THE POWER TO KNOW.

SAS® Strategy Management 5.2 Batch Maintenance Facility

User's Guide

SAS® Documentation

The correct bibliographic citation for this manual is as follows: SAS Institute Inc. 2010. *SAS® Strategy Management 5.2 Batch Maintenance Facility: User's Guide*. Cary, NC: SAS Institute Inc.

SAS® Strategy Management 5.2 Batch Maintenance Facility: User's Guide

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

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

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

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

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

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

1st electronic book, November 2010

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

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

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

Contents

About This Book

Audience

The Batch Maintenance Facility (BMF) and this user's guide are primarily intended for SAS Strategy Management scorecard modelers, that is, users of Strategy Management who create and maintain their organization's Strategy Management data.

Readers must understand the Strategy Management data model and must be comfortable with basic computer network concepts, editing files with text editors, and running SAS client sessions.

What's New in SAS Strategy Management 5.2 Batch Maintenance Facility?

Overview

Batch Maintenance Facility (BMF) 5.2 is enhanced by added functionality and improved performance.

Support for SAS Data Integration Studio

BMF now provides a BMF-specific transformation that you can use to create jobs in SAS Data Integration Studio.

Local Log Files

BMF now provides a log file on your local system that contains debugging information. This local log is in addition to the server-side log file that is already provided. The local log is overwritten each time you run BMF unless you use the LOCALLOGAPPEND argument in the %SPMBMF macro. The local log files contain single-line error messages that describe the BMF-related error. Local logs do not contain the detailed debugging messages and code information that is found in server-side log files.

QUICKENTRY Input Format

BMF now provides a quick-entry mode for creating and updating a subset of SAS Strategy Management Web application objects. Quick-entry mode identifies Strategy Management objects by using the object names (in the default language) instead of UUIDs or integer reference numbers. All input data is contained in one input comma-separated value (CSV)

file or SAS data set instead of in multiple input files that are organized by Strategy Management object type.

Support for Dynamic Ranges

Support is now provided for creating dynamic ranges from formulas. This support enables you to set up ranges once, and apply them over time by using formula-based ranges. Using BMF, you can define formula-based intervals and replace manual updates to ranges that are time sensitive, and those that require manual calculation.

Text as Values

The cell data file has changed. A new column, Cell Text, is now available that provides support for text metric attribute values. This change affects the CREATE, MODIFY, and GET data models. This support for text guarantees that scorecards include values that make the most sense to users. When using BMF, you can now include descriptive words, instead

of numbers, as performance measure results. All text values are saved in Strategy Management so you can report and compare by time.

Removing Cell Values and Text

BMF now provides the capability to clear cell text or values by using the BMF MODIFY action.

New Threshold Interval Types

BMF now provides the following new threshold interval types: Range Label, Range Grade, and Range Normalized Value. These types are in addition to the Value type.

Internationalization of Keywords in Data Files

BMF now provides integers as an alternative to English keywords that are used in the data files. The data model documentation provides information about these integers.

Expanded Character Encoding Support

BMF now supports character encoding that is also supported by Java. By using the ENCODING argument, BMF enables you to specify the character encoding that you use in your data input files. Then, BMF opens the input files using the specified encoding, reads the data, and converts the data internally to UTF-8 character encoding.

Data Model Updates

The cell file data model provides updates to accommodate new features in BMF 5.2.

Chapter 1

Overview of the Batch Maintenance Facility

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 pass data in comma-separated-value (CSV) files or SAS data sets. The arguments also pass settings to tell the macro what to do.

Note: The system that is running the SAS client and the server on which 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 %SPMBMF 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 to find out 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 %SPMBMF 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 that are identified in the affected CSV files or SAS data sets. The MODIFY action is useful for adding, modifying, or deleting data in an existing Strategy Management project. You can use the GET action to create the data files, and then use the MODIFY action to modify the data.

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

Typically, the GET and MODIFY actions are used the 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 and SAS data sets in a macro invocation.

Table 1.1 *Arguments for the %SPMBMF Macro*

Argument	Description	Required
Required Arguments		
action	A value that indicates which action you want to perform: GET, MODIFY, or CREATE.	Yes
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. This user ID setting must be set in SAS Management Console.	Yes
pw	The password for that user.	Yes
templatename	The name of the Strategy Management template that you want to work with.	Required if project_id is not specified or if action=CREATE.
projectname	The name of the Strategy Management project that you want to work with.	Required if project_id is not specified or if action=CREATE.
project_id	The UUID of the project that is being used for a GET or MODIFY action. *Note:* Do not specify the templatename or projectname arguments if specifying project_id.	Required if *templatename* and *projectname* are not specified.
outputdir	The name of a directory in which BMF can create output files.	Yes
Input Data Arguments for Using CSV Files *Note:* You can specify either CSV files or SAS data sets. However, you cannot specify *both* CSV files and SAS data sets in a macro invocation.		
setup	The setup file that contains information about the template, template permissions, element types, metric attributes, column formatting, and attribute definitions.	Required if inputdir is not specified and if the following actions are specified: • action=MODIFY and you are modifying strategy management objects that are contained in this file • action=CREATE and you are using this file to create a template and template objects

Argument	Description	Required
project	The project file that contains information about the project and project permissions.	Required if inputdir is not specified and if the following actions are specified: • action=MODIFY and you are modifying strategy management objects that are contained in this file • action=CREATE and you are using this file to create a project
range	The range file that contains information about project ranges and range intervals.	Required if inputdir is not specified and if the following actions are specified: • action=MODIFY and you are modifying strategy management objects that are contained in this file • action=CREATE and you are using this file to create ranges
scorecard	The scorecard file that contains information about project scorecards.	Required if inputdir is not specified and if the following actions are specified: • action=MODIFY and you are modifying strategy management objects that are contained in this file • action=CREATE and you are using this file to create scorecards
element	The element file that contains information about elements, both project and scorecard level.	Required if inputdir is not specified and if the following actions are specified: • action=MODIFY and you are modifying strategy management objects that are contained in this file • action=CREATE and you are using this file to create elements
attribute	The attribute file that contains information about the attributes of each element.	Required if inputdir is not specified and if the following actions are specified: • action=MODIFY and you are modifying strategy management objects that are contained in this file • action=CREATE and you are using this file to create element attributes
cell	The cell file that contains information about the cells of each element.	Required if inputdir is not specified and if the following actions are specified: • action=MODIFY and you are modifying strategy management objects that are contained in this file • action=CREATE and you are using this file to create cells

Argument	Description	Required
cellformat	The cell format file that contains information about the cell formats of each cell.	Required if inputdir is not specified and if the following actions are specified: • action=MODIFY and you are modifying strategy management objects that are contained in this file • action=CREATE and you are using this file to create cell formats
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.
quickentry	The file that contains quick entry data.	Required if you specify the *quickentrymode* argument with a value of YES.
inputdir	The name of a directory in which BMF can locate input files. Use this argument to specify the directory in which all the input CSV files are located. For more information, see "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.
Input Data Arguments for Using SAS Data Set Files *Note:* You can specify either CSV files or SAS data sets. However, you cannot specify *both* CSV files and SAS data sets in a macro invocation.		
setupds	The setup data set that contains information about the template, template permissions, element types, metric attributes, column formatting, and attribute definitions.	Required if inputdir is not specified and if the following actions are specified: • action=MODIFY and you are modifying strategy management objects that are contained in this file • action=CREATE and you are using this file to create a template and template objects
projectds	The project data set that contains information about the project and project permissions.	Required if inputdir is not specified and if the following actions are specified: • action=MODIFY and you are modifying strategy management objects that are contained in this file • action=CREATE and you are using this file to create a project
rangeds	The range data set that contains information about project ranges and range intervals.	Required if inputdir is not specified and if the following actions are specified: • action=MODIFY and you are modifying strategy management objects that are contained in this file • action=CREATE and you are using this file to create ranges

Argument	Description	Required
scorecardds	The scorecard data set that contains information about project scorecards.	Required if inputdir is not specified and if the following actions are specified: • action=MODIFY and you are modifying strategy management objects that are contained in this file • action=CREATE and you are using this file to create scorecards
elementds	The element data set that contains information about elements, both project and scorecard level.	Required if inputdir is not specified and if the following actions are specified: • action=MODIFY and you are modifying strategy management objects that are contained in this file • action=CREATE and you are using this file to create elements
attributeds	The attribute data set that contains information about the attributes of each element.	Required if inputdir is not specified and if the following actions are specified: • action=MODIFY and you are modifying strategy management objects that are contained in this file • action=CREATE and you are using this file to create element attributes
cellds	The cell data set that contains information about the cells of each element.	Required if inputdir is not specified and if the following actions are specified: • action=MODIFY and you are modifying strategy management objects that are contained in this file • action=CREATE and you are using this file to create cells
cellformatds	The cell format data set that contains information about the cell formats of each cell.	Required if inputdir is not specified and if the following actions are specified: • action=MODIFY and you are modifying strategy management objects that are contained in this file • action=CREATE and you are using this file to create cell formats
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.

Argument	Description	Required
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 16.	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 9.
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 16.	Required if action=MODIFY or CREATE and specifying SAS data sets as input, either individually or using the inputdslib argument.
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.
quickentryds	The data set used for quick entry data.	Required if you specify the *quickentrymode* argument with a value of YES.
Optional Arguments		
filter	A CSV file that specifies filter data. For more information, see "Output Filter Option" on page 10.	Optional
filterds	A data set that specifies filter data. For more information, see "Output Filter Option" on page 10.	Optional
migrate	A setting that indicates the specified project is being migrated. Valid values are **`Yes`** and **`No`**. The default value is No. For more information, see "Project Migration Option" on page 11.	Optional
quickentrymode	A setting that indicates to BMF that you are using the QUICKVALUES file for data input. Valid values are **`Yes`** and **`No`**. The default value is No. For more information, see "Quick Entry Option" on page 13.	Optional
encoding	A value that specifies the Java supported character encoding used for the input data files. For more information, see "Character Encoding Option" on page 13.	Optional
integerkeywords	A setting that directs the BMF GET action to return data files that use integer values for keywords in the Keywords column. Valid values are **`Yes`** and **`No`**. The default value is No. For more information, see "Use Integers for Keywords Option" on page 13.	Optional

Argument	Description	Required
appendlocallog	A setting that directs BMF to append log output to the local log file instead of overwriting the log with each invocation. Valid values are **Yes** and **No**. The default value is No. For more information, see "Local Log Option" on page 13.	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 9.	Optional

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 that is specified by the inputdir argument is used only if an analogous CSV file is not specified individually. For example, although a file named *projectname*_Scorecard.csv is present in the specified directory, the file is not used if you specify a CSV file using the scorecard argument.

SAS Data Sets

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 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 that is specified by the inputdslib argument is used only if an analogous data set is not specified individually. For example, although a data set named *projectname*_Scorecard is present in the specified library, the data set is not used if you specify a data set using the scorecards 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 more information about specifying library locations and output file locations, see "Specifying Folder Locations to BMF" on page 16.

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 finish executing before control is returned to the client session. *Synchronous processing* is a type of processing in which a BMF job must finish executing before control is returned to a client session.

By default, BMF runs in asynchronous mode. However, if a BMF job is part of another program and the program logic requires the output from the BMF job before proceeding, you must specify that the BMF job run synchronously.

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 that is 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 criterion 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 1.2 *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 the act of copying or moving 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 that is running on the original system where the project was created.

Note: When using the MIGRATE option, remember the following considerations:

- The MIGRATE option is not recommended for use with Strategy Management projects from installations that are earlier than 5.1.
- You can move project data from one installation to another as long as both installations are the same version of Strategy Management and that version is 5.1 or later. For example, you can move data from a 5.2 installation to another 5.2 installation.

- You can move project data from an earlier version installation to a later version installation, but you must manually update the migrated data file to incorporate any data model changes in the later version. For example, you can move data from a 5.1 installation to a 5.2 installation, but you must manually update the cell data file to reflect the data model changes in that file in version 5.2.
- You cannot move project data from a later version installation to an earlier version installation. For example, you cannot move data from a 5.2 installation to a 5.1 installation.

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 action 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 setting folder permissions or by 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 action with MIGRATE=YES on the data files, BMF creates all the objects by using the *same* UUIDs that were used on the source system.

When 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 generates an exception if the following sequence occurs:

  1. You create an object (for example, the template).
  2. You perform a GET action with the MIGRATE 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 who is invoking BMF.

Quick Entry Option

When using BMF, the most used action is MODIFY. BMF 5.2 provides the quick-entry option that enables you to use quick-entry mode. Quick-entry mode provides a subset of the MODIFY action support.

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

Quick-entry mode uses one input file. Each line in the file refers to a specific scorecard, element, and cell. BMF uses the numeric value that is supplied in a column in this file to replace or create the value that is pointed to by the scorecard and element. No UUID values are used in this file. For detailed information and examples of using quick-entry mode, see Chapter 5, "Example: Creating and Modifying Data Using Quick-Entry Mode," on page 33.

Character Encoding Option

BMF 5.2 provides an *encoding* argument that you can use to specify the character encoding that you used when creating and editing the BMF input files. For more information, see "Character Encoding" on page 55.

Use Integers for Keywords Option

BMF 5.2 provides integers as alternatives to English keywords that are used in the BMF data files. For more information about these integers and their associated keywords, see the following appendixes:

See Also

- "Input File Keywords" on page 56
- Appendix A1, "Data Model Information," on page 49
- Appendix A2, "Data Model for the GET and MODIFY Actions," on page 59
- Appendix A3, "Data Model for the CREATE Action," on page 81

Local Log Option

BMF provides a detailed log file on the SAS Application server. For more information about the BMF log on the server, see Chapter 7, "Debugging BMF," on page 45.

BMF 5.2 also provides a log file that is located on the local system from which you are issuing the %SPMBMF macro. The local log does not contain the large volume of debugging messages and code information that the server-side logs contain. Instead, the

local log contains single-line error messages that explain the BMF error that has occurred. The local log is written to the location that is specified in the %SPMBMF macro argument *outputdir* in the *template_name* subdirectory. The log filename is template_name_LOG.txt.

The log is created with each invocation of BMF. If a previous log exists, that log is overwritten. However, you can set the macro argument *appendlocallog* to not overwrite the log file and to append log output to the local log instead.

Also, you do not have to set the logging level for the BMF packages in order to use this log.

Note: The server-side log is still available and contains the large quantity of debugging information from each invocation of the %SPMBMF macro. It is not overwritten.

Prepare the Macro

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

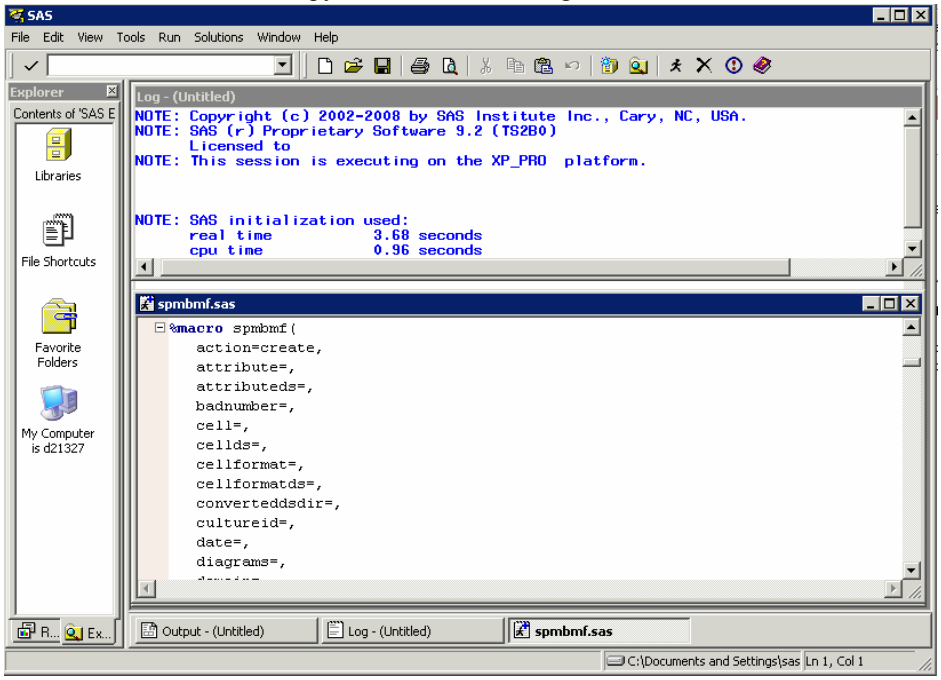
To prepare the macro for use, complete the following steps:

1. Start a SAS client session. The SAS Display Manager appears.
2. In the Program Editor window, type the macro without any arguments: **`%SPMBMF();`**.

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

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

define the macro to SAS. Copy the macro into a Program Editor window.



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

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

3. In the %SPMBMF macro statement, locate and copy the following line.

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

   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 to be 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 %SPMBMF macro.

Macro Execution

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

1. The SAS system checks the macro invocation for syntactic errors and reports any errors to the SAS log.
2. The %SPMBMF macro validates the invocation and reports errors to the SAS log.
3. The SAS system sends the argument values to the application server.

If errors occur, the macro stops executing. See the SAS log to correct your errors. For more information, see Chapter 7, “Debugging BMF,” on page 45.

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 of the processing. BMF writes all further error messages to the BMF log and the local 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 that is specified in the **user** argument must have e-mail capability for the notification to succeed. This user ID setting must be made in SAS Management Console.

Specifying Folder Locations to BMF

Typically, you want the output files written to a directory on the system that is 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**

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

Prerequisites

To use BMF, all prerequisites for SAS Strategy Management 5.2 must be satisfied. See the *SAS Strategy Management 5.2: System Requirements* for information about prerequisites.

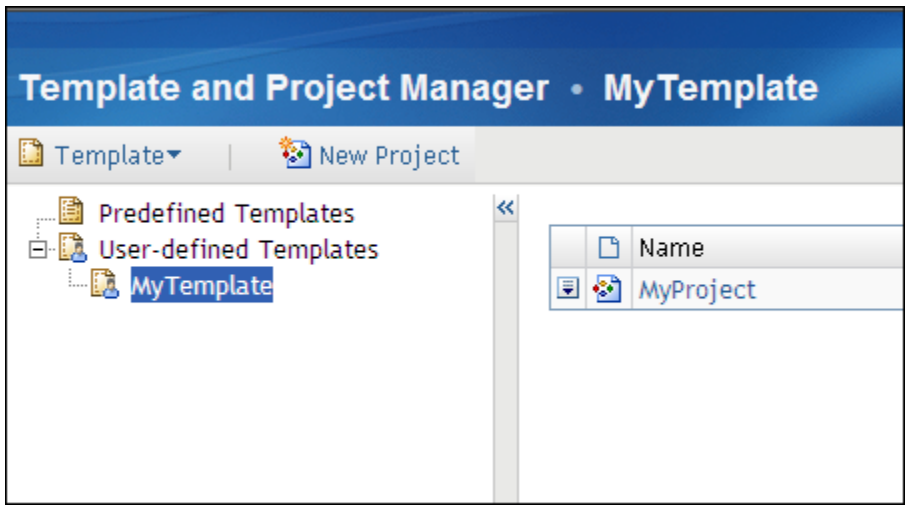
Chapter 2

Example: Getting Data

Overview

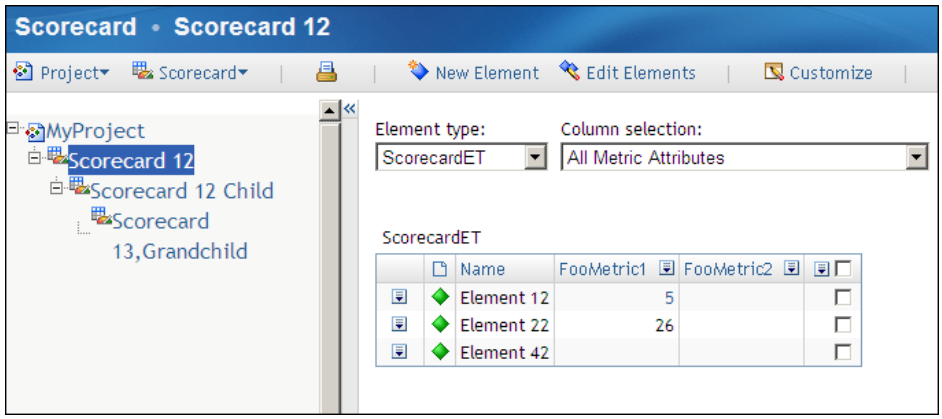
Using the BMF GET action, you can get some or all of the Strategy Management project data and write the data into comma-separated-value (CSV) files. The following example describes how to get the data from an existing template named MyTemplate and project named MyProject.

Display 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.

Display 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 %SPMBMF macro, make sure you have defined the macro to the SAS client. For more information, see "Prepare the Macro" on page 14.

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. This setting is set in SAS Management Console.
- 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 16.

Note: By default the files that are 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 5.2 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 notification is sent only if the user ID has e-mail capabilities. The e-mail indicates that the command was 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 with 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 that are created by BMF GET:

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

Data Type Files	Description
Cell	Contains information about the cells of each element.
Cell format	Contains information about the cell formats of each cell.
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 more information about the FILTER argument, see "Output Filter Option" on page 10.

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 that is 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:

- The example includes a scorecard called **`Scorecard 13,Grandchild`**. In the data file, the scorecard name must be surrounded by quotation marks so BMF processes it correctly. However, when Excel displays this data, it does not display the quotation marks.

- 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. Otherwise, you must use the ENCODING argument to specify the character encoding used. For more information, see "Character Encoding Option" on page 13.

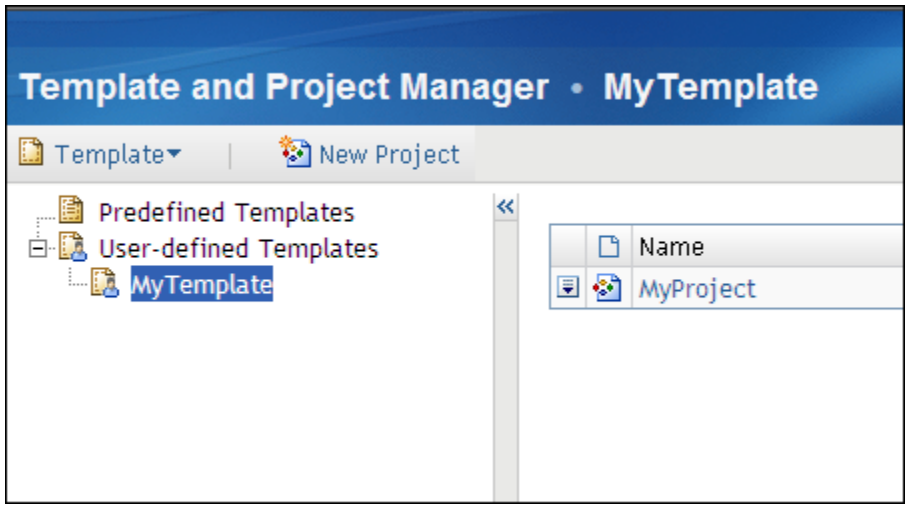
Chapter 3

Example: Modifying Data

Overview

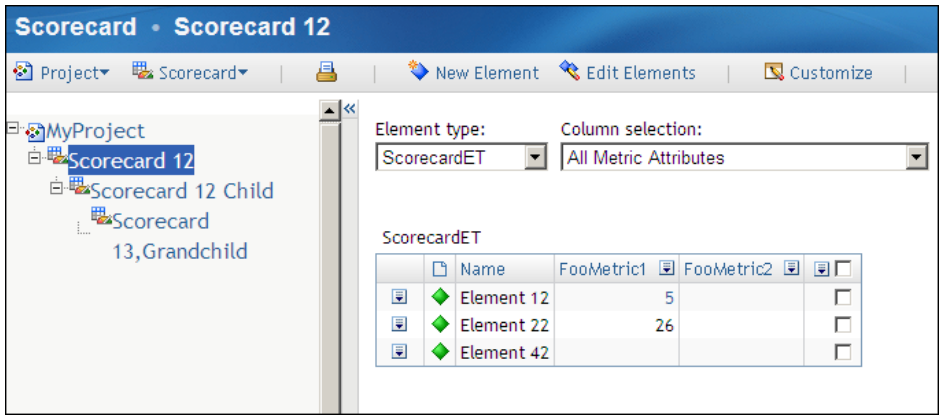
Using the BMF MODIFY action, you can add, modify, or delete the Strategy Management data from a project. The following example builds upon the example that is used for the BMF GET action. From that example, use the template called MyTemplate and the project called MyProject. The example expects the files 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.

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



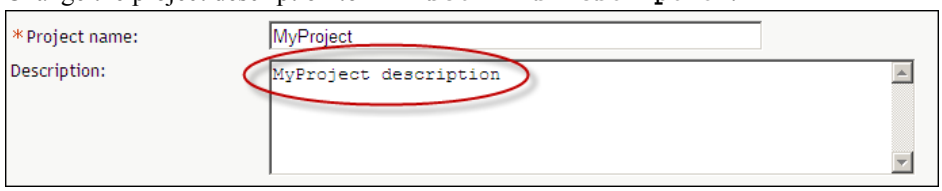
Within MyProject there are three scorecards, each with elements and cell values for the time period of September 2009.

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

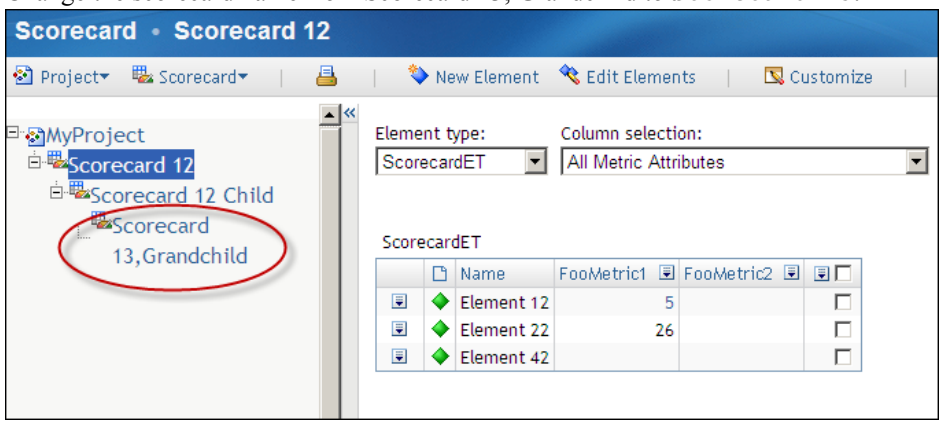


In this example, the following changes are implemented:

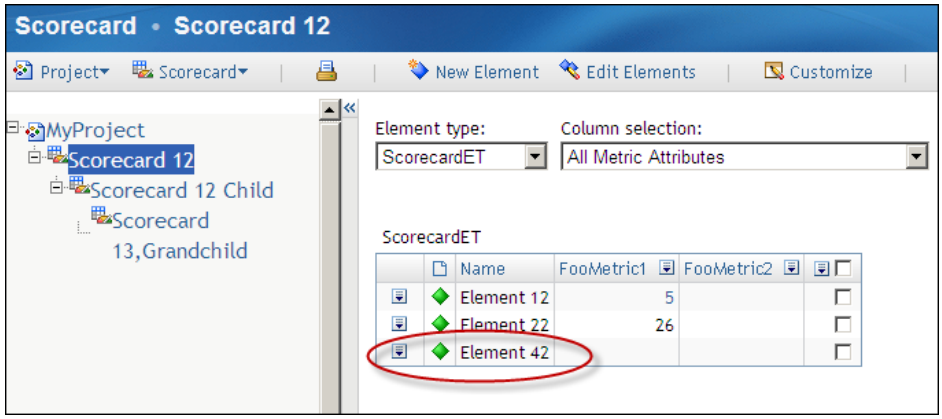
- Change the project description to **`BMF Set This Description`**.



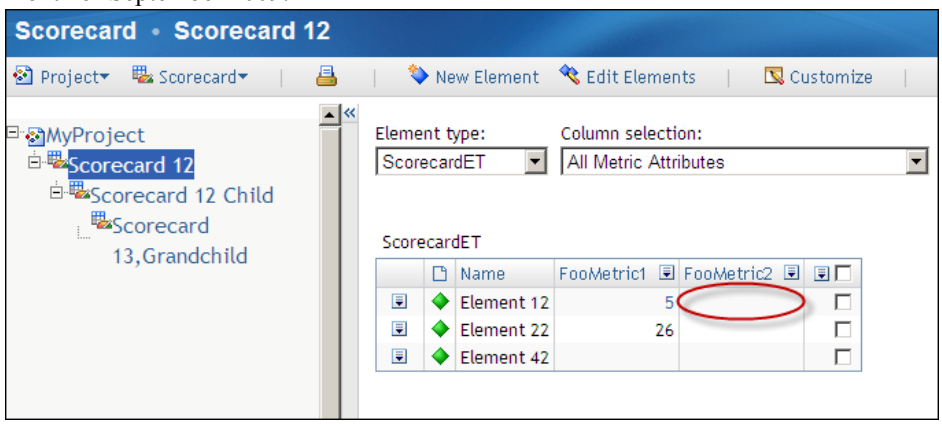
- Change the scorecard name from Scorecard 13, Grandchild to **`Scorecard 13`**.



- 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 more information about specifying directories in these arguments, see "Specifying Folder Locations to BMF" on page 16.

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 or a text editor. The Project file contains rows with different column formats. There is only one row with the GENERAL keyword. In this row, make the following changes:
  - In the Operation Code column, enter **1**, which is the value for modify.
  - In the New Project Description column, enter **BMF Set This Description**.
- To change the scorecard name, open the file C:\public\inputfiles\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`.

    Note: Values that contain a comma must be enclosed in quotation marks.

- 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 %SPMBMF macro, make sure you have defined the macro to the SAS client. For more information, see "Prepare the Macro" on page 14.

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. This setting is set in SAS Management Console.
- 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 more information about specifying file locations using the OUTPUTDIR argument, see "Specifying Folder Locations to BMF" on page 16. For information about error files, see Chapter 7, "Debugging BMF," on page 45.
- 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 making your modifications to the files.
  - For more information about editing these files, see "Data File Considerations" on page 49.
  - 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 59.
  - 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 16.

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 5.2 has ended but some StMBMF processes may still be running
asynchronously.
```

Macro Results and Output Files

The BMF MODIFY action processes the input files in the following order.

Note: All of these file types might not be part of a specified job.

1. Template input file (setup file). This file is processed for 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 7, “Debugging BMF,” on page 45.

Chapter 4

Example: Creating Data

Overview

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

The following example uses the template called 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 that contains four elements. There is one project-level element.
  - One element that contains five element attributes, one of each type.
  - One element that contains two cell values, one manual and one formula based.

Create the Required Input Files

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 2.

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

Note: Make sure BMF can find the directory. For more information about specifying directories in these arguments, see "Specifying Folder Locations to BMF" on page 16.

The CREATE action uses reference numbers to identify Strategy Management objects. For more information about reference numbers, see Appendix A5, "Identifying New Strategy Management Objects," on page 99.

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
```

Note: When a scorecard name contains a comma, you must enclose the scorecard name with quotation marks. If you do not, BMF generates errors.

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 %SPMBMF macro, make sure you have defined the macro to the SAS client. For more information, see "Prepare the Macro" on page 14.

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. This setting is set in SAS Management Console.
- 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 more information about specifying file locations using the OUTPUTDIR argument, see "Specifying Folder Locations to BMF" on page 16. For information about error files, see Chapter 7, "Debugging BMF," on page 45.
- 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 81. For more information about editing these files, see "Data File Considerations" on page 49.

  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 16.

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 5.2 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 7, “Debugging BMF,” on page 45.

Chapter 5

Example: Creating and Modifying Data Using Quick-Entry Mode

Overview

Description

Quick-entry mode is an alternative to using the MODIFY action. Using quick-entry mode, you can create and update a subset of the Strategy Management objects by using the object name instead of its universal unique identifier (UUID). This mode also enables you to do the following tasks:

- create only a scorecard with no elements or values
- create only an element with no values
- create or update cell values

Quick-entry mode is invoked using the %SPMBMF macro.

Prerequisites

You must meet the following prerequisites to use quick-entry mode:

- The user account that you specify when invoking BMF must have the correct permissions to create or modify anything in Strategy Management. The user must be a member of the System Administrator group, Scorecard Modeler group, or both. Any attempt to use quick-entry mode without being a member of an appropriate group causes BMF to issue an error message and end.
- The template, template objects (or objects contained within the templates), and project must exist and must be specified in the %SPMBMF macro invocation.

Performance Limitations

Quick-entry mode identifies Strategy Management objects by using their names in the default language. Because quick-entry mode does not use UUIDs to identify objects, BMF must perform more database processing to locate and identify Strategy Management objects. Because quick-entry mode does not use UUIDs, this mode has performance limitations when compared with standard BMF. Although UUIDs can be difficult to use, they do provide processing efficiency.

Requirements

Quick-entry mode performs a subset of the existing MODIFY functionality according to the following requirements:

- There is only one input file or data set.
- Each row must correspond to one of the following items:
  - a scorecard
  - a scorecard and element
  - a scorecard, element, and cell
- The element type, column (metric attribute), and period type must already be defined within the template and project.
- The date must be a value defined within the SASSDM database.
- The scorecards, element, and cell that are referred to by the row either must already exist or be defined for creation.

Quick-Entry Mode Errors and Logging

Error logging and e-mail notification work the same for quick-entry mode as they do for the standard MODIFY action.

Each row in the input file corresponds to one of the following items:

- a scorecard
- a scorecard and element
- a scorecard, element, and cell

If one of these combinations cannot be found or created with the information in this row, the following actions occur:

- The row data is written to an error file.
- An error message explaining the problems that occurred is written to the local error log.

Note: BMF continues to process the subsequent rows of data.

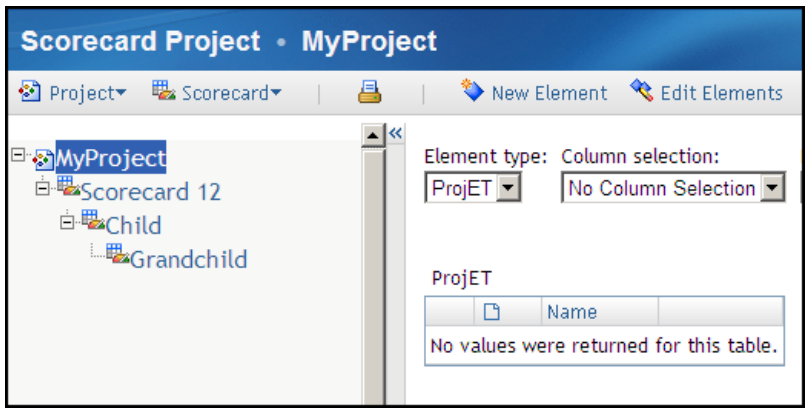
The following mistakes can cause errors when using quick-entry mode:

- Specifying element properties (Periodicity, Start Period, End Period) for an element that already exists.
- Specifying the Cell Date using a date that is not in the currently specified SAS short date format.

Creating a Scorecard Hierarchy

Overview

This example shows how to create a scorecard hierarchy without element or cell values using quick-entry mode.



Create the Required Input Files

Create a CSV file, the same way you do with standard BMF. You still specify a header row that is ignored, and each column still represents an aspect of your data. In the quick-entry data model, the first column represents scorecards. BMF interprets the input as an instruction to create a root-level scorecard named Scorecard12 in the template and project that you specify in the macro invocation. In this example, that is all that BMF does. If the scorecard already exists, nothing is done. You cannot set or modify any scorecard properties by using quick-entry mode.

To create one scorecard named Scorecard12, create an input file that contains the following data:

Note: Not all columns are shown in the following displays.

Scorecard	Element Type	Element	Period	Column	Value	Text
Scorecard 12						

To create a hierarchy of three scorecards, you can specify all the scorecard names separated by a delimiter, the vertical bar (|). In the following example, each scorecard has its own row of data. The non-root-level scorecards are indicated by the delimiter separating the scorecard names.

Scorecard	Element Type	Element	Period	Column	Value	Text
Scorecard 12						
Scorecard 12|Child						
Scorecard 12|Child|Grandchild						

You can also specify the same hierarchy by using only one row of data:

Scorecard	Element Type	Element	Period	Column	Value	Text
Scorecard 12|Child|Grandchild						

For information about the data model, see Appendix A4, "Data Model for Quick-Entry Mode," on page 95.

Invoke the Macro

Before you can invoke the %SPMBMF macro, make sure you have defined the macro to the SAS client. For more information, see "Prepare the Macro" on page 14.

- 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. This setting is set in SAS Management Console.
- BMF works with one template and project at a time. Specify this information in the TEMPLATENAME and PROJECTNAME macro arguments.
- Specify **YES** in the QUICKENTRYMODE argument.
- Specify the CSV file that you created using the quick-entry data model in the QUICKENTRY argument. For more information about specifying the file location in this argument, see "Specifying Folder Locations to BMF" on page 16.
- 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 16. For information about error files, see Chapter 7, "Debugging BMF," on page 45.

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

```
%spmbmf(action=modify,
        user=sasdemo,
        pw=DemoDemo1,
        templatename=MyTemplate,
        projectname=MyProject,
        quickentrymode=YES,
        quickentry=\\MYCOMPUTER\public\inputfiles\MyValues.csv,
        outputdir=\\MYCOMPUTER\public
        );
```

Submit the macro statement to the SAS client. To confirm that the command was successfully sent to the SAS middle tier and 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

BMF interprets the input file in the following way:

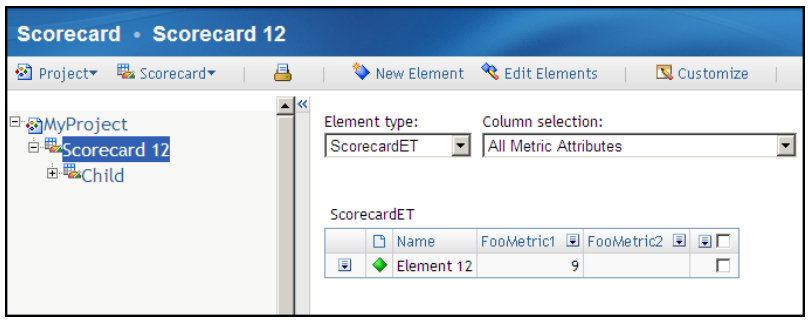
1. Determine whether a root-level scorecard named Scorecard12 already exists.
   a. If it does not exist, create the root-level scorecard named Scorecard12.
   b. If it does already exist, ignore the statement.
2. Determine whether Scorecard12 has a child scorecard named Child.
   a. If it does not exist, create the child scorecard named Child.
   b. If it does already exist, ignore the statement.
3. Determine whether Child has a child scorecard named Grandchild.
   a. If it does not exist, create the child scorecard named Grandchild.
   b. If it does already exist, ignore the statement.

Adding Elements and Cell Values

Overview

This example shows how to add elements and cell values using quick-entry mode. Using the scorecard hierarchy that was created in the previous example, add an element named Element 12 with a value of **9** for the displayed period and column FooMetric1.

Note: A scorecard element type, ScorecardET, and a metric attribute, FooMetric1, must already be defined in the template before invoking the macro using quick-entry mode.



Create the Required Input File

To add an element and cell values, create the following input:

- In the Element Type column, specify the scorecard element type named **`ScorecardET`**.
- In the Element column, specify the element named **`Element12`** for the scorecard Scorecard12.
- In the Cell Date column, specify the date to associate with the element.

  Quick-entry mode uses a date format that is different from standard BMF. Quick-entry mode expects the date to be given in the currently specified SAS short date format. This format is set on the Preferences page in the Strategy Management Web application. You can choose from different date formats, such as 06/03/2010 or 2010-60-03.

  Note: If you do not use the currently specified SAS short date format, BMF generates an error.
- In the Column column, specify the metric attribute **`FooMetric1`**.
- In the Value column , specify **`9`**.

The following example shows data that adds element and cell values for additional scorecards in the hierarchy. This input file creates the scorecards, if they do not already exist, as well as the elements and cells. You can also add cell text values.

Scorecard	Element Type	Element	Period	Column	Value	Text
Scorecard 12	ScorecardET	Element 12	5/1/2010	FooMetric1	9	
Scorecard 12|Child	ScorecardET	Element Child	5/2/2010	FooMetric2	6	
Scorecard 12|Child|Grandchild	ScorecardET	Element Grandchild	5/4/2010	FooMetric1	7	

Invoke the Macro

Assuming that the new data is added to the MyValues.csv input file, the macro invocation is unchanged from the previous example. See "Invoke the Macro" on page 36 for that macro invocation.

Macro Results

BMF creates the elements if they do not exist and gives them start and end periods of Float. If the cells do not exist, they are also created and the values are set as specified.

Using the Wildcard Token in the Scorecard Column

Overview

If you want to create the same element, cell value, or both in every scorecard in a part of the scorecard hierarchy, quick-entry mode provides a wildcard token for use in the input file. In the Scorecard column, you can specify the wildcard token (*) as part of the scorecard value. You can use the wildcard as the entire scorecard value or you can place it at the end of the scorecard value.

The wildcard directs BMF to apply the values from the row to every scorecard that matches the wildcard. If the row contains information about an element or cell, that element or cell is created or updated for every scorecard that matches the wildcard. All elements in the resulting scorecard hierarchy are linked.

Note: The scorecard hierarchy that is located where the asterisk is placed must already exist.

Examples of Using the Wildcard Token

If you want the same element to appear in all of the scorecards in the hierarchy, you can specify the wildcard character in the Scorecard column. If you want to specify Element 12 and cell value `9` for the current Period in column FooMetric1 in every scorecard in the example hierarchy, you use *only* the wildcard character in the Scorecard column as shown in the following display:

Scorecard	Element Type	Element	Period	Column	Value	Text
*	ScorecardET	Element 12	5/1/2010	FooMetric1	9	

If you want to specify Element Child and cell value `6` for the current Period in column FooMetric1 in all the child scorecards of Scorecard 12 and their descendants, you use the wildcard character after the root-level scorecard and the delimiter (|) in the Scorecard column:

Scorecard	Element Type	Element	Period	Column	Value	Text
Scorecard 12|*	ScorecardET	Element Child	5/2/2010	FooMetric2	6	

Chapter 6

Example: Using BMF with SAS Data Integration Studio

Overview

BMF in SAS Strategy Management 5.2 provides a BMF-specific transformation for use in SAS Data Integration Studio. You can use this transformation to perform BMF tasks in SAS Data Integration Studio instead of invoking the %SPMBMF macro in a SAS client session. An example job is also shipped with BMF.

Note: For information about SAS Data Integration Studio, see the *SAS Data Integration Studio: User's Guide*.

Using SAS Data Integration Studio, you can create multiple jobs that use the BMF transformation. For each job that you create, you can specify and save settings in the BMF transformation properties. Doing so enables you to easily create, customize, and save BMF jobs.

Start SAS Data Integration Studio and Locate the Samples

To start SAS Data Integration Studio and locate the sample transformation and job, complete the following steps:

1. Obtain the following information from an administrator:
   - the network name of the metadata server
   - the port number used by the metadata server
   - a user name and password for the metadata server

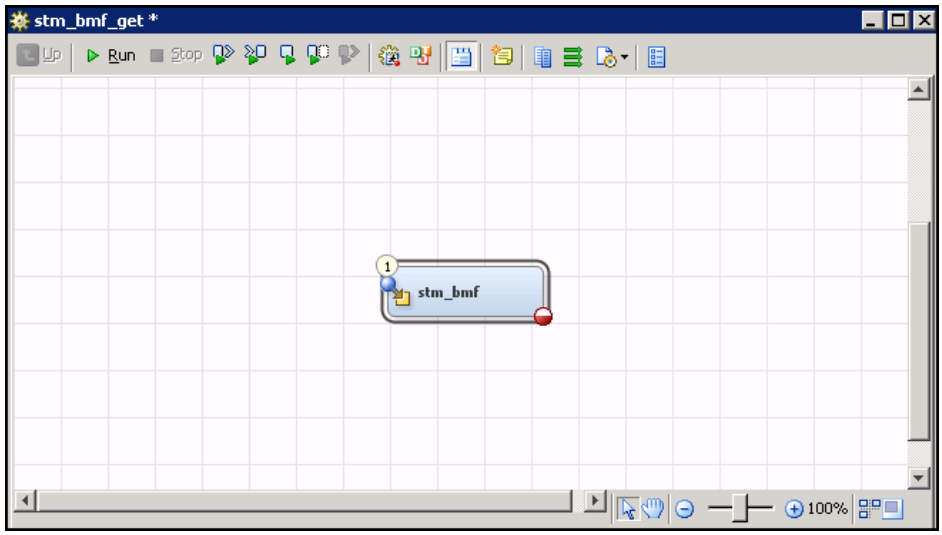
   Note: The server name and port number is the same information that you submit with the macro definition that is described in "Prepare the Macro" on page 14.
2. Start SAS Data Integration Studio.

3. In the Connection Profile window, click **Create a new connection profile**. A connection profile enables you to connect to a SAS Metadata Server. You cannot do any work until you open an existing profile or create a new profile.
4. In the New Connection Profile wizard, click **Next**, and type a name for the profile.
5. Click **Next**, and type a machine address, port, user name, and password that enables you to connect to the appropriate SAS Metadata Server.
6. Click **Finish** to exit the New Connection Profile wizard, connect to the metadata server, and display the server's metadata in SAS Data Integration Studio.
7. Click **OK** in the Connection Profile window. The SAS Data Integration Studio desktop appears.
8. In the left panel, click the **Folders** tab to view the **Folders** tree.
9. To locate the sample BMF transformation named stm_bmf, expand **System** ⇨ **Applications** ⇨ **SAS Strategy Management** ⇨ **Common** ⇨ **Generated Transformations**.
10. To locate the sample job named stm_bmf_get, expand **Products** ⇨ **SAS Strategy Management** ⇨ **5.2 Jobs**.

Run the Sample Job

The sample job, stm_bmf_get, performs a simple BMF GET action on a sample project that is shipped with SAS Strategy Management called KPI Project. To run this sample job, complete the following steps:

1. In the **Folders** tree, double-click **stm_bmf_get**. The stm_bmf_get job appears on the Diagram page.



2. On the Diagram page, double-click the stm_bmf transformation icon.
3. In the Properties window, click the **Options** tab.
4. On the BMF Options page, complete the following steps:
   a. In the **StM User** field, specify the user ID of a SAS user.

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

b. In the **StM Password** field, specify the password for the SAS user.

c. In the **Output Directory** field, specify a folder in which BMF can write the output.

5. Click **OK**. The stm_bmf icon displays a green circle with a check mark that indicates all the required information has been provided.

6. On the menu bar, click **Run**. When the job is complete, the Details pane displays status information. However, you must still check the BMF log or see the BMF e-mail notification to determine whether the BMF job completed successfully.

   Note: The Details pane information is displayed only if there was no error in the job submission.

Create Custom Jobs

Using the stm_bmf transformation, you can create your own custom jobs in SAS Data Integration Studio. For each job, edit the transformation properties and specify the BMF argument values that are required for that job.

Note: For more information about creating jobs, editing transformation properties, and running jobs in SAS Data Integration Studio, see the *SAS Data Integration Studio: User's Guide*.

Chapter 7

Debugging BMF

Overview

When you invoke BMF, the following conclusions are possible:

- The command succeeded with no errors.
- The macro invocation was incorrect, and the command was not sent to the SAS middle tier.
- The macro invocation succeeded, and the command was sent to the SAS middle tier. However, an unrecoverable error occurred, and none of the BMF changes were made.
- The macro invocation succeeded, and the command was sent to the SAS middle tier. However, some errors occurred, and only some of the BMF changes were made.

Debug Scenarios

The Macro Invocation Failed

If you make a semantic error when composing your %SPMBMF 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 ends and restores all changes to their previous state if an unrecoverable error occurs.

Suppose, for example, that in the project file you replace the project UUID with `1` and set the operation code to `1` (modify). When you run BMF MODIFY, the following message is sent to the specified user if that user has e-mail 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 performs the following actions:

- 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 and the local log

  The server-side 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. For more information about local logs, see "Local Log Option" on page 13.

- generates an e-mail indicating that errors were found

  Note: The specified user ID must have e-mail capability to receive this notification. This capability is set in SAS Management Console.

BMF processes the input files in a specific order. For more information about this order, see "Macro Results and Output Files" on page 27.

Obtaining Additional Debugging Information

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

```
%let debug=Y
```

For more information about submitting the %SPMBMF macro, see "Macro Arguments " on page 2.

Also, you can review debugging information in the BMF local log. For more information about local logs, see "Local Log Option" on page 13.

Troubleshooting Tips

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 other 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 size of the files that you want to load.
- Excel might convert values such as dates to its own internal format. You must format the affected columns as simple text to avoid this conversion.
- You must use quotation marks correctly in the input files, or errors can result. Because Excel uses quotation marks for values correctly, consider using Excel to save your files to 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 make updates, make sure you are a member of the Solutions Administrators group, the Scorecard Modeler group, or both.
- BMF can run asynchronously or synchronously. Synchronous mode is useful when you want to use BMF in a program that has several steps that must be run one after the other. For more information, see the eventname argument in "Macro Arguments " on page 2.

Appendix 1

Data Model Information

Data File Considerations

General Data File Requirements

When working with data files, remember the following requirements:

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

that is 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. Also, Excel converts dates to its own internal format.
- When you specify access permissions, you are *replacing* the access permissions that are in effect for the object, *not* adding to them. For example, if you set an access permission of Update (U) for a scorecard and then run BMF after specifying an access permission of Read (R), then the scorecard has a resulting access permission of Read.
- Strategy Management uses universal unique identifiers (UUIDs) to identify objects. The BMF MODIFY action requires that you identify existing objects by using UUIDs, unless you are using the QUICKENTRY argument. The BMF GET action returns the UUID values for most Strategy Management objects if that is how the objects are identified.

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

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 59 for more information about required column order and column content when you are using the GET and MODIFY actions. See Appendix A3, "Data Model for the CREATE Action," on page 81 for information about required column order and column content when you are using the CREATE action.

In the data files each row might be constructed as follows:

- a row of column headings. A column heading row is defined as a row where the first column contains the word KEYWORD.
- representative of the data in a Strategy Management object.
- blank. A blank row is ignored when it is 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 that are output by BMF use UTF-8 encoding. For more information about character encoding, see "Internationalization Considerations" on page 55.

CAUTION:

Do not edit data files by using word processor software. If you want to use special characters, either make sure your software can save the files in the UTF-8 format or use the ENCODING argument to specify the character encoding used. For more information, see "Character Encoding Option" on page 13.

Diagram File Creation

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

CAUTION:

Do not edit the diagram file. Doing so can corrupt it.

Access Permission Values

To change security permissions, you must specify the Security Operation Code, Security ID, Security ID Type, and Security Permissions. Each of these values indicates changes to an individual Strategy Management user that is already defined in SAS Management Console. The following table describes valid values for the Security Permissions column. For more information about specifying security operation codes, see "Security Operation Code Values" on page 57.

When using the %SPMBMF macro, there are several situations in which you specify or get access permissions. When you specify the access permissions, the access permissions replace, but do not add to, the existing access permissions. This value is case insensitive and must be any combination of the available values in the following table

Table 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 %SPMBMF macro, you can specify information to store with an element. This information is called an element attribute. This value is case insensitive and must be specified in the default language. When using either the BMF CREATE or MODIFY actions, you must indicate the category in which the attribute value belongs. The available category values are listed in the following table.

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

Value	Integer	Description
TEXT	1	Indicates that the attribute's Value column contains text data. This value can be no longer than 255 characters.
EMAIL	2	Indicates that the attribute's Value column contains an e-mail address. This value can be no longer than 255 characters.
DATE	3	Indicates that the attribute's Value column contains a date. The date value must be in the format expected by the SAS Strategy Management Web application.
URL	4	Indicates that the attribute's Value column contains a Web address. This value can be no longer than 255 characters.
ELEMENT TYPE	5	For the CREATE action, the attribute's Value column must contain the integer reference number of another previously defined element. For the MODIFY action, the attribute's Value column varies, depending on the operation code that you specified in this data row. • If the operation code is DELETE (or 2), then the Value column must be blank. • If the operation code is MODIFY (or 1), then the Value column must contain the UUID of a different element to associate. • If the operation code is ADD (or 3) and the element to associate is being created in the current BMF invocation, then the Value column must contain the integer reference number of that element. • If the operation code is ADD (or 3) and the element to associate is a different element that already exists, then the Value column must contain the UUID of that element.

Alignment Values

When using the %SPMBMF macro, you might need to specify an alignment for text. You can use either the integer or string value. The string values are case insensitive. The available alignment values are in the following table.

Table A1.3 *Alignment Integer and String Values*

Integer	String
0	LEFT
1	CENTER
2	RIGHT

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 standard color name WHITE.
- A seven-character hexadecimal number string that uses the RGB format. The first character must be the pound sign (#).

  For example, Blue is specified as #0000CC.

  Note: If you do not include the # character, BMF automatically includes the character for you.

Specify a Standard Color Name

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

- DEFAULT
- BLACK
- WHITE
- RED
- ORANGE
- YELLOW
- GREEN

- BLUE
- INDIGO
- VIOLET

Format Type Values

When using the %SPMBMF macro, you might need to specify a format type. You can use either the integer or string value. The string values are case insensitive. The available format type values are in the following table.

Table A1.4 *Format Type Integer and String Values*

Integer	String
0	blank Indicates that you must use the current format type.
1	GENERAL
2	CURRENCY
3	NUMBER
4	PERCENTAGE
5	DATE
6	SAS BEST

Global Thresholds and Cells

You can attach different types of global thresholds to a cell value. The default is no threshold. The cell file data model includes the following columns that are used by BMF for specifying a threshold:

- global threshold value
- threshold type
- threshold operator

BMF checks the threshold type column first to determine whether you have specified a threshold. If you specify any of the following values in this column, BMF ignores the other threshold columns:

- a blank

  Note: For faster processing, specify a blank in this column to indicate no threshold.

- 0

- NONE

The following table describes the interval types that you can specify for global thresholds that are attached to a cell.

Note: The interval type values are case insensitive.

Table A1.5 *Global Threshold Interval Types, Operators, and Descriptions*

Type	Operator	Description
0, NONE, or blank	blank or NONE	blank
1 or VALUE	<, >, <=, >=	A numeric value
2 or LABEL	=, <>	The label value of one of the intervals attached to the cell.
3 or GRADE	=, <>	The grade value of one of the intervals attached to the cell.
4 or NORMALIZEDVALUE	=, <>	The normalized value of one of the intervals attached to the cell.

Internationalization Considerations

Character Encoding

In previous versions of BMF, UTF-8 character encoding was required for the data input files. BMF 5.2 now permits you to create data input files in any character encoding that is supported by Java. The %SPMBMF macro provides a new argument, encoding, that you can use to specify the encoding that is used in your data files. Using this information, BMF opens the data input files by using the specified encoding, and reads the data by using Java I/O methods. These Java methods convert the data internally to UTF-8 encoding.

CAUTION:

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

If you do not specify the encoding argument, BMF opens the data files by using UTF-8 character encoding.

Input File Keywords

Previous versions of BMF provided keywords in English only. BMF 5.2 now provides integer values to indicate keyword data.

For example, in the Setup file in column 1 you must indicate the type of Strategy Management object to which the rest of the data on that line relates. If that line is data for an element type, the value in column 1 previously was an English keyword:

```
ELEMENT TYPE,data,data,...
```

BMF now accepts integer values as well as English keywords:

```
2,data,data,...
```

The integers are included in the data model documentation in this user's guide.

Also, the %SPMBMF macro provides a new argument, integerkeywords, that you can use to specify whether the values returned by BMF in the Keyword columns are integers or English keywords. To receive integers, specify **YES**. By default, English keywords are returned.

Template and Project Name Specification

Typically, you specify your template and project name using the %SPMBMF macro in the following way:

```
%SPMBMF(...,
        TEMPLATENAME=<template_name>,
        PROJECTNAME=<project_name>,
        ...);
```

However, if your Template or Project names use non-ASCII characters, the %SPMBMF macro cannot send the characters correctly to the SAS application server. This is because the SAS framework code receives and transmits all the macro arguments as a UTF-8 character encoded stream.

As a workaround, you can identify the template and project by specifying the projectid argument. This argument accepts the UUID of the project. BMF determines the template by ownership of the specified project ID.

Operation Code Values

When you modify model data, you can specify an operation code. The operation code is an integer that indicates the action to perform. The default value is blank. The available operation code values are in the following table.

Table A1.6 *Operation Codes and Their Associated Actions*

Code	Action to Perform
1	Modify the item.
2	Delete the item.

Code	Action to Perform
3	Add the item.
5	Ignore this row.
blank	Ignore this row.

Security Operation Code Values

To change security permissions, you must specify the Security Operation Code, Security ID, Security ID Type, and Security Permissions. Each of these values indicates changes to an individual Strategy Management user that is already defined in SAS Management Console. The following table describes valid values for the Security Operation Code column. For information about specifying security permissions, see "Access Permission Values" on page 51.

Table A1.7 *Security Operation Codes and Their Associated Actions*

Code	Action to Perform
1	Modify the permissions for the specified user.
2	Delete the specified user.
3	Add the specified user.
5	Ignore this row.
blank	Ignore this row.

Shape Values

When using the %SPMBMF macro, you might need to specify a shape. You can use either the integer or string value. The string values are case insensitive. The following table describes the available shape values.

Table A1.8 *Shape Integer and String Values*

Integer	String
0	NONE
1	RECTANGLE

Integer	String
2	ELLIPSE
3	DIAMOND
4	PENTAGON
5	OCTAGON
6	HEXAGON
7	TRAPEZOID
8	TRIANGLE
9	PARALLELOGRAM

Text Style Values

When using the %SPMBMF macro, you might need to specify a text style. You can use either the integer or string value. You can also combine styles. To combine styles, separate each value with a vertical bar (|), as in the following example:

```
bold|underline
```

This value can be no longer than 64 characters, and the string values are case insensitive. The following table describes the available text style values. The following table describes the available text style values.

Table A1.9 *Text Style Integer and String Values*

Integer	String
0	BOLD
1	ITALIC
2	UNDERLINE
3	STRIKEOUT
4	WRAP TEXT

Appendix 2

Data Model for the GET and MODIFY Actions

Setup File

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

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

Although most data files contain one type of data and a fixed number of columns, the setup data file can contain four types of data rows. Each type of data row requires a different number of columns.

Each type of data is identified by the value in the first column (the Keyword column) and must be one of the following values (either string or integer):

String	Integer
TEMPLATE	1
TEMPLATE PERMISSIONS	5
ELEMENT TYPE	2

String	Integer
METRIC ATTRIBUTE	4
ATTRIBUTE DEFINITION	3

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 (or 1). This value is case insensitive. *Note:* Specify only one row with the keyword TEMPLATE.	Required
2	Operation Code	• For GET, this column is blank. • For MODIFY, this column specifies the operation to take. For more information, see "Operation Code Values" on page 56.	Optional *Note:* For GET, this value does not apply.
3	ID	The identifier for the template. When you modify or delete a template, this is a UUID that uniquely identifies the template. When you add a template, this is a reference number that uniquely identifies the template. For more information, see Appendix A5, "Identifying New Strategy Management Objects," on page 99. *Note:* The template that is identified must be the same template that is specified in the %SPMBMF macro argument TEMPLATENAME.	Required
4	Name	The name of the template. This value must be in the default language, and can be no longer than 255 characters. When you modify or delete a template, this is the existing template name. If you add a template, this is the new template name. *Note:* The template that is identified must be the same template that is specified in the %SPMBMF macro argument TEMPLATENAME.	Required
5	New Name	The name of the template after you modify a template name. This value must be in the default language, and can be no longer than 255 characters.	Required if you modify a template name. Otherwise, it is optional.
6	Owner	The valid SAS Strategy Management user ID of the owner of the template. This value can be no longer than 60 characters. A blank value indicates that the template owner is unchanged.	Optional

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 (or 5). This value is case insensitive.	Required
2	Security Operation Code	• For GET, this column is blank. • For MODIFY, this column specifies the operation to take. For more information, see "Operation Code Values" on page 56.	Optional *Note:* For GET, this value does not apply.
3	Template Name	The name of the template. This value must be in the default language and can be no longer than 255 characters. *Note:* The template that is identified must be the same template that is specified in the %SPMBMF macro argument TEMPLATENAME.	Required
4	Security ID	The ID of the user or user group for whom the template access permissions are specified. This value can be no longer than 60 characters.	Required
5	Security ID Type	The type of access permissions. This value must be either USER (or 1) or GROUP (or 2), and is case insensitive.	Required
6	Permissions	The specified permissions. For more information about access permissions, see "Access Permission Values" on page 51.	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 (or 2). 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 56.	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 modify or delete an element type, this is a UUID that uniquely identifies the element type. When you add an element type, this is a reference number that uniquely identifies the element type. For more information, see Appendix A5, "Identifying New Strategy Management Objects," on page 99.	Required
4	Name	The name of the element type. This value can be no longer than 255 characters.	Optional
5	New Name	When you are modifying an existing element type name, this is the new name of the element type. This value can be no longer than 255 characters.	Optional
6	Description	The description of the element type. This value can be no longer than 255 characters.	Optional
7	New Description	When you are modifying an existing description, this is the new description of the element type. This value can be no longer 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 1) or SCORECARD (or 2).	For MODIFY, when you modify or add 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 longer than 100 characters.	Optional
10	Text Color	The color of the text for the element type. For more information, see "Color Values" on page 53. To leave the color unchanged, specify a blank.	Optional
11	Background Color	The background color for the element type. For more information, see "Color Values" on page 53. To leave the color unchanged, specify a blank.	Optional
12	Shape	The shape for the element type. For more information, see "Shape Values" on page 57.	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 (or 4). This value is case insensitive.	Required

Column Order	Column Name	Column Description	Required for MODIFY
2	Operation Code	• For GET, this column is blank. • For MODIFY, this column specifies the operation to take. For more information, see "Operation Code Values" on page 56.	Optional *Note:* For GET, this value does not apply.
3	ID	The identifier of the metric attribute. When you modify or delete a metric attribute, this is a UUID that uniquely identifies the metric attribute. When you add a metric attribute, this is a reference number that uniquely identifies the metric attribute. For more information, see Appendix A5, "Identifying New Strategy Management Objects," on page 99.	Required
4	Name	The name of the metric attribute. This value can be no longer than 255 characters.	Optional
5	New Name	• For GET, this column is blank. • For MODIFY, this value specifies the new name of the metric attribute. This value can be no longer than 255 characters.	Optional
6	Format	The name of the SAS format used by the metric attribute. This value can be no longer than 20 characters.	Optional
7	Format Type	The type of format of metric attribute. For more information, see "Format Type Values" on page 54.	Optional
8	Width	The integer that specifies the width of the metric attribute.	Optional
9	Decimal Width	The integer that specifies the number of decimal places in a metric attribute.	Optional
10	Alignment	The horizontal alignment of the text in the column. For more information, see "Alignment Values" on page 53.	Optional
11	Text Style	The style of text in the column. For more information, see "Text Style Values" on page 58.	Optional
12	Text Color	The color of the text in the column. For more information, see "Color Values" on page 53.	Optional
13	Background Color	The color of the background in the column. For more information, see "Color Values" on page 53.	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 (or 3). This value is case insensitive.	Required
2	Operation Code	• For GET, this column is blank. • For MODIFY, this column specifies the operation to take. For more information, see "Operation Code Values" on page 56. *Note:* You can add and delete, but you cannot modify, an existing attribute definition. If you want to change existing attribute definitions, you must delete the existing definition and then add the definition with the required changes.	Optional *Note:* For GET, this value does not apply.
3	ID	The identifier of the attribute definition. When you modify or delete an attribute definition, this is a UUID that uniquely identifies the attribute definition. When you add an attribute definition, this is a reference number that uniquely identifies the attribute definition. For more information, see Appendix A5, "Identifying New Strategy Management Objects," on page 99.	Required
4	Element Type Name	The name of element type for which the attribute definition is defined. This value can be no longer than 255 characters.	Optional
5	Element Type ID	The identifier of the element type for which the attribute definition is defined. When you modify or delete an element type, this is a UUID that uniquely identifies the element type. When you add an element type, this is a reference number that uniquely identifies the element type. For more information, see Appendix A5, "Identifying New Strategy Management Objects," on page 99.	Required
6	Label	The label for the attribute definition. This value can be no longer than 255 characters.	For MODIFY, when you delete or add an attribute definition, this value is required.
7	Description	The description of the attribute definition. This value can be no longer than 255 characters.	Optional
8	Category	The type of category for the attribute definition. For more information, see "Attribute Category Values" on page 52.	For MODIFY, when you add an attribute definition, this value is required.

Column Order	Column Name	Column Description	Required for MODIFY
9	Element Type Attribute ID	The identifier of the element type associated with the attribute definition. When you modify, delete, or migrate an attribute definition, this is a UUID that uniquely identifies the element type that is linked to this attribute definition. When you add an attribute definition, this is a reference number that uniquely identifies the element type that is linked to this attribute definition. For more information, see Appendix A5, "Identifying New Strategy Management Objects," on page 99.	When the value in the Category column is ELEMENT TYPE, this value is required.
10	Multiple Selections	Indicates whether the attribute definition allows multiple selections. This value is case insensitive, and must be one of the following values: • YES (or 1) • NO (or 2) *Note:* A blank is the same as NO.	Optional

Project File

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

Although other data files contain one type of data and a fixed number of columns, the project data file can contain two types of data rows. Each type of data row requires a different number of columns. Each type of data is identified by the value in the first column (the Keyword column) and must be one of the following (either string or integer):

String	Integer
GENERAL	6
PERMISSIONS	7

Note:

- If you use the add operation to create a new project, the project is not registered when it is created. It is not stored in the SAS Metadata Repository. You must register the project, and then the project is assigned to an object metadata repository.
- When you create a project, BMF does not create Scorecard 1. If you want a scorecard with this name, you must specify Scorecard 1 using the scorecard data file.

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

Table A2.6 *Keyword=General Column Order and Descriptions*

Column Order	Column Name	Column Description	Required for MODIFY
1	Keyword	This value must be GENERAL (or 6). This value is case insensitive. *Note:* Only one data row that contains the keyword GENERAL is permitted.	Required
2	Operation Code	• For GET, this column is blank. • For MODIFY, this column specifies the operation to take. For more information, see "Operation Code Values" on page 56.	Optional *Note:* For GET, this value does not apply.
3	ID	The identifier for the project. When you modify or delete a project, this is a UUID that uniquely identifies the scorecard. When you add a scorecard, this is a reference number that uniquely identifies the scorecard. For more information, see Appendix A5, "Identifying New Strategy Management Objects," on page 99. *Note:* The project identified must be the same project that is specified in the %SPMBMF macro argument PROJECTNAME.	Required
4	Name	The name of the project. This value must be in the default language and can be no longer than 255 characters. *Note:* The project identified must be the same project that is specified in the %SPMBMF macro argument PROJECTNAME.	Required
5	New Name	• For GET, this column is blank. • For MODIFY, this value specifies the new description of the project. This value can be no longer than 255 characters.	Optional
6	Description	The description of the project. This value can be no longer than 255 characters.	Optional
7	New Description	• For GET, this column is blank. • For MODIFY, this value specifies the new description of the project. This value can be no longer than 255 characters.	Optional
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

Column Order	Column Name	Column Description	Required for MODIFY
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 the project by using BMF. Access permissions can be specified only after the project is registered.	Optional
12	Owner	The name of the project's owner as it appears in SAS Management Console, not as it appears in SAS Strategy Management. This value can be no longer than 60 characters.	Optional

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

Table 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
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 56.	Optional *Note:* For GET, this value does not apply.
3	Project Name	The name of the project. This value must be in the default language, and can be no longer than 255 characters. *Note:* The project identified must be the same project that is specified in the %SPMBMF macro argument PROJECTNAME.	Required
4	Security ID	The ID of the user or user group for whom the template access permissions are being specified. This value can be no longer than 60 characters.	Required
5	Security ID Type	The type of access permissions. This value must be either USER (or 1) or GROUP (or 2), and is case insensitive.	Required
6	Permissions	The specified permissions. For more information about access permissions, see "Access Permission Values" on page 51.	Required

Range File

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

Note: For more information about modifying ranges, see Appendix A6, "Using Ranges in BMF," on page 103.

The range data files can contain three types of data. Each type of data is identified by one of the following values (either string or integer) in the first column (the Keyword column):

String	Integer
GENERAL	6
INTERVAL	8
SPECIAL	9

The GENERAL row must be first in the file, then the INTERVAL rows, and then the SPECIAL rows. BMF collects INTERVAL and SPECIAL data only if there is a corresponding GENERAL row (that is, the Range Reference Numbers match).

Note: Although the operation code of IGNORE prevents BMF from validating any columns or operate on the data, you still must specify valid keywords (GENERAL, INTERVAL, or SPECIAL) in column 1.

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

Table 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 (or 6). This value is case insensitive.	Required
2	Operation Code	• For GET, this column is blank. • For MODIFY, this column specifies the operation to take. For more information, see "Operation Code Values" on page 56.	Optional *Note:* For GET, this value does not apply.
3	Range ID	An integer that is greater than zero that identifies the range. When you modify or delete a range, this is a UUID that uniquely identifies it. When you add a range, this is a reference number that uniquely identifies it. For more information, see Appendix A5, "Identifying New Strategy Management Objects," on page 99. *Note:* Each range reference number can be used only once.	Required

Column Order	Column Name	Column Description	Required for MODIFY
4	Range Name	The name of the range. This value can be no longer than 255 characters.	Required
5	Range Description	The description of the range. This value can be no longer than 255 characters.	Optional

Note: For more information about modifying ranges, see Appendix A6, "Using Ranges in BMF," on page 103.

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

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 (or 8). This value is case insensitive.	Required
2	Range ID	The UUID that identifies the range to which the interval belongs. For MODIFY, specify a value of zero to ignore this data row.	Required
3	Range Interval Number	An integer that is greater than zero that identifies the interval within the range. *Note:* The lower bound interval number must always be 1. All other bound numbers must be greater than 1, and their numbers are based on their order in the range. Subsequent intervals are numbered 2-*n* (in sorted order) based on their specific bound value.	Required
4	Interval Bound	The double word that represents the bound of the interval. This value is required for all intervals other than the lower bound interval.	Required for all intervals except the lower bound interval.
5	Interval Operator	The operator for the interval. Valid values are > (greater than) or >= (greater than or equal to).	Required for all intervals except the lower bound interval.
6	Interval Label	The label for the interval. This value can be no longer than 255 characters.	Optional
7	Interval Grade	The grade of the interval. This value can be no longer than 255 characters.	Optional
8	Normalized Value	The double word that represents the normalized value of the interval.	Optional
9	Interval Color	The color of the text for the interval. For more information, see "Color Values" on page 53.	Optional

Column Order	Column Name	Column Description	Required for MODIFY
10	Interval Icon	The image filename to use as the icon for the interval. This value can be no longer than 100 characters.	Optional
11	Interval Formula	A string that represents a valid formula.	Required for all intervals except the lower bound interval if this is a formula-based range.

Note: For more information about modifying ranges, see Appendix A6, "Using Ranges in BMF," on page 103.

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

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 (or 9). This value is case insensitive. *Note:* There can be no more than two rows of data that specify the SPECIAL keyword for a single range: one row for the MISSING interval and one row for the UNRESOLVED interval. You do not have to specify both intervals.	Required
2	Range ID	The UUID that identifies the range to which the interval belongs. For MODIFY, specify a value of zero to ignore this data row.	Required
3	Special Range Value Type	The value that indicates to which special interval the row of data applies. This value must be either MISSING (or 1) or UNRESOLVED (or 2).	Required
4	Placeholder	• For GET, this column is blank. • For MODIFY, this value is unused but the data column must exist.	Required
5	Placeholder	• For GET, this column is blank. • For MODIFY, this value is unused but the data column must exist.	Required
6	Placeholder	• For GET, this column is blank. • For MODIFY, this value is unused but the data column must exist.	Required
7	Interval Grade	The grade of the interval. This value can be no longer than 255 characters.	Optional

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

Scorecard File

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

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 56.	Optional *Note:* For GET, this value does not apply.
2	Scorecard ID	• For GET, this is the identifier that uniquely identifies the scorecard. • For MODIFY, when you modify or delete a scorecard, this value is a UUID that uniquely identifies the scorecard. When you add a scorecard, this is a reference number that uniquely identifies the scorecard. For more information, see Appendix A5, "Identifying New Strategy Management Objects," on page 99.	Required
3	Scorecard Name	The name of the scorecard. This value must be specified in the default language and can be no longer than 255 characters.	For MODIFY, this value is required when you add a scorecard. Otherwise, it is optional.

Column Order	Column Name	Column Description	Required for MODIFY
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 A5, "Identifying New Strategy Management Objects," on page 99.	Required when you add a scorecard. Otherwise, it is optional.
5	Owner	The new name of the scorecard's owner as it appears in SAS Management Console, not as it appears in SAS Strategy Management. This value can be no longer than 60 characters.	For MODIFY, this value is required when you add a scorecard. Otherwise, it is optional.
6	Order	An integer that is greater than or equal to zero that indicates the sort position of the scorecard under the parent scorecard. You do not need to use consecutive numbers; the sibling scorecards are sorted by their numbers relative to each other. A value of zero indicates that the scorecard's order is determined by its position in the CSV file.	For MODIFY, this value is required when you add a scorecard. Otherwise, it is optional.
7	Security Operation Code	• For GET, this column is blank. • For MODIFY, this column specifies the operation to take regarding permissions. For more information, see "Security Operation Code Values" on page 57. *Note:* To specify access permissions, set the Operation Code to 1. See the Operation Code information earlier in this table.	This value is not valid when you add an element. Otherwise, it is optional. *Note:* For GET, this value does not apply.
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 you add an element. Otherwise, it is optional.
9	Security ID Type	The type of access permissions. This value must be either USER (or 1) or GROUP (or 2), and is case insensitive.	For MODIFY, this value is not valid when you add an element. Otherwise, it is optional.
10	Permissions	The specified permissions. For more information about access permissions, see "Access Permission Values" on page 51.	For MODIFY, this value is not valid when you add an element. Otherwise, it is optional.

Element File

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

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 56.	Optional *Note:* For GET, this value does not apply.
2	ID	The identifier that uniquely identifies the element. When you modify or delete an element, this is a UUID that uniquely identifies the element. When you add an element, this is a reference number that uniquely identifies the element. For more information, see Appendix A5, "Identifying New Strategy Management Objects," on page 99.	Required
3	Name	The name of the element. This value must be specified in the default language, and can be no longer than 255 characters.	For MODIFY, this value is required when you add an element. Otherwise, it is optional.
4	Description	The description of the element. This value must be specified in the default language, and can be no longer than 255 characters.	For MODIFY, this value is required when you modify or delete an element. Otherwise, it is optional.
5	Container ID	• For GET, the identifier that uniquely identifies the element's container. If the element is a project-level element, this value is the project UUID. • For MODIFY, to specify an existing scorecard as the parent, use the UUID of the parent scorecard. To specify a new scorecard as the parent, use the reference number for the new scorecard that was previously defined. For more information, see Appendix A5, "Identifying New Strategy Management Objects," on page 99. When you modify an element, this column is used for informational purposes only; the value is ignored.	Required when you add an element. Otherwise, it is optional.
6	Container Name	The name of the scorecard or project that contains the element. This value is for informational purposes only; it is ignored.	Optional

Column Order	Column Name	Column Description	Required for MODIFY
7	Element Type	The element type. This value must be specified in the default language, and is case insensitive.	For MODIFY, this value is required when you add an element. Otherwise, it is optional.
8	Period Type	The periodicity of the element. This value must be specified in the default language, and is case insensitive.	For MODIFY, this value is required when you add an element. Otherwise, it is optional.
9	Start Period	The start period of the element. This value must be specified in the default language, and is case insensitive.	For MODIFY, this value is required when you add an element. Otherwise, it is optional.
10	End Period	The end period of the element. This value must be specified in the default language, and is case insensitive.	For MODIFY, this value is required when you add an element. Otherwise, it is optional.
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 A5, "Identifying New Strategy Management Objects," on page 99.	Required when you add an element. Otherwise, it is optional.
12	Owner	The name of the element's owner as it appears in SAS Management Console, not as it appears in SAS Strategy Management. This value can be no longer than 60 characters.	For MODIFY, this value is required when you add an element. Otherwise, it is optional.
13	Order	An integer that is greater than or equal to zero that indicates the sort position of the element under the container. You do not need to use consecutive numbers; the sibling elements are sorted by their numbers relative to each other. A value of zero indicates that the element's order is determined by its position in the CSV file.	For MODIFY, this value is required when you add an element. Otherwise, it is optional.
14	Security Operation Code	• For GET, this column is blank. • For MODIFY, this column specifies the operation to take regarding permissions. For information about specifying security operation codes, see "Security Operation Code Values" on page 57. *Note:* To specify access permissions, set the Operation Code to 1. See the Operation Code information earlier in this table.	This value is not valid when you add an element. Otherwise, it is optional. *Note:* For GET, this value does not apply.
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 you add an element. Otherwise, it is optional.

Column Order	Column Name	Column Description	Required for MODIFY
16	Security ID Type	The type of access permissions. This value must be either USER (or 1) or GROUP (or 2), and is case insensitive.	For MODIFY, this value is not valid when you add an element. Otherwise, it is optional.
17	Permissions	The specified permissions. For more information about access permissions, see "Access Permission Values" on page 51.	For MODIFY, this value is not valid when you add an element. Otherwise, it is optional.

Element Attribute File

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

As with scorecards and elements, you can modify, delete, and add attributes. However, for the MODIFY action, you can change only the attribute value. Most of the provided attribute information identifies the attribute to modify. You cannot change the identifying information of an existing attribute. This information includes the Element ID, Category, and Category Label.

Table 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 56.	Optional *Note:* For GET, this value does not apply.
2	Element ID	The identifier that uniquely identifies the element that is associated with the attribute. When you modify or delete an element attribute, use the UUID of an existing element. When you add an element attribute, use the UUID of an existing element or the reference number for a new element that was previously defined. For more information, see Appendix A5, "Identifying New Strategy Management Objects," on page 99.	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

Column Order	Column Name	Column Description	Required for MODIFY
5	Category	• For GET, the name of the element attribute category. • For MODIFY, when you modify an element attribute, this value must be the same as that used to create the attribute. For more information, see "Attribute Category Values" on page 52.	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 you modify an element attribute, this value must be the same as the one that was used to create the attribute.	Required
7	Value	The value of the element attribute that is determined by the element attribute category. For more information, see "Attribute Category Values" on page 52.	Required
8	Original Element Type Element Attribute ID	The UUID of the element that was originally linked to this element attribute.	Required when you change the element to which this element attribute is linked. Otherwise, it is optional.

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 56.	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

Column Order	Column Name	Column Description	Required For MODIFY
3	Element Name	The name of the element, in the default language, that contains the cell. This value is for informational purposes only; it is ignored.	Optional
4	Element ID	The identifier that uniquely identifies the element that contains the cell. When you modify or delete a cell, this value is the UUID for an element. When you add a cell, this value is the UUID for an existing element or the reference number for a new element that was previously defined. For more information, see Appendix A5, "Identifying New Strategy Management Objects," on page 99. *Note:* Do not change the value in this column.	Required
5	Metric Attribute	The name of the metric attribute for the cell. This value must be specified in the default language, and is case insensitive. *Note:* Do not change the value in this column.	Required
6	Period Type	The periodicity of the cell. This value must be specified in the default language, and is case insensitive. When you modify a cell, this value must be the same as when the cell was created.	Required
7	Period	The name of the period. This value must be specified in the default language and is case insensitive. When you modify a cell, this value must be the same as when the cell was created. For MODIFY, the period name must match the period names in the SAS Strategy Management program. *Note:* Do not change the value in this column.	Required
8	Cell Type	The type of value for the cell type. This value must be specified in the default language, is case insensitive, and must be either MANUAL (or 1) or FORMULA (or 2).	If you specify *Value*, this value is required. If you add a cell, this value is required. Otherwise, it is optional.

Column Order	Column Name	Column Description	Required For MODIFY
9	Value	The numeric value for the cell. BMF processes this value in the following ways: • If the cell type is MANUAL, this value is a number. • If the cell type is FORMULA, this value is a string that represents a formula. • If there is no value in the column (that is, the column is blank), BMF does nothing to the cell value. • If you specify the delete token (#) in this column, BMF deletes the cell value that already exists. BMF does not delete the cell; only the cell value.	For MODIFY, this value is required when you add or modify a cell. Otherwise, it is optional.
10	Action	The action of the directive to be applied to the cell value. This value must be exactly the text that is 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 Value	The value of the global threshold. For more information, see "Global Thresholds and Cells" on page 54.	For MODIFY, if you specify *Threshold Type*, this value is required. Otherwise, it is blank.
14	Threshold Type	The type of global threshold. To specify no threshold, specify a blank. For more information, see "Global Thresholds and Cells" on page 54.	Optional
15	Threshold Operator	The threshold operator. For more information, see "Global Thresholds and Cells" on page 54.	For MODIFY, if you specify *Threshold Type*, this value is required. Otherwise, it is blank.

Column Order	Column Name	Column Description	Required For MODIFY
16	Cell Text	The text value for the cell. This value can be no longer than 255 characters. BMF processes this value in the following ways: • If there is a value in the column, BMF updates the cell text value. • If there is no value in the column (that is, the column is blank), BMF does nothing to the cell value. • If you specify the delete token (#) in this column, BMF deletes the cell value that already exists. BMF does not delete the cell; only the cell value. *Note:* This column is new in BMF 5.2.	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 56.	Optional *Note:* For GET, this value does not apply.
2	Element ID	An integer that is greater than zero that uniquely identifies the element that is associated with the cell. The element must have been previously defined in the input CSV file that specified the elements.	Required
3	Metric Attribute	The name of the metric attribute for the cell format. The element must have been previously defined in the input CSV file that specified the setup information. This value can be no longer than 255 characters.	Required
4	Format	The name of the SAS format that is used by the cell format. This value can be no longer than 100 characters. Valid values are available from the SAS Strategy Management application.	Optional

Column Order	Column Name	Column Description	Required For MODIFY
5	Format Type	The type of format of metric attribute. For more information, see “Format Type Values” on page 54.	Optional
6	Width	An integer that specifies the width of the numeric field.	Optional
7	Decimal Width	An integer that specifies the number of decimal places in a numeric field.	Optional
8	Alignment	The horizontal alignment of the text in the column. For more information, see “Alignment Values” on page 53.	Optional
9	Text Style	The style of text in the column. For more information, see “Text Style Values” on page 58.	Optional
10	Text Color	The color of the text in the column. For more information, see “Color Values” on page 53.	Optional
11	Background Color	The color of the background in the column. For more information, see “Color Values” on page 53.	Optional

Appendix 3

Data Model for the CREATE Action

Setup File

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

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

Although most data files contain one type of data and a fixed number of columns, the setup data file can contain four types of data rows. Each type of data row requires a different number of columns.

Each type of data is identified by the value in the first column (the Keyword column) and must be one of the following values (either string or integer):

String	Integer
TEMPLATE	1
ELEMENT TYPE	2
METRIC ATTRIBUTE	4

String	Integer
ATTRIBUTE DEFINITION	3

Note: The template owner is set to the user who is specified by the %SPMBMF 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 (or 1). This value is case insensitive. *Note:* Specify only one row with the keyword TEMPLATE.	Required
2	Reference Number	An integer greater than zero.	Required
3	Template Name	The name of the template. This value must be in the default language, and can be no longer than 255 characters. *Note:* The template that is identified must be the same template that is specified in the %SPMBMF 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 (or 2). This value is case insensitive.	Required
2	Reference Number	An integer that is greater than zero that identifies the element type. For more information, see Appendix A5, "Identifying New Strategy Management Objects," on page 99.	Required
3	Element Type Name	The name of the element type. This value can be no longer than 255 characters.	Required
4	Description	The description of the element type. This value can be no longer than 255 characters.	Optional
5	Element Type	The type of element to create: project level or scorecard level. The value must be either PROJECT (or 1) or SCORECARD (or 2).	Required
6	Image	The filename of the image to use as the icon for the element type. This value must not contain the file path and can be no longer than 100 characters.	Required

Column Order	Column Name	Column Description	Value Required
7	Font Color	The color of the text for the element type. For more information, see "Color Values" on page 53.	Required
8	Background Color	The background color for the element type. For more information, see "Color Values" on page 53.	Required
9	Shape	The shape for the element type. For more information, see "Shape Values" on page 57.	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 (or 4). This value is case insensitive.	Required
2	Reference Number	An integer that is greater than zero that identifies the metric attribute. For more information, see Appendix A5, "Identifying New Strategy Management Objects," on page 99.	Required
3	Metric Attribute Name	The name of the metric attribute. This value can be no longer than 255 characters.	Required
4	Format	The name of the SAS format that is used by the metric attribute. This value can be no longer than 20 characters.	Optional
5	Format Type	The type of format of metric attribute. For more information, see "Format Type Values" on page 54.	Optional
6	Width	An integer that specifies the width of the metric attribute.	Optional
7	Decimal Width	An integer that specifies the number of decimal places in a metric attribute.	Optional
8	Alignment	The horizontal alignment of the text in the column. For more information, see "Alignment Values" on page 53.	Optional
9	Text Style	The style of text in the column. For more information, see "Text Style Values" on page 58.	Optional
10	Text Color	The color of the text in the column. For more information, see "Color Values" on page 53.	Optional
11	Background Color	The color of the background in the column. For more information, see "Color Values" on page 53.	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 Definition Column Order and Descriptions*

Column Order	Column Name	Column Description	Value Required
1	Keyword	This value must be ATTRIBUTE DEFINITION (or 3). This value is case insensitive.	Required
2	Reference Number	An integer that is greater than zero that identifies the attribute definition. For more information, see Appendix A5, "Identifying New Strategy Management Objects," on page 99.	Required
3	Element Type Reference Number	An integer that is greater than zero that identifies the element type for which the attribute definition is specified. For more information, see Appendix A5, "Identifying New Strategy Management Objects," on page 99.	Required
4	Label	The label for the attribute definition. This value can be no longer than 255 characters.	Required
5	Description	The description of the attribute definition. This value can be no longer than 255 characters.	Optional
6	Category	The type of category for the attribute definition. For more information, see "Attribute Category Values" on page 52.	Required
7	Element Type Attribute Reference Number	An integer that is greater than zero that identifies the element type that is linked to this attribute definition.	When the value in the Category column is ELEMENT TYPE, this value is required.
8	Multiple Selections	Indicates whether the attribute definition allows multiple selections. This value is case insensitive, and must be one of the following values: • YES (or 1) • NO (or 2) *Note:* A blank is the same as NO.	Optional

Project File

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

Note:

- The project owner is set to the user who is specified by the %SPMBMF macro argument USER.
- When you create 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 (or 6). This value is case insensitive. *Note:* Only one data row that contains the keyword GENERAL is permitted.	Required
2	Name	The name of the project. This value must be in the default language, and can be no longer than 255 characters.	Required
3	Description	The description of the project. This value can be no longer than 255 characters.	Optional
4	Dimension	The code for the SAS dimension. This value is case insensitive, and the default value is blank.	Optional
5	Hierarchy	The code for the SAS hierarchy. This value is case insensitive, and the default value is blank.	Optional
6	Time Dimension	The code for the SAS time dimension. This value is case insensitive, and the default value is 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 the project by 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.

Note: For information about creating ranges, see Appendix A6, "Using Ranges in BMF," on page 103.

The range data files can contain three types of data. Each type of data is identified by one of the following values (either string or integer) in the first column (the Keyword column):

String	Integer
GENERAL	6
INTERVAL	8
SPECIAL	9

The GENERAL row must be first in the file, then the INTERVAL rows, and then the SPECIAL rows. BMF collects INTERVAL and SPECIAL data only if there is a corresponding GENERAL row (that is, the Range Reference Numbers match).

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

Table 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 (or 6). This value is case insensitive.	Required
2	Reference Number	A reference number that is greater than zero that uniquely identifies the range. For more information, see Appendix A5, "Identifying New Strategy Management Objects," on page 99. *Note:* Each range reference number can be used only once.	Required
3	Range Name	The name of the range. This value can be no longer than 255 characters.	Required
4	Range Description	The description of the range. This value can be no longer than 255 characters.	Optional

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

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

Column Order	Column Name	Column Description	Value Required
1	Keyword	This value must be INTERVAL (or 8). This value is case insensitive.	Required
2	Range Reference Number	An integer that is greater than zero that identifies the range to which the interval belongs.	Required
3	Range Interval Number	An integer that is greater than zero that identifies the interval within the range. *Note:* The lower bound interval number must always be 1. All other bound numbers must be greater than 1, and their numbers are based on their order in the range. Subsequent intervals are numbered 2-*n* (in sorted order) based on their specific bound value.	Required

Column Order	Column Name	Column Description	Value Required
4	Interval Bound	The double word that represents the bound of the interval. This value is required for all intervals other than the lower bound interval.	Required for all intervals except the lower bound interval.
5	Interval Operator	The operator for the interval. Valid values are > (greater than) or >= (greater than or equal to).	Required for all intervals except the lower bound interval.
6	Interval Label	The label for the interval. This value can be no longer than 255 characters.	Optional
7	Interval Grade	The grade of the interval. This value can be no longer than 255 characters.	Optional
8	Normalized Value	The double word that represents the normalized value of the interval.	Optional
9	Interval Color	The color of the text for the interval. For more information, see "Color Values" on page 53.	Optional
10	Interval Icon	The image filename to use as the icon for the interval. This value can be no longer than 100 characters.	Optional
11	Interval Formula	A string representing a valid formula.	Required for all intervals except the lower bound interval if this is a formula-based range.

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

Table A3.8 *Keyword=Special Data Column Order and Descriptions*

Column Order	Column Name	Column Description	Value Required
1	Keyword	This value must be SPECIAL (or 9). This value is case insensitive. *Note:* There can be no more than two rows of data that specify the SPECIAL keyword for a single range: one row for the MISSING interval and one row for the UNRESOLVED interval.	Required
2	Range Reference Number	An integer that is greater than zero that identifies the range to which the interval belongs.	Required
3	Special Range Value Type	The value that indicates to which special interval the row of data applies. This value must be either MISSING (or 1) or UNRESOLVED (or 2).	Required

Column Order	Column Name	Column Description	Value Required
4	Placeholder	This value is unused but the data column must exist.	Required
5	Placeholder	This value is unused but the data column must exist.	Required
6	Placeholder	This value is unused but the data column must exist.	Required
7	Interval Grade	The grade of the interval. This value can be no longer than 255 characters.	Optional
8	Normalized Value	The double word that represents the normalized value of the interval.	Optional
9	Interval Color	The color of the text for the interval. For more information, see "Color Values" on page 53.	Optional
10	Interval Icon	The image filename to use as the icon for the interval. This value can be no longer than 100 characters.	Optional

Scorecard File

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

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	An integer that is greater than zero that identifies the scorecard.	Required
2	Name	The name of the scorecard. This value must be specified in the default language, and can be no longer than 255 characters.	Required
3	Scorecard Parent Reference Number	An integer that is greater than or equal to zero that identifies the scorecard's parent. The parent scorecard must have been defined previously. A value of zero indicates that the scorecard is a root-level scorecard.	Required
4	Owner	The new name of the scorecard's owner as it appears in SAS Management Console, not as it appears in SAS Strategy Management. This value can be no longer than 60 characters.	Required

Column Order	Column Name	Column Description	Value Required
5	Order	An integer that is greater than or equal to zero that indicates the sort position of the scorecard under the parent scorecard. You do not need to use consecutive numbers; the sibling scorecards are sorted by their numbers relative to each other. A value of zero indicates that the scorecard's order is determined by its position in the CSV file.	Required

Element File

This section describes the element data file format that is 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	An integer that is greater than zero that identifies the element. For more information, see Appendix A5, "Identifying New Strategy Management Objects," on page 99.	Required
2	Name	The name of the element. This value must be specified in the default language, and can be no longer than 255 characters.	Required
3	Description	The description of the element in the default language. This value must be specified in the default language, and can be no longer than 255 characters.	Optional
4	Container Reference Number	An integer that is greater than zero that identifies the scorecard that was specified in the scorecard.csv file. The container must have been previously defined.	Required
5	Element Type	The element type. This value must be specified in the default language, and is case insensitive.	Required
6	Period Type	The periodicity of the element. This value must be specified in the default language, and is case insensitive.	Required
7	Start Period	The start period of the element. This value must be specified in the default language, and is case insensitive.	Required
8	End Period	The end period of the element. This value must be specified in the default language, and is case insensitive.	Required
9	Link ID	An integer that uniquely identifies another element to which this element is linked. The linked element must have been previously defined. A value of zero indicates that there is no link.	Required

Column Order	Column Name	Column Description	Value 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 that is greater than or equal to zero that indicates the sort position of the element under the container. You do not need to use consecutive numbers; the sibling elements are sorted by their numbers relative to each other. A value of zero indicates that the element's order is determined by its position in the CSV file.	Required

Element Attribute File

This section describes the element attribute data file that is 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	An integer that is greater than zero that identifies the element that is associated with the element attribute. The element must have been previously defined.	Required
2	Category	Specifies the category. For more information, see "Attribute Category Values" on page 52.	Required
3	Category Label	The label of the category for the element type. This value is case insensitive, and must be specified in the default language.	Required
4	Value	The value of the element attribute that is determined by the category. For more information, see "Attribute Category Values" on page 52.	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	An integer that is greater than zero that identifies the element that is associated with the cell. The element must have been previously defined in its data file.	Required
2	Metric Attribute	The name of the metric attribute for the cell. This value must be specified in the default language, and is case insensitive.	Required
3	Period Type	The periodicity of the cell. This value must be specified in the default language, and is case insensitive.	Required
4	Period	The name of the period. This value must be specified in the default language, and is case insensitive.	Required
5	Cell Type	The type of value for the cell type. This value must be specified in the default language, is case insensitive, and must be either MANUAL (or 1) or FORMULA (or 2).	Required
6	Value	The value for the cell. If the cell type is MANUAL, this value is a number. If the cell type is FORMULA, this value is a string that represents a formula. To specify no value, specify a blank.	Optional
7	Action	The action of the directive to be applied to the cell value. This value must be exactly the text that is 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 Value	The value of the global threshold. For more information, see "Global Thresholds and Cells" on page 54.	If you specify *Threshold Type*, this value is required. Otherwise, it is blank.
11	Threshold Type	The type of global threshold. To specify no threshold, specify a blank. For more information, see "Global Thresholds and Cells" on page 54.	Optional
12	Threshold Operator	The threshold operator. For more information, see "Global Thresholds and Cells" on page 54.	If you specify *Threshold Type*, this value is required. Otherwise, it is blank.

Column Order	Column Name	Column Description	Value Required
13	Cell Text	The cell text value. This value can be no longer 255 characters. *Note:* This column is new in BMF 5.2.	Optional

Cell Format File

This section describes the format of the cell format data file for the CREATE action. Cell formats are applied to individual cells in the SAS Strategy Management application.

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

Column Order	Column Name	Column Description	Value Required
1	Element Reference Number	A reference number (integer) that is greater than zero that uniquely identifies the element that is associated with the cell. The element must have been previously defined in this CSV file that specified the elements. For more information, see Appendix A5, "Identifying New Strategy Management Objects," on page 99.	Required
2	Metric Attribute	The name of the metric attribute for the cell format. The element must have been previously defined in the input CSV file that specified the setup information. This value can be no longer than 255 characters.	Required
3	Format	The name of the SAS format used by the cell format. This value can be no longer than 100 characters. Valid values are available from the SAS Strategy Management application.	Optional
4	Format Type	The type of format of metric attribute. For more information, see "Format Type Values" on page 54.	Optional
5	Width	An integer that specifies the width of the numeric field.	Optional
6	Decimal Width	An integer that specifies the number of decimal places in a numeric field.	Optional
7	Alignment	The horizontal alignment of the text in the column. For more information, see "Alignment Values" on page 53.	Optional
8	Text Style	The style of text in the column. For more information, see "Text Style Values" on page 58.	Optional
9	Text Color	The color of the text in the column. For more information, see "Color Values" on page 53.	Optional

Column Order	Column Name	Column Description	Value Required
10	Background Color	The color of the background in the column. For more information, see "Color Values" on page 53.	Optional

Appendix 4

Data Model for Quick-Entry Mode

This section describes the format of the quick-entry mode data file.

Note:

- If you want to create only a scorecard or a scorecard hierarchy, you must specify values only in the Scorecard column.
- If you want to create only elements, you must specify values in the Scorecard, Element Type, and Element columns.

Table A4.1 *Quick-Entry Mode Data File Column Order and Descriptions*

Column Order	Column Name	Column Description	Value Required
1	Scorecard	The path and name of a scorecard that contains the data. The path indicates the scorecard location in the scorecard hierarchy, and is a concatenation of the scorecard names that are separated by a delimiter (|). Here is an example: `Scorecard_Root|Scorecard_Child` If the scorecard is a root-level scorecard, do not specify a path or delimiter. Any scorecard within this path must satisfy either of these conditions: • It already exists. • It is in the process of creation. *Note:* If this scorecard does not exist, it is created using default values for scorecard properties. This name and all scorecard names that are specified in the path must be in the default language. *Note:* This value can also contain the wildcard token (*). You can use the wildcard token either at the end of the path or as the Scorecard column value itself. The wildcard token indicates that the remaining values in this data row apply to all scorecards that exist at this level of the scorecard hierarchy. For more information, see "Using the Wildcard Token in the Scorecard Column" on page 38.	Required
2	Element Type	The name of the element type of the element that is specified in the Element column. *Note:* The element type must already be defined within the template and project.	Required if specifying an element.

Column Order	Column Name	Column Description	Value Required
3	Element	The name of the element that contains the data. The element must be specified in the default language. If the element does not exist in the scorecard that is specified by the Scorecard column, it is created. The element can be created using default values for element properties, or you can specify the following values: • The value for the element's periodicity, such as YEAR, MONTH, and so forth. If you specify this value, it is located in the Periodicity column. If you do not specify this value, the default of MONTH is used. • The values for the start and end periods. If you specify these values, they are located in the Element Start Period and Element End Period columns. If you do not specify these values, the element is created with the special FLOAT value for both the start and end periods. *Note:* If the element does exist, you cannot specify these element properties. If you do, BMF generates errors.	Required if creating an element or specifying a cell value.
4	Cell Date	The date of the cell that contains this data. Quick-entry mode uses a date format that is different from standard BMF. Quick-entry mode expects the date to be given in the currently specified SAS short date format. This format is set on the Preferences page in the Strategy Management Web application. You can choose from different date formats, such as 06/03/2010 or 2010-60-03. *Note:* If you do not use the currently specified SAS short date format, BMF generates an error.	Required if specifying a cell value.
5	Column	The column (that is, metric attribute) of the cell that contains this data. *Note:* The metric attribute must already be defined within the template and project.	Required if specifying a cell value.

Column Order	Column Name	Column Description	Value Required
6	Value	The numeric value for the cell. If you specify this value, you must also specify valid Element, Periodicity, and Column values. A cell can have a numeric value, text value, or both. BMF processes cell data in the following ways: • If there is a value in either the Value or Text Value columns, BMF creates a cell for the specified Element, Period, and Column (metric attribute). If the cell did not exist previously, BMF sets the specified cell values. If the cell does exist, BMF replaces the specified cell values. • If there is no value in this column (that is, the column is blank), BMF does nothing to the cell value. • If you specify the delete token (#) in this column, BMF deletes the cell value that already exists. BMF does not delete the cell; it deletes only the cell value. *Note:* If you want to create a new cell, but do not want it to have a value, specify the delete token (#) in the Value or Text Value column.	Required if specifying a cell value.
7	Text Value	The text value for the cell. If you specify this value, you must also specify valid Element, Periodicity, and Column values. A cell can have a numeric value, text value, or both. BMF processes cell data in the following ways: • If there is a value in either the Value or Text Value columns, BMF creates a cell for the specified Element, Period, and Column (metric attribute). If the cell did not exist previously, BMF sets the specified cell values. If the cell does exist, BMF replaces the specified cell values. • If there is no value in this column (that is, the column is blank), BMF does nothing to the cell value. • If you specify the delete token (#) in this column, BMF deletes the cell value that already exists. BMF does not delete the cell; it deletes only the cell value. *Note:* If you want to create a new cell, but do not want it to have a value, specify the delete token (#) in the Value or Text Value column.	Required if specifying a cell text value.
8	Periodicity	The periodicity (period type) of the specified period that is associated with the specified element. *Note:* The period type must already be defined within the template and project.	Required if creating an element with a periodicity other than MONTH.

Column Order	Column Name	Column Description	Value Required
9	Element Start Period	The name of the start period that is associated with the specified element. This value must be specified in the default language and is case insensitive. Also, this value can be FLOAT (or 15). This special value matches all periods. Quick-entry mode uses the same values as standard BMF. BMF expects a Start or End Period value that is appropriate for the periodicity of the element. If the element's periodicity is YEAR, you must specify a start or end period of 2009, 2010, and so forth.	Required if creating an element.
10	Element End Period	The name of the end period that is associated with the specified element. This value must be specified in the default language and is case insensitive. Also, this value can be FLOAT (or 15). This special value matches all periods. Quick-entry mode uses the same values as standard BMF. BMF expects a Start or End Period value that is appropriate for the periodicity of the element. If the element's periodicity is YEAR, you must specify a start or end period of 2009, 2010, and so forth.	Required if creating an element.

Appendix 5

Identifying New Strategy Management Objects

Overview

When working with Strategy Management objects in CSV files, you identify each Strategy Management object with a universal unique identifier (UUID). Most Strategy Management objects are stored in the database with a UUID as a primary key. The UUID acts as the Strategy Management object's identifier. When a BMF GET action retrieves values for an object, a column is typically provided for the object identifier. When you modify or delete Strategy Management objects, BMF uses this identifier to locate the object.

However, if you want to identify a *new* object, that is, an object that does not exist in the Strategy Management database and therefore does not have a UUID, you must use a reference number. A *reference number* is an arbitrary integer that is greater than 0. The number must be unique among all new objects of the same type that you are defining in the same input file. If you are adding a new Strategy Management object, using either the MODIFY or CREATE action, you must assign a reference number as an identifier.

Note: BMF CREATE uses reference numbers exclusively to identify objects. When you use BMF CREATE, it is implied that everything that is specified in the input files is new.

Example

The following example uses a template called MyTemplate and a project called MyProject. The project contains three existing scorecards. 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.

Display A5.1 *Scorecard CSV Data from the GET Action Example*

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 Information," on page 49.

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

1. In the Operation Code column, enter `3`. This code indicates an addition.
2. In the Scorecard ID column, enter `1` for the reference number.
3. In the Scorecard Name column, enter `Root Scorecard`.
4. In the Scorecard Parent ID column, enter `0` to indicate that this is a root-level scorecard.

   Note: This value is not a reference number. It is a Strategy Management indicator that BMF interprets as a root-level scorecard.

Enter the following data in the second row:

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

   Note: You must always define an object in the file before using that object reference number as a parent ID or container ID for another new object. For example, a scorecard parent must be defined in a file before its child.

Display A5.2 *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. This file contains five existing elements.

Display A5.3 *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:

1. In the Operation Code column, enter `3`. This code indicates an addition.
2. In the Element ID column, enter `1` for the reference number.

3. In the Element Name column, enter **`Root Element`**.
4. 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.
5. In the Container Name column, enter **`Root Scorecard`**.

Enter the following data in the second row:

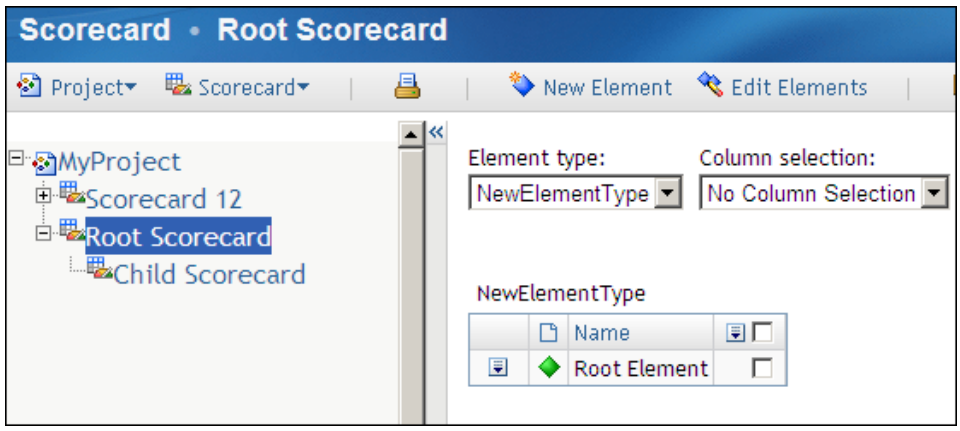
1. In the Operation Code column, enter **`3`**. This code indicates an addition.
2. In the Element ID column, enter **`2`** for the reference number.
3. In the Element Name column, enter **`Child Element`**.
4. In the Container ID column, enter **`2`** to indicate that the parent scorecard is Child Scorecard.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

Display A5.4 *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:

Display A5.5 *Updated Scorecard View*



If you run BMF GET on this project, the output CSV files contain rows for the scorecard and element objects that you added. Also, each object has a UUID in place of the reference number. If you want to modify or delete any of these objects using BMF, use the UUID.

Appendix 6

Using Ranges in BMF

Using Ranges in BMF

Overview

The format of the Range input data file in BMF differs from other Strategy Management objects. There are three types of data rows identified by one of the following values in the Keyword column:

- GENERAL (or 6)
- INTERVAL (or 8)
- SPECIAL (or 9)

General Data Row

This Range file can specify information for multiple Strategy Management ranges. To distinguish which data belongs to a range, view the rows that have GENERAL in the Keyword column. A GENERAL row exists for each range. In the GENERAL row is a Range ID column that contains either a unique integer value for that range or the range UUID.

Note: The INTERVAL and SPECIAL rows also include the Range ID column so that these rows can identify the range for which they hold data.

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

- 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 68.

Interval Data Row

The range intervals are created by using the INTERVAL data row. The range that each interval is assigned to is determined by the Range Reference Number column that points back to the Reference Number that is indicated by the GENERAL data row. The Range Interval Number column indicates in what order the intervals are arranged. Special significance is given to interval 1. This is the Lower Bound interval (that is, it is the lower limit of the range). You do not assign it a numeric value or an operator, but you can assign values for interval grade, interval icon, and so forth. For more information about INTERVAL row data, see Table A2.9 on page 69.

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 70.

Formula-Based Ranges

If you are creating a formula-based range, you must supply a formula for every interval except the lower-bound interval. Although you can include a value for the interval bound, BMF ignores it.

Working with Ranges and Intervals

The data model format for the MODIFY action does not include the Operation Code column for the INTERVAL and SPECIAL data rows. Only the GENERAL data row includes the Operation Code column. Therefore, you use the GENERAL data row to specify the type of changes that you want to make to the GENERAL data row and all associated INTERVAL and SPECIAL rows. The Range ID value that is used in the GENERAL, INTERVAL, and SPECIAL data rows identifies the affected range. When you specify modify (that is, 1) in the Operation Code column, you can modify any value in the range, such as the range name, interval value, special interval value, and so forth. Specifying delete (2) indicates that you want to delete the entire range and all its intervals. Specifying add (3) indicates that you want to add a new range.

For example, to add a new range, complete the following steps:

1. Specify 3 in the Operation Code column in a new GENERAL data row.
2. Specify the new range with a new integer identifier for the Range ID.
3. Specify any number of INTERVAL data rows for the new range.

To modify, add, or remove intervals (both regular and special), specify the modify (1) operation code in the GENERAL data row of the range that contains the affected interval. You do not add or delete intervals by specifying the delete (2) or add (3) operation codes in the GENERAL data row. You must use the modify (1) operation code in the GENERAL data row. If you want to modify an interval bound, you must change the bound value and specify modify (1) in the GENERAL row of the range that contains that interval.

CAUTION:

When specifying a modify, you must include all the range intervals even if you are modifying only one. Excluding any interval indicates to BMF that you want to delete the excluded interval.

To delete an interval, complete the following steps:

1. Specify modify (1) in the GENERAL data row of the range that contains that interval.
2. Delete the row that contains the interval to delete.

For example, to delete interval B, complete the following steps:

1. Specify modify (1) in the GENERAL data row of the range that contains interval B.
2. Delete the row for interval B.

To add an interval, complete the following steps:

1. Specify modify (1) in the GENERAL data row of the range that contains that interval.
2. Insert a new row after the keyword=INTERVAL row.
3. Enter the interval information (for example, range ID; range interval number; interval bound; interval operator and label; grade; normalized value, color, and icon).

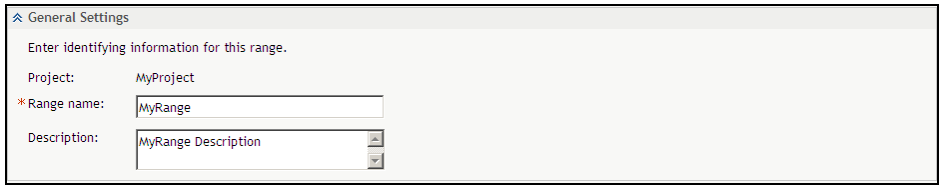
For example, you have a range with intervals A, B, and C. To add the new interval D, complete the following steps:

1. Specify modify (1) in the GENERAL data row of the range.
2. Add a new interval row with all the data for interval D.
3. Make sure that the interval rows for A, B, and C are present in the file. If they are not, BMF deletes these intervals.

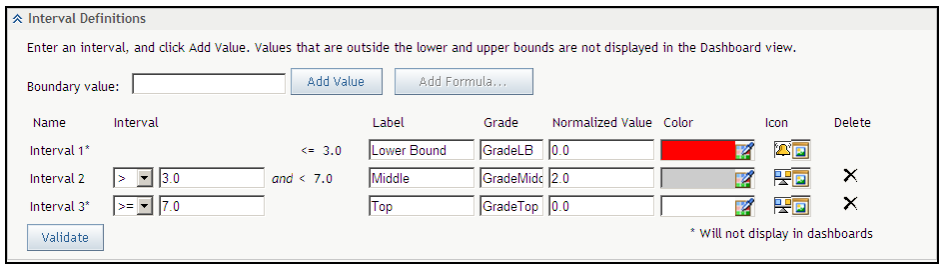
A Basic Range Defined in SAS Strategy Management Builder

Before examining how BMF defines range data, consider how Strategy Management Builder defines ranges. In the Web application, a range is defined by using the following types of information:

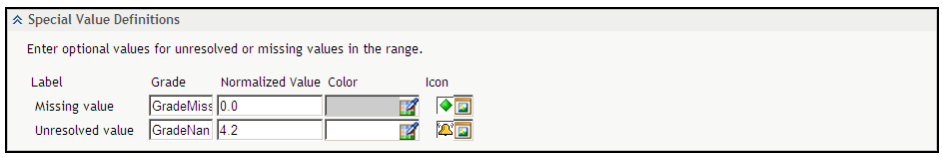
- General information.



- Interval definitions. In this section you can add or remove intervals. Also, you can assign attributes such as colors, icons, and labels.



- Special values definitions. In this section you can set the MISSING and UNRESOLVED values. Also, you can assign attributes such as colors, icons, and labels.



A Basic Range Defined in a BMF Data File

In the following example, a Range CSV file shows the BMF data representation of the same range that is described above.

The row with the keyword GENERAL describes the general settings of the range including the name, description, and the interval UUID.

Display A6.1 *The GENERAL Row with the Interval UUID Circled*

KEYWORD	Operation Code	Range ID	Range Name	Range Description
GENERAL		42ba7563-0a15-1367-30f5-18624fc92316	MyRange	MyRange Description
KEYWORD	Range ID	Range Interval Number	Interval Bound	Interval Operator
INTERVAL	42ba7563-0a15-1367-30f5-18624fc92316	1	-1.80E+307	<=
INTERVAL	42ba7563-0a15-1367-30f5-18624fc92316	2	3	>
INTERVAL	42ba7563-0a15-1367-30f5-18624fc92316	3	7	>=
KEYWORD	Range ID	Special Range Value Type	Not Used	Not Used
SPECIAL	42ba7563-0a15-1367-30f5-18624fc92316	UNRESOLVED		
SPECIAL	42ba7563-0a15-1367-30f5-18624fc92316	MISSING		

This file could contain data for multiple ranges instead of just the one shown here. BMF GET returns a GENERAL row for every range within the project.

Note: The Operation Code column is always blank when a CSV file is created by using BMF GET.

The rows with the keyword INTERVAL describes the same information that the Interval Definitions section does in the Builder. Note that the Range ID column of the INTERVAL

rows contains the same interval UUID as shown in the GENERAL row. This is how each interval is mapped to the containing range.

Display A6.2 *The INTERVAL Rows with the Range ID UUIDs Circled*

KEYWORD	Operation Code	Range ID	Range Name	Range Description
GENERAL		42ba7563-0a15-1367-30f5-18624fc92316	MyRange	MyRange Description
KEYWORD	Range ID	Range Interval Number	Interval Bound	Interval Operator
INTERVAL	42ba7563-0a15-1367-30f5-18624fc92316	1	-1.80E+307	<=
INTERVAL	42ba7563-0a15-1367-30f5-18624fc92316	2	3	>
INTERVAL	42ba7563-0a15-1367-30f5-18624fc92316	3	7	>=
KEYWORD	Range ID	Special Range Value Type	Not Used	Not Used
SPECIAL	42ba7563-0a15-1367-30f5-18624fc92316	UNRESOLVED		
SPECIAL	42ba7563-0a15-1367-30f5-18624fc92316	MISSING		

The Range Interval Number column corresponds to the Name column in the **Interval Definitions** section of the Strategy Management Builder. These values accomplish the following goals:

- They facilitate the sorting of the intervals.
- The value `1` is reserved to indicate that this interval is the *lower bound interval*.

In the Strategy Management Builder, the lower bound interval is automatically created when you create a range. You cannot assign a value to the bound because it is preset to a very low number (usually the smallest value for a double on the system). The INTERVAL rows also display the bound and operator values.

The following display shows the remaining columns in the INTERVAL rows. These columns display the remaining attributes that you can set for each interval. Note that the Interval Formula column is blank, indicating that none of the intervals are formula-based intervals.

Display A6.3 *The Remaining Columns in the INTERVAL Rows*

Interval Label	Interval Grade	Normalized Value	Interval Color	Interval Icon	Interval Formula
Lower Bound	GradeLB	0	#ff0000	/bell.gif	
Middle	GradeMiddle	2	#cccccc	/balance.gif	
Top	GradeTop	0		/balance.gif	

The rows with the keyword SPECIAL describes the same information that the Special Interval Definitions section does in the Builder. Note that the Range ID column in the SPECIAL rows contains the same interval UUID as shown in the GENERAL row. Again, this is how each interval is mapped to the containing range. The three columns that are labeled Not Used are ignored. These columns exist to make these rows align with the additional columns in the INTERVAL rows.

Display A6.4 *The SPECIAL Rows in the CSV File*

KEYWORD	Range ID	Special Range Value Type	Not Used	Not Used	Not Used
SPECIAL	42ba7563-0a15-1367-30f5-18624fc92316	UNRESOLVED			
SPECIAL	42ba7563-0a15-1367-30f5-18624fc92316	MISSING			

Modifying Ranges Using the MODIFY Action

Overview

When the BMF GET action creates a Range CSV file, the Operation Code column in the GENERAL row is always blank. This behavior differs from the other CSV data files. The operation that you specify in this column is applied to the range *only*. Then, BMF processes all the INTERVAL and SPECIAL rows for that range accordingly.

Modify a Range

The operation code for modify is **`1`**. Using this value and the input file that is shown above, you can change the basic range attributes such as name and description. You can also change attributes of existing intervals, add intervals, and remove intervals. The following display shows an example of removing the middle interval with the label **`Middle`**.

Display A6.5 *Removing the Middle Interval*

KEYWORD	Operation Code	Range ID	Range Name	Range Description
GENERAL	1	433fb3a0-0a15-1367-30f5-18629d22caae	MyRange	MyRange Description
KEYWORD	Range ID	Range Interval Number	Interval Bound	Interval Operator
INTERVAL	433fb3a0-0a15-1367-30f5-18629d22caae	1	-1.80E+307	<=
INTERVAL	433fb3a0-0a15-1367-30f5-18629d22caae	2	7	>=
KEYWORD	Range ID	Special Range Value Type	Not Used	Not Used
SPECIAL	433fb3a0-0a15-1367-30f5-18629d22caae	UNRESOLVED		
SPECIAL	433fb3a0-0a15-1367-30f5-18629d22caae	MISSING		

In the Range CSV, delete the row that is labeled **`Middle`**. See the INTERVAL row displays in the previous section. Then, set the Operation Code column to **`1`**. Optionally, for the third interval row, you can change the Range ID value to **`2`**. This value indicates that the third interval row is now the second interval row. This step is optional because BMF automatically renumbers and sorts the intervals. When BMF processes the changes in this file, the middle interval is removed.

CAUTION:

When using operation code 1, you must specify all the INTERVAL and SPECIAL row values that you want to be associated with this range, even if you are modifying only the range name. Leaving any INTERVAL or SPECIAL row out of the CSV file causes that row to be removed from the range.

Add a Range

The operation code for an addition is 3. Using this operation code in a GENERAL row adds a new range. Because the range does not yet have a UUID, you must specify an integer reference number in the Range ID column. Typically, the reference number is 1, although it can be any integer that is greater than zero. Also, the name must be unique among existing ranges in the project.

When you add an interval, you must create the INTERVAL and SPECIAL rows also. You must use the reference number in the Range ID column in the INTERVAL and SPECIAL

rows. After you create the range with BMF MODIFY and then perform a BMF GET action, the interval is assigned a UUID that you can use as the Range ID.

When specifying the SPECIAL rows, remember that there are only two SPECIAL values for a Range: UNRESOLVED and MISSING. If you add multiple values, BMF generates errors.

Delete a Range

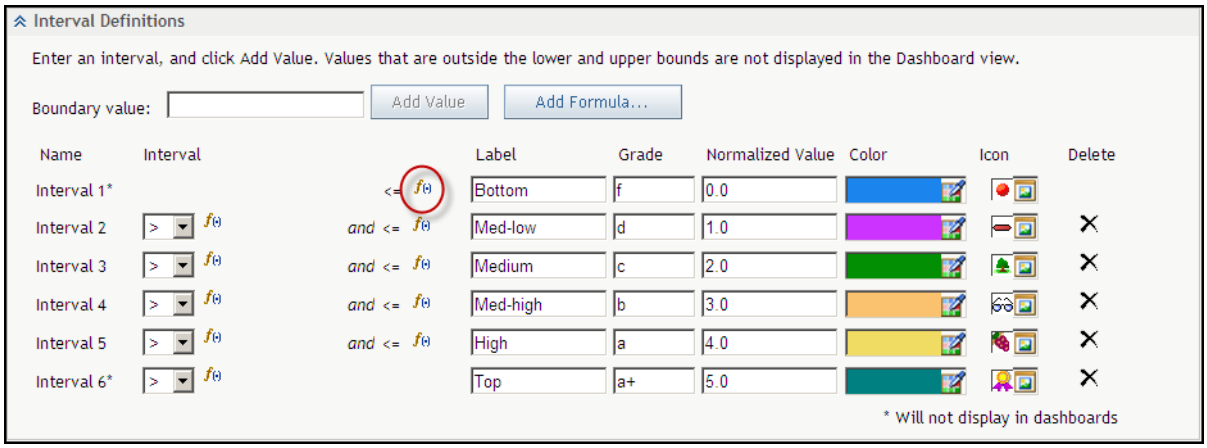
The operation code for delete is `2`. Using this operation code in a GENERAL row deletes the entire range and all interval and special values.

Defining Formula-Based Ranges Using BMF

The preceding examples of ranges in this chapter used discrete numerical values for the interval bounds. Strategy Management and BMF also support formula-based interval bounds.

The following display shows the Formula icon. This icon indicates that the interval is formula-based. In a formula-based range, all intervals must be formula-based. You cannot create a range that has some intervals that are defined by discrete values and some intervals that are defined by formula. Both the Strategy Management Builder and BMF enforce this rule.

Display A6.6 *The Interval Definitions Section with a Formula-Based Interval Bound Circled*



The following displays show a CSV data file that corresponds to the previous display. All the intervals have formulas except for the lower bound interval. Recall that the lower bound interval is set automatically. If you attempt to modify this range by adding an interval without a formula in the Interval Formula column, BMF generates an error. Also, the formula must be a valid formula. If the formula does not compile successfully, BMF generates an error.

Note: The following displays show the left and right columns of a range CSV file. The right-most columns, Normalized Value and Interval Color, are not shown.

Display A6.7 *The Same Formula-Based Intervals in a Range CSV File*

KEYWORD	Operation Code	Range ID	Range Name	Range Description		
GENERAL		43588f17-0a15-1367-30f5-186227b01a60	FormulaRange	Formula Range		
KEYWORD	Range ID	Range Interval Number	Interval Bound	Interval Operator	Interval Label	Interval Grade
INTERVAL	43588f17-0a15-1367-30f5-186227b01a60	1	-1.80E+307	<=	Bottom	f
INTERVAL	43588f17-0a15-1367-30f5-186227b01a60	2	4	>	Med-low	d
INTERVAL	43588f17-0a15-1367-30f5-186227b01a60	3	5	>	Medium	c
INTERVAL	43588f17-0a15-1367-30f5-186227b01a60	4	6	>	Med-high	b
INTERVAL	43588f17-0a15-1367-30f5-186227b01a60	5	7	>	High	a
INTERVAL	43588f17-0a15-1367-30f5-186227b01a60	6	8	>	Top	a+

Display A6.8 *More Columns in the Range CSV File*

Interval Icon	Interval Formula
images/circle06_red.gif	
images/noentry03.gif	[ELE=current('ELE')][COL='FooMetric1'][PER=current('PER')] / [ELE=current('ELE')][COL='FooMetric2'][PER=current('PER')]
images/tree_summer.gif	[ELE=current('ELE')][COL='FooMetric1'][PER=current('PER')] / [ELE=current('ELE')][COL='FooMetric2'][PER=current('PER')]+1
images/sunglasses.gif	[ELE=current('ELE')][COL='FooMetric1'][PER=current('PER')] / [ELE=current('ELE')][COL='FooMetric2'][PER=current('PER')]+2
images/fruit_grapes.gif	[ELE=current('ELE')][COL='FooMetric1'][PER=current('PER')] / [ELE=current('ELE')][COL='FooMetric2'][PER=current('PER')]+3
images/ribbon_pink.gif	[ELE=current('ELE')][COL='FooMetric1'][PER=current('PER')] / [ELE=current('ELE')][COL='FooMetric2'][PER=current('PER')]+4

Glossary

asynchronous processing
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.

information map
a collection of data items and filters that provides a user-friendly view of a data source. When you use an information map to query data for business needs, you do not have to understand the structure of the underlying data source or know how to program in a query language.

key performance indicator
a measurement that shows whether an organization is progressing toward its stated goals. Short form: KPI.

KPI
See key performance indicator.

metadata
descriptive data about data that is stored and managed in a database, in order to facilitate access to captured and archived data for further use.

middle tier
in a SAS business intelligence system, the architectural layer in which Web applications and related services execute. The middle tier receives user requests, applies business logic and business rules, interacts with processing servers and data servers, and returns information to users.

portal
a Web application that enables users to access Web sites, data, documents, applications, and other digital content from a single, easily accessible user interface. A portal's personalization features enable each user to configure and organize the interface to meet individual or role-based needs.

universal unique identifier
a number that is used to uniquely identify information in distributed systems without significant central coordination. There are 32 hexadecimal digits in a UUID, and these are divided into five groups with hyphens between them as follows: 8-4-4-4-12. Altogether the 16-byte (128 bit) canonical UUID has 32 digits and 4 hyphens, or 36 characters.

UUID
See universal unique identifier.

Your Turn

We welcome your feedback.

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

SAS® Publishing Delivers!

SAS Publishing provides you with a wide range of resources to help you develop your SAS software expertise.
Visit us online at **support.sas.com/bookstore**.

SAS® PRESS

SAS Press titles deliver expert advice from SAS® users worldwide. Written by experienced SAS professionals, SAS Press books deliver real-world insights on a broad range of topics for all skill levels.

support.sas.com/saspress

SAS® DOCUMENTATION

We produce a full range of primary documentation:

- Online help built into the software
- Tutorials integrated into the product
- Reference documentation delivered in HTML and PDF formats—free on the Web
- Hard-copy books

support.sas.com/documentation

SAS® PUBLISHING NEWS

Subscribe to SAS Publishing News to receive up-to-date information via e-mail about all new SAS titles, product news, special offers and promotions, and Web site features.

support.sas.com/spn

SOCIAL MEDIA: JOIN THE CONVERSATION!

Connect with SAS Publishing through social media. Visit our Web site for links to our pages on Facebook, Twitter, and LinkedIn. Learn about our blogs, author podcasts, and RSS feeds, too.

support.sas.com/socialmedia

sas® THE POWER TO KNOW®

SAS and all other SAS Institute Inc. product or service names are registered trademarks or trademarks of SAS Institute Inc. in the USA and other countries. ® indicates USA registration. Other brand and product names are trademarks of their respective companies. © 2010 SAS Institute Inc. All rights reserved. 56836US.0510