. This code indicates an addition.
- In the Scorecard ID column, enter `1` for the reference number.
- In the Scorecard Name column, enter `Root Scorecard`.
- 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:

- In the Operation Code column, enter `3`. This code indicates an addition.
- In the Scorecard ID column, enter `2` for the reference number.
- In the Scorecard Name column, enter `Child Scorecard`.
- In the Scorecard Parent ID column, enter `1` to indicate that the parent scorecard is Root Scorecard. The value 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.

Figure A4.1 *Scorecard CSV Data with Two New Scorecards*

Operation Code	Scorecard ID	Scorecard Name	Scorecard Parent ID	Owner	Order
	be07799a-0a28-0d9b-000d-a52583798a41	Scorecard 12	0	sasdemo	0
	be077a07-0a28-0d9b-000d-a5258527cfd7	Scorecard 12 Child	be07799a-0a28-0d9b-000d-a52583798a41	sastrust	0
	be077a17-0a28-0d9b-000d-a52509de3364	Scorecard 13,Grandchild	be077a07-0a28-0d9b-000d-a5258527cfd7	sasdemo	0
3	1	Root Scorecard	0	sasdemo	0
3	2	Child Scorecard	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 2, "Example: Getting Data," on page 17.

Figure A4.2 *Element CSV Data from the GET Action Example*

Operation Code	Element ID	Element Name	Element Description	Container ID	Container Name	Elem
	be077ab3-0a28-0d9b-000d-a525d3480a0b	ProjElement		be0774b8-0a28-0d9b-000d-a5258a2a6cd2	MyProject	ProjE
	be077a36-0a28-0d9b-000d-a525c246718c	Element 12	Test description	be07799a-0a28-0d9b-000d-a52583798a41	Scorecard 12	Score
	be077a84-0a28-0d9b-000d-a525941f60e8	Element 22		be07799a-0a28-0d9b-000d-a52583798a41	Scorecard 12	Score
	be077a93-0a28-0d9b-000d-a52536d0183d	Element 32	New Element 3	be07799a-0a28-0d9b-000d-a52583798a41	Scorecard 12	New
	be077aa3-0a28-0d9b-000d-a525fa8bcf39	Element 42		be07799a-0a28-0d9b-000d-a52583798a41	Scorecard 12	Score

To add two elements to the project, add two data rows to the elements file. Enter the following data in the first row:

- In the Operation Code column, enter `3`. This code indicates an addition.
- In the Element ID column, enter `1` for the reference number.
- In the Element Name column, enter `Root Element`.
- In the Container ID column, enter `1` to indicate that the parent scorecard is Root Scorecard. The value entered is the reference number for Root 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.

- In the Container Name column, enter **`Root Scorecard`**.

Enter the following data in the second row:

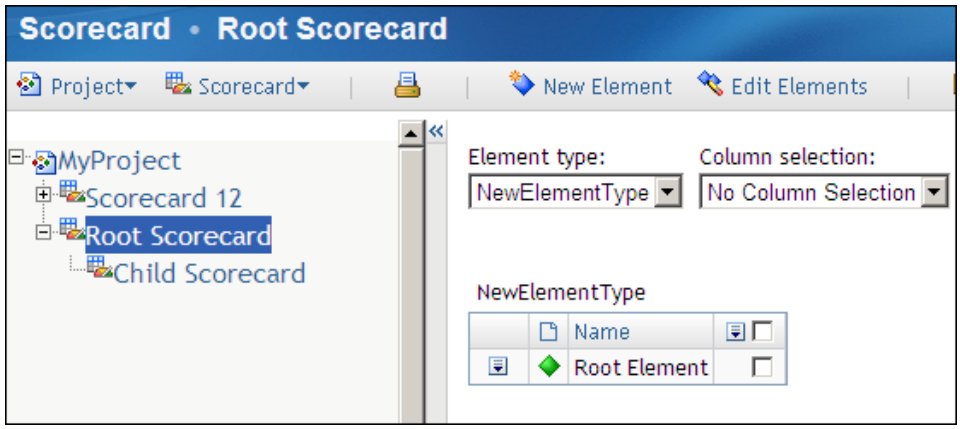
- In the Operation Code column, enter `3`. This code indicates an addition.
- In the Element ID column, enter `2` for the reference number.
- In the Element Name column, enter **`Child Element`**.
- In the Container ID column, enter `2` to indicate that the parent scorecard is Child Scorecard. The value entered is the reference number for Child Scorecard.
- In the Container Name column, enter **`Child Scorecard`**.

Figure A4.3 *Element CSV Data with Two New Elements*

Operation Code	Element ID	Element Name	Element Description	Container ID	Container Name	Elem
	be077ab3-0a28-0d9b-000d-a525d3480a0b	ProjElement		be0774b8-0a28-0d9b-000d-a5258a2a6cd2	MyProject	ProjE
	be077a36-0a28-0d9b-000d-a525c246718c	Element 12	Test description	be07799a-0a28-0d9b-000d-a52583798a41	Scorecard 12	Score
	be077a84-0a28-0d9b-000d-a525941f60e8	Element 22		be07799a-0a28-0d9b-000d-a52583798a41	Scorecard 12	Score
	be077a93-0a28-0d9b-000d-a52536d0183d	Element 32	New Element 3	be07799a-0a28-0d9b-000d-a52583798a41	Scorecard 12	New
	be077aa3-0a28-0d9b-000d-a525fa8bcf39	Element 42		be07799a-0a28-0d9b-000d-a52583798a41	Scorecard 12	Score
3	1	Root Element		1	Root Scorecard	
3	2	Child Element		2	Child Scorecard	

Run BMF MODIFY with the edited CSV files. In the Strategy Management scorecard view, the new objects are displayed:

Figure A4.4 *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 5

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
- INTERVAL
- SPECIAL

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 these rows can identify the range for which they hold data.

When working with GENERAL data rows, remember the following considerations:

- All GENERAL rows must be located 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 A2.8 on page 50.

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 indicated by the GENERAL data row. The Range Interval Number column indicates in what order the intervals are arranged. Special significance is given 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 A2.9 on page 51.

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 A2.10 on page 52.

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 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 on 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) on 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.

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