

Version 9 Release 1.2  
September 23, 2015

*IBMCampaign and IBM SPSS Modeler  
Advantage Marketing Edition  
Integration Guide*

**IBM**

**Note**

Before using this information and the product it supports, read the information in "Notices" on page 41.

This edition applies to version 8, release 0, modification 0 of IBM SPSS Modeler Advantage Marketing Edition and version 9, release 1, modification 2 of IBM Campaign and to all subsequent releases and modifications until otherwise indicated in new editions.

© **Copyright IBM Corporation 1998, 2015.**

US Government Users Restricted Rights – Use, duplication or disclosure restricted by GSA ADP Schedule Contract with IBM Corp.

---

# Contents

## Chapter 1. Overview: Integration of Campaign and SPSS Modeler Advantage Marketing Edition . . . . . 1

How modeling and scoring work in the IBM SPSS Modeler Advantage Marketing Edition and IBM Campaign integrated environment . . . . .	2
How predictive modeling works in IBM Campaign flowcharts . . . . .	2
How scoring works in IBM Campaign flowcharts . . . . .	3

## Chapter 2. Configuring the integration between IBM Campaign and IBM SPSS Modeler Advantage Marketing Edition .. 5

Single sign-on between IBM EMM and IBM SPSS Modeler Advantage Enterprise Marketing Management Edition . . . . .	7
Logins and roles in IBM SPSS Modeler Advantage Marketing Edition . . . . .	7
Setting up single sign-on between IBM EMM and IBM SPSS Modeler Advantage Enterprise Marketing Management Edition . . . . .	9
Setting up a system user and defining a data source . . . . .	9
Setting up user groups . . . . .	10
Setting up users with specific roles . . . . .	10
Configuring the single sign-on properties . . . . .	11
SPSS   integration . . . . .	12
SPSS   integration   partitions   partition [n] ..	13
Configuring navigation and IBM Campaign properties settings . . . . .	13
SPSS   navigation . . . . .	14
Campaign   partitions   partition[n]   server   spss . . . . .	15

Disabling or re-enabling IBM Campaign and IBM SPSS Modeler Advantage Marketing Edition integration. . . . .	16
---	----

## Chapter 3. Building and scoring models. . . . . 17

About single sign-on . . . . .	18
Changing your password on Marketing Platform . . . . .	20
Model types . . . . .	20
Automatic matching of fields . . . . .	21
Prerequisites for building and scoring models . . . . .	23
Converting an existing IBM Campaign flowchart from IBM PredictiveInsight . . . . .	25
Selecting modeling stream versions other than LATEST . . . . .	25
The SPSS Model process . . . . .	26
Best practices for creating or rebuilding a model . . . . .	26
Creating or rebuilding a model . . . . .	27
Evaluating the model . . . . .	29
The SPSS Score process . . . . .	30
Scoring using a modeling stream . . . . .	31
Automating the building and scoring of models ..	33
Troubleshooting model and score processes. . . . .	34
Example of a campaign that uses SPSS Model and SPSS Score processes . . . . .	35

## Before you contact IBM technical support . . . . . 39

<b>Notices . . . . .</b>	<b>41</b>
Trademarks . . . . .	43
Privacy Policy and Terms of Use Considerations ..	43



---

## Chapter 1. Overview: Integration of Campaign and SPSS Modeler Advantage Marketing Edition

The integration of IBM® Campaign and IBM SPSS® Modeler Advantage Marketing Edition provides a complete solution for creating predictive models, which marketers can then score to predict future customer behavior. Marketers can use modeling and scoring to reach customers who are more likely to accept an offer, which results in better response rates for marketing campaigns.

### IBM Campaign

IBM Campaign is a cross-channel marketing product that delivers personalized, relevant marketing messages across all channels. IBM Campaign allows marketers to target individuals with just the right message.

Use IBM Campaign for the following actions:

- Build an ongoing dialog with your customer or prospect through a complete history of offers that are presented, campaign details, and responses.
- Close loops by attributing responses to campaigns by using several attribution methods, including best match, fractional, multiple, and custom.
- Manage the entirety of the campaign logic, including audience segmentation, exclusions, and assignment of offers and channels.
- Enable use, reuse, and tracking of campaign building blocks, including audiences, segments, offers, treatments, and exclusion rules.

IBM Campaign is installed on IBM Marketing Platform, which provides authentication, authorization, and single sign-on (SSO).

### IBM SPSS Modeler Advantage Enterprise Marketing Management Edition

IBM SPSS Modeler Advantage Enterprise Marketing Management Edition is a predictive analytics platform that combines predictive intelligence to decision making. It provides a range of advanced algorithms and techniques, decision management, and optimization to help marketers select the actions that result in better outcomes.

Use IBM SPSS Modeler Advantage Enterprise Marketing Management Edition to improve decisions and outcomes and to extract value from customer data.

### The integrated solution

IBM Campaign communicates with IBM SPSS Modeler Advantage Marketing Edition in the following ways:

- By internal messaging
- By providing data for model creation
- By retrieving the analytical results when modeling and scoring

IBM Campaign uses these results for campaign strategy decision making.

When IBM SPSS Modeler Advantage Marketing Edition is integrated with IBM Campaign, the IBM Campaign flowchart palette includes two new process boxes:

- SPSS Model
- SPSS Score

---

## How modeling and scoring work in the IBM SPSS Modeler Advantage Marketing Edition and IBM Campaign integrated environment

When you use IBM Campaign and IBM SPSS Modeler Advantage Marketing Edition in an integrated environment, you can model and score within your IBM Campaign flowchart.

When you create a model in IBM SPSS Modeler Advantage Marketing Edition, you generate a modeling stream that you can use in an IBM Campaign flowchart. The flowchart defines your campaign logic. You can then use one or more models to score your target audience for the campaign. You can access IBM SPSS Modeler Advantage Marketing Edition directly from an IBM Campaign flowchart, so you can create, edit, and select models while you are designing a marketing campaign. You can also set up flowcharts to automate model updates and batch scoring.

### Changes from IBM PredictiveInsight

If you previously used IBM PredictiveInsight, you will no longer be able to use the legacy Model and Score process boxes. After you install IBM Campaign version 9.1.0 or later, the legacy Model and Score process boxes are unconfigured in existing flowcharts.

You must manually re-create the predictive models either by using IBM SPSS Modeler Advantage Marketing Edition or by using the SPSS Model process box.

**Note:** Legacy Model and Score process boxes are inactive and cannot be run. However, they can be viewed for configuration details.

To migrate from PredictiveInsight, you must complete the following tasks:

- Delete instances of the Model process box and replace them with the SPSS Model process box.
- Delete instances of the Score process box and replace them with the SPSS Score process box.
- Reconfigure downstream process boxes that use legacy score fields to use the new SPSS score fields.

These tasks are described in “Converting an existing IBM Campaign flowchart from IBM PredictiveInsight” on page 25.

## How predictive modeling works in IBM Campaign flowcharts

The SPSS Model process takes a single input cell for which you specify a target field to indicate what you want to predict.

For example, if you want to predict responders and non-responders, your target field might have ones for responders and zeros for non-responders. Your target field might also contain numeric values, to indicate profitability or revenue, or a categorical variable, for predicting the preferred channel or time of day for contact.

You can create a predictive model in IBM SPSS Modeler Advantage Marketing Edition to do any of the following tasks:

- Identify who is most likely to respond to an offer.
- Determine the expected value or profitability of an individual who receives an offer.
- Determine the next best action, such as cross-selling a product or service, for the target audience.
- Cluster individuals into similar groups for analysis and targeting.

## How and where to create models

You can create new predictive models, either before or during flowchart creation, or use existing modeling streams:

- Create a modeling stream in IBM SPSS Modeler Advantage Marketing Edition from within an IBM Campaign flowchart.
- Use an existing IBM SPSS Modeler Advantage Marketing Edition modeling stream within an IBM Campaign flowchart to rebuild the model by using the input data from the flowchart.
- Use a modeling stream that was created with IBM SPSS Modeler Advantage (non-marketing edition) or with IBM SPSS Modeler. You must make sure that the modeling stream can be loaded by IBM SPSS Modeler Advantage Marketing Edition. The prerequisites for using a modeling stream that was created in IBM SPSS Modeler are described in the "Sharing Streams" topic in the *IBM SPSS Modeler Advantage Guide*.

**Note:** For integration with IBM Campaign, the modeling stream must contain the numeric field SPSS\_AudID, which is the key field for the modeling stream.

## Additional tasks

You can automatically build models on a recurring schedule by using the SPSS Model process box in an IBM Campaign flowchart. You can then access the modeling stream from the SPSS Model process box in IBM Campaign to view and edit modeling options. You can evaluate the model and view the SPSS Model performance reports.

You can also manually open the modeling stream through the IBM SPSS Modeler Advantage Marketing Edition interface.

## How scoring works in IBM Campaign flowcharts

You can use the SPSS Score process box in an IBM Campaign flowchart to deploy models, such as using modeling streams to score an audience.

For example, you can use a predictive model to rate the likelihood of each customer making a purchase or responding to an offer. By using this method to score the model, you can identify the best customers or prospects for the campaign that you plan to run. You can use up to five models in a single SPSS Score process box to score the target audience in the campaign, which will use the most recent data available.

Predictive model scores are available downstream from the SPSS Score process box. You can use the score fields directly to subselect or segment your audience members.





---

## Chapter 2. Configuring the integration between IBM Campaign and IBM SPSS Modeler Advantage Marketing Edition

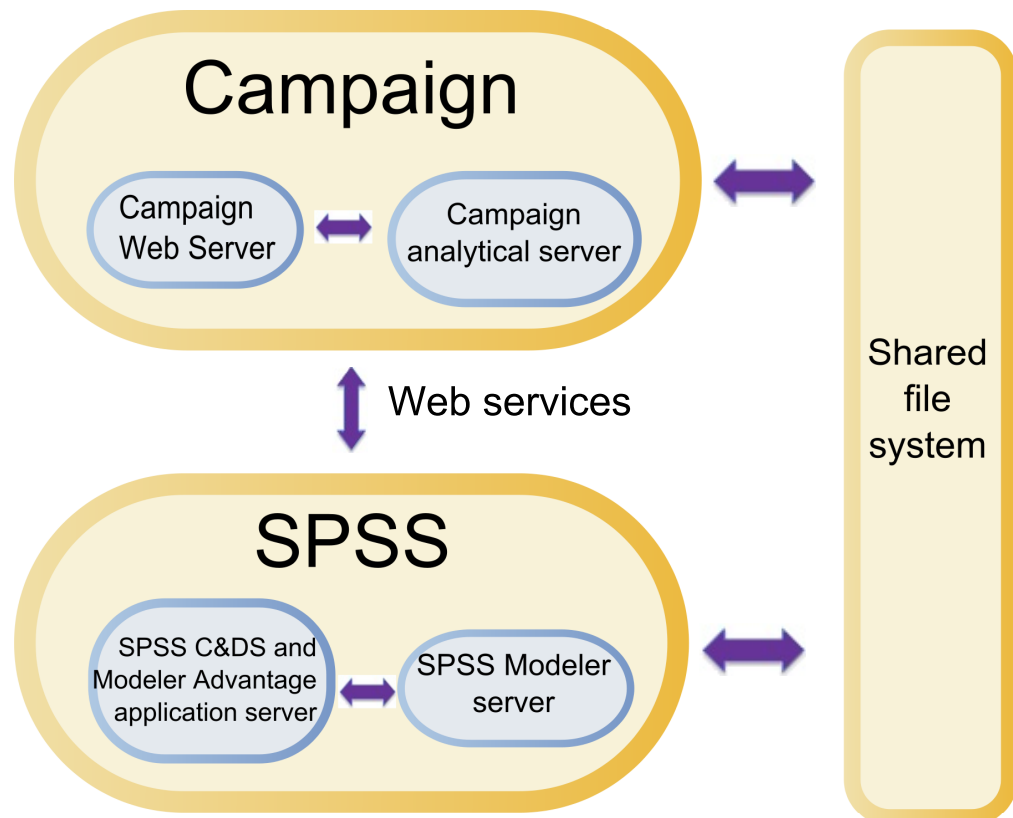
You must ensure that IBM Campaign and IBM SPSS Modeler Advantage Marketing Edition are installed and configured for integration.

### About this task

To integrate IBM Campaign and IBM SPSS Modeler Advantage Marketing Edition, install or upgrade the following components:

- IBM Marketing Platform
- IBM Campaign
- IBM SPSS Modeler Advantage Marketing Edition

The following image shows the architecture of the IBM Campaign and IBM SPSS Modeler Advantage Marketing Edition integration. Both products are linked to a shared file system. The IBM Campaign setup includes a web server and an analytical server. The IBM SPSS Modeler Advantage Marketing Edition setup includes the IBM SPSS Collaboration and Deployment Services and Modeler Advantage application server and the SPSS Modeler server.



**Note:** The steps that are described in the following table must be completed only by users with administrative security permissions.

## Procedure

The following table provides an overview of the configuration process.

Table 1. Configuring the integration between IBM Campaign and IBM SPSS Modeler Advantage Marketing Edition

Task	Details	Documentation
1. Install or upgrade the software.	<p>Use the IBM EMM installer (9.1.0 or later) to install or upgrade the following components to the same version, in the order listed:</p> <ol style="list-style-type: none"> <li>1. IBM Marketing Platform</li> <li>2. IBM Campaign</li> <li>3. IBM SPSS Modeler Advantage Marketing Edition (version 8.0.0 or later)</li> </ol> <p><b>Note for installing:</b> When you install IBM SPSS Modeler Advantage Marketing Edition, make sure to use the native repository configuration.</p> <p><b>Note for upgrading:</b> Installing IBM SPSS Modeler Advantage Marketing Edition automatically uninstalls PredictiveInsight and removes PredictiveInsight configuration parameters from Marketing Platform.</p>	<p>Installation and upgrades are described in the following documents:</p> <ol style="list-style-type: none"> <li>1. <i>IBM Marketing Platform Installation Guide</i> or <i>IBM Marketing Platform Upgrade Guide</i></li> <li>2. <i>IBM Campaign Installation Guide</i> or <i>IBM Campaign Upgrade Guide</i></li> <li>3. <i>IBM SPSS Modeler Advantage Marketing Edition Installation Guide</i></li> </ol>
2. If IBM SPSS Modeler Advantage Marketing Edition is deployed in BEA WebLogic, configure the Oracle WebLogic domain.	<p>In Oracle WebLogic, add the following lines to the config.xml file:</p> <pre>&lt;enforce-valid-basic-auth-credentials&gt; false &lt;/enforce-valid-basic-auth-credentials&gt; &lt;/security-configuration&gt;</pre>	<p>This configuration is described in the <i>IBM SPSS Modeler Advantage Marketing Edition Installation Guide</i>.</p>
3. Configure single sign-on.	<p>Single sign-on (SSO) allows users to access IBM SPSS Modeler Advantage Marketing Edition from within the IBM EMM user interface without being prompted to log in.</p> <p>Single sign-on is configured on Marketing Platform.</p>	<p>Information about single sign-on is described in “Single sign-on between IBM EMM and IBM SPSS Modeler Advantage Enterprise Marketing Management Edition” on page 7.</p> <p>Additional configuration information is described in <i>IBM Marketing Platform Administration Guide</i>.</p>
4. Create shared directories.	<p>A shared directory that is accessible by both IBM Campaign and IBM SPSS Modeler Advantage Marketing Edition is used to transfer data between the two applications. Each partition requires its own shared directory.</p> <p>The shared directory that is created in this step is the directory pointed to by the configuration settings in the next step.</p>	<p>This task is typically completed by IT or other technical personnel.</p>
5. Adjust configuration settings.	<p>You must adjust the configuration settings to specify the IBM SPSS Collaboration and Deployment Services server and the Decision Management server. You must also adjust the configuration settings for each IBM Campaign partition where you want to enable integration with IBM SPSS Modeler Advantage Marketing Edition.</p>	<p>The configuration properties are described in “Configuring navigation and IBM Campaign properties settings” on page 13.</p>

---

## Single sign-on between IBM EMM and IBM SPSS Modeler Advantage Enterprise Marketing Management Edition

You can enable single sign-on to allow users to navigate to IBM SPSS Modeler Advantage Marketing Edition from within the IBM EMM user interface without being prompted to log in.

After single sign-on is configured, users who are logged in to IBM EMM can navigate to IBM SPSS Modeler Advantage Marketing Edition by using either of the following options:

- By clicking **Analytics > SPSS** to view the user's Decision Management home page.
- By clicking the links in the SPSS Model and SPSS Score process boxes in an IBM Campaign flowchart to view the Model and Score tabs of the modeling stream.

Single sign-on is supported for all authentication methods in IBM SPSS Modeler Advantage Marketing Edition. Single sign-on is also supported with all of the authentication mechanisms that are supported for IBM EMM:

- Authentication through Marketing Platform
- Authentication through supported LDAP servers
- Authentication through supported web-access control platforms

### Prerequisites for single sign-on

Your environment must meet the following prerequisites before you implement single sign-on.

- You must have fully functional installations of the following before you can configure single sign-on:
  - Marketing Platform version 9.1.0 or later
  - IBM SPSS Modeler Advantage Marketing Edition version 8.0.0 or later
- Your installation of IBM SPSS Modeler Advantage Marketing Edition must use the native repository configuration. This configuration is described in the *IBM SPSS Modeler Advantage Guide*.

### Partition support with single sign-on

You need only a single instance of IBM SPSS Modeler Advantage Marketing Edition regardless of the number of partitions that you have in your IBM EMM environment. You can configure each partition independently and specify whether users have access to IBM SPSS Modeler Advantage Marketing Edition. The members of each partition can see and access the modeling streams and data that were created within their own partition only. Each modeling stream that is created in IBM SPSS Modeler Advantage Marketing Edition is available only in the partition in which it was created.

## Logins and roles in IBM SPSS Modeler Advantage Marketing Edition

Marketing Platform defines two user roles for integration: SPSSadmin and SPSSuser. IBM Campaign users who are assigned one of these roles in IBM Campaign have the corresponding permissions in IBM SPSS Modeler Advantage Marketing Edition. These permissions cannot be changed in IBM Campaign.

You can assign either or both of these roles to an IBM Campaign user. The roles specify the operations that users can perform in the integration. Users with the SPSSadmin role can perform all administrative operations in IBM SPSS Modeler Advantage Marketing Edition. Users with the SPSSUser role can open IBM SPSS Modeler Advantage Marketing Edition to build and score models. You assign these roles to users on the Users page for the partition.

**Note:** You can modify permissions for single sign-on users in IBM SPSS Modeler Advantage Marketing Edition by using IBM SPSS Collaboration and Deployment Services.

How you manage roles and permissions for single sign-on users depends on whether the users have accounts in IBM SPSS Modeler Advantage Marketing Edition before single sign-on is configured. Typically, users will not have existing logins for IBM SPSS Modeler Advantage Marketing Edition.

The following table describes the different login situations for users in the integrated environment.

*Table 2. Login situations for users in the integrated environment*

User login situation	Actions required
No existing login	<p>Set up new users with logins on Marketing Platform with a role of either SPSSuser or SPSSadmin.</p> <p>When users access IBM SPSS Modeler Advantage Marketing Edition from Marketing Platform or from within an IBM Campaign flowchart for the first time, Marketing Platform automatically creates their logins on IBM SPSS Modeler Advantage Marketing Edition.</p> <p>The IBM SPSS Modeler Advantage Marketing Edition logins and passwords are stored in the automatically created SPSS_CRED_DS data source that is defined in the user profiles.</p>
Existing IBM Campaign login	<p>In Marketing Platform, assign the role of either SPSSuser or SPSSadmin to existing IBM Campaign users.</p> <p>When users access IBM SPSS Modeler Advantage Marketing Edition from Marketing Platform or from within an IBM Campaign flowchart for the first time, Marketing Platform automatically creates their logins on IBM SPSS Modeler Advantage Marketing Edition.</p> <p>The IBM SPSS Modeler Advantage Marketing Edition user IDs are the same user IDs in Marketing Platform and IBM Campaign. The IBM SPSS Modeler Advantage Marketing Edition logins and passwords are stored in the automatically created SPSS_CRED_DS data source that is defined in the user profiles.</p>
IBM SPSS Modeler Advantage Marketing Edition login	<p>Set up existing IBM SPSS Modeler Advantage Marketing Edition users with new logins on Marketing Platform.</p> <p>To associate the IBM SPSS Modeler Advantage Marketing Edition user IDs with the Marketing Platform user IDs, manually create the SPSS_CRED_DS credentials, which reference the IBM SPSS Modeler Advantage Marketing Edition user IDs.</p> <p>The steps for manually creating credentials are described in “Setting up users with specific roles” on page 10.</p> <p><b>Note:</b> Users maintain their existing IBM SPSS Modeler Advantage Marketing Edition roles.</p>

---

## Setting up single sign-on between IBM EMM and IBM SPSS Modeler Advantage Enterprise Marketing Management Edition

To set up single sign-on in the integrated environment, complete the following tasks in the order listed.

### About this task

**Note:** Each of the following steps is a separate task.

### Procedure

1. "Setting up a system user and defining a data source"
2. Optional: "Setting up user groups" on page 10
3. "Setting up users with specific roles" on page 10
4. "Configuring the single sign-on properties" on page 11

## Setting up a system user and defining a data source

Select or create an IBM EMM system user and configure a data source for this user.

### About this task

A system user is the user account that IBM EMM uses to communicate with IBM SPSS Modeler Advantage Marketing Edition. This account is associated with a corresponding IBM SPSS Modeler Advantage Marketing Edition system user that is used to build and score models in IBM SPSS Modeler Advantage Marketing Edition.

To set up a system user and define a data source, complete the following steps.

### Procedure

1. In IBM SPSS Modeler Advantage Marketing Edition, create or identify a user account that has permissions to build and score models.  
Note the user name and password for this IBM SPSS Modeler Advantage Marketing Edition account.
2. In Marketing Platform, create or identify an account to configure as the system user. Give the system user the SPSSAdmin role in Marketing Platform, either by making the user a member of a group with this role or by assigning the role individually.

**Note:** You can use the platform\_admin user account. Because this user is a member of all partitions, the data source is available in all partitions.

3. On the system user's detail page, click **Edit Data Sources > Add New**.
4. Complete the fields as follows.
  - **Data Source:** Type any name. It is convenient to use SPSS\_MA\_ADMIN\_DS because this is the default value of the SPSS | Integration | SPSSCredentialDatasource property. The value of this property must be the name of this data source.
  - **Data Source Login:** Type the system user's IBM SPSS Modeler Advantage Marketing Edition login name.
  - **Data Source Password:** Type the system user's IBM SPSS Modeler Advantage Marketing Edition password.
5. Save your changes.

## Setting up user groups

You might want to create two groups to correspond to the SPSSadmin and SPSSuser roles. Alternatively, if you have only a few users, you can assign roles individually without creating groups.

### About this task

**Note:** If you have multiple partitions, you must complete this task in every partition where users require single sign-on.

To set up user groups, complete the following steps.

### Procedure

1. Log in to IBM EMM as an Admin user and navigate to the **Settings > User Groups** page.
2. Create or identify one or more groups of IBM SPSS Modeler Advantage Marketing Edition single sign-on users.
3. Assign the appropriate role or roles to your group or groups.
4. Save your changes.

## Setting up users with specific roles

You must set up users in the integration and either assign them to a group or assign them a role. If necessary, you can manually create data source credentials and change passwords for users.

### About this task

IBM EMM uses the SPSS\_CRED\_DS data source to log in users to IBM SPSS Modeler Advantage Marketing Edition. For users who have an existing account, the system automatically creates a login and SPSS\_CRED\_DS data source the first time that they use single sign-on to access IBM SPSS Modeler Advantage Marketing Edition. You might need to manually create data sources for users who have existing IBM SPSS Modeler Advantage Marketing Edition accounts.

Both users and administrators can change the password in the user's data source. If users with existing logins change their passwords in IBM SPSS Modeler Advantage Marketing Edition, they must also change their Marketing Platform password to match. Otherwise, the login attempt will fail with an authentication error.

If you set a new password in the user's data source in Marketing Platform, the user's IBM SPSS Modeler Advantage Marketing Edition credentials are reset to the password you specify.

**Note:** If you have multiple partitions, you must complete this task in every partition where you have users who require single sign-on.

To set up users with specific roles, complete the following steps.

### Procedure

1. Navigate to the **Settings > Users** page.
2. Create or identify IBM EMM user accounts for users who require single sign-on access to IBM SPSS Modeler Advantage Marketing Edition.

3. For users with existing IBM SPSS Modeler Advantage Marketing Edition accounts, create a data source for each user by completing the following steps:
  - a. On each user's detail page, click **Edit Data Sources > Add New**.
  - b. Complete the fields.
    - **Data Source:** Type **SPSS\_CRED\_DS**, which is the required name of the data source for every user.
    - **Data Source Login:** Type the user's IBM SPSS Modeler Advantage Marketing Edition login name.
    - **Data Source Password:** Type the user's IBM SPSS Modeler Advantage Marketing Edition password.
4. To assign a user role to single sign-on users, complete one of the following steps:
  - Make each user a member of one of the groups that you created for single sign-on.
  - For each user, assign SPSSuser or SPSSadmin roles.
5. Save your changes.

## Configuring the single sign-on properties

Properties in the Integration node specify the name of the Marketing Platform account in which the data source is configured to store credentials for single sign-on users. For each partition that you want to be used in the integration, configure the single sign-on properties. Data for each partition is distinct and separate from every other partition.

### About this task

The default partition in Marketing Platform is named partition1. Only a single installation of IBM SPSS Modeler Advantage Marketing Edition is required even when integrated with a Marketing Platform installation that has multiple partitions.

The view, operations, and data of a user of a particular partition is available to that partition only. For example, a user from partition 1 cannot view, modify, or use the data for partition 2.

**Note:** Partitions cannot be deleted. However, the integration for such partitions can be disabled.

To configure the single sign-on properties, complete the following steps.

### Procedure

1. Navigate to the **Settings > Configuration** page.
2. Set the **SPSS | Integration** parameters. More information about these parameters is described in "SPSS | integration" on page 12.

Property	Value
<b>SPSS   Integration   Platform user for IBM SPSS account</b>	Enter the login name for the IBM SPSS Modeler Advantage Marketing Edition account that you created or identified in "Setting up a system user and defining a data source" on page 9.

Property	Value
<b>SPSS   Integration   Datasource for IBM SPSS account</b>	Set this property to the name of the data source you created for the system user in “Setting up a system user and defining a data source” on page 9.  If you used <b>SPSS_MA_ADMIN_DS</b> as the data source name, you can retain the default value of this property.
<b>SPSS   Integration   Is this score only integration</b>	Not supported.

- Set the **SPSS | Integration | partitions** parameters. More information about these parameters is described in “SPSS | integration | partitions | partition [n]” on page 13.

Property	Value
<b>SPSS   Integration   partitions   partition[n]   Enable IBM SPSS</b>	Set this property to <b>TRUE</b> .  For each partition that has single sign-on users, you must use <b>SPSS MA EMM Edition   Integration   partitions   partitionTemplate</b> to create the <b>enableSPSS</b> configuration property. The name of the category you create with the template must exactly match the name of the corresponding Campaign partition. The default partition1 already has the <b>enableSPSS</b> configuration property, so you do not have to use the template to create it.

## SPSS | integration

Properties in this category are used to configure Marketing Platform for single sign-on with IBM SPSS Modeler Advantage Marketing Edition.

### Platform user for IBM SPSS account

#### Description

Enter the login name for the IBM SPSS Modeler Advantage Marketing Edition account that you created or identified for single sign-on with IBM SPSS Modeler Advantage Marketing Edition.

#### Default value

asm\_admin

#### Availability

This property is used only to configure Marketing Platform for single sign-on with IBM SPSS Modeler Advantage Marketing Edition.

### Datasource for IBM SPSS account

#### Description

Set this property to the name of the data source you created for the system user when you configured single sign-on with IBM SPSS Modeler Advantage Marketing Edition. If you used **SPSS\_MA\_ADMIN\_DS** as the data source name, you can retain the default value of this property.

#### Default value



SPSS\_MA\_ADMIN\_DS

**Availability**

This property is used only to configure Marketing Platform for single sign-on with IBM SPSS Modeler Advantage Marketing Edition.

**Is this score only integration**

**Description**

Not supported.

**Default value**

FALSE

**Availability**

This property is used only to configure Marketing Platform for single sign-on with IBM SPSS Modeler Advantage Marketing Edition.

## **SPSS | integration | partitions | partition [n]**

The property in this category is used to configure Marketing Platform for single sign-on with IBM SPSS Modeler Advantage Marketing Edition.

### **Enable IBM SPSS**

**Description**

Set this property to TRUE to enable single sign-on with IBM SPSS Modeler Advantage Marketing Edition.

For each partition where you have users who should have single sign-on, you must use the **SPSS MA EMM Edition | Integration | partitions | partitionTemplate** to create the **enableSPSS** configuration property for that partition. The name of the category you create with the template must exactly match the name of the corresponding Campaign partition. The default partition1 already has the **Enable IBM SPSS** configuration property, so you do not have to use the template to create it.

**Default value**

FALSE

**Availability**

This property is used only to configure Marketing Platform for single sign-on with IBM SPSS Modeler Advantage Marketing Edition.

---

## **Configuring navigation and IBM Campaign properties settings**

You must adjust the configuration settings to specify the IBM SPSS Collaboration and Deployment Services server. You must also adjust the configuration settings for each IBM Campaign partition where you want to enable integration with IBM SPSS Modeler Advantage Marketing Edition.

### **About this task**

Navigation properties for SPSS configuration specify the URL for the IBM SPSS Decision Management server and the server and port for the IBM SPSS Collaboration and Deployment Services server. In most cases, the IBM SPSS

Collaboration and Deployment Services server and port are specified in the URL for the SPSS Decision Management server.

To configure the navigation and IBM Campaign properties settings, complete the following steps.

### Procedure

1. Navigate to **Settings > Configuration > SPSS | Navigation** and adjust the settings to define the appropriate URLs.  
More information about these parameters is described in “SPSS | navigation.”
2. For each IBM Campaign partition where you want to enable integration, navigate to **Settings > Configuration > Campaign | partitions | partition[n] | server | spss** and adjust the settings.  
More information about these parameters is described in “Campaign | partitions | partition[n] | server | spss” on page 15.

## SPSS | navigation

Properties in this category affect IBM SPSS Modeler Advantage Marketing Edition integration with IBM Campaign. These properties define the location of the Decision Management server and the IBM SPSS Collaboration and Deployment Services server.

### IBM SPSS Decision Management Server URL

#### Description

The URL for the IBM SPSS decision management server. Configure this URL with server name or server IP address followed by the port on which IBM SPSS Modeler Advantage Marketing Edition is hosted on the server.

#### Default value

One of the following formats:

- http://<server name>:<port>/DM
- http://<server IP address>:<port>/DM

#### Valid values

The URL for the IBM SPSS decision management server.

### C&DS Server

#### Description

The name of the IBM SPSS Collaboration and Deployment Services server.

#### Default value

None

#### Valid values

Valid server name or server IP address on which IBM SPSS Collaboration and Deployment Services is installed and configured.

### C&DS Port

#### Description

The port where the IBM SPSS Collaboration and Deployment Services server is located.

**Default value**

None

**Valid values**

Valid port number on which IBM SPSS Collaboration and Deployment Services is hosted.

## **Campaign | partitions | partition[n] | server | spss**

Properties in this category affect IBM SPSS Modeler Advantage Marketing Edition integration for the specified partition in IBM Campaign.

### **SharedDirectoryPathCampaign**

**Description**

The path to the directory that is used to transfer data between IBM Campaign and IBM SPSS Modeler Server, as seen from IBM Campaign.

- IBM Campaign puts input data files to IBM SPSS Modeler Advantage Marketing Edition in this directory.
- IBM SPSS Modeler Advantage Marketing Edition puts output data files in this directory to be read and processed by IBM Campaign.

**Default value**

None

**Valid values**

Any valid Windows path (such as Z:\SPSS\_Shared) or a mount directory (for UNIX).

### **SharedDirectoryPathSPSS**

**Description**

The path to the directory that is used to transfer data between IBM Campaign and IBM SPSS Modeler Server, as seen from IBM SPSS Modeler Server. This is the same shared directory referenced by SharedDirectoryPathCampaign but is the local directory path used by IBM SPSS Modeler Server.

For example, IBM Campaign might be installed on Windows with SharedDirectoryPathCampaign = Z:\SPSS\_Shared, where Z:\SPSS\_Shared is a mapped network drive, while IBM SPSS Modeler Server is installed on UNIX with a mount to that directory defined as SharedDirectoryPathSPSS = /share/CampaignFiles.

**Default value**

None

**Valid values**

Any valid Windows path (such as Z:\SPSS\_Shared) or a mount directory (such as /share/CampaignFiles) for UNIX.

### **C&DS\_URL**

**Description**

The URL for the IBM SPSS Collaboration and Deployment Services repository.

**Default value**

http://localhost:7001/cr-ws/services/ContentRepository

**Valid values**

The URL for the IBM SPSS Collaboration and Deployment Services repository.

## **SPSS\_Integration\_Type**

**Description**

This property determines the type of integration between IBM Campaign and IBM SPSS Modeler Advantage Marketing Edition.

**Default value**

None

**Valid values**

- None: No integration
- SPSS MA Marketing Edition: Full integration of modeling and scoring. This option is only available if IBM SPSS Modeler Advantage Marketing Edition is installed and configured.
- Scoring only: Scoring, but not modeling, is enabled.

---

## **Disabling or re-enabling IBM Campaign and IBM SPSS Modeler Advantage Marketing Edition integration**

Although it is possible to disable integration of IBM Campaign and IBM SPSS Modeler Advantage Marketing Edition, it is best to avoid this action if possible. The disabling and re-enabling tasks can only be performed by users with administrative security permissions.

### **Disabling the integration**

If you disable the integration, you can no longer navigate to IBM SPSS Modeler Advantage Marketing Edition from within IBM EMM. The SPSS Model and SPSS Score process boxes will no longer appear in the flowchart palette in IBM Campaign. Although the SPSS Model and SPSS Score process boxes continue to appear in any existing flowcharts, they will generate errors when you attempt to open the process boxes or run the flowcharts.

To disable the integration, navigate to the **Settings > Configuration** page and set the **SPSS | Integration | partitions | partition[n] | Enable IBM SPSS** property to false.

### **Re-enabling the integration**

If you have not uninstalled the IBM SPSS Modeler Advantage Marketing Edition product, you can re-enable the integration by navigating to the **Settings > Configuration** page and setting the **SPSS | Integration | partitions | partition[n] | Enable IBM SPSS** property to true.

---

## Chapter 3. Building and scoring models

After IBM Campaign and IBM SPSS Modeler Advantage Marketing Edition are integrated, you can use the SPSS Model and SPSS Score process boxes within an IBM Campaign flowchart. Use the SPSS Model and SPSS Score process boxes to open IBM SPSS Modeler Advantage Marketing Edition to view and configure the modeling and scoring options.

### About this task

**Note:** The SPSS Model and SPSS Score process boxes appear in the IBM Campaign flowchart palette only if IBM SPSS Modeler Advantage Marketing Edition integration is enabled.

This process overview describes how to use the SPSS Model and SPSS Score process boxes within an IBM Campaign flowchart. Additional information is described in the following documents:

- Flowcharts, sessions, and campaigns are described in detail in the *IBM Campaign User's Guide*.
- Modeling and scoring are described in detail in the *IBM SPSS Modeler Advantage Guide*.

### Procedure

The following table provides an overview of how to build and score a model in IBM Campaign and IBM SPSS Modeler Advantage Marketing Edition.

Table 3. Building and scoring models process overview

Task	Description	Documentation
1. Use IBM Campaign to design your flowchart.	For example, start with a Select process box. Add an SPSS Model process box downstream and connect the upstream process to provide input.	This task is described in "Creating or rebuilding a model" on page 27.
2. Configure the SPSS Model process box.	<ol style="list-style-type: none"><li>1. Create a predictive model or use an existing modeling stream.</li><li>2. Select the target fields and candidate fields to consider while modeling.</li><li>3. Save your changes and close the SPSS Model process box.</li></ol>	This task is described in "Creating or rebuilding a model" on page 27.
3. Save and run the flowchart.	Make sure that the model builds successfully.	This task is described in "Creating or rebuilding a model" on page 27.
4. Evaluate the model.	You can generate model performance reports to evaluate the model's predictive accuracy.	This task is described in "Evaluating the model" on page 29.

Table 3. Building and scoring models process overview (continued)

Task	Description	Documentation
5. Add an SPSS Score process box downstream of the SPSS Model process box.	To ensure that the scoring process runs only after modeling is complete, add a temporal connection between the SPSS Model process box and the SPSS Score process box. <b>Note:</b> A solid line connects the process box whose output cell is used by the Select process. A dotted line connects the process box whose output is not used as input but has only a temporal relationship with the Select process.	This task is described in “Scoring using a modeling stream” on page 31.
6. Configure the SPSS Score process box.	You can select up to five modeling streams to use for scoring.	This task is described in “Scoring using a modeling stream” on page 31.
7. Ensure that the variables that are required by each model are properly matched.	Verify that all fields are matched. For any fields that are not automatically matched, select each model and click <b>Match Variables</b> .	This task is described in “Scoring using a modeling stream” on page 31.
8. Optional: Automate the flowchart to run periodically.	You can either use the Schedule process in your flowchart or configure the IBM EMM Scheduler.	This task is described in “Scoring using a modeling stream” on page 31. See the <i>IBM Campaign User’s Guide</i> for information about the Scheduler.
9. Save and run the flowchart.		This task is described in “Scoring using a modeling stream” on page 31.
10. Troubleshoot any errors.		This task is described in “Troubleshooting model and score processes” on page 34.

## Flowchart of a periodic scoring process

In the following example, the flowchart starts with a Schedule process that runs the flowchart every month. It is connected to a Select process that generates a list of customer IDs from your marketing data. The IDs are then sent to an SPSS Score process for scoring against a model. Finally, the results of the SPSS Score process are sent to a Snapshot process to be written to a database table for use by marketing campaigns.



## About single sign-on

Single sign-on allows users to access IBM SPSS Modeler Advantage Marketing Edition from Marketing Platform or from an IBM Campaign flowchart. To use single sign-on, you must have a login and password on Marketing Platform with a role of either SPSSuser or SPSSadmin.

System administrators set up users in both IBM SPSS Modeler Advantage Marketing Edition and IBM Campaign through Marketing Platform. For users who already have logins on IBM SPSS Modeler Advantage Marketing Edition, their

passwords are reset during this setup process. System administrators can provide users with their new passwords. Users can then change their IBM SPSS Modeler Advantage Marketing Edition passwords by editing their SPSS\_CRED\_DS credentials in their Marketing Platform user profiles.

Users do not need their IBM SPSS Modeler Advantage Marketing Edition passwords if they are accessing IBM SPSS Modeler Advantage Marketing Edition only through Marketing Platform or IBM Campaign.

**Note:** You might share an IBM SPSS Modeler Advantage Marketing Edition login with other IBM Campaign users. Talk to your administrator to understand how users were set up in your integration.

## Accessing IBM SPSS Modeler Advantage Marketing Edition

You can access IBM SPSS Modeler Advantage Marketing Edition in the following ways:

- In Marketing Platform, select **Analytics > SPSS** to open an IBM SPSS Modeler Advantage Marketing Edition window. If you do not see this option, talk to your administrator.
- In IBM Campaign, create a flowchart and add an SPSS Model or SPSS Score process box. Double-click the box and click **Open Modeler Advantage Session** to open an IBM SPSS Modeler Advantage Marketing Edition window.

## Logging out and re-entering IBM SPSS Modeler Advantage Marketing Edition

You must log out of the IBM SPSS Modeler Advantage Marketing Edition browser window. Do not exit by closing the browser window. You are still logged in to IBM Campaign.

After you log out of the IBM SPSS Modeler Advantage Marketing Edition window, the message Application exited is displayed with a **Re-enter** button. To re-enter IBM SPSS Modeler Advantage Marketing Edition, click **Re-enter** and type your IBM SPSS Modeler Advantage Marketing Edition user ID and password to display the Decision Management home page. If you do not know your IBM SPSS Modeler Advantage Marketing Edition login ID, you can reenter IBM SPSS Modeler Advantage Marketing Edition from the IBM EMM suite.

## Changing roles

If your role on Marketing Platform changes between user and admin, your permissions in IBM SPSS Modeler Advantage Marketing Edition are not affected. If your role in IBM SPSS Modeler Advantage Marketing Edition changes, your administrator needs to do one of the following tasks:

- Modify the permissions that you have within IBM SPSS Modeler Advantage Marketing Edition through IBM SPSS Collaboration and Deployment Services.
- Create a new IBM SPSS Modeler Advantage Marketing Edition login and password for you. Your administrator also needs to disable or change the password on your previous IBM SPSS Modeler Advantage Marketing Edition account to prevent it from being used.

## Changing your password on Marketing Platform

Users can change their integration passwords in Marketing Platform in their SPSS\_CRED\_DS data source.

### Before you begin

You must know the password for your IBM SPSS Modeler Advantage Marketing Edition login. If you do not know this password, ask your administrator to reset your password.

### About this task

To change your integration password, complete the following steps.

### Procedure

1. Log in to Marketing Platform.
2. Navigate to **Settings > User**.
3. In the left pane, click your user name.
4. In the right pane, click **Edit Data Sources**.
5. For the SPSS\_CRED\_DS data source, type your new password in the **Data Source Password** field and in the **Confirm Password** field.
6. Click **Save Changes**.

---

## Model types

IBM SPSS Modeler Advantage Marketing Edition supports four model types. However, Predictive models are the only type of model that you can create when you use the SPSS Model process in an IBM Campaign flowchart. Although IBM Campaign restricts which types of models can be created in the SPSS Model process box, any of the four model types can be used for scoring in the SPSS Score process box.

The following table describes the four model types.

Table 4. IBM SPSS Modeler Advantage Marketing Edition model types

Model type	Description	Restrictions
Predictive	Build a model to predict a chosen target of interest.  For example, turn a loss into a profit by targeting the best available customers for your next campaign.	Default model type that you create from an SPSS Model process box. The <b>Target</b> field must contain the text or numeric values for the model to predict.
Predictive Rule	Interactively build a model that identifies segments that show a higher or lower likelihood relative to a specific outcome.  Use a predictive rule model to create rules to segment customer data. You can use the rule-finder function to automatically find segments with high or low concentrations of the TRUE value for your chosen target field. For example, look for customers who gave a positive response to your campaign, and then identify segments with a higher probability of responding.	Cannot be created or used in an SPSS Model process box but can be used in an SPSS Score process box. To build a Predictive Rule model, you must create and build the modeling stream from the IBM SPSS Modeler Advantage Marketing Edition user interface.  Supports only categorical targets.



Table 4. IBM SPSS Modeler Advantage Marketing Edition model types (continued)

Model type	Description	Restrictions
Clustering	Build a model that categorizes records into groups with similar characteristics.  For example, you can segment customers based on demographic characteristics or purchasing behavior.	To build a Clustering model, you must start IBM SPSS Modeler Advantage Marketing Edition from the SPSS Model process box. Then, change the model type to Clustering and save the modeling stream. The specified <b>Target</b> field from the SPSS Model process box is used as the <b>Evaluation</b> field. The <b>Evaluation</b> field and other clustering options are described in the <i>IBM SPSS Modeler Advantage Guide</i> .
Association	Build a model that predicts which items are most likely to appear together and predicts the strength of the relationship between them.  For example, identify the next most likely purchase for a customer based on the items in the current basket.	To build an Association model, you must start IBM SPSS Modeler Advantage Marketing Edition from the SPSS Model process box. Then, change the model type to Association and save the modeling stream. The <b>Target</b> field from the SPSS Model process box must specify the field that contains the content. The <b>Content</b> field and other association options are described in the <i>IBM SPSS Modeler Advantage Guide</i> .

### Predictive Rule models

The Predictive Rule model type is not supported in the SPSS Model process box in an IBM Campaign flowchart. If you open IBM SPSS Modeler Advantage Marketing Edition from an IBM Campaign SPSS Model process box, you cannot create Predictive Rule models or change from another model type to a Predictive Rule model.

If you change the model type of the modeling stream to Predictive Rule, the SPSS Model process box displays an error and will not configure. However, you can manually run Predictive Rule models through the IBM SPSS Modeler Advantage Marketing Edition interface and build them interactively.

Predictive rule models can be selected for scoring in SPSS Score process boxes.

---

### Automatic matching of fields

When you use an existing modeling stream, the fields are automatically matched when you configure SPSS Model and SPSS Score process boxes. The automatic matching process finds the first occurrence of an exact field name from mapped tables and matches it to the required field from the modeling stream.

Both the SPSS Model and SPSS Score process boxes perform automatic field matching of cell fields to modeling stream fields. This can cause issues where a field is not matched because IBM Campaign and IBM SPSS Modeler Advantage Marketing Edition use different mechanisms to interpret field types.

For example:

In IBM Campaign, a cell field that contains numbers within strings, such as 1512 and 100, is of type string. In IBM SPSS Modeler Advantage Marketing Edition, that data is determined to be numeric. In such cases auto-match fails and you must match fields manually in the SPSS Model or SPSS Score process box.

The following sections describe the situations in which modeling stream fields are automatically matched.

## Run a flowchart

Modeling stream fields are automatically matched when you run a flowchart in which the modeling stream contains unmatched fields. Fields might not be matched in a configured SPSS Model or SPSS Score process box if you changed the modeling stream after you saved the configuration in the SPSS Model process box. For example, if you add candidate fields in an SPSS Score process box, these fields are unmatched in the modeling stream.

- If the model is rebuilt, new fields that are not matched in the SPSS Model process box are automatically matched.
- If the model is scored, new fields that are not matched in the SPSS Score process box are automatically matched.

The flowchart run succeeds if matching is successful. If matching is not successful, the run fails and you must manually match fields before the process can be rerun.

If you did not change any fields, then the fields are not automatically matched. This action prevents any matches that you provided from being overwritten.

In the following example, you configured the SPSS Score process box to match variables between the IBM Campaign flowchart and the modeling stream. So A matches A, B1 (which you manually overwrote) matches B, and C matches C.

Field from IBM Campaign flowchart	Variable that is required by modeling stream
A	A
B1 For this field, you manually overwrote the automatic match.	B
C	C

If the modeling stream is changed and now requires variables A, B, and D, your previous matches are preserved and only the new variable D is automatically matched. So A still matches A, B1 still matches B, and the new variable D matches D.

Field from IBM Campaign flowchart	Variable that is required by modeling stream
A	A
B1	B
D The field D is automatically matched at run time.	D

## Open SPSS Model or SPSS Score process box in flowchart edit mode

Modeling stream fields are automatically matched when you select a modeling stream in the SPSS Model process with the **Use existing modeling stream** option.

When you open an SPSS Model or SPSS Score process box, IBM Campaign retrieves metadata about the configured modeling streams from IBM SPSS Modeler Advantage Marketing Edition:

- For any mismatches of the modeling stream fields, a warning is displayed.
- Any matches that you set up on the existing modeling stream fields are retained.
- Any deleted fields are deleted from the mapping.
- For new fields, you can use the **Match** button to automatically match fields or use the **Add** button to manually match fields.

### **Modify fields in an IBM SPSS Modeler Advantage session**

Modeling stream fields are automatically matched when you select a modeling stream in the SPSS Score process box.

When you modify modeling stream fields in IBM SPSS Modeler Advantage, IBM Campaign does not have information about the session or any changes you made there.

- When you click **OK** in the SPSS Model or SPSS Score process configuration dialog, the existing configuration in the process box is saved. However, IBM Campaign does not get the latest modeling stream metadata. If required fields changed from the last time the configuration window was opened, click **OK**. Then, reopen the process box to update those fields for the modeling stream.
- When you open the SPSS Model or SPSS Score process box, IBM Campaign retrieves the latest modeling stream configuration. Any changed fields are automatically matched, as described in "Open SPSS Model or SPSS Score process box in flowchart edit mode".
- When you run the SPSS Model or SPSS Score process box, IBM Campaign retrieves the latest modeling stream configuration. Fields are automatically matched, as described in "Run a flowchart".

---

## **Prerequisites for building and scoring models**

Make sure that the prerequisites are met before you build and score models in IBM Campaign.

### **Modeling streams**

In IBM SPSS Modeler Advantage Marketing Edition, modeling configuration and metadata are stored in proprietary stream files, which are called modeling streams.

When you configure a new SPSS Model process box in an IBM Campaign flowchart, you can create a new modeling stream or use an existing modeling stream.

For the SPSS Score process, you can use existing modeling streams that were created in IBM SPSS Modeler Advantage Marketing Edition.

Modeling streams must meet the following requirements:

- The modeling stream includes SPSS\_AudID as a numeric key field. This field is created automatically for any modeling stream that is created through an SPSS Model process box. If you are manually creating a modeling stream, you need to ensure that your data source contains a numeric SPSS\_AudID field that uniquely identifies each individual in the data set. For scoring, the SPSS\_AudID key field must be selected as scoring output.

- The modeling stream uses a single data source node.
- The deployment metadata indicates which branch is the Model Refresh branch.
- The selected modeling node is either an automated modeling node or a Decision List node.
- A Type node is present to define the target field.

You can download modeling streams by accessing the IBM SPSS Collaboration and Deployment Services repository. The download process is described in the *IBM SPSS Collaboration and Deployment Services User's Guide*.

## Data fields

IBM Campaign passes user data fields to IBM SPSS Modeler Advantage Marketing Edition through .csv data files. These data files are written to a shared folder for modeling and scoring.

The data can contain numeric, text, and date fields. However, IBM SPSS Modeler Advantage Marketing Edition understands date fields in numeric form only. If your modeling data includes dates, you must convert them to numeric values before that data is passed to IBM SPSS Modeler Advantage Marketing Edition. You can use the system-defined Date () macro in IBM Campaign to convert dates into Julian format.

## Dummy data files

If you create a modeling stream in the SPSS Model process box, IBM Campaign generates dummy data according to the types for the candidate fields that are specified in the SPSS Model process box. The dummy data file is stored in the common shared folder and is used to create a stream. The purpose of the dummy file is to pass field names and data types to IBM SPSS Modeler Advantage Marketing Edition so that IBM SPSS Modeler Advantage Marketing Edition can understand the field types in the modeling stream.

If you open the modeling stream in IBM SPSS Modeler Advantage Marketing Edition before you run the SPSS Model or SPSS Score process box, only dummy data is available for the SPSS Score process box. You must run the processes that provide the input cell and run the SPSS Model process to see real data in any of the IBM SPSS Modeler Advantage Marketing Edition data overviews or previews.

The dummy file cannot be used to build the modeling stream. Actual data for modeling is passed only when the SPSS Model process box is run in the IBM Campaign flowchart.

## Test runs

Test runs do not require that predecessor process boxes have run successfully, but the runs might not generate meaningful results. For test mode, only partial user data is provided to test flowchart function. Other than that, a test run of the SPSS Model or SPSS Score process box is the same as a production run. Both types of runs rebuild the model that is based on the latest data from IBM Campaign.

---

## Converting an existing IBM Campaign flowchart from IBM PredictiveInsight

For IBM Campaign flowcharts that used IBM PredictiveInsight for modeling or scoring, you must manually replace the legacy Model and Score process boxes.

### About this task

**Note:** Flowcharts with legacy Model and Score process boxes will not run. You must replace the legacy process boxes with the SPSS Model and SPSS Score process boxes.

To convert an IBM Campaign flowchart from IBM PredictiveInsight to IBM SPSS Modeler Advantage Enterprise Marketing Management Edition, complete the following steps.

### Procedure

1. In IBM Campaign, open the flowchart.
2. Open any legacy Model and Score process boxes and record any information that you want to use in the new process boxes.
3. Delete the legacy Model process boxes and add SPSS Model process boxes to the flowchart.  
This task is described in “Creating or rebuilding a model” on page 27.
4. Delete the legacy Score process boxes and add SPSS Score process boxes to the flowchart.  
This task is described in “Scoring using a modeling stream” on page 31.
5. Test the flowchart to verify that your changes create the output that you want.

---

## Selecting modeling stream versions other than LATEST

There might be multiple versions of a modeling stream saved in the IBM SPSS Collaboration and Deployment Services repository. When you select a modeling stream from the repository, you always get the version labeled LATEST.

### About this task

IBM SPSS Modeler Advantage Marketing Edition automatically applies the label LATEST to the last saved version of a modeling stream.

To use a version of the modeling stream other than LATEST, complete the following steps.

### Procedure

1. Open the version that you want in IBM SPSS Modeler Advantage Marketing Edition.  
**Note:** You can expand the list to see the available versions and to select one of the versions.
2. Select **Save as** to copy the model to a new modeling stream. This version is then labeled LATEST.
3. In the SPSS Model or SPSS Score process box, click **Use an existing modeling stream** and select the new modeling stream.

---

## The SPSS Model process

IBM Campaign runs the SPSS Model process box as part of a flowchart. You can run the flowchart manually by using the flowchart controls, or you can automate the flow by using a Schedule process box in the flowchart. The model is built with current data that is extracted from the IBM Campaign flowchart.

The SPSS Model process box must be properly configured and must point to a modeling stream in the IBM SPSS Collaboration and Deployment Services repository. Process boxes that supply input to the SPSS Model process box must have run successfully for data to be properly generated for a production run.

Deleting an SPSS Model process box does not delete any modeling streams it has created. IBM Campaign deletes files that are created on the shared file system upon deletion of the SPSS Model process box from the flowchart. To remove modeling streams, delete them in IBM SPSS Modeler Advantage Marketing Edition through IBM SPSS Collaboration and Deployment Services.

The following steps describe the SPSS Model process:

1. When the SPSS Model process box is run, IBM Campaign creates a data file by using the selected fields for the input cell.
2. IBM Campaign calls IBM SPSS Modeler Advantage Marketing Edition to build a model that uses the modeling stream in the IBM SPSS Collaboration and Deployment Services repository and the data file created in step 1. The input file overrides any data source that is configured in the modeling stream. If you build the model manually through the IBM SPSS Modeler Advantage Marketing Edition interface, whatever data source is configured in the modeling stream is used to build the model.
3. IBM SPSS Modeler Advantage Marketing Edition builds the model and saves a file that is labeled LATEST in the IBM SPSS Collaboration and Deployment Services repository.

If the model is rebuilt because input data source variables were added or deleted, modeling configuration is preserved. If the configuration is valid, the model is built and saved in the repository as the latest version. If the configuration is not valid, an error is displayed, such as missing target variable.

4. If IBM SPSS Modeler Advantage Marketing Edition returns a success message, the SPSS Model process box displays a green check.  
If IBM SPSS Modeler Advantage Marketing Edition returns a failure message, the SPSS Model process box displays a red X.
5. The data source is updated to point to the IBM Campaign data that was used to build the model. The modeling stream in the repository is updated and contains a freshly built model.

### Best practices for creating or rebuilding a model

Use best practices when you create or rebuild models in IBM Campaign.

The following table describes best practices to use when you create or build SPSS models in IBM Campaign.

Flowchart types	Create session flowcharts when the model will be shared among multiple campaign flowcharts.  Create campaign flowcharts when the resulting modeling stream will be used only by that one campaign.
Model names	Model names must be alphanumeric. Names must begin with an alphabetic character and cannot contain any spaces. They can include the underscore (_) character.
Changing model types	You can change the model type in a modeling stream from the default Predictive type by opening IBM SPSS Modeler Advantage Marketing Edition from the SPSS Model process box. Change the model type and save the modeling stream. You can then build the model either from the SPSS Model process box or directly from IBM SPSS Modeler Advantage Marketing Edition.
Data for modeling and scoring	If you open the modeling stream in IBM SPSS Modeler Advantage Marketing Edition before you run the SPSS Model or SPSS Score process, only dummy data is available for the SPSS Score process. You must run the processes that provide the input cell and run the SPSS Model process to use real data in the IBM SPSS Modeler Advantage Marketing Edition data overviews or previews.
Displaying the latest results	If you open a modeling stream while it is running, the display does not report that the model is building or that it completed. You must close and re-open a modeling stream to see the latest results.
Saving modeling streams	Modeling streams cannot be saved in the root directory, which is at the parent level. They must be saved in folders, which are at the child level.

## Creating or rebuilding a model

Add an SPSS Model process box to an IBM Campaign flowchart to create a new modeling stream or use an existing modeling stream to rebuild or refresh a model. You can then view and configure the model build options in IBM SPSS Modeler Advantage Marketing Edition. These settings are used when the model is built during an IBM Campaign automated process flow.

### Before you begin

If you are using an existing modeling stream, it must be a compatible .str file that can be loaded into IBM SPSS Modeler Advantage Marketing Edition. The prerequisites for using a modeling stream that is created in IBM SPSS Modeler Advantage Marketing Edition are described in the "Sharing Streams" topic in the *IBM SPSS Modeler Advantage Guide*. In addition, the modeling stream must contain a numeric key field named SPSS\_AudID.

### About this task

Complete the following steps to configure a model process.

### Procedure

1. In IBM Campaign, open a flowchart in Edit mode.
2. Drag process boxes from the palette to the flowchart workspace. Connect them as you normally would to select a set of audience members. For example, use the Select, Segment, and Merge process boxes.
3. Drag the SPSS Model process box from the palette to your flowchart workspace.

4. Connect a process to the SPSS Model process box. The output of the process that is upstream of the SPSS Model process provides input to the SPSS Model process. If you connect a Select process box to the SPSS Model process box, the Select process provides the set of audience members to use for building the model.
5. Double-click the SPSS Model process box in the flowchart workspace. The SPSS Model Process Configuration dialog opens.
6. Select the input data source, which is the input cell.
7. Select whether to create a modeling stream or to rebuild a model in an existing modeling stream.

Option	Description
<b>Create new modeling stream</b>	Create a modeling stream. <b>Note:</b> The stream name must be unique. By default, the modeling stream name is based on a concatenation of the campaign name, the campaign code, the flowchart name, and the SPSS Model process name. You can change the name to any unique value, but it is useful to retain a traceable link to the process box that created this modeling stream. If a stream with that name exists, a warning is displayed.
<b>Use an existing modeling stream</b>	Click <b>Browse</b> to select a modeling stream. In the Open Model File window, the default is to choose a modeling stream from the IBM SPSS Collaboration and Deployment Services repository.  Click <b>Upload Local File</b> to select a modeling stream from your local hard drive.

8. Depending on the model type, select what you are trying to predict in the **Target** field.
  - For a Predictive model, use the **Target** field.
  - For an Association model, use the **Content** field.
  - For a Clustering model, use the **Clustering Evaluation** field.
9. Specify the variables to be considered for modeling.
  - When you build a model, you can select any of the Candidate fields, which are based on the table mappings that are available in the flowchart.
  - When you use an existing stream, the **Stream Field** column is automatically populated. The **Match**, **Up**, and **Down** buttons are not displayed if the Stream Fields are not populated.
10. Optional: To change the default model build options, click **Open Modeler Advantage Session**.

IBM SPSS Modeler Advantage Marketing Edition opens in a new window. The Modeling tab is displayed. The modeling stream might be partially or completely configured and ready to build a model, but a model has not been built yet.

The SPSS Model process box is now configured to use an existing modeling stream, which is the stream that was just created. IBM Campaign passes the default target variable and the audience ID and key, and creates a dummy input data file to build the model.



- a. Select the modeling type.  
Make sure the default Predictive model type is selected.
  - b. Optional: On the Modeling tab, select the values for this model process.
    - Model-specific settings: such as the percentage of data to use for the training set versus the test set
    - Build settings: enabling or disabling automatic data clean up

**Note:** Make sure the numeric key field SPSS\_AudID is included.
  - c. Optional: Click the **Data** tab and view the data configuration.  
If you are creating a modeling stream from the SPSS Model process box, the Data tab is configured with data from the flowchart. If you are using an existing modeling stream, the Data tab is configured with data from the modeling stream. You can change data sources and use any features, such as creating new variables. Any data source changes are in effect only for the current session; they are overwritten on any run of the SPSS Model process.
  - d. Optional: Click **Build Model** after you configure the settings.  
You can build the model only if data is available on the SPSS Modeler server, such as if the SPSS Model process box was previously run.
  - e. Save your changes and exit IBM SPSS Modeler Advantage Marketing Edition to return to the SPSS Model Process Configuration dialog.  
The modeling stream was saved in the IBM SPSS Collaboration and Deployment Services repository.
11. Click **OK** to save and close the SPSS Model Process Configuration dialog.  
IBM Campaign verifies whether the settings are valid and a model is ready to be built.
    - If the settings are valid, the SPSS Model process box displays the status configured.
    - If the settings are not valid, the SPSS Model process box displays the status unconfigured with an appropriate error message.

## Evaluating the model

You can generate model performance reports to evaluate the model's predictive accuracy after the model is built.

### Before you begin

Either build the model manually from the IBM SPSS Modeler Advantage Marketing Edition user interface or run the SPSS Model process with production data. Then, verify that the modeling stream contains a successfully built model.

### About this task

Use the **Evaluate** option to generate charts, such as analysis of modeling data and model details, that are available after a successful model build.

To generate evaluation graphs and charts for the model, complete the following steps.

### Procedure

1. Select the model to evaluate from the following options:

- In your IBM Campaign flowchart, double-click the SPSS Model process box to open the SPSS Model Process Configuration dialog. The SPSS Model process box must display a green check.
  - Click **Open Modeler Advantage Session** to launch IBM SPSS Modeler Advantage Marketing Edition in a new window. The Model tab is displayed for the modeling stream that is associated with the SPSS Model process.  
The version number of the built model should match the version number that is expected from IBM Campaign when it last ran the SPSS Model process. If the version number does not match, IBM Campaign displays a warning that the model in the stream might not be the model last built through IBM Campaign.
  - In IBM SPSS Modeler Advantage, click **Open** and select a modeling stream that contains a built model.
2. Click **Evaluate** to generate charts for the model.  
  
**Note:** If you change any model settings, you can rebuild the model from the IBM SPSS Modeler Advantage session or by running the process flow in the IBM Campaign flowchart.
  3. Review the evaluation charts.
  4. Close the reporting window when you are done.
  5. Exit IBM SPSS Modeler Advantage Marketing Edition.

---

## The SPSS Score process

IBM Campaign runs the SPSS Score process box as part of a flowchart. The individuals to be scored and their data come from the source cell that is defined in the SPSS Score process box.

The SPSS Score process box must be properly configured and point to at least one modeling stream in the IBM SPSS Collaboration and Deployment Services repository.

The SPSS Score process can score using up to five different models run against the same input cell. You might use multiple models to compare response likelihood against different offers, one model for each offer. For example, score one model to generate the likelihood of response and score another model to predict the magnitude of the purchase amount.

If you delete an SPSS Score process box, IBM Campaign cleans up any associated files from the shared folder and from the partition/<partition n>/tmp folder.

### File length errors

If you frequently see the message Delimited file length exceeds allowable maximum length when you run the SPSS Score process box, you can increase the value of the configuration parameter.

1. In IBM Campaign configuration, navigate to Affinium|Campaign|partitions|partition1|server|internal.
2. Change **numRowsReadToParseDelimitedFile** to a number higher than the default value of 100.

The value depends on the total number of records to be processed in the SPSS Score process box. For any value for this configuration property, half of the records are processed from the top of the score output file, which is received

from IBM SPSS Modeler Advantage Marketing Edition. The remaining half of the records are processed from the bottom of the file to determine maximum field width for all fields.

If you set this configuration parameter to a high value, you can process more records to help ensure accurate identification of the maximum field width for all fields.

If you set this configuration parameter to 0, the entire file is scanned to accurately determine the field width of all fields. This action resolves the error but increases the SPSS Score process run time if the file size is large.

The following steps describe the SPSS Score process:

1. When the SPSS Score process is run, IBM Campaign specifies the following information:
  - The modeling stream in the IBM SPSS Collaboration and Deployment Services repository
  - The input and output file paths for the data to be scored
  - The scoring results, such as from a Snapshot process box
2. IBM Campaign creates an input file for the audience members to be scored. The file contains the fields or variables that are required by the models.
3. The SPSS Score process runs. The results are stored in a file in a shared directory on the server. IBM Campaign automatically retrieves and makes scored fields available to downstream process boxes as persistent derived fields.
4. The downstream processes can use the output scores to further subselect or segment the data or to take a snapshot of the score values.

**Note:** If the score outputs that are used by the downstream processes are not available from the SPSS Score process, the downstream processes fail. This failure might happen, for example, if the score configuration was changed in the modeling stream and different outputs were defined.

## Scoring using a modeling stream

In an IBM Campaign flowchart, open an SPSS Score process box to configure the score settings. These settings are used when the audience members are scored during an IBM Campaign automated process flow.

### About this task

You can modify the scoring options in an existing modeling stream. For example, you might want to take a snapshot of the values that were used to generate the score, such as the account balance at the time the score was derived. These fields might be used for personalization, such as sending the message "Thank you for your recent deposit of \$500."

To score using a modeling stream, complete the following steps.

### Procedure

1. In IBM Campaign, open a flowchart in Edit mode.
2. Drag process boxes from the palette to the flowchart workspace. Connect them as you normally would to select a set of audience members. For example, use the Select, Segment, and Merge process boxes.
3. Drag the SPSS Score process box from the palette to your flowchart workspace.

4. Connect the process box that contains the audience members to be scored to the SPSS Score process box.

**Note:** If any of the modeling streams in the SPSS Score process are created in the same flowchart, connect those SPSS Model process boxes to the SPSS Score process box. Create temporal connections to ensure that scoring does not occur until the model is refreshed. You cannot use the temporal connection if the model has not already been built. To create the temporal connection, drag one of the arrow corners of the SPSS Model process box to the SPSS Score process box.

5. Double-click the SPSS Score process box in the flowchart workspace. The SPSS Score Process Configuration dialog opens.
6. Select the source cell that contains the audience members to score.
7. Select the number of models to use for scoring.
8. Configure each model by completing the following steps:
  - a. Select the modeling stream either by browsing to a file in the repository or by uploading a modeling stream from your local hard disk drive. After you select a valid modeling stream, the scoring outputs are displayed in the **Score Field Name** column.

**Note:** You cannot configure the SPSS Score process if the model is not already built.

- b. Optional: In the Parameter For column, change the default model name to a more user-friendly name. The downstream scoring outputs are identified by this model name.

For example, you can name the output fields \$XS-Response and \$XSC-Response for the output score and associated confidence value. The model name is FreeShippingOffer. The scoring outputs available downstream from the SPSS Score process are named FreeShippingOffer.\$XS-Response, for the free shipping model score, and FreeShippingOffer.\$XSC-Response, for the associated confidence value.

- c. Optional: Select a modeling stream row and click **Match Variable Names** to verify and match any incorrectly matched fields.

**Note:** By default, variables are automatically matched by name. Verify that the matches are correct and manually fix any incorrect matches. Auto-matching is described in “Automatic matching of fields” on page 21.

- d. Optional: Click **Open Modeler Advantage Session** to configure the scoring options.

IBM SPSS Modeler Advantage Marketing Edition opens in a new window. You can change the default scoring outputs (or any other scoring options) and save the modeling stream.

9. Click **OK** and close the SPSS Score Process Configuration dialog. If IBM Campaign detects that the SPSS Score process is not completely configured, the SPSS Score process box displays the status unconfigured with an error message.
10. Optional: Automate the flowchart to run periodically. You can either use the Schedule process in your flowchart or configure the IBM EMM Scheduler. The Scheduler is described in the *IBM Campaign User's Guide*.
11. Save the flowchart. You can now perform a test run on the flowchart to verify that it returns the results you expect.

---

## Automating the building and scoring of models

You can automate the building and scoring of models by using the Schedule process box in IBM Campaign flowcharts or by using the IBM EMM Scheduler. The Scheduler operates only on the full flowchart.

### About this task

You can implement the automated building and scoring of models in two separate flowcharts that run with different frequencies. For example, you might want the scoring to be done weekly, while the model is rebuilt monthly.

If both of the building and scoring processes are in the same flowchart, make sure that modeling is complete and successful before the scoring starts. You can create a temporal connection between the SPSS Model process and the SPSS Score process, which is shown as a dotted line in the flowchart.

**Note:** The following task is one example of how the flowchart can be configured. You might use a Select process box to select the audience or use a Sample or Segment process box to choose a portion of the audience with which to build the model.

To automate the building and scoring of models, complete the following steps.

### Procedure

1. In IBM Campaign, open a flowchart in Edit mode.
2. To automate the building of models, drag the following process boxes from the palette to your flowchart workspace and connect them in the following order:
  - a. Schedule: Connect to all top-level process boxes that must start when flowchart run begins.
  - b. Select, and other process boxes as needed
  - c. SPSS Model
3. To automate batch scoring, drag the following process boxes from the palette to your flowchart workspace and connect them in the following order:
  - a. Schedule: Connect to all top-level process boxes that must start when flowchart run begins.
  - b. Select, and other process boxes as needed
  - c. SPSS Score
  - d. Snapshot: The Snapshot process writes the scores to a database table or flat file for use by other flowcharts and processes.
4. To create a single flowchart that automates building and scoring, drag the following process boxes from the palette to your workspace and connect them in the following order:

**Note:** Connect the Schedule process box to all top-level process boxes that must start when flowchart run begins.

- a. Schedule to Select
- b. Select to SPSS Model
- c. Select to SPSS Score

Add a temporal connection from the SPSS Model process box to the SPSS Score process box.

**Note:** If the model is not built, you cannot select the model stream in the SPSS Score process box.

d. SPSS Score to Snapshot

The Snapshot process writes the scores to a database table.

**Note:** Items a and b comprise one branch and items c and d comprise another branch in a single flowchart.

5. Configure the process boxes.
6. Save the flowchart.
7. Test the processes in the flowchart.

---

## Troubleshooting model and score processes

Determine the cause of failure and correct the settings so that the model can be rebuilt before being scored.

### About this task

When a flowchart run fails, IBM Campaign displays the error status and error messages. If an SPSS Model or SPSS Score process box fails during a run, it displays a red X. Depending on the error, you might need to correct the problem in the flowchart process box or in the modeling stream. Other problems might require changing configuration parameters.

To troubleshoot problems with the model or score process, complete the following steps.

### Procedure

1. In your IBM Campaign flowchart, roll your cursor over the process box with the red X to view the error.

**Note:** This information is also captured in the flowchart logs. In IBM Campaign, make sure the log level is set to **ALL**.

2. Open the SPSS Model Process Configuration or SPSS Score Process Configuration dialog.
3. If you determine that the problem is in the modeling stream, click **Open Modeler Advantage Session**.

**Note:** In the SPSS Score process box, you can open multiple sessions, one for each modeling stream. Each modeling stream opens in its own window.

The Model tab is displayed for the modeling stream that is associated with the SPSS Model process. The Score tab is displayed for the modeling stream that is associated with the SPSS Score process. The Data tab is displayed if no model was built. Depending on the problem, an error might be displayed unless the model or scoring is rerun in the IBM SPSS Modeler Advantage session.

- a. Review and change the settings as appropriate for the error.
  - b. Click **Build Model** or **Score**. You can also click **Evaluate** or **Test**.
  - c. Save the modeling stream.
4. Close the process configuration dialog and return to the IBM Campaign flowchart.

IBM Campaign detects if the modeling stream is ready to run and displays the SPSS Model or SPSS Score process box as configured or unconfigured.

## Example of a campaign that uses SPSS Model and SPSS Score processes

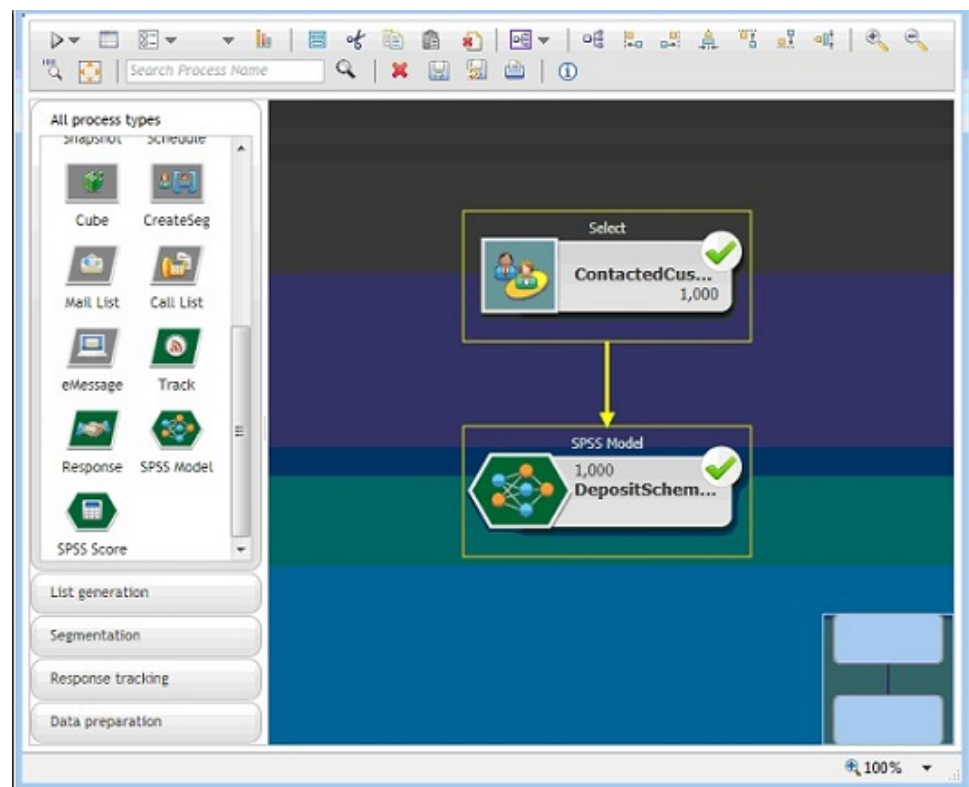
Marketers at ABC Bank want to promote savings accounts to customers by providing special high-interest rates. They ran a marketing campaign that targeted 1000 customers. The results of the campaign were poor as few customers accepted the offer. Now, the marketers want to target an additional 1000 customers. To get better results from the campaign, they want to analyze the responses from the previous campaign to find customers who have a higher probability of accepting the offer.

### Run a marketing campaign to promote a new savings account

The campaign designer can create this campaign by completing the following steps:

1. In IBM Campaign, open a flowchart in Edit mode to create a model that analyzes data from previous responses.
2. Drag a Select process box to the flowchart workspace. Configure it to select all customer data and pass it to the SPSS Model process box.
3. Drag an SPSS Model process box to the flowchart workspace. Configure it to use account type, account balance, average yearly account balance, last transaction amount, and salary to create the model.

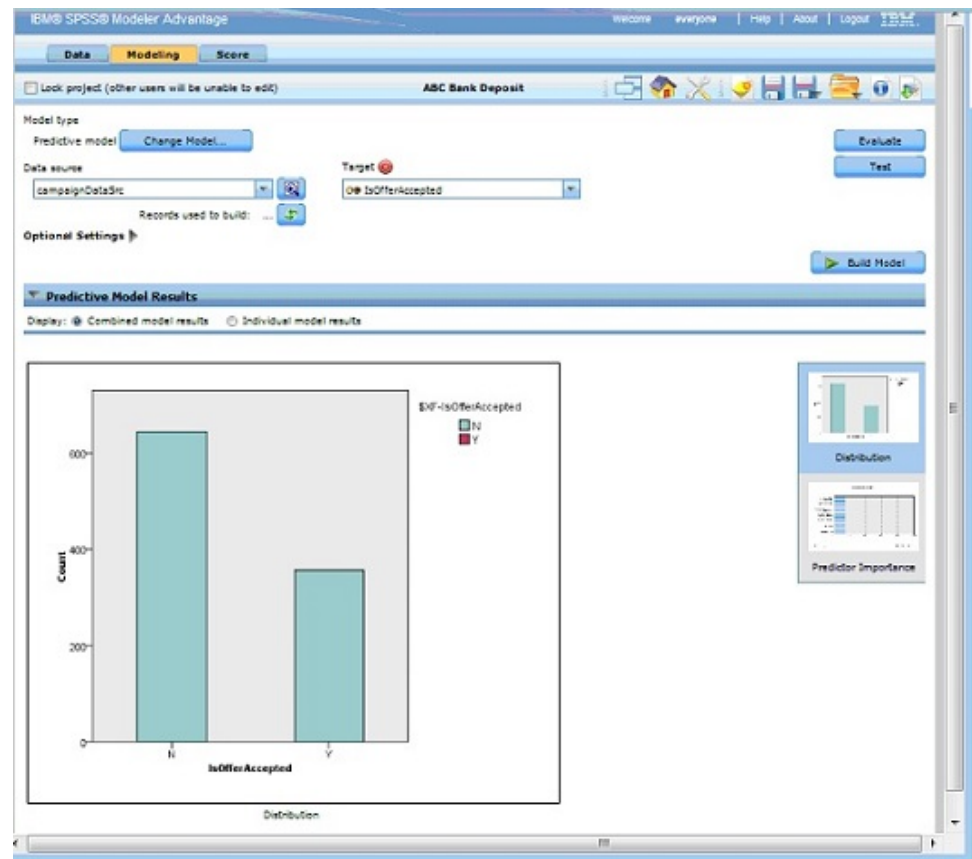
The following example shows the modeling flowchart details.



4. Run the flowchart.

The predictive model is created by IBM SPSS Modeler Advantage Marketing Edition and is based on the data that is provided by IBM Campaign. This model helps the marketer to predict the behavior of other customers.

The following example shows the created model in IBM SPSS Modeler Advantage Marketing Edition.

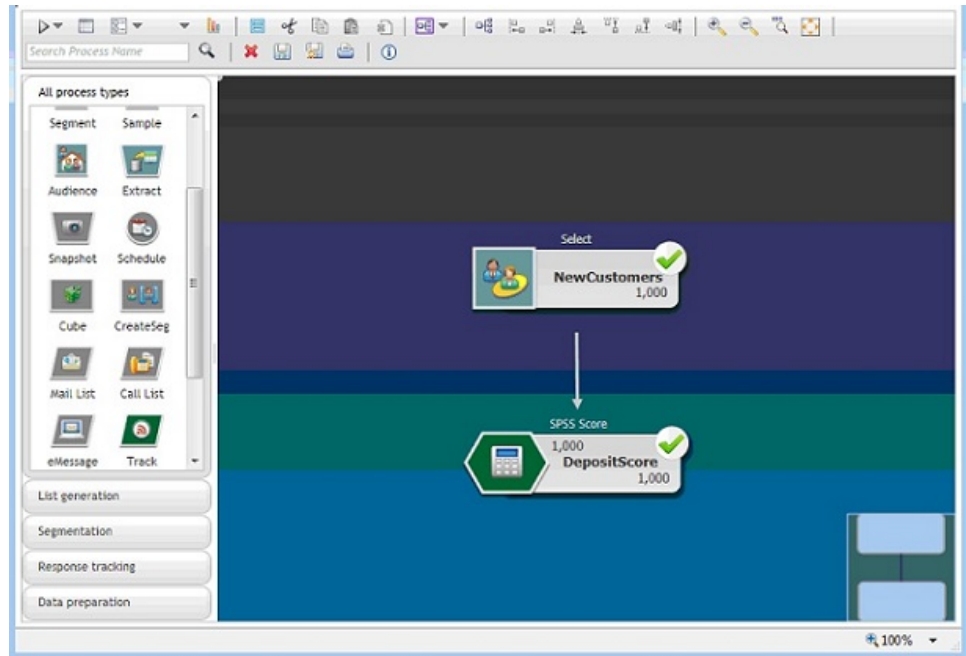


When the Model is ready in IBM SPSS Modeler Advantage Marketing Edition, it can be used for predicting the behavior of customers. ABC Bank has a list of 1000 customers that comprise the potential target audience for the new campaign.

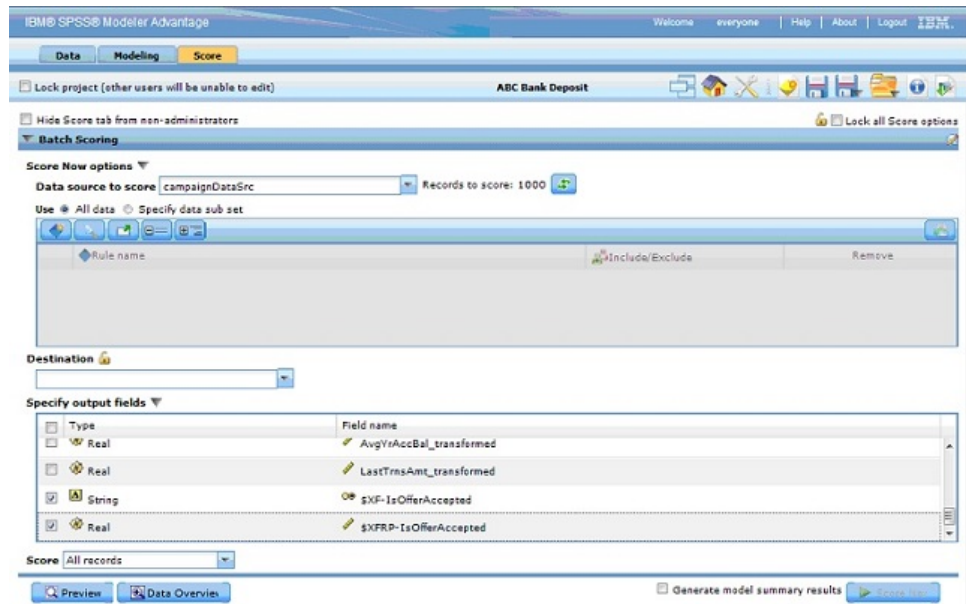
5. In IBM Campaign, open a flowchart in Edit mode in which the customer data is sent to IBM SPSS Modeler Advantage Marketing Edition for scoring based on the previously created model. Configure the SPSS Score process box to select the newly created model for scoring.

The following example shows the scoring flowchart details.

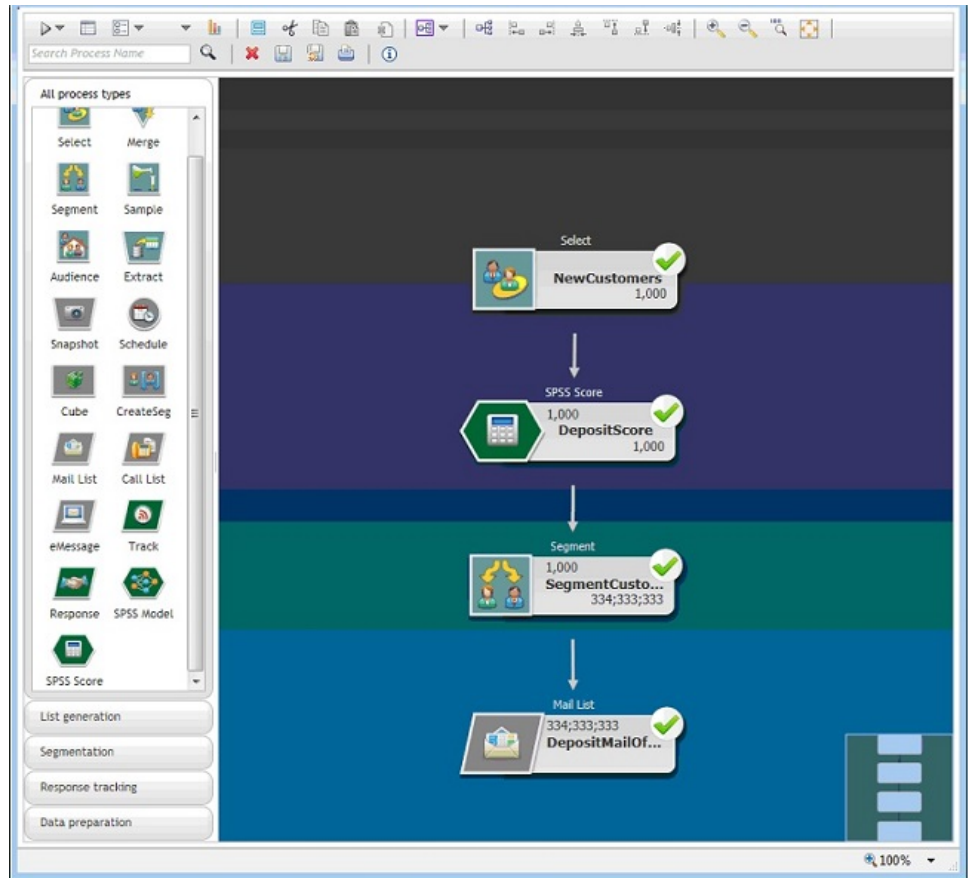




In the following example, the IBM SPSS Modeler Advantage Marketing Edition Score tab shows the output field and data source details.



6. Score the data in IBM SPSS Modeler Advantage Marketing Edition, and the scoring results are provided to IBM Campaign.
7. In the IBM Campaign flowchart, use marketing logic to optimize the list based on the score that is received for each customer.  
The marketing offer will be assigned and delivered to the targeted list of customers using various channels.



---

## Before you contact IBM technical support

If you encounter a problem that you cannot resolve by consulting the documentation, your company's designated support contact can log a call with IBM technical support. Use these guidelines to ensure that your problem is resolved efficiently and successfully.

If you are not a designated support contact at your company, contact your IBM administrator for information.

**Note:** Technical Support does not write or create API scripts. For assistance in implementing our API offerings, contact IBM Professional Services.

### Information to gather

Before you contact IBM technical support, gather the following information:

- A brief description of the nature of your issue.
- Detailed error messages that you see when the issue occurs.
- Detailed steps to reproduce the issue.
- Related log files, session files, configuration files, and data files.
- Information about your product and system environment, which you can obtain as described in "System information."

### System information

When you call IBM technical support, you might be asked to provide information about your environment.

If your problem does not prevent you from logging in, much of this information is available on the About page, which provides information about your installed IBM applications.

You can access the About page by selecting **Help > About**. If the About page is not accessible, check for a `version.txt` file that is located under the installation directory for your application.

### Contact information for IBM technical support

For ways to contact IBM technical support, see the IBM Product Technical Support website: ([http://www.ibm.com/support/entry/portal/open\\_service\\_request](http://www.ibm.com/support/entry/portal/open_service_request)).

**Note:** To enter a support request, you must log in with an IBM account. This account must be linked to your IBM customer number. To learn more about associating your account with your IBM customer number, see **Support Resources > Entitled Software Support** on the Support Portal.



---

## Notices

This information was developed for products and services offered in the U.S.A.

IBM may not offer the products, services, or features discussed in this document in other countries. Consult your local IBM representative for information on the products and services currently available in your area. Any reference to an IBM product, program, or service is not intended to state or imply that only that IBM product, program, or service may be used. Any functionally equivalent product, program, or service that does not infringe any IBM intellectual property right may be used instead. However, it is the user's responsibility to evaluate and verify the operation of any non-IBM product, program, or service.

IBM may have patents or pending patent applications covering subject matter described in this document. The furnishing of this document does not grant you any license to these patents. You can send license inquiries, in writing, to:

IBM Director of Licensing  
IBM Corporation  
North Castle Drive  
Armonk, NY 10504-1785  
U.S.A.

For license inquiries regarding double-byte (DBCS) information, contact the IBM Intellectual Property Department in your country or send inquiries, in writing, to:

Intellectual Property Licensing  
Legal and Intellectual Property Law  
IBM Japan, Ltd.  
19-21, Nihonbashi-Hakozakicho, Chuo-ku  
Tokyo 103-8510, Japan

The following paragraph does not apply to the United Kingdom or any other country where such provisions are inconsistent with local law: INTERNATIONAL BUSINESS MACHINES CORPORATION PROVIDES THIS PUBLICATION "AS IS" WITHOUT WARRANTY OF ANY KIND, EITHER EXPRESS OR IMPLIED, INCLUDING, BUT NOT LIMITED TO, THE IMPLIED WARRANTIES OF NON-INFRINGEMENT, MERCHANTABILITY OR FITNESS FOR A PARTICULAR PURPOSE. Some states do not allow disclaimer of express or implied warranties in certain transactions, therefore, this statement may not apply to you.

This information could include technical inaccuracies or typographical errors. Changes are periodically made to the information herein; these changes will be incorporated in new editions of the publication. IBM may make improvements and/or changes in the product(s) and/or the program(s) described in this publication at any time without notice.

Any references in this information to non-IBM Web sites are provided for convenience only and do not in any manner serve as an endorsement of those Web sites. The materials at those Web sites are not part of the materials for this IBM product and use of those Web sites is at your own risk.

IBM may use or distribute any of the information you supply in any way it believes appropriate without incurring any obligation to you.

Licensees of this program who wish to have information about it for the purpose of enabling: (i) the exchange of information between independently created programs and other programs (including this one) and (ii) the mutual use of the information which has been exchanged, should contact:

IBM Corporation  
B1WA LKG1  
550 King Street  
Littleton, MA 01460-1250  
U.S.A.

Such information may be available, subject to appropriate terms and conditions, including in some cases, payment of a fee.

The licensed program described in this document and all licensed material available for it are provided by IBM under terms of the IBM Customer Agreement, IBM International Program License Agreement or any equivalent agreement between us.

Any performance data contained herein was determined in a controlled environment. Therefore, the results obtained in other operating environments may vary significantly. Some measurements may have been made on development-level systems and there is no guarantee that these measurements will be the same on generally available systems. Furthermore, some measurements may have been estimated through extrapolation. Actual results may vary. Users of this document should verify the applicable data for their specific environment.

Information concerning non-IBM products was obtained from the suppliers of those products, their published announcements or other publicly available sources. IBM has not tested those products and cannot confirm the accuracy of performance, compatibility or any other claims related to non-IBM products. Questions on the capabilities of non-IBM products should be addressed to the suppliers of those products.

All statements regarding IBM's future direction or intent are subject to change or withdrawal without notice, and represent goals and objectives only.

All IBM prices shown are IBM's suggested retail prices, are current and are subject to change without notice. Dealer prices may vary.

This information contains examples of data and reports used in daily business operations. To illustrate them as completely as possible, the examples include the names of individuals, companies, brands, and products. All of these names are fictitious and any similarity to the names and addresses used by an actual business enterprise is entirely coincidental.

#### COPYRIGHT LICENSE:

This information contains sample application programs in source language, which illustrate programming techniques on various operating platforms. You may copy, modify, and distribute these sample programs in any form without payment to IBM, for the purposes of developing, using, marketing or distributing application programs conforming to the application programming interface for the operating

platform for which the sample programs are written. These examples have not been thoroughly tested under all conditions. IBM, therefore, cannot guarantee or imply reliability, serviceability, or function of these programs. The sample programs are provided "AS IS", without warranty of any kind. IBM shall not be liable for any damages arising out of your use of the sample programs.

If you are viewing this information softcopy, the photographs and color illustrations may not appear.

---

## Trademarks

IBM, the IBM logo, and [ibm.com](http://www.ibm.com) are trademarks or registered trademarks of International Business Machines Corp., registered in many jurisdictions worldwide. Other product and service names might be trademarks of IBM or other companies. A current list of IBM trademarks is available on the Web at "Copyright and trademark information" at [www.ibm.com/legal/copytrade.shtml](http://www.ibm.com/legal/copytrade.shtml).

---

## Privacy Policy and Terms of Use Considerations

IBM Software products, including software as a service solutions, ("Software Offerings") may use cookies or other technologies to collect product usage information, to help improve the end user experience, to tailor interactions with the end user or for other purposes. A cookie is a piece of data that a web site can send to your browser, which may then be stored on your computer as a tag that identifies your computer. In many cases, no personal information is collected by these cookies. If a Software Offering you are using enables you to collect personal information through cookies and similar technologies, we inform you about the specifics below.

Depending upon the configurations deployed, this Software Offering may use session and persistent cookies that collect each user's user name, and other personal information for purposes of session management, enhanced user usability, or other usage tracking or functional purposes. These cookies can be disabled, but disabling them will also eliminate the functionality they enable.

Various jurisdictions regulate the collection of personal information through cookies and similar technologies. If the configurations deployed for this Software Offering provide you as customer the ability to collect personal information from end users via cookies and other technologies, you should seek your own legal advice about any laws applicable to such data collection, including any requirements for providing notice and consent where appropriate.

IBM requires that Clients (1) provide a clear and conspicuous link to Customer's website terms of use (e.g. privacy policy) which includes a link to IBM's and Client's data collection and use practices, (2) notify that cookies and clear gifs/web beacons are being placed on the visitor's computer by IBM on the Client's behalf along with an explanation of the purpose of such technology, and (3) to the extent required by law, obtain consent from website visitors prior to the placement of cookies and clear gifs/web beacons placed by Client or IBM on Client's behalf on website visitor's devices

For more information about the use of various technologies, including cookies, for these purposes, See IBM's Online Privacy Statement at: <http://www.ibm.com/privacy/details/us/en> section entitled "Cookies, Web Beacons and Other Technologies."









Printed in USA