IBM Marketing Operations
Version 9 Release 0
January 15, 2013

Administrator's Guide

Note
Before using this information and the product it supports, read the information in "Notices" on page 191.

This edition applies to version 9, release 0, modification 0 of IBM Marketing Operations and to all subsequent releases and modifications until otherwise indicated in new editions.

Contents

Chapter 1. Administering IBM Marketing Operations

With IBM® Marketing Operations, you can organize the people, tasks, and budget associated with any marketing program in your organization while reducing costs and time to market.

Marketing Operations is a web-based application.

System requirements

Hardware, operating system, web server, and database requirements are described in the *Recommended Software Environments and Minimum System Requirements* document.

Client machines

Client machines should meet the following configuration requirements.

- On the Internet Explorer **Tools > Internet Options > Settings** dialog box, in the **Check for newer versions of stored pages** section, **Every visit to the page** should be selected.
- If pop-up blocker (ad blocker) software is installed on the client machine, Marketing Operations may not function properly. We recommend allowing pop-ups for the Marketing Operations URL (for example, `http://myMachine:7001/plan`).

For more information

Different people in your organization use IBM Marketing Operations to accomplish different tasks. Information about Marketing Operations is available in a set of guides, each of which is intended for use by team members with specific objectives and skill sets.

Table 1. Guides in the Marketing Operations documentation set

If you	See	Audience
• Plan and manage projects • Establish workflow tasks, milestones, and personnel • Track project expenses • Get reviews and approvals for content • Produce reports	*IBM Marketing Operations User's Guide*	• Project managers • Creative designers • Direct mail marketing managers
• Design templates, forms, attributes, and metrics • Customize the user interface • Define user access levels and security • Implement optional features • Configure and tune Marketing Operations	*IBM Marketing Operations Administrator's Guide*	• Project managers • IT administrators • Implementation consultants

Table 1. Guides in the Marketing Operations documentation set (continued)

If you	See	Audience
• Create marketing campaigns • Plan offers • Implement integration between Marketing Operations and Campaign • Implement integration between Marketing Operations and IBM Digital Recommendations	*IBM Marketing Operations and IBM Campaign Integration Guide*	• Project managers • Marketing execution specialists • Direct marketing managers
• Learn about new system features • Research known issues and workarounds	*IBM Marketing Operations Release Notes*	Everyone who uses Marketing Operations
• Install Marketing Operations • Configure Marketing Operations • Upgrade to a new version of Marketing Operations	*IBM Marketing Operations Installation Guide*	• Software implementation consultants • IT administrators • Database administrators
Create custom procedures to integrate Marketing Operations with other applications	*IBM Marketing Operations Integration Module* and the API JavaDocs available when you click **Help > Product Documentation** in Marketing Operations, and then download the `IBM <version>PublicAPI.zip` file	• IT administrators • Database administrators • Implementation consultants
Learn about the structure of the Marketing Operations database	*IBM Marketing Operations System Schema*	Database administrators
Need more information while you work	• Get help and search or browse the *User's*, *Administrator's*, or *Installation* guides: Click **Help > Help for this page** • Access all of the Marketing Operations guides: Click **Help > Product Documentation** • Access guides for all IBM Enterprise Marketing Management (EMM) products: Click **Help > All IBM EMM Suite Documentation**	Everyone who uses Marketing Operations

About managing users

You create and manage users and user groups with features installed with the IBM Marketing Platform. The locale preference for IBM Marketing Operations administrators should be set to match the default locale for your Marketing Operations installation. The installation default locale is defined by the **defaultLocale** parameter under **Settings > Configuration > Marketing Operations.** For details on creating users and user groups, setting user locales, and assigning application access, see the *IBM Marketing Platform Administrator's Guide.*

After you create users, you must synchronize the Marketing Operations user tables with the Marketing Platform user tables. To do so, select **Settings > Marketing Operations Settings > Synchronize Users**.

You then assign users to a user group with an appropriate Marketing Operations role, such as PlanUserRole or PlanAdminRole. This process authorizes users to access Marketing Operations.

If you do not see the users you expect in Marketing Operations, or if users receive an error when logging in, make sure that the user group has application access rights to Marketing Operations and that you have synchronized the user tables.

About synchronizing users

You can manually synchronize the IBM Marketing Operations user tables with the IBM Marketing Platform user tables. This procedure enables new users to log in to Marketing Operations and for changes to take effect before the next scheduled synchronization as set by the **usermanagerSyncTime** parameter under **Settings > Configuration > Marketing Operations > umoConfiguration**. Synchronizing pulls over all the user information from the Marketing Platform to Marketing Operations.

To synchronize users manually

1. Log into Marketing Operations.
2. Click **Settings** > **Marketing Operations Settings**.
3. Click **Synchronize Users**.

IBM Marketing Operations administration process overview

After you install and set up IBM Marketing Operations, users can sign in and use it by following the procedures in the *IBM Marketing Operations User's Guide*. For best results, all administrators should read the *IBM Marketing Operations User's Guide* to gain an understanding of the product before attempting to set it up. To install and set up Marketing Operations, follow these procedures.

1. Install Marketing Operations.
2. Configure Marketing Operations.

   For more information about installing and configuring Marketing Operations, see the *IBM Marketing Operations Installation Guide*.
3. Create templates. See Chapter 4, "Introducing Templates," on page 41.
4. Set up a security policy and configure alerts. See Chapter 9, "Setting Up Security," on page 135 and Chapter 10, "Setting Up Alerts," on page 145.
5. Set up assets. See Chapter 11, "Setting Up Assets," on page 153.
6. Set up list definitions. See Chapter 13, "Defining list options," on page 159.

Administrative settings

User Personalization section

When you select **Settings > Marketing Operations Settings**, the Administrative Settings page displays. This page contains the following sections and links.

Table 2. Administrative settings: User Personalization section

Section	Description
User Personalization	This section contains links for users to customize Marketing Operations to view and receive information that is important to them. See the *IBM Marketing Operations User's Guide* for details.

System Administration Settings section

Table 3. System Administration Settings section: Restricted Options

Link	Description
Security Policy Settings	Contains links to all security policies defined in your system. See "Creating new security policies" on page 140 for details.
User Permissions	Displays a list of all users authorized to use Marketing Operations, organized by the groups to which they are assigned. See "To assign security roles" on page 142 for details.
Synchronize Users	Synchronizes the users in Marketing Operations with the users in the IBM Marketing Platform. See "About synchronizing users" on page 3 for details. When you synchronize users in a clustered environment, any changes propagate to the other servers when they next synchronize with Marketing Platform.
Synchronize Menus	Synchronize the menus in the Marketing Platform with the menus defined in Marketing Operations.

Table 4. System Administration Settings section: Accessible Options

Link	Description
Default Alert Subscriptions	Opens a page for setting up and editing default alert subscriptions for Marketing Operations objects. See "About setting default alert subscriptions" on page 147 for details.

Table 5. System Administration Settings section: Root-Level Object Definitions

Link	Description
Account Definitions	**Note:** This link is only available for systems that use the Financial Management module for Marketing Operations. Contains links for managing Marketing Operations accounts.
Budget Line Item Columns	Opens a page for adding text columns to the Line Item Details tables on Budget tabs.
Asset Library Definitions	Contains links for managing asset libraries. See Chapter 11, "Setting Up Assets," on page 153 for details.

Table 6. System Administration Settings section: Project Options

Link	Description
Health status	Click to customize the user interface labels and colors associated with the four possible project health statuses. See "To customize labels and colors" on page 167.
Health rules	Click to view and manage the rules used to calculate the health status score for projects. You can add, edit, and delete rules, and assign the rule to project templates. See "To configure project health status rules" on page 165.
Recalculate Project Health	Click to manually initiate recalculation of health status scores for all projects. See Chapter 14, "Implementing project health rules," on page 163.

Table 6. System Administration Settings section: Project Options (continued)

Link	Description
Project Health Daily Mails	Available to all users with the PlanUserRole or PlanAdminRole. Click to subscribe or unsubscribe yourself from project health status notifications. These messages are triggered by the automated daily process only, and are not sent if this process does not run for any reason. For more information, see Marketing Operations | **umoConfiguration** | **Scheduler** | **daily** in the *Marketing Operations Installation Guide*.
IntraDay scheduler	Indicates the status of the batch process for periodically recalculating project health status scores as ON or OFF. Click to toggle the status. For more information, see the Marketing Operations **umoConfiguration** | **Scheduler** | **intraDay** configuration parameter in the *Marketing Operations Installation Guide*.
Daily scheduler	Indicates the status of the daily batch process for calculating project health status scores as ON or OFF. Click to toggle the status. For more information, see the Marketing Operations **umoConfiguration** | **Scheduler** | **daily** configuration parameter in the *Marketing Operations Installation Guide*.

Table 7. System Administration Settings section: Other Options

Link	Description
List Definitions	Contains links to the available lists where an administrator can populate or define list values. See "Customizable lists" on page 159 for details.
Template Configuration	Contains links to features for working with templates and template components. See Chapter 5, "Building and managing templates," on page 53 for details. **Note:** In a clustered environment, you must shut down all but one server before initiating any template configuration tasks.
Non-working Business Days	Opens a page for updating the set of system-wide non-work dates. See "About system wide non-work dates" on page 6 for details.
Manage Published Searches	Opens a page for publishing searches saved by Marketing Operations users. See "About managing published searches" on page 11 for details.
Marketing Object Type Settings	Opens a page where you can view and manage custom marketing object types for your system. See "Adding marketing object types" on page 26 for details. **Note:** In a clustered environment, you must shut down all but one server before completing any marketing object configuration tasks.
Trigger Bindings	Opens a page listing triggers defined in the system and details about how they are bound to procedures. See "Triggers" on page 8 for details.
Customize Alerts	Opens a page where you can change the text for alerts for specified events. See Chapter 10, "Setting Up Alerts," on page 145 for details.
Marketing Operations Upgrade	Opens a page where you can select Marketing Operations components to upgrade. See the *IBM Marketing Operations Installation Guide* for details.
Data Migration	Offers options to export and import metadata. See Chapter 15, "Exporting and importing metadata," on page 169.

Table 7. System Administration Settings section: Other Options (continued)

Link	Description
Out of Office-Automatic Addition of Delegate	Provides access to a system-wide setting for the out of office feature. When a user is out of the office, a delegate can be specified to cover tasks, approvals, and requests. This setting defines whether a user can select only another team member as a delegate, or any Marketing Operations user. • Set **Enable Auto Addition of Delegate User** to yes to add the delegate as a project team member if necessary when a task, approval, or request is assigned. • Set **Enable Auto Addition of Delegate User** to no to require users to select only a user who is already a team member for all of the same projects as a delegate. You can override this setting for individual project templates. For more information about the out of office feature, see the *IBM Marketing Operations User's Guide*.
Out of Office Users and Delegation Summary	Offers options to report information about team members who are out of the office. For more information, see "To produce the Out of Office Users and Delegation Summary" on page 38.
Associate Deny Reasons with Standalone Approvals	For stand-alone approvals, you can configure Marketing Operations so that users who deny approval are required to select a reason from a predefined list. See "Configuring the approval process" on page 19.
Import Campaign Offers	Available only on systems that integrate IBM Marketing Operations with Campaign and also enable optional offer integration. Enumerates the offers and offer templates, folders, and lists currently available in IBM Campaign. For more information about enabling offers, see *IBM Marketing Operations and Campaign Integration Guide*.

About system wide non-work dates

IBM Marketing Operations allows you account for time where, by default, no work will be done on tasks. Marketing Operations does not include non-work time in task duration calculations.

You can specify non-work time in date ranges or as single dates.

To add a non-work date

1. Select **Settings > Marketing Operations Settings**.
2. In the Other Options section, click **Non-working Business Days**.

   The Non-working Business Days page appears.
3. Enter a start and end date for the new non-work time. The end date defaults to the start date, for easily entering single-date events.
4. Type a name for the non-work time in the **Name** field.
5. Select a type for the event from the **Type** drop-down list.

   Note: Use the List Definitions page in the Administration section to add non-work time types.
6. Click **Accept**.

A message appears, reminding you to click Save Changes for your changes to take effect.

Note: You cannot add past dates (that is, dates that have already occurred).

7. Click:
   - **Save Changes** to save your changes.
   - **Revert to Saved** to undo your changes and continue editing.
   - **Cancel** to undo your changes and return the Administration page.
8. If your changes affect any projects, the system displays a summary screen, detailing the projects affected and the name and email address for the project owner.

To remove a non-work date

1. Select **Settings > Marketing Operations Settings**.
2. In the Other Options section, click **Non-working Business Days**.

   The Non-working Business Days page appears.
3. Select a date or dates from the list.
4. Click **Remove**.

   A message appears, reminding you to click Save Changes for your changes to take effect.

   Note: You cannot delete past dates (that is, dates that have already occurred).
5. Click:
   - **Save Changes** to save your changes,
   - **Revert to Saved** to undo your changes and continue editing, or
   - **Cancel** to undo your changes and return the Administration page.
6. If your changes affect any projects, the system displays a summary screen, detailing the projects affected and the name and email address for the project owner.

To change the list of non-working business dates

Typically, you define the list of holidays and other non-working dates at the beginning of the calendar year, before marketing calendar details are set. However, you may need to change the set of non-working days after dates for tasks, projects, and programs have already been set. In this case, the process for changing the list of non-working business days is as follows.

1. Make any changes to the list of non-working business days.
2. If your changes affect any projects or tasks, you should use the Non-working Business Dates summary page to notify affected project owners.

Non-working Business Dates summary page

The Non-working Business Dates summary page contains the following fields:

Field	Description
Name	The name of the project owner of the affected project(s).
Email Address	The email address of the project owner of the affected project(s).
Project list	A list of affected projects, and the actual non-working dates that were added or removed that occur during the duration of the project.

Use this page to send email notification to project owners whose projects are affected by your changes. You can cut and paste the text in the project list field into your email, so the project owners can quickly assess the impact of your changes.

Triggers

You can set up triggers so that events related to certain objects cause execution of a procedure.

Assume you want to insert data into a database whenever the state of a particular project changes from draft to active. You can use a trigger to do this by defining the following:

- A procedure to insert a record into an external database table
- A project template, DirectMail
- A trigger binding for the DirectMail template, set to fire when the state of a project changes (for example from draft to active).

If you create a project based on the DirectMail template, the system calls the procedure when the specified state change occurs.

The following trigger rules apply:

- Triggers occur just before or just after an event.
- Triggers are executed on a subset of system events, including those involving projects, requests, marketing objects, approvals, tasks, workflow spreadsheets, grid rows, users, invoices, budgets, accounts, and resources.

In general, define triggers at the most granular level possible. For example, rather than setting a trigger binding for any object, configure a trigger binding for a particular event for a particular project template.

You can view the list of trigger bindings for your installation by selecting **Settings > Marketing Operations Settings** and clicking **Trigger Bindings**.

To add a trigger

You must perform several tasks before a trigger automatically fires when a certain condition is met for an object. These steps describe the process of adding triggers. Note that you must do some of the steps outside of IBM Marketing Operations.

1. Create a procedure in Java™, implementing the `IProcedure` interface.
2. Put the procedure into the procedure folder. You specify this folder in the **`integrationProcedureDefintionPath`** parameter under **Settings > Configuration > Marketing Operations > umoConfiguration > integrationServices**.
3. Build the procedure.
4. Add the procedure to the definition file, `procedure-plugins.xml` (located in the above folder).
5. Restart the web server.
6. Log in to Marketing Operations, and navigate to the **Trigger Bindings** screen (**Settings > Marketing Operations Settings > Trigger Bindings**).
7. Click **Add New Trigger Binding**.
8. Fill in the fields in the Add New Trigger screen, and click **Save**.

   Now, when the condition is met for this particular object, the procedure bound to this trigger condition executes.

To add or edit a trigger binding

1. Select **Settings > Marketing Operations Settings** and click **Trigger Bindings** to display the current trigger bindings in the system.
2. Click **Add New Trigger Binding**, or **Edit** for an existing binding.
3. Fill in the details for the trigger binding.

   Note that you must choose **Validating** or **Deferred** (checking one unchecks the other). The default is **Deferred**.
4. Click **Save** to save the binding and return to the Trigger Binding list screen.

Trigger bindings details

When you create a trigger binding, you specify the following information. This information is then displayed in the Triggers table.

Column	Description
Name	Text name for the binding. Names must be unique.
Marketing Operations Object	The object the trigger is defined for. The default is **Any Marketing Operations Object**.
Template	The template to use as a filter. The template provided is a filter that applies to all instances of objects for that template. Projects are objects that have templates. So specifying a filter criterion that restricts the search to a specific template. The default for this criterion is **Any Template**, meaning either that all templates for the object are included in the filter, or that the object specified does not have templates to consider.
Context	The context for the trigger. For example, the context could be a task or workflow. A default of **Any** means that any context is considered for the filter criterion.
Event	An event for the filter operation. Only events that correspond to the selected object, template, and context are displayed, unless **Any Event** was selected for the object, in which case all events are displayed.
Deferred	The procedure runs sometime after the transaction is committed. The transaction that enclosed the trigger it not present in the procedure context. The procedure is provided a separate transaction context.
Validating	A validating trigger invokes a procedure to validate data before the current transaction is committed. The trigger sets up the procedure call with an enclosing context, which contains the database transaction.

Column	Description
Exclusive	Exclusive bindings denote a procedure that may not be executed with other procedures, even if multiple bindings match. (If multiple exclusive bindings match, all the exclusive bindings are executed.) If this box is not checked, the binding is inclusive. Inclusive bindings denote procedures that will be executed with other procedures if more than one trigger's selection criterion matches. If any matching procedure is exclusive, then only an exclusive matching procedure will be executed. Only the most specific exclusive bindings match. So, for example if you have three exclusive triggers, a global one, one on all projects, and one on a particular project template, then if the event fired matches all three, only the one for the particular project template runs.
Procedure	The procedure bound to the trigger; that is, the procedure to execute when the trigger fires.

About customizing the Budget tab

You can add up to three text column to the Line Item Details tables that appear on the Budget tabs for programs and projects. This is a global change; the text columns you specify display on all Line Items Details tables in all programs and projects in your Marketing Operations installation. Changes to the Budget tab apply to both new and existing programs and projects.

Note: Budget tabs require the Financial Management module. If you do not have the module, the Budget Line Item Columns option is not visible.

About disabling and removing text columns

You can remove a text column from the Line Item Details tables without deleting the label from the administration settings by clicking Disable. Once you disable a text column, the Disable option is replaced with Enable.

You can delete a text column from the Line Item Details tables and the administration settings by clicking Remove. When you click Save Changes, the text column fields are renumbered if necessary and new fields are added at the bottom of the screen to keep the total number of text colum fields in the administration settings at three.

To add or edit text columns in the Line Item Details table

1. Select **Settings > Marketing Operations Settings** and click **Budget Line Item Columns**.
2. Enter the column label you want for each column.

   Entering label text automatically enables the column.
3. Click **Save Changes**.

Enabling the vendor column for budgets

If you want the **Vendor** column to be visible when users are editing budget line items, you must set the **FMPrgmVendorEnabled** and **FMProjVendorEnabled** configuration parameters to `true` under **Settings > Configuration >Marketing Operations > umoConfiguration**.

About managing published searches

All IBM Marketing Operations users have the ability to save any search they perform. After users specify the search criteria, they can save that criteria for later use. As an administrator, you can then publish these saved searches. Publishing a search makes it available to all Marketing Operations users.

To make a published search private

If someone has previously published a search, and it is no longer needed, you can change it back to a private search.

1. Select **Settings > Marketing Operations Settings**.

   The Administrative Settings page opens.
2. Click **Manage Published Searches**.

   The Published Searches page opens.
3. Use the **<<** button to remove searches from the **Publish Saved Search** list box.
4. Click **Save Changes.**

   Any searches you removed from the Published Saved Search list box are now private, and can be deleted if required.

Administering IBM Marketing Operations in a clustered environment

If you are running IBM Marketing Operations in a clustered environment, we recommend you shut down all but one Marketing Operations instance when you perform system administration tasks.

Viewing system locks

IBM Marketing Operations includes a tool for viewing the items currently locked within the application. To use the tool, enter the following URL into a browser window, using the hostname and port of your Marketing Operations server:

`http://<hostname>:<port>/MktOps/affiniumplan.jsp ?cat=adminobjectlocklist`

In the login screen, enter the credentials for an administrator-level account. The object lock browser screen appears. The lock browser displays information about the current locks, grouped by objects, grids, and grid rows. The screen displays the information about each lock (user holding the lock, the object ID of the locked object, and so on).

Increasing Marketing Operations performance

This section describes configuration parameters you can set or change to increase performance. IBM Marketing Operations configuration properties are located in the IBM Marketing Platform under **Settings > Configuration > Marketing Operations**.

Max result size

You can crop all listing page result sets to a specified value using the **commonDataAccessLayerMaxResultSetSize** parameter under **umoConfiguration > database**. This setting is used to help overcome some database query limitations.

Query batch size

You can set the batch size of some performance-sensitive queries using the **commonDataAccessLayerFetchSize** parameter under **umoConfiguration > database**. The batch size determines how many records in the result set are returned to the application at one time. The default setting for the database is usually 10. The recommended setting for Marketing Operations is 500.

maximumItemsToBeDisplayedInCalendar

If you have a large number of objects (plans, programs, projects and tasks), you may experience performance issues when viewing and exporting the calendar. To improve the speed, increase the value of the **maximumItemsToBeDisplayedInCalendar** parameter under **umoConfiguration > listingPages**. The maximum value is 500.

The displayed or exported calendar entities will be limited to the number you specify. You may need to use a custom search to ensure you see all the desired items.

Customizing the IBM Marketing Operations interface

IBM Marketing Operations offers options for customizing the user interface. You can:

- Rename standard marketing object types to change the labels that display on pages and menus.
- Create menus and rename them.
- Reorganize and rename menu items, and add menu items that link to URLs.

You also define the options that display on several drop-down lists in the user interface. For more information, see Chapter 13, “Defining list options,” on page 159.

Renaming marketing object types

You can change the labels and other text strings that display in the user interface for marketing object types. The standard Marketing Operations marketing object types include plans, programs, projects, approvals, and assets. You can also add custom marketing object types to meet the needs of your organization. See Chapter 2, “Administering Marketing Objects,” on page 23.

To rename an object type, you edit one or more of the following files:

- *<MarketingOperations_Home>*/messages/com/ibm/umo/ext/UMOConfigurationMessages_*<defaultLocale>*.properties (for a standard marketing object type) or UMOMktObjectConfigurationMessages_*<defaultLocale>*.properties (for a custom marketing object type)

  This file contains list parameters and ui parameters.

  - The list parameters define labels and text strings for the list page that displays when users select the menu item for the object type. For example, `projectlist.columnList.PROJECT_STATUS.header=Status`.
  - The ui parameters define labels and text strings for the pages that display data for a single instance of that object type. For example, `projectsui.tabset.tab_edit_workflow.item_addTask.display=Add Task Row`.
- *<MarketingOperations_Home>*`/conf/`*<defaultLocale>*`/sysmodules.xml`

  See "About the `sysmodules.xml` file."
- *<MarketingOperations_Home>*`/conf/`*<defaultLocale>*`/sysmenu.xml`

  See "About the `sysmenu.xml` file" on page 14.

For your changes to take effect in the Marketing Operations user interface, you must restart the application server and synchronize menus with Marketing Platform.

If your organization supports multiple locales, you can localize the labels that display for the standard marketing object types. See "About localizing object types" on page 18.

About the `sysmodules.xml` file

The *<MarketingOperations_Home>*`/conf/`*<locale>*`/sysmodules.xml` file defines the labels that display in the user interface for standard marketing object types. This file contains sections for module elements and item elements.

- Module elements define how the marketing object type displays on menus in Marketing Operations.
- Item elements define singular and plural versions of the object type name for other uses in Marketing Operations.

For each of the standard marketing object types, the `sysmodules.xml` file includes one module element and two item elements. For example, the `en_US/sysmodules.xml` file includes the following values for projects:

```
<module id="projects">
     <display>Projects</display>
     <description>Projects Module</description>
     <helptip>Projects</helptip>
     <link>uapprojectservlet?cat=projectlist</link>
     <helpfile>plan.htm</helpfile>
</module>
<item id="project">Project</item>
<item id="projects">Projects</item>
```

To change the labels that display on menus and pages, one of the files that you edit is the `sysmodules.xml` file for your default locale. For example, to change "projects" to "promotions" throughout the user interface, you edit the value of the <display> element for the module and the values for both of the <item> element for projects.

```
<module id="projects">
     <display>Promotions</display>
     <description>Projects Module</description>
     <helptip>Projects</helptip>
     <link>uapprojectservlet?cat=projectlist</link>
     <helpfile>plan.htm</helpfile>
</module>
<item id="project">Promotion</item>
<item id="projects">Promotions</item>
```

You also edit the sysmodules.xml file if you want to add a menu item that links to a URL. See "To add a menu item that links to a URL" on page 17.

To apply changes you make in the sysmodules.xml file to the Marketing Operations user interface, you must restart the server and synchronize menus with Marketing Platform.

Note: The default locale for your organization is set during installation. To verify this setting, click **Settings > Configuration > Marketing Operations** and review the defaultLocale configuration parameter.

When you create a custom marketing object type, Marketing Operations automatically adds a module element and the singular and plural item elements for it to the sysmodules.xml file. For more information, see Chapter 2, "Administering Marketing Objects," on page 23.

Elements in the sysmodules.xml file:
To define modules in the sysmodules.xml file, you use the following elements.

module

The <module> element is the container element for the elements that define a module. This element has the following attributes:

Attribute	Description
id	Unique name of the module.

The <module> element has no value. It can contain the following child elements: <display>, <description>, and <link>.

display

The <display> element defines the name that Marketing Operations uses for this module in the interface. This element has no attributes and no child elements. The element value is the name you want to use.

description

The <description> element defines the description for this module. This element has no attributes and no child elements. The element value is the description you want to use.

link

The <link> element defines the page that displays when users click the menu item for this module. This element has no attributes and no child elements. The element value is the link.

About the sysmenu.xml file

The *<MarketingOperations_Home>*/conf/*<locale>*/sysmenu.xml file defines the labels of menus and menu items, including the sequence of the menu items and any separators.

User interface menus and menu items are defined by the elements in sysmenu.xml. Initially, the menu items correspond to the values defined in the sysmodules.xml

file for module elements. Every item in the sysmenu.xml file must have a corresponding module element in the sysmodules.xml file.

To reorganize menu items in their menus, rename a menu that you created, or add a menu item, one of the files that you edit is the sysmenu.xml file for your default locale. To apply changes you make in the sysmenu.xml file to the Marketing Operations user interface, you must restart the application server and synchronize menus with Marketing Platform.

Elements in the sysmenu.xml file:
You use the following elements to define menus and menu items in the sysmenu.xml file.

menugroup

The <menugroup> element identifies a menu in the user interface, and contains elements that define the label for the menu and the items that it offers. This element has the following attribute:

Attribute	Description
id	Unique identifier for the menu.

The <menugroup> element has no value. It can contain the following child elements: <display> and <menuitem>.

display

The <display> element defines the label that Marketing Operations displays in the user interface for this menu. This element has no attributes and no child elements. The attribute value is the name that you want to use.

menuitem

The <menuitem> element defines an item on a menu. This element has the following attributes:

Attribute	Description
id	Unique identifier for the module that corresponds to this menu item. A corresponding module id value must be present in the sysmodules.xml file.
type	The type of the module that corresponds to this menu item. Optional.

The <menuitem> element has no value or child elements.

To include a horizontal line between two menu items, you add a <separator/> element to sysmenu.xml between the <menuitem> elements.

To rename a marketing object type

1. Open the sysmodules.xml file.
2. Locate the <syscatalogitems> section of this file. For the <item> elements that define the singular and plural names of the marketing object type you are renaming, replace the values with your preferred terminology.

3. Locate the <module> section for the marketing object type you are renaming. Change the value of the <display> element in that section to your preferred terminology.
4. Save and close the `sysmodules.xml` file.
5. Open the `UMOConfigurationMessages_<defaultLocale>.properties` file (for a standard marketing object type) or the `UMOMktObjectConfigurationMessages_<defaultLocale>.properties` file (for a custom marketing object type).

   For the marketing object type you want to rename, locate all list and ui property values (after the = sign) that include the object type name.
6. Change the name values to your preferred terminology. Save and close the file.
7. Open the `sysmenu.xml` file. The menu item names that this file defines override the display names that are defined by `sysmodules.xml`.
8. Change the menu item name values to your preferred terminology. Save and close the file.
9. Restart the Marketing Operations application server.
10. Click **Settings > Marketing Operations Settings > Synchronize Menus**.

    Note: If menus do not display as expected after you complete this procedure, use the `configTool` utility to import menu items manually. For information about using this tool, see the *IBM Marketing Operations Installation Guide*. See the section on configuring Marketing Operations before deployment, and the step for registering Marketing Operations manually.

Customizing menus

You can configure the menus and menu options for Marketing Operations based on the needs of your organization. Marketing Operations allows you to make any of the following customizations:

- Create menus
- Reorganize items on menus
- Rename items on menus
- Rename a menu you created earlier
- Add menu items that link to URLs

You cannot rename the default menus (Operations, Analytics, etc.) although you can rename items within those menus.

To create a menu

Before you can create a menu, the `sysmodules.xml` file must contain a module for the menu and a module for each item you want to include on the menu.

1. Open the `sysmodules.xml` file.
2. Add a <module> element with a unique id value for the new menu.
3. Ensure that a <module> exists for each menu item you want to include on the menu.

   Make a note of the id value for each one.
4. Save and close the `sysmodules.xml` file.
5. Open the `sysmenu.xml` file.
6. To create the menu, add a <menugroup> element.

Enter the same id value for this element that you entered for the new menu <module> element in the sysmodules.xml file.

7. To create menu items for the menu, add <menuitem> elements to that <menugroup>.

   Make sure that each <menuitem> element has an id value that is the same as one of the sysmodules.xml file <module> elements that you identified in step 3.
8. Save and close the sysmenu.xml file.
9. Restart the Marketing Operations server.
10. Click **Settings > Marketing Operations Settings > Synchronize Menus**.

Reorganizing items on menus

You can reorganize items on menus. You can move items from one menu to another or change the order of items on a menu.

You reorganize items on menus by changing the location of the <menuitem> elements in the sysmenu.xml file. When you are through, click **Settings > Marketing Operations Settings > Synchronize Menus.**

To rename a menu or an item on a menu

1. Open the sysmenu.xml file.
2. Find the <menugroup> element for the menu you want to rename or the <menuitem> element for the menu item you want to rename.
3. Do one of the following options:
   a. If the element has a <display> child element, change the value of the <display> element to the text you want to display.
   b. If the element does not have a <display> child element, create a <display> child element whose value is the text you want to display.
4. Save and close the sysmenu.xml file.
5. Restart the Marketing Operations application server.
6. Click **Settings > Marketing Operations Settings > Synchronize Menus**.

To add a menu item that links to a URL

1. Open the sysmodules.xml file.
2. Create a module.

   The value of the <link> element must be the URL to which you want to link.
3. Make a note of the values for the id and type attributes.

   You must enter them in the sysmodules.xml file in a later step.
4. Save and close the sysmodules.xml file.
5. Open the sysmenu.xml file.
6. Find the <menugroup> for the menu to which you want to add the link.
7. Add a <menuitem> element that references the module you created earlier.
8. Save and close the sysmenu.xml file.
9. Restart the Marketing Operations server.
10. Click **Settings > Marketing Operations Settings > Synchronize Menus**.

Synchronizing menus

Anytime you make a change to the menus in Marketing Operations, you must synchronize the menus in order for your changes to display.

Note: Creating a marketing object type counts as a change to the menus. Marketing Operations modifies the `sysmodules.xml` file and the `sysmenu.xml` file automatically, but you must manually synchronize the menus.

To synchronize the menus, click **Settings > Marketing Operations Settings > Synchronize Menus**.

Supporting multiple locales

For organizations with Marketing Operations users in multiple locales, you can configure the labels and other text strings that display in the user interface to support the language of each locale. The **supportedLocales** and **defaultLocale** configuration parameters, found under **Settings > Configuration > Marketing Operations**, identify the locales for your organization. These parameters are set during installation.

You can localize the following objects in Marketing Operations:

- Standard marketing object types and custom marketing object types. See "About localizing object types."
- Template properties. See "Multi-locale support" on page 47.
- Form attributes. See "Localizing forms" on page 103.
- Metrics. See "Localizing metrics" on page 132.
- Alerts. See "To customize an alert" on page 149.
- Lists, including user roles for project templates. See "About localizing lists" on page 162.

Note: Changes to the *<MarketingOperations_Home>*`/messages/com/ibm/umo/core/UMOMessages_<`*locale*`>.properties` files to localize system warning and error messages are not supported. System upgrades and other processes overwrite these files.

About localizing object types

If your organization supports multiple locales, the user interface labels and text strings for marketing object types can be translated into the language of each locale. To localize these labels and text strings for your organization, you follow the procedure to rename an object type. You edit the `sysmodules.xml`, `sysmenu.xml`, and `UMOConfigurationMessages_<`*locale*`>.properties` or `UMOMktObjectConfigurationMessages_<`*locale*`>.properties` files for each supported locale.

- For standard marketing object types, IBM Marketing Operations supplies a properties file for each locale. This file contains a set of properties that define user interface labels and strings for each standard marketing object types. These files are the *<MarketingOperations_Home>*`/messages/com/ibm/umo/ext/UMOConfigurationMessages_<`*locale*`>.properties` files.
- The first time you create a custom marketing object type, Marketing Operations creates another properties file for each locale. This file contains properties that define labels and strings for the custom marketing object type. Each time you add a custom marketing object type, the system adds a set of properties for it to these files. These files are the *<MarketingOperations_Home>*`/messages/com/ibm/umo/ext/UMOMktObjectConfigurationMessages_<`*locale*`>.properties` files.

In these files, the list parameters define labels and text strings for the page that displays when users select the menu item for the object type. The ui parameters define labels and text strings for the pages that display data for a single instance of that object type.

For example, for the project marketing object type this parameter defines the label for the "Owner" column on the project list page:

```
projectlist.columnList.PROJECT_OWNER.header
```

In the English language properties file, the value for this parameter is:

```
projectlist.columnList.PROJECT_OWNER.header=Owner
```

In the German language properties file it is:

```
projectlist.columnList.PROJECT_OWNER.header=Besitzer
```

For more information, see “Renaming marketing object types” on page 12.

About localized format and symbol settings

The *<MarketingOperations_Home>*/conf/*<locale>*/format_symbols.xml file stores values to localize the display of dates, currency, months, and days of the week for each supported locale.

Note: IBM discourages editing the format_symbols.xml files.

If you do edit the format_symbols.xml file, follow these guidelines:

- In Windows, you must save the file in UTF-8 format, rather than the Windows default of ANSI.
- If you edit the date/time settings, you must supply the same date format value for both <date-format> and <date-time-format>. Otherwise, you will receive errors while working with Marketing Operations.

Configuring the approval process

In IBM Marketing Operations, a structured approval process distributes information to team members and elicits their comments. As the outcome of an approval, users select one of these options:

- Approved
- Approved with Changes
- Denied

To customize the approval process for your organization, you can require users to select a predefined **Deny reason** when they deny an approval. Administrative reports are available to help you analyze the reasons given.

For more information about the approval process, see the *IBM Marketing Operations User's Guide*.

To require a deny reason

To require a deny reason when users deny an approval, you complete the following configuration steps.

1. Set the **specifyDenyReason** configuration parameter to `true` under **Settings > Configuration >Marketing Operations > umoConfiguration > Approvals**. For more information, see the *IBM Marketing Operations Installation Guide*.
2. Restart the Marketing Operations application server.
3. Add options to the customizable Approval Deny Reason list. For more information, see "Customizable lists" on page 159.
4. To enable this feature for stand-alone approvals, you select the Approval Deny Reason options that apply to this type of approval. Select **Settings > Marketing Operations Settings > Associate Deny Reasons with Stand-alone Approvals**.
5. To enable this feature for approval tasks, you select the Approval Deny Reason options that apply to each project template. For more information, see "To select approval options for the template" on page 72.

Configuring the markup feature

Marketing Operations provides markup tools for making comments on attachments. When Marketing Operations users send approvals for review, approvers can place their comments directly in the electronic file, where they can be viewed by other users.

Marketing Operations provides two types of markup tools.

- Native Marketing Operations markup: The native markup option provides various markup functions that can be applied to files in PDF, HTML, JPG, PNG, GIF, and BMP format. Users can mark up whole websites if a URL is supplied. The comments can then be saved in Marketing Operations. Native markup is the default option. It does not require Acrobat to be installed on client machines.
- Adobe Acrobat markup: This markup tool requires the installation of Adobe Acrobat on each client machine. Users can apply all Acrobat commenting features, and then save the edited PDF in Marketing Operations.

The markup option is a global setting. (You cannot enable different markup options for different groups of users.)

About changing markup tool availability

By default, the native Marketing Operations markup tool is enabled. You can change the type of markup tool available to users by changing the markup configuration parameters under **Settings > Configuration > Marketing Operations > umoConfiguration > markup**. However, changing the markup tool after users have begun viewing and editing markups has serious consequences.

- Switching from Acrobat markup to native markup means that users cannot view or edit markups made using Acrobat.
- Switching from native markup to Acrobat markup means that users cannot view or edit markups made using the native markup tool.

Note: For best results, avoid changing markup configuration after users have begun using the markup tool. Carefully consider the implications for users before changing markup tool availability.

To enable Adobe Acrobat markup

Enabling Adobe Acrobat markup disables the native Marketing Operations markup for all users.

1. Click **Settings > Configuration > Marketing Operations > umoConfiguration > markup**.

2. Click **Edit Settings**.
3. Set the **markupServerType** parameter to `SOAP`.
4. Set the **markupServerURL** parameter to the URL for the Marketing Operations host server, including the fully qualified host name and the port where the web application server listens.

   Use this path format, with your values substituted for *<server>* and *<port>*.

   `http://<server>:<port>/plan/services/collabService?wsdl`
5. Set the **useCustomMarkup** parameter to `True`.

   If you want Windows users to use the Marketing Operations custom **Send Comments** button instead of the Acrobat **Send Receive Comments** button, set the **useCustomMarkup** parameter to `False`. Users must then configure Acrobat to enable the Marketing Operations Comments toolbar. For more information about reviewing PDFs, see the *Marketing Operations User's Guide*.
6. Click **Save**.
7. Restart Marketing Operations for the change to take effect.

Installing and configuring Adobe on client computers

For users to use Adobe markup effectively, you install Adobe Acrobat on each client computer that is used to access IBM Marketing Operations.

After each installation on a Microsoft Windows platform, you must copy the customized `UMO_Markup_Collaboration.js` file from the `<MarketingOperations_Home>\tools` directory to the client computer. Copy this file to the `Javascripts` subdirectory of the directory where you installed Adobe Acrobat. For example:

```
C:\Program files\Adobe\Acrobat 6.0\Acrobat\Javascripts\
UMO_Markup_Collaboration.js
```

If an `sdkSOAPCollabSample.js` file exists in this directory, delete it.

Note the following.

- If a user cannot view comments by other approvers, the `UMO_Markup_Collaboration.js` file is likely to be missing or incorrect.
- If you run Acrobat before you copy this file, you must restart the computer for the markup capability to be used.

In addition, users who use the Internet Explorer browser to access IBM Marketing Operations must set Internet Explorer preferences to display PDFs in the browser.

To enable native IBM Marketing Operations markup

Enabling native Marketing Operations markup disables Adobe Acrobat markup.

1. Click **Settings > Configuration > Marketing Operations > umoConfiguration > markup**.
2. Click **Edit Settings**.
3. Set the `markupServerType` parameter to `MCM`.
4. Click **Save**.
5. Restart Marketing Operations for the change to take effect.

To disable markup

If you disable markup, users cannot add comments to PDFs.

1. Click **Settings > Configuration > Marketing Operations > umoConfiguration > markup**.
2. Click **Edit Settings**.
3. Clear the `markupServerType` parameter value.
4. Click **Save**.
5. Restart Marketing Operations for the change to take effect.

Configuring system logs

To log configuration, debugging, and error informationMarketing Operations uses the Apache log4j utility.

To change the types of messages that this utility includes in the system log, you change the value of the **level** property in the *<MarketingOperations_Home>*/conf/plan_log4j.xml file.

You can set the logging level to FATAL, ERROR, WARN, INFO, or DEBUG to capture an increasing number of messages. For example, to record the maximum number of messages to help troubleshoot a problem, you scroll to the end of the plan_log4j.xml file and change the level to DEBUG:

```
<root>
   <level value="DEBUG"/>
   <appender-ref ref="ASYNC_SYS_LOG"/>
</root>
```

When your investigation is complete, you change the level value back to the default, WARN:

```
<root>
   <level value="WARN"/>
   <appender-ref ref="ASYNC_SYS_LOG"/>
</root>
```

Tip: The plan_log4j.xml file is reloaded 60 seconds after it is updated, so a server restart is not necessary after you edit this file.

Chapter 2. Administering Marketing Objects

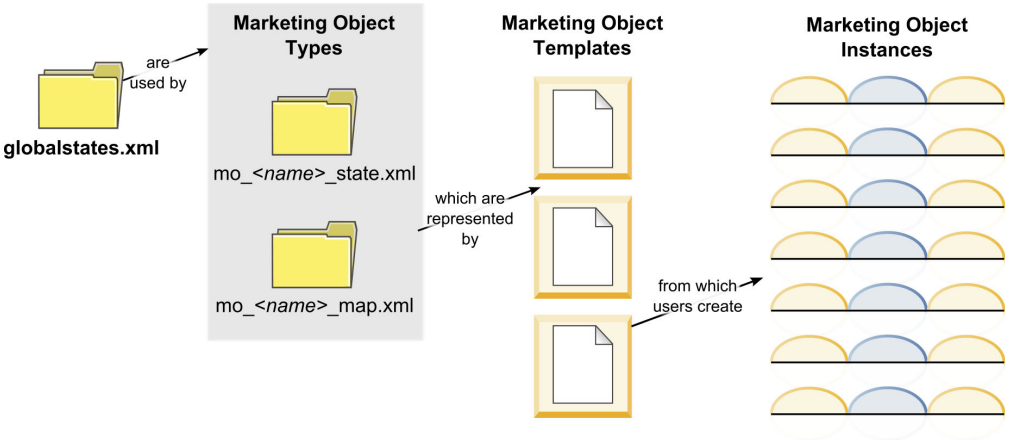
Marketing objects are the work products a team develops and reuses in the course of marketing activities. A marketing object can represent a physical item, such as a letter, credit card, or banner ad. A marketing object can also represent a business component, such as a credit card offer, target segment definition, or rewards program definition.

IBM Marketing Operations organizes marketing objects by type. You must define a marketing object type for each kind of physical item or business component you want to use. Given the marketing object examples listed earlier, you could create the following marketing object types.

- letter
- credit card
- banner ad
- credit card offer
- target segment definition
- rewards program definition

After you define the marketing object type, you create one or more templates for each marketing object type. For example, you could create separate letter templates for different kinds of letters. Each template can be used multiple times to create different instances of that type of letter.

The following diagram displays the representation of marketing objects within IBM Marketing Operations, and how the components relate to one another:



Typically, marketing object instances move through a series of states or workflow statuses, such as Not Started, In Progress, and Completed. A single XML file defines the states for all marketing object types. To specify the states that apply to a marketing object type, and the transitions that are allowed between states, you update the marketing object type.

Marketing object type process overview

1. If the new marketing object type requires new states, define the new states in the global states file. See "Editing the global states file" for details.
2. If you defined new states, restart the web server to make the new states available.
3. Add the marketing object type. You specify the states that are valid, and the transitions between states, when you add the marketing object type. See "Adding marketing object types" on page 26 for details.
4. Restart the web application server to make the new marketing object type available.
5. Create a marketing object template for the marketing object type. See "Creating a marketing object template" on page 28 for details.
6. Users create marketing object instances based on the marketing object template. See the *IBM Marketing Operations User's Guide* for details.

About marketing object states

Every marketing object has a state that indicates its status. The state changes as the marketing object moves through its lifecycle.

The following states are available by default:

- Not Started
- In Progress
- On Hold
- Cancelled
- Completed

You can create additional states by editing the global states file.

When you create a marketing object type, you specify the possible states for that type from the global list of states.

Editing the global states file

The global states file lists all possible states for marketing objects in your installation. The `globalstates.xml` file is in the *<MarketingOperations_Home>*`\conf\`*<locale>* folder.

You define states in this file with the following XML tags:

Table 8. XML tags for global states

Tag	Description
id	A unique identifier for the state. The id value cannot contain spaces.
displayName	The label to display for objects when they are in this state. For example, "In Progress".
icon	The visual indicator that displays next to the `displayName` to represent this state. Referenced image files must be placed in the webapp/images directory of the WAR file. Images that are 20x20 pixels in size and in GIF format provide the best results. The system automatically resizes images of other sizes to 20x20 pixels.

Table 8. XML tags for global states (continued)

Tag	Description
frozen	A flag that indicates whether the object can be edited in this state: • `false`: users can edit the object when it is in this state. • `true`: users cannot edit the object when it is in this state.

An example entry for the `IN_PROGRESS` state follows:

```
<state id="IN_PROGRESS">
     <displayName>In Progress</displayName>
     <icon>status_onschedule.gif</icon>
     <frozen>false</frozen>
</state>
```

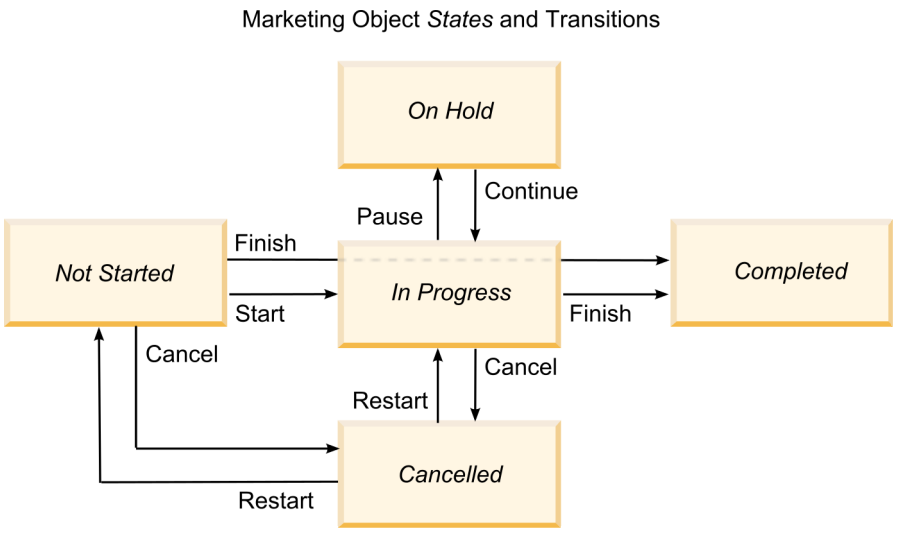
Important: To update the global states file used by your Marketing Operations instance, you must restart your web server.

About state transitions

When users work with marketing object instances, they can change the status of an individual instance while they edit it, or change the status of multiple selected instances on the list page for that object type. Users choose from a list of possible transitions: the values that are available depend on the current status of the instance and on the state transitions defined for the marketing object type.

By default, the following transitions are defined:

Transition	From Status	To Status
Start	Not Started	In Progress
Cancel	Not Started	Cancelled
Continue	On Hold	In Progress
Cancel	In Progress	Cancelled
Pause	In Progress	On Hold
Finish	Not Started or In Progress	Completed
Restart	Cancelled	Not Started or In Progress



For example, if a marketing object instance is In Progress, a user can choose to:

- Pause it: change its status to On Hold
- Finish it: change its status to Completed
- Cancel it: change its status to Cancelled

You add or remove transitions when you create a marketing object type.

Adding marketing object types

You add a marketing object type to IBM Marketing Operations before you create marketing object templates, and before users create instances of that type.

Note: IBM Marketing Operations does not offer a user interface for updating marketing object types after you add them. Before you begin, determine the state transitions that the marketing object type should offer and collect the information that you need.

To add a marketing object type

1. Select **Settings > Marketing Operations Settings**.
2. In the **Other Options** section, click **Marketing Object Type Settings**.
   The Marketing Object Type Settings page displays.
3. Click **Add Marketing Object Type**.
4. Specify the details for the object type. Descriptions of the fields on this page follow.
5. Click **Save Changes** to add the new marketing object type, or **Cancel** to quit without adding the new type. When you save the marketing object type, Marketing Operations creates XML definition files and properties files with its specifications.
6. If your organization supports multiple locales, translate the labels and text strings that display in the user interface into the language of each locale. For information, see "About localizing object types" on page 18.

Add Marketing Object Type page

On this page, you define the internal and display names for a marketing object type, how users navigate to instances, and valid states and state transitions.

Table 9. Fields on the Add Marketing Object Type page

Field	Description
Marketing Object Type Module Name	The internal name of this marketing object type. The name can include only English-language alphanumeric characters and underscores. An all-lowercase version of this name is used in the names of the XML definition files, and in the parameters in the properties files, for this marketing object type.
Marketing Object Type Display Name	The label to use for the marketing object type in menus and listings.
Marketing Object Type Module Description	A brief description of this marketing object type.
Marketing Object Type Module Help Tip	Reserved for future use.

Table 9. Fields on the Add Marketing Object Type page (continued)

Field	Description
Marketing Object Name (Singular)	The label to use in links and titles in the Marketing Operations user interface when a singular name is needed (for example, "Add Creative").
Marketing Object Name (Plural)	The label to use in links and titles in the Marketing Operations interface when a plural name is needed (for example, "All Creatives").
Marketing Object Type Menu Settings	To add a navigational menu to access a list page for this marketing object type, select **Create new menu group with display name** and supply the menu name. To add a navigational option to an existing menu to access the list page for this marketing object type, select **Add in existing menu group** and the menu.
Initial State	Specify the state to assign to all newly created instances of this marketing object type.
Transitions Names	The label for a transition from one marketing object state to another. **Note:** This name is only visible on this screen; it does not display to users when they work with marketing objects of this type.
From	The first state in this transition; the state the marketing object instance is moving from. Select a state that is defined in the global states file.
To	The second state in this transition; the state the marketing object instance is moving to. Select a state that is defined in the global states file.

About marketing object type definition files

When you create a marketing object type, IBM Marketing Operations updates database tables and creates the following XML files to store definitions for that marketing object type.

- `mo_<name>_map.xml`, which defines the standard attributes to show on the Summary tab for the marketing object. You can also change the labels of these attributes.
- `mo_<name>_state.xml`, which contains the metadata for the transitions defined between states for the object. The metadata for every marketing object state defined on your system is defined in the `globalstates.xml` file. If you add any new states, you must define them in that file.

where `<name>` is a lowercase version of the name you specified in the **Marketing Object Type Module Name** field when you created the marketing object type.

The marketing object definition files are stored in the `<MarketingOperations_Home>\conf\<locale>` directory.

Note: In versions before version 8.6.0, the system created two additional files for marketing object types: `mo_<name>_list.xml` and `mo_<name>_ui.xml`. These files are no longer created; however, the `<MarketingOperations_Home>\conf\backupUiListConfig` directory retains files created before the upgrade to version 8.6 for reference.

Important: Do not remove any of the marketing object definition files. If you do so, you cannot start your web server or use IBM Marketing Operations.

About marketing object type properties files

For the first custom marketing object type that you create, Marketing Operations creates a properties file for each locale. This properties file defines user interface labels and strings for the object type. These properties files are the *<MarketingOperations_Home>*/messages/com/ibm/umo/ext/UMOMktObjectConfigurationMessages_*<locale>*.properties files.

Each time you add another custom marketing object type, the system adds a set of parameters for it to these properties files. The new parameters begin with <name>_ui and <name>_list, where <name> is a lowercase version of the name you specified in the **Marketing Object Type Module Name** field when you created the marketing object type.

To change user interface labels and strings for a marketing object type, you edit the properties file for your default locale. For more information, see "Renaming marketing object types" on page 12.

To localize user interface labels and strings for a marketing object type, you edit the properties file for each supported locale. For more information, see "About localizing object types" on page 18.

Editing a marketing object type

If you want to change a marketing object type after you create it, you must modify the marketing object type definition files and properties files. If you want to change how the marketing object type displays in the menus, you must modify the corresponding entries in the \conf*<locale>*\sysmenu.xml file under your IBM Marketing Operations installation directory. For more information, see "Customizing the IBM Marketing Operations interface" on page 12 and "Supporting multiple locales" on page 18.

Creating a marketing object template

After you define a marketing object type, you create at least one marketing object template for that type. Users cannot create instances of that marketing object type until you create a template.

To create a marketing object template

1. Select **Settings > Marketing Operations Settings**.
2. In the **Other Options** section, click **Template Configuration**.
3. Click **Templates**.

   The Templates page includes a section for each marketing object type in your system. For example, if you configure a sample marketing object type named **creatives**, a section called **Creatives Templates** displays.
4. To create a template for a marketing object type, click **Add Template** in that section of the page.
5. On the Add Template page, supply the properties for the new template. For more information, see Chapter 5, "Building and managing templates," on page 53.
6. Click **Save Changes** to add the new template.

Important: To make the new marketing object type available, restart the web application server.

About associating marketing objects with projects or other marketing objects

You can associate a marketing object with a project or with another marketing object. For example, you have a particular brochure type that you use with a particular project type. You can add a field to the project template that prompts users to select one or more brochures for the project.

When the user clicks Select, a list of brochures displays. The list can contain all the brochures in the system, or you can limit the list to only those brochures created using a specific marketing object template.

You can also

- Configure IBM Marketing Operations to create an instance of the specified marketing object whenever the project template is used to create a project This is not available if you are associating the marketing object with another marketing object.
- Specify standard or custom attributes of the marketing object to display on the project or marketing object.

You associate marketing objects with projects by adding a Single Object Reference or Multiple Object Reference attribute to a form and then adding the form to a project template. To associate the marketing object with another marketing object, add the form to a marketing object template.

You display an attribute of the marketing object by adding an Object Attribute Field Reference attribute to the form. You can only specify attribute of a marketing object if you are using a Single Object Reference attribute to reference the marketing object.

Chapter 3. Using Reports

By default, IBM Marketing Operations provides a set of reports and dashboard report components. The Marketing Operations reports package provides additional reports and dashboard report components created in IBM Cognos®, a separate business intelligence application.

- For Marketing Operations users, there are two ways to access reports.
  - To report information for a single instance, such as an individual project or marketing object, click the **Analysis** tab for that item.
  - To produce a Cognos report that includes data for more than one object, select **Analytics > Operational Analytics**.

    The reports administrator can modify these reports, create new ones, add custom attributes, set up filters, and so on.
- For Marketing Operations administrators, reports that help you monitor different activities are available. For more information, see "About administrative reports" on page 38.

For information about installing the Marketing Operations reports package, see the *IBM EMM Reports Installation and Configuration Guide*. For information about creating and managing dashboards, see the *IBM EMM Marketing Platform Administrator's Guide*.

IBM Marketing Operations report and folder names in Cognos

Cognos Connection presents reports in a directory structure, the top level of which is named **Public Folders**. After the IBM Marketing Operations reports package is installed in Cognos, **Public Folders** contains the following sub-folders for Marketing Operations.

- **Affinium Plan**, which contains the multiple-object reports that appear on the Analysis page in IBM Marketing Operations. If you create new mutiple-object reports in Report Studio, save them to this folder. If necessary, you can create sub-folders within this folder to organize the reports into a hierarchy.
- **Affinium Plan - Object Specific Reports**, which contains the single-object reports that appear on the Analysis tabs of individual IBM Marketing Operations objects. This folder contains sub-folders for plans, programs, projects, and teams. If you create new single-object reports, you save them to the appropriate sub-folder.

As a best practice, you should not rename the folders. If you do, note the following.

- Edit the properties named `reportsAnalysisSectionHome` and `reportsAnalysisTabHome` under **Settings > Configuration > Marketing Operations > umoConfiguration > reports** so they match the names of the folders.
- Do not use special characters (such as quotes, or '<') in the folder names. Use only alphanumeric characters, and the space and dash ('-') characters if you rename the default report folders.
- If you rename the **Affinium Plan - Object Specific Reports** folder, you must edit the **Project Budget Summary by Quarter** report in Report Studio. This report contains a URL that links to the **Detailed Expense Breakout** report, and it

is hard-coded to the report folder name. If the folder name changes, you must edit the links to refer to the new folder name.

- Do **not** rename the subfolders in the **Affinium Plan - Object Specific Reports** folder.

About creating and customizing IBM Marketing Operations reports in Cognos

In Cognos, you can create reports based on the IBM Marketing Operations data model and you can edit the reports in the Marketing Operations reporting pack.

Common customization tasks include the following.

- Adding custom attributes and metrics to reports
- Creating filters for reports
- Adding hyperlinks from a report column to the related IBM Marketing Operations object

Before you create or customize reports, update the IBM Marketing Operations data model in Cognos to include any new attributes or metrics you want to use in reports.

Save new reports in the appropriate folder in Cognos.

Updating the IBM Marketing Operations data model in Cognos

Whenever there are changes to the IBM Marketing Operations system or custom tables, for example, if you add custom attributes or metrics, ensure the Marketing Operations data model in Cognos is updated to reflect those changes. Otherwise, you will not be able to use the new attributes or metrics in Cognos reports.

To update the IBM Marketing Operations data model

1. Identify the custom attributes you want to include in reports and identify the tables (including lookup tables) that are needed for those attributes.
2. Using Import View in Cognos Framework Manager, import the metadata for the attributes.
3. Using Model View in Cognos Framework Manager, define the appropriate relationship between the custom attributes and objects to which they belong. (For example, relate Project Custom Attributes to Project.) Define appropriate relationships to lookup tables.
4. Using Business View in Cognos Framework Manager, define query items and aggregate them into Query Subjects.
5. Republish the data model.

The Query Subjects for the custom attributes and metrics are now available to report writers.

Example Query Subject for a custom metric

You can define a single Query Subject for all of the metrics associated with an object type. Here is an example Query Subject for metrics associated with projects:

```
Select
     UAP_PROJECTS.PROJECT_ID,
     a.METRIC_VALUE1 as TotalRevenue,
     b.METRIC_VALUE1 as ResponseRateActual,
```

```
     b.METRIC_VALUE2 as ResponseRateTarget,
     c.METRIC_VALUE1 as TotalLeadsGeneratedActual,
     c.METRIC_VALUE2 as TotalLeadsGeneratedTarget,
     d.METRIC_VALUE1 as TotalCostPassed
From
     UAP_PROJECTS
LEFT JOIN
(select PROJECT_ID, METRIC_VALUE1 from UAP_PROJ_METRICS
 where UAP_PROJ_METRICS.METRIC_ID = 'TotalRevenue') as a
ON a.PROJECT_ID = UAP_PROJECTS.PROJECT_ID
LEFT JOIN
(select PROJECT_ID, METRIC_VALUE1, METRIC_VALUE2 from UAP_PROJ_METRICS
 where UAP_PROJ_METRICS.METRIC_ID = 'ProjectResponseRate') as b
ON b.PROJECT_ID = UAP_PROJECTS.PROJECT_ID
LEFT JOIN
(select PROJECT_ID, METRIC_VALUE1, METRIC_VALUE2 from UAP_PROJ_METRICS
 where UAP_PROJ_METRICS.METRIC_ID = 'NumberOfLeadsGeneratedPassed') as c
ON c.PROJECT_ID = UAP_PROJECTS.PROJECT_ID
LEFT JOIN
(select PROJECT_ID, METRIC_VALUE1 from UAP_PROJ_METRICS
 where UAP_PROJ_METRICS.METRIC_ID = 'TotalCostPassed') as d
ON d.PROJECT_ID = UAP_PROJECTS.PROJECT_ID
```

Creating report filters in Cognos

When you create a Cognos report, you may need to provide the people who run the report the ability to filter the results, rather than selecting all the data in the application. Using Cognos Report Studio, you can create various filters. IBM Marketing Operations users frequently want filters that do the following.

- Filter by the name or code of an object
- Filter by when an object is active
- Filter by the status, type, or both for an object

As a best practice make filter prompts optional, rather than required. Optional filters are simpler for users running the reports.

Best practices for name and code searching

As a best practice, use a Select & Search prompt to enable users to filter a report based on an object name or object code. The IBM Marketing Operations data items use the naming scheme [PlanBV].[<*Object*>].[<*item*>]. (For example, the data item for project IDs is [PlanBV].[Project].[ProjectID].)

When you create the Select & Search prompt, you can specify one type of value to display to the user and another to use to search the database. For example, the following prompt control configuration prompts users for the project name or code, but searches using project IDs, which is generally a faster search.

- Values to use: [PlanBV].[Project].[Project ID]
- Values to display: [PlanBV].[Project].[Project Name (Code)]

Best practices for date searching

In order to create a date filter in Cognos that returns any object that is active during a certain date range, exactly like Advanced Search in IBM Marketing Operations, use a date prompt with the range option enabled and create a filter that includes both the start date and the end date. This returns objects that meet any of the following criteria.

- Start within the active date range

- End within the active date range
- Start before the active date range AND end after the active date range

The following filter searches for projects active during the date range entered in the date prompt named Target_Date_Prompt.

```
[PlanBV].[Project].[Project Start Date] in_range ?Target_Date_Prompt? OR
[PlanBV].[Project].[Project End Date] in_range ?Target_Date_Prompt? OR
([PlanBV].[Project].[Project Start Date] <= ?Target_Date_Prompt? AND
[PlanBV].[Project].[Project End Date] >= ?Target_Date_Prompt?)
```

Best practices for object status and type filters

Because there is a small, fixed set of status and types, use a simple multi-select control for filtering on status or type.

In order to prompt users for the status or type of an object (or both) do the following.

- To prompt for status, use a a multi-select control using the ***<OBJECT>*** Status Query Subject.
- To prompt for type, use a multi-select control using the *<OBJECT>* Template Query Subject.

Creating hyperlinks in Cognos reports

You can create hyperlinks in a Cognos report that take users from the report to the corresponding object in IBM Marketing Operations. For example, if the report displays a list of projects and you created hyperlinks, users can click a project name to go to the Summary tab for that project. Hyperlinks also work in reports that are emailed to users. Users who click the links may be asked to log in to Marketing Operations.

You can create hyperlinks for the following objects.

- plans
- programs
- projects
- project requests
- standalone approvals
- work and approval tasks
- invoices

The IBM Marketing Operations reports package includes a URL query item for each object for which you can create a hyperlink. For example, the URL query item for plans is named Plan URL. The URL query item for an object is listed in the query subject for the object.

In Cognos Report Studio, use the appropriate URL query item to define the URL source for the hyperlinks.

Example custom report: Project Performance Summary (custom)

The IBM Marketing Operations reports package provides two versions of the Project Performance Summary. The Project Performance Summary uses only default attributes. The Project Performance Summary (Custom) contains custom attributes and metrics. This section describes the changes that were made to the Marketing Operations data model and report in Cognos to produce the Project Performance Summary (Custom) .

Custom attributes and metrics identified

The following custom attributes and metrics were needed to produce the Project Performance Summary (Custom).

Attribute	Column	Lookup table
Initiative	dyn_projectatts.init_type_id	lkup_initiative
Business unit	dyn_projectatts.business_unit_id	lkup_business_unit
Product Family	dyn_projectatts.prod_family_id	lkup_prod_family
Segment	dyn_projectatts.segment_id	lkup_segments

The following are the custom metrics needed for the report.

- Total Revenue: metricid = 'TotalRevenue' (actual)
- Response Rate: metricid = 'ResponseRate' (actual)
- Total Leads Generated: metricid = 'NumberOfLeadsGeneratedPassed' (actual, target)
- ROI: metricid = 'ROI' (actual)

Metadata associated with the custom attributes

The following columns in the dyn_projectatts table were imported to support the custom attributes.

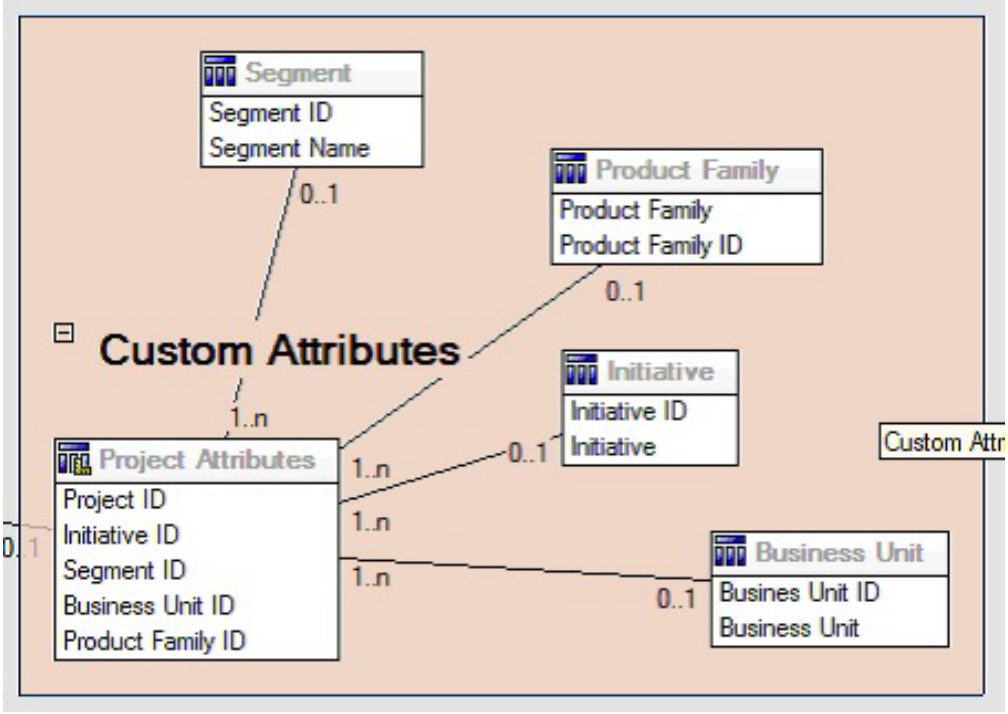
- init_type_id
- segment_id
- business_unit_id
- prod_family_id

The following lookup tables were imported to support the custom attributes.

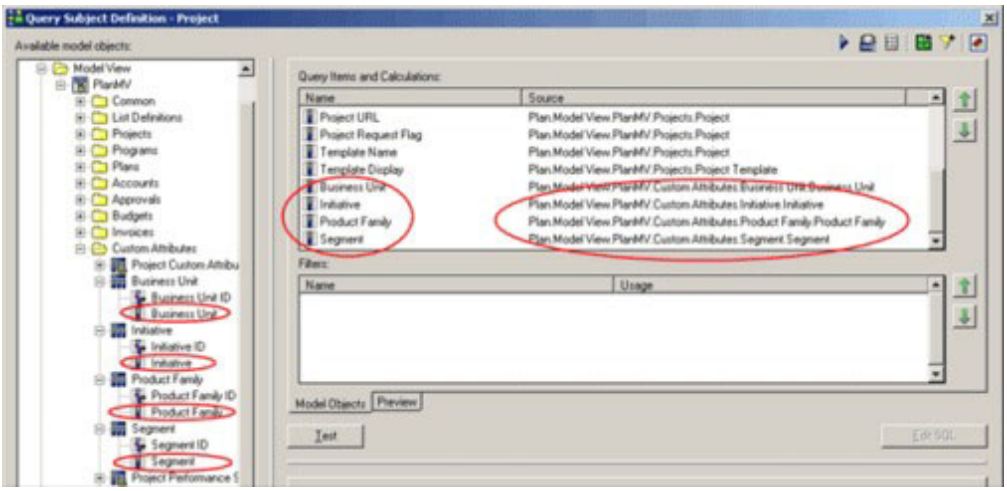
- lkp_initiative
- lkup_segments
- lkup_business_unit
- lkup_prod_family

Relationships and Queries defined in Model View

In Model View in Cognos Framework Manager, relationships were defined as shown here.



The Query Subject definition for Project was updated with query items for the custom attributes as shown here.



Query Items added in Business View

The following query items were added in the Business View in Cognos Framework Manager.

Column	Type/extra info	Query item
Initiative	String; group-by column	Project Custom Attributes.Initiative
Business Unit	String	Project Custom Attributes.Business Unit
Segment	String	Project Custom Attributes.Segment

Column	Type/extra info	Query item
Product Family	String	Project Custom Attributes.Product Family
Total Revenue	Currency	Project Performance Summary Metrics.Total Revenue
Response Rate (Actual)	Percent	Project Performance Summary Metrics.Response Rate (Actual)
Response Rate (Target)	Percent	Project Performance Summary Metrics.Response Rate (Target)
Response Rate Variance	Percent, Calculation	ResponseRate Actual – ResponseRate Target
Total Leads Generated (Actual)	Number	Project Performance Summary Metrics. Total Leads Generated (Actual)
Total Leads Generated (Target)	Number	Project Performance Summary Metrics. Total Leads Generated (Target)
Total Leads Generated Variance	Number, Calculation	Total Leads Generated (Actual) – Total Leads Generated (Target)
ROI	Percent, Sort Column, Calculation	Project Performance Summary Custom Metrics].[Total Revenue]-[Project Budget].[Actual Total])/[Project Budget].[Actual Total]

Columns added and deleted from the report

In Cognos Report Studio, all the columns were removed from the report except for Project Name (Code), Project Start Date, and Project End Date.

The following columns were added to the report.

- Initiative
- Business Unit
- Segment
- Product Family
- Total Revenue
- Response Rate (Actual)
- Response Rate (Target)
- Response Rate Variance
- Total Leads Generated (Actual)
- Total Leads Generated (Target)
- Total Leads Generated Variance
- ROI

Prompts created

The following two prompts were created.

Prompt	Prompt type	Query Subject
Initiative	Search & Select	Project Custom Attributes.Initiative
Business unit	Search & Select	Project Custom Attributes.Business Unit

About administrative reports

For Marketing Operations administrators, reports that help you monitor different user activities are available.

- Individual project and request owners can view out of office team members on the People tab for their projects. As an administrator, you can track all users with the out of office parameter set. See "To produce the Out of Office Users and Delegation Summary."
- Your organization can require users to provide a reason when they respond to an approval with Deny. You can analyze the reasons selected for denials over time, or for a specific project or stand-alone approval. See "To produce a Deny Reason Analysis Report."

To produce the Out of Office Users and Delegation Summary

1. Select **Settings > Marketing Operations Settings > Out of Office Users and Delegation Summary**.
2. In the list of **Projects/Requests**, click to select None, All, or a listed project or request. To select several projects and requests, use Shift+click or Ctrl+click.
3. In the list of **Approvals**, click to select None, All, or one or more of the listed approvals.
4. In the list of **Users**, click to select All or one or more of the listed user names.
5. Click **Search**. For each selected project, request, and approval, a list of the project team members, request recipients, or approvers who are out of the office displays. The specified delegate and delegation start date also display.
6. Optionally, save the report in a spreadsheet: Click **Export**.

For more information about how project owners and participants use out of office settings, see the *IBM Marketing Operations User's Guide*.

To produce a Deny Reason Analysis Report

Different reports are available for workflow approvals and stand-alone approvals. You use similar procedures to produce these reports.

1. Click **Analytics > Operational Analytics**.
2. To produce a report for workflow approvals, click **Deny Reason Analysis Report for Workflow Approvals**.

   To produce a report for stand-alone approvals, click **Deny Reason Analysis Report for Standalone Approvals**.
3. For a workflow approval, select the project template or All Templates.
4. Optionally, enter the name of a project for a workflow approval or enter the name of an approval for a stand-alone approval.

5. Optionally, supply start and end dates. The report includes projects with an end date within this date range or stand-alone approvals with an approval due date in this range.

   To run the report for all dates, delete the default start and end date values.

The report lists approvals with the total number of denials and the percentage for each selected reason for denying approval.

Chapter 4. Introducing Templates

An object (plan, program, project, or marketing object) template defines the information that your organization can capture about the object. An invoice template defines the information that your organization needs to capture in invoices.

After you install IBM Marketing Operations you can get up and running using the example object or invoice templates provided by IBM. The example templates allow you to see what templates are and how Marketing Operations uses them. Once you understand templates, you must customize the example templates or create your own custom templates.

Template concepts

Templates consist of various components, some of which are described in detail here.

Object Templates

Templates for plans, programs, and projects are known as planning object templates. In cases where behavior is different among the object types, the specific behavior is described for each separate object type.

Standard tabs: plan, program, and project templates

Templates for IBM Marketing Operations plans, programs, and projects have the following standard tabs.

- Properties. This tab becomes the Summary tab when you create an object from the template. See "Template Properties tab" on page 57.
- Tabs. See "Template Tabs tab" on page 59.
- Attachments. See "Template Attachments tab" on page 61.
- Custom Links. See "Template Custom Links tab" on page 62.
- Customize Alerts.

Program and project templates have a Budget Approval Rules tab. See "Budget Approval Rules tab" on page 63.

Project templates also have the following additional tabs.

- Project Roles. See "Project template Project Roles tab" on page 66.
- Requests. See "Project template Request tab" on page 66.
- Campaign. See "Project template Campaign tab" on page 76.

  Note: This tab is available only if IBM Marketing Operations and Campaign are integrated.
- Workflow. See "Project template Workflow tab" on page 70.

When you create a plan, program, or project from a template, the object includes the Budget and Analysis tabs in addition to the tabs listed here. If metrics were specified, the object includes a Tracking tab.

Standard tabs: invoice, asset, and offer templates

Invoice, asset, and offer templates have the following standard tabs.

- Properties. This tab becomes the Summary tab. See "Template Properties tab" on page 57.
- Tabs. See "Template Tabs tab" on page 59.
- Customize Alerts.

The invoice template also has a Budget Approval Rules tab. See "Budget Approval Rules tab" on page 63.

Offer templates also have the following additional tabs.

- Attachments. See "Template Attachments tab" on page 61.
- Custom links. See "Template Custom Links tab" on page 62.

Note: You cannot rename the standard tabs.

Custom tabs

You can add additional forms and tabs to a template on its Tabs tab. For more information about adding custom forms and tabs, see "To add a tab to a template" on page 60.

Field

A field is a single piece of data, such as the marketing manager's phone number, or the data type of an attachment. A field is sometimes referred to as an *attribute*.

Fields can be standard or custom.

Metrics

Metric fields measure the performance of the object. Metrics Typical metrics include financial metrics such as cost and revenue, and performance metrics such as the number of contacts and the number of responses in a particular marketing campaign.

You can perform the following tasks.

- Set up metrics that calculate based on other metric values. For example, you could calculate that the *profit* of a campaign is the *revenue* minus the *cost*.
- Group metrics.
- Define both the metrics and their groups.
- Roll up metrics from projects to programs, and from programs to plans.

Attachment categories

You use categories to organize attachments into meaningful groups. When users add an attachment, they select the category that it appears in. For example, they might add a brochure as an attachment and put it under the category called creative ideas.

Deciding on a set of templates

This section provides a few examples of how an organization might use a set of templates.

You could have a project template called Marketing Collateral that contains all the information you need about projects that revolve around creating or modifying a set of marketing collateral within your organization. Whenever someone in your organization creates a new project that involves marketing collateral, they select the Marketing Collateral template and create the project from that template. For more information on creating a project, see the*IBM Marketing Operations User's Guide.*

In addition to the Marketing Collateral project template, you might also have another template called Database Marketing Campaign that contains all the information you need for developing and executing new direct marketing campaigns. Whenever someone in your organization creates a new project for a particular database marketing campaign, they select the Database Marketing Campaign template and create the project from that template. You can have as many templates as you have types of marketing projects or types of marketing programs.

When to create another template

In general, you should create a new template if the information (fields, workflow, metrics, and so on) you must capture about a type of plan, program, project, or invoice is significantly different or unique as compared to other sets of information in existing plans, programs, projects, or invoices.

The fields of information to capture may be different from a descriptive perspective or you may want to capture different fields of information for tracking purposes. In one project type you capture specific metrics, a specific "best-practice workflow," or a specific type of reference material and deliverable attached to the project. In another type of project one or many of these may be different.

You can also choose to use different project templates for variations of a marketing program. For example, you might have the following:

- a project for a routine monthly direct mailing
- a project for a specifically targeted direct marketing program around a new product launch

Each of these can have its own project template.

What can you customize?

The items you can customize depend on the object:

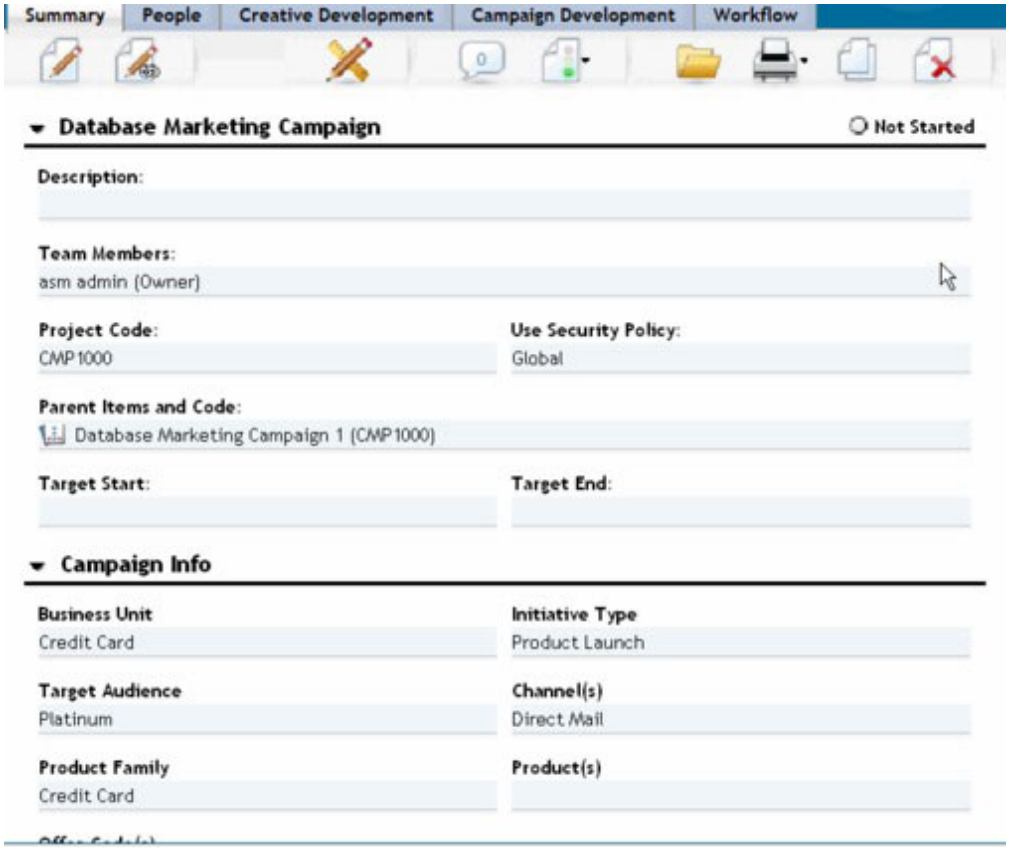
- For invoices, you can add custom attributes to the **Summary** tab.
- For plans, programs, and projects, you can customize the content or appearance of all the tabs except the **Analysis** and **Budget** tabs.

  You can add custom fields to the **Summary** and the **Tracking** tab, but not to the **Workflow** tab or **Attachments** tab.
- For workflows, you can customize nearly all characteristics, such as stages, steps, dependencies, durations, and so on.
- For metrics, you define and edit them, and they appear in the **Tracking** tab.

- For attachments, you can modify the categories that appear, as well as adding default attachments that appear in all objects created based upon the template.
- For projects, requests, and marketing objects, you can customize security permissions for each tab included in the templates (both custom and default tabs).

Sample summary page

The following image is of the Summary page for a project based on the **Database Marketing Campaign** sample template.



Note the following:

- The fields in the top portion of the screen (the Database Marketing Campaign section) are standard fields. You can not modify the standard fields.
- The fields in the bottom portion of the screen (the Campaign Info section) are custom fields.

The custom fields allow you to capture the information needed for the project. You can later use these custom fields for reporting and analysis purposes. You can also group custom fields that relate to one another, as shown above.

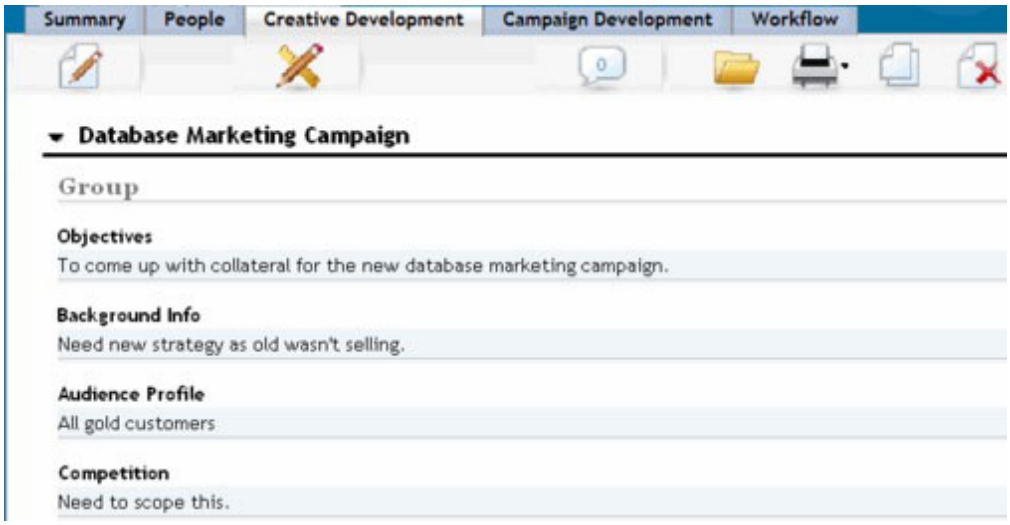
Some examples of a custom field:

- A text box, where the user enters free text.
- A drop-down list or multi-select, where the user selects a value or multiple values from a list. You can specify a static list that the user selects from or you can specify a database table from which the list retrieves values

- A radio button, where the user selects exactly one option from several

Custom tab example

The image that follows shows the Creative Development tab for the Database Marketing Campaign Collateral project. This tab is a custom tab.



In this example, the purpose of this tab is to provide instructions about the development and production of the project. The Creative Development tab has fields that capture information about the objectives, background, and audience profile for the marketing campaign.

You can add custom tabs to capture information about a project that you now capture on paper forms that you fill out and give to other departments or vendors. By including this information in your project, you can ensure that users fill in the information, ensure that all team members see it, and minimize the delays that occur when the information is incomplete.

About template components

Templates include not only default data, but different components that you, as the administrator, create and manage. Template components are modular, reusable structures that help you meet the needs of the users who create instances of different types of marketing objects.

To work with templates and template components, click **Settings > Marketing Operations Settings > Template Configuration** to open the Template Configuration page.

Specifically, templates can include the following components:

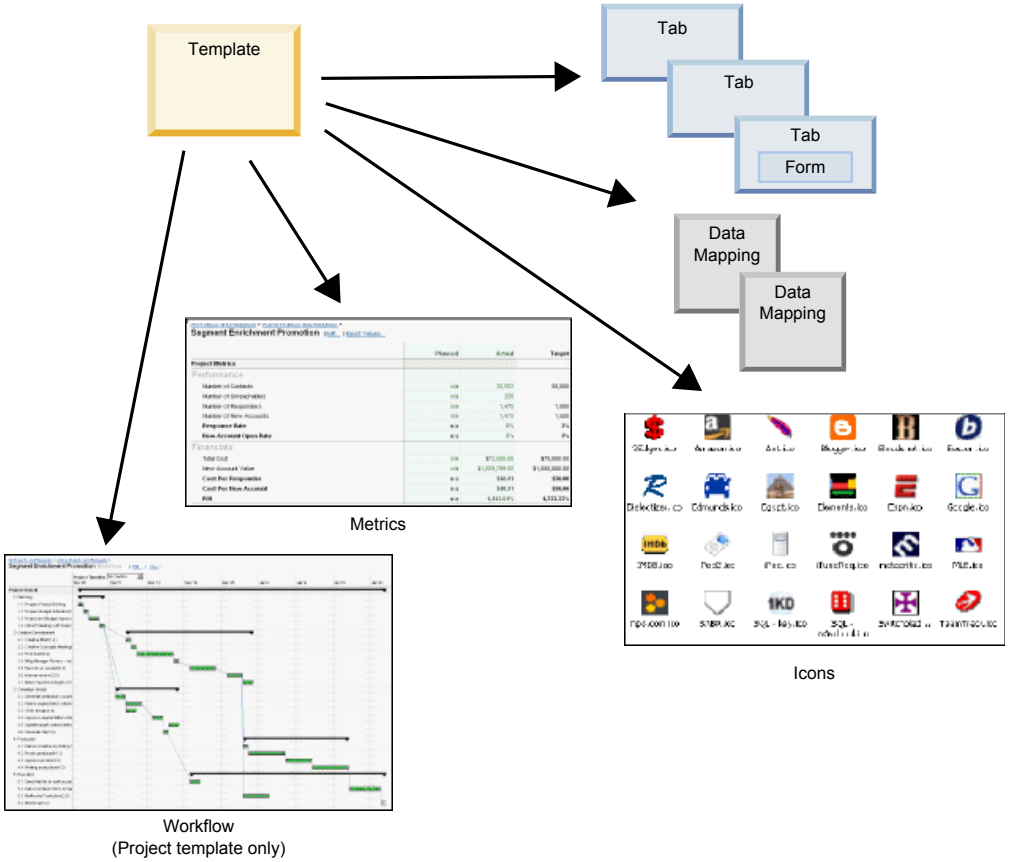
Table 10. Template components

Component	Description
Forms	An organized group of elements for collecting data. In marketing object templates, each tab contains one or more forms. You can use a form across marketing object templates; for example, in both project and program templates. To create a form, you create the attributes that collect data and combine them into a form definition: on the Template Configuration page click **Forms**. For more information, see Chapter 6, "Creating and managing forms," on page 87.
Shared Attributes	Data elements that collect data values. Each attribute has a specific format for collecting data, such as Yes or No, Single-Select from a predefined list or from a database lookup table. For more information, see "Attribute types" on page 113. After you define shared attributes, you can import them into different forms. To create an attribute, on the Template Configuration page click **Shared Attributes**. For more information, see Chapter 7, "Using attributes on forms," on page 107.
Rules	A set of verification functions that can be applied to a form automatically to assure that entered data is valid. You use an XML editor to create a rules file, then add it to Marketing Operations by clicking **Rules** on the Template Configuration page. For more information, see "Grid validation" on page 179.
Metrics	User-entered or computed numeric values that track and measure performance or financial data. Metrics are assigned to metrics templates, which you can associate with a plan, program, or project template. If you associate a metrics template with an object template, instances of that object include the Tracking tab. To create and edit metrics and metrics templates, on the Template Configuration page click **Metrics**. For more information, see Chapter 8, "Working with Metrics," on page 127.
Workflow	Stages, tasks, milestones, personnel, dependencies, and other data that organize and schedule the work needed to complete a project. Workflow is used in project templates only. To create or edit a workflow template, you define a workflow on the Workflow tab of a project template or in any project instance. You can then save that work as a separate workflow template. A workflow template can then be imported into the Workflow tab of any project template or project instance to replace any previously supplied values. To disable, enable, or delete workflow templates, or to export them to or import them from another Marketing Operations instance, on the Template Configuration page click **Workflow**. For more information, see "Project template Workflow tab" on page 70.
Data Mapping	If IBM Campaign and Marketing Operations integration is enabled, a data mapping file establishes how the metrics for tracking and roll-up established in each system correspond. You use an XML editor to create a data mapping file, then add it to Marketing Operations by clicking **Data Mapping** on the Template Configuration page. For more information, see "Data Mapping Definitions page" on page 80.

Table 10. Template components (continued)

Component	Description
Icons	Images that represent marketing objects in the user interface. You use image editing software to create icon images, then add them to Marketing Operations by clicking**Icons** on the Template Configuration page. For more information, see "Icons page" on page 82.

A graphical representation of the components of a template follows.



After these template components are defined and available, you assemble them into templates.

Multi-locale support

Templates in IBM Marketing Operations have features to support organizations that use multiple locales. When you add a project template in Marketing Operations, the system saves a properties file for the template. The file is saved under the Marketing Operations home folder as follows,

`\templates\db\properties\<template_id>_<user_locale>.properties`

where `<template_id>` is the template ID for the template, and `<user_locale>` is the locale for the user that creates the template. Create translations of this file for as many other locales as your organization supports.

The properties file for the default locale is used in the following situations.

- If a locale is supported but there is no corresponding properties file.
- If a locale is not supported.

Note: The supported and default locales are specified under **Settings > Configuration > Marketing Operations**.

The following attributes are localized in the properties file.

- Template properties screen: Name, Description, and Default Name.
- Template tabs screen: Name.
- Template attachments screen: Name.
- Template custom links screen: Name and Description.

Template properties file sample:

```
    template.description.tradeshow=Use this template for requests/projects
    to prepare for tradeshow attendance.
template.default_name.tradeshow=Tradeshow
template.display_name.tradeshow=Tradeshow Template
tab.display_name.contact=Contact Info
tab.display_name.tradeshowsummary=Tradeshow Attributes
attachment_folder.display_name.folder2=Project Deliverable(s)
attachment_folder.display_name.folder1=Reference Attachments
custom_link.display_name.new=New Custom Link
```

Localizing a template does not localize the forms used in the template. You must localize forms separately.

Template-building methodology

Building a custom template is a bottom-up process. You construct each component you need, then assemble them into a complete template. You use the complete template to create instances of the object. For example, you use a program template to create a program, and a project template to create a project.

Task 1: Planning

Before you begin building templates within Marketing Operations, analyze the needs of your organization, and plan out the types of templates you need. For more information, see “Planning your custom templates” on page 49.

Task 2: Define attributes and forms

After analyzing the types of fields you need and how you want to organize them, create the attributes and forms. For more information, see “About creating, editing, and deleting attributes” on page 109 and “Creating forms” on page 89.

Task 3: Define metrics

After analyzing the types of metrics you need, create and edit the appropriate metrics. For more information, see “Metric creation overview” on page 128.

Task 4: Define other template components

Using the appropriate software, create any icons and data mapping files your template needs.

Task 5: Define the template

Assemble the components into the template. You can create custom tabs, and specify the icons, forms, metrics, and so forth to use in the template. For more information, see "To add or edit a template" on page 55.

Task 6: Test the template

Use your new template to create an object. Building a template is an iterative process; you will probably need to go back and tweak the individual components, maybe swap components in and out, and then re-test by creating new objects. For more information about building objects from templates, see the *IBM Marketing Operations User's Guide*.

Planning your custom templates

Most of the work involved in creating custom templates involves determining the fields you want in your templates and how you want to organize those fields. You should attempt to capture this information on paper before you start creating attributes and forms; this planning step streamlines the creation process.

Before you begin creating custom templates, decide on the types of templates that your organization needs and create a storyboard or a spreadsheet that shows the tabs that you want the object to have and each field that you want to appear in each tab.

For example, if you know that you want a project to list the business unit that requested the project, you record the following information about the business unit field.

Table 11. Example of recording information for a field before adding it

Attribute information	**Value**
Shared or Local	Shared
Attribute Category	Form
Attribute Type	Single-Select
Internal Name	BusinessUnit
Display Name	Business Unit
Tab/grouping	In the Summary tab under the Collateral Request Info section.
Field type	Drop-down list
Possible values or database table to retrieve values from	Retail Banking, Investment Services, Insurance, Credit Card Brochure, Postcard, DataSheet, Intro Folder, White Paper, Print Ad, or a table name or column name where Marketing Operations should look up these values.
Required?	Yes
Help Tip	Enter the business unit requesting this collateral piece.

After you do this planning step for every field in a form, you can create the attributes and the form.

Example templates

IBM Marketing Operations provides a few example program and project templates; you can modify these templates and create new ones. Marketing Operations also provides one default template for a plan, an invoice, and an asset; you can edit these templates to suit your needs, but you cannot create new templates for these object types. The examples are located in the following file under your IBM Marketing Operations installation.

`\tools\admin\sample_templates\sampleTemplates<database>.zip`

where `<database>` is your database. For example, if you are using an Oracle database, you should import `sampleTemplatesOracle.zip`.

List of example templates

The following are example templates for a program.

- **Database Marketing Program**, which contains basic information about programs that develop and execute direct marketing campaigns.
- **Product Launch Program**, which contains basic information about programs that develop and execute new product launch campaigns.

The following are example templates for projects.

- **Marketing Collateral**, which contains basic information about projects that develop marketing collateral.
- **Database Marketing Campaign**, which contains basic information about projects that develop and execute direct marketing campaigns.
- **Tradeshow**, which contains basic information about projects that plan tradeshows.
- **Campaign Project**, which if IBM Marketing Operations-Campaign integration is enabled, contains information about projects linked with campaigns in IBM Campaign.

For details on importing the example templates, see "To import template metadata" on page 172.

Example template structure

An example project template has at least six tabs that structure the project information.

- **Summary** tab, which contains some standard fields (attributes) such as the project name, description, start and end dates for the project, and optionally some custom fields.

  Note: Standard attributes for all objects (projects, programs, etc.), appear only on the Summary tab. You can optionally add additional custom attributes to the Summary tab, or create custom tabs which contain custom attributes.
- **Workflow** tab, which contains a task list for the project that you can view in a spreadsheet or a calendar view. You can use this tab to manage the project and track approvals and tasks.
- **Budget** tab, which contains budget information to help you plan expenses that will be needed to successfully execute your project.
- **Tracking** tab, which contains user-defined metrics for measuring the performance of the project.
- **Attachments** tab, which contains any documents pertaining to the project.

- **Analysis** tab, which contains the project reports and revision history.

The other objects contain a subset of these tabs.

- An example plan or program template has the same tabs as a project, except for the Workflow tab.
- An example invoice template has only the Summary, Attachments, and Analysis tabs. For invoice templates, you can only add custom attributes to the Summary tab.

Campaign project templates

If IBM Marketing Operations is integrated with IBM Campaign, campaign project templates guide users in creating a campaign project.

You indicate that a template is a campaign project template by completing the options on the Campaign tab for the template. Specifically, you must specify a Target Cell Spreadsheet. If you want to import Campaign contact and response metrics, you must specify a metric map file.

Campaign Summary section

The Campaign Summary section of the project Summary tab defines basic information about the campaign for this project.

Field	Description
Campaign Description	Enter a description of the campaign.
Campaign Start Date	The date on which the campaign starts. You can manually enter the date or click the drop-down arrow to display a calendar from which you can select a date. If the field contains a date, you can click the forward or back arrows to change the date. You cannot create the linked campaign if this field is empty.
Campaign End Date	The date on which the campaign ends. You can manually enter the date or click the drop-down arrow to display a calendar from which you can select a date. If the field contains a date, you can click the forward or back arrows to change the date. You cannot create the linked campaign if this field is empty.
Campaign Objective	Enter the objectives of the campaign.
Campaign Initiative	Enter the initiative under which the campaign falls.
Campaign Security Policy	Select a security policy from the drop-down list of all the security policies defined for Campaign. You can select any policy, even policies in which you do not have a role. If you put a campaign into the wrong policy, it will not be visible to the desired end users. You cannot create the linked campaign if there is no security policy specified.

Designing campaign project templates

You can create as many campaign project templates as you want. For example, you may want to create a separate campaign project template for each type of campaign you run.

In general, you should create a separate template for each unique combination of forms you need. For example, if you need to gather different information to define your target cells for some campaigns, you need to create different versions of the Target Cell Spreadsheet and associate them with different templates. Similarly, if some custom campaign attributes are relevant only for certain types of campaigns, you can create different campaign project templates to make different custom campaign attributes available and control their display order and organization on tabs.

Offer templates

If IBM Marketing Operations is integrated with Campaign, and optional offer integration is also enabled, you create offer templates in Marketing Operations to guide users in creating offers. To work with offer templates, you select **Settings > Marketing Operations Settings > Template Configuration > Templates** and use the options in the Offer Templates section.

For more information about the features of offer templates, and about administering and using offers, see the Campaign guides for administrators and users.

When you enable offer integration, you can import any pre-existing offer templates and their custom offer attributes, along with offers, offer lists, and offer folders, from Campaign. For more information about enabling offer integration, see *IBM Marketing Operations and Campaign Integration Guide*.

Chapter 5. Building and managing templates

For information on the entire process of building and managing templates, see "Template-building methodology" on page 48.

To create and manage templates and template components, you use the Template Configuration page. To display the page, select **Settings > Marketing Operations Settings**. Then click **Template Configuration**.

The items and functions on the Template Configuration page are organized into two sections, **Template Configuration** and **Templates Components**. There is also an option to validate all templates.

Template Configuration section

The template configuration section of the Template Configuration page contains the **Templates** link, which opens a page that lists all the existing templates and template folders organized by marketing object type. You use the links on that page to create, delete, and organize templates, and to edit or export individual templates.

Validating templates

To run a utility that validates templates and forms and displays any validation errors, click **Validate Templates** in the template configuration section.

Templates Components section

The templates components section of the page contains the following links.

Table 12. Links in the Templates Components section

Link	Description
Forms	Opens the Form Definitions page, which lists the form definitions and provides options for working with forms. The following information displays for each form definitions: • Name of the form • Database table name that stores the values users enter in the form fields • List of templates that use the form Use the links and icons on this page to create, import, enable, disable, delete, export, copy, publish, and manage forms. For more information, see Chapter 6, "Creating and managing forms," on page 87.

Table 12. Links in the Templates Components section (continued)

Link	Description
Metrics	Opens a page with sections for Metrics Templates, Metrics, and Metrics Dimension. The name and a short description display for each listed item. For Metrics Templates, the following additional information and options display. • ID; used when adding a metrics template to an object template. • List of templates that use the metrics template. • Links to edit or delete individual metrics templates. • An **Export Properties File** link to export properties files for metrics. • An **Import Metrics Template** link to import an xml file for a metrics template or a properties file. • An **Add Metrics Template** link to add a metrics template. For Metrics, the following additional information and options display. • ID; used when adding a metric to a metrics template. • List of projects that use the metric. • Links to edit or delete individual metrics. • An **Add Metrics** link to add a metric. For Metrics Dimension, the following additional information and options display. • Type (Actual, Target, Other) of each metrics dimension. • Links to edit or delete individual metrics dimensions. • An **Add Metrics Dimension** link to add a metrics dimension. Use the **Legacy Metrics Specification Files** link to retrieve legacy metrics specification files if they were uploaded before your upgrade to IBM Marketing Operations version 8.5.0. From Marketing Operations 8.5.0 onwards, users cannot add any further files. For more information, see Chapter 8, “Working with Metrics,” on page 127.
Workflow	Opens a list of separately saved workflow templates and displays the following information. • Name • The number of stages and tasks in the workflow template • When it was first created and last modified • Whether it is enabled or disabled You create workflow templates by saving the work done on the Workflow tab of a project template or instance. You can use the links on this list page to delete, enable/disable, import, or export a workflow template. For more information, see “Workflow Templates page” on page 78.

Table 12. Links in the Templates Components section (continued)

Link	Description
Data Mapping	Opens a list of data maps and displays the following information. • Data mapping file names • Type: Campaign Metrics Import (if you have data maps from previous versions, you may see other values) • List of templates that use the mapping. • You can use the links on this page to add and delete data mapping files. For more information, see "Data Mapping Definitions page" on page 80.
Icons	Opens a list of icons and displays the following information. • Icon images; large and small • Icon name • List of templates that use the icon • Delete link for deleting the icon (does not delete the file from its location on disk) Click the **Add Icon** link to add an icon. For more information, see "Icons page" on page 82.
Rules	Opens the Rules Definitions page. You can use the **Add Rules Definition** link to add rules. For more information, see "About data validation rules" on page 84.
Shared Attributes	Opens a list of the shared attributes in the system, organized by attribute category, and displays the following information. • Display name • Type of attribute • List of templates that use the attributes For more information, see Chapter 7, "Using attributes on forms," on page 107.

You can also transfer templates from one computer system to another using the export and import features. For more information, see Chapter 15, "Exporting and importing metadata," on page 169.

To add or edit a template

Before you create a template, review your existing template components to see whether you can reuse any in the new template, or if new components are needed. Template components include metrics or metrics templates for tracking performance and financial data, attributes and forms for collecting data, and workflow templates for identifying and scheduling project management tasks.

After you identify the template components that you need, you can create the template. The steps to create a template are generally the same for each object type, with the following exceptions.

- IBM Marketing Operations offers only one template for plans, one template for invoices, and one template for assets. You can edit these templates as needed, but you cannot create more plan, invoice, or asset templates.
- For project, program, and plan templates, you can select a metrics template on the Properties tab.
- In each project template, you can specify a workflow within that template, or you can import a previously defined and reusable workflow template.
- If IBM Marketing Operations-Campaign integration is enabled, you identify a project template as a campaign project template on its Campaign tab.

1. Select **Settings > Marketing Operations Settings**.
2. In the System Administration | Other Options section, click **Template Configuration** then click **Templates**.
3. On the Templates page, scroll to the section for the type of marketing object you want to work on.
4. To create a template, click **Add Template** in that section. To edit an existing template, click its name.
5. Supply data on the template Properties tab. This tab corresponds to the Summary tab in the instances that users create from this template. You must supply a template display **Name** and an internal **Template ID**. The **Template ID** can include lowercase alphanumeric values only. Do not use accented or non-Roman characters.

   For project, program, and plan templates, you also select a metrics template and set the security policy on this tab. For more information, see "Template Properties tab" on page 57.
6. Click **Save Changes** on the Properties tab.
7. Supply data on other tabs to complete the template. The tabs that are available depend on the type of template you are creating or editing.

   Important: Click **Save Changes** when you finish editing each tab, and before you click another tab in the template. Otherwise, your changes are not saved.

Table 13. Tabs available for each type of template

Tab Name	Plan	Program	Project	Invoice	Asset	Offer*
Tabs	X	X	X	X	X	X
Attachments	X	X	X			X
Custom Links	X	X	X			X
Customize Alerts	X	X	X	X	X	X
Budget Approval Rules		X	X	X		
Project Roles			X			
Request			X			
Workflow			X			
Campaign*			X			

* Applies only to installations with IBM Marketing Operations-Campaign integration enabled. For more information about the options that are offered on each of these template tabs, see the sections that follow.

Effects of template changes

When editing a template, be aware you are changing all instances of objects previously created from the template.

The exceptions are workflow, metrics, and attachment folders. When you change the workflow or metrics template for an object template, or add or remove an attachment folder, your changes apply only to objects you create after the changes are made. Existing workflows are not changed, nor are the attachment folders nor metrics for any existing projects, programs or plans.

Template Properties tab

For all objects, the template Properties tab contains the following properties for you to set. Additional properties display on this tab for projects.

Table 14. Properties for all templates

Property	Description
Name	The display name for the template, which displays on the Templates list page.
Description	Short description of the template. Displays on the template selection page when users add a process or marketing object.
Icon	Large and small icon images for the template. The large icon displays when users create an instance that is based on this template. The small icon displays next to the template name in the Templates list page. Click **Change Icon** to import different image files.
Security Policies	List of security policies that determine which users have access to the template. **Note:** Different fields display for project templates.
Template ID	Internal identifier for the template. Use lowercase alphanumeric values only. Do not include accented or non-roman characters or spaces. **Note:** • For plan and invoice templates, this field is display-only. There is only one template for plans and one for invoices; their IDs cannot be changed. • Template IDs must be unique across object type. For example, you cannot have two project templates, both having an identical ID, such as *tradeshow*. If you have two trade show project templates, use a different ID for each one, such as *tradeshow01* and *tradeshow02*. Additionally, after you use a template ID, you cannot use it again, even if you delete it. • You can edit this field only until a user creates the first object instance that is based on this template.
Default Name	The default name to give to an object instance (such as a program, asset, or marketing object) created from this template. For auto-created marketing objects, this name is part of the unique name that is generated when the system auto-creates the marketing object. You can leave this field blank.

Table 14. Properties for all templates (continued)

Property	Description
ID Prefix	Prefix for the external ID of the object. Each plan, program, project, or marketing object in Marketing Operations has an external ID assigned to it. For example, the ID for the first project might be 1001. You can set the ID prefix by template, to easily determine the template on which an object is based. For example, you choose an ID Prefix of **TRS** for the Tradeshow project template. The first tradeshow project that you create would then have an ID of TRS1001.
ID Generation Class	Java class to specify a numbering algorithm for objects. By default, Marketing Operations assigns a sequential number to each object (plan, program, or project). However, you can configure Marketing Operations to use an algorithm that you define to set the external ID. If you choose this configuration option, the ID Generation Class specifies the Java class that is used to generate the code. You must edit this attribute only if you want to generate IDs according to an algorithm other than the default.
Metrics	For processes (projects, programs, and plans), the metrics template that is used for the object. You can select any metrics template available from the list.

To support data migration of an individual template, click **Export Template** at the top of this tab. See "To export a single template" on page 59.

In addition to the properties that apply to all templates, templates for projects contain the following properties.

Table 15. Properties for project templates

Property	Description
Security Policy Use Model	Determines the way a "use" security policy is determined when a project request becomes a project. When the value of this field is **User Security Policy**, the **Use Security Policy** field on this tab is disabled. The person who creates a project or request from this template specifies the "use" security policy when the item is created. When the value of this field is **Template Security Policy**, the **Use Security Policy** field on this tab is enabled and the template developer selects the "use" policy.
View Security Policies	Specifies the security policy that determines which users can select this template when they create a project or request.
Use Security Policy	Specifies the security policy that determines which users can access the projects or requests after they are created.
Project Health Status Rule	Selects a rule for calculating project health. For more information about rules, see Chapter 14, "Implementing project health rules," on page 163.
Export Tab	Select the project tab to export when you export the Calendar. You can choose the Summary tab or any custom tab. When you export the Calendar, a link to the tab and the data for the tab are included with the exported calendar data. You can use this feature to navigate into each exported project to view some of its data.

Table 15. Properties for project templates (continued)

Property	Description
Enable Automatic Addition of Delegate to the People tab	When a user is out of the office, a delegate can be specified to cover tasks, approvals, and requests. Used to override the system-wide setting at the project template level. • If set to yes, the system automatically adds the delegate as a project team member (if necessary) when a task, approval, or request is assigned to the delegate. • If set to no, users only can select a delegate who is a team member for all of the same projects. For information about the system-wide setting, see "Administrative settings" on page 3. For information about the out of office feature, see the *IBM Marketing Operations User's Guide*.

To export a single template

1. From the **Settings** menu, select **Marketing Operations Settings**.
2. Click **Template Configuration**.
3. Click **Templates**.
4. Click the name of the template to export.

   The **Properties** tab appears.
5. Click **Export Template**.
6. Specify the **Database Type** of the system that will receive the template metadata through an import operation. The selected database type determines the format of the SQL script files that are generated by the export process.
7. Click **Export** to export the template, or **Close** to cancel the export; skip the remainder of the instructions.
8. Click **Open** or **Save** on the File Download dialog that appears.

   The system creates a compressed archive containing the xml and SQL script files for the selected template. Open or extract the archive file to view these files.

Template Tabs tab

Use this tab to add forms to the Summary tab and create custom tabs. For example, you could create a custom tab called **Printing**, where you want users to specify information about the outside vendor that they plan to use to get the collateral printed. In this tab, you could add a drop-down list that allows users to select a printing company from a list of several vendors. You could also add a text box that allows users to enter the quoted price of each page of the collateral.

When you configure security policies for your organization, you can configure custom security permissions for these tabs.

Internal Name

For each tab, the Internal Name displays. If IBM Marketing Operations-Campaign integration is enabled, this string identifies the form when mapping attributes to IBM Campaign.

Tab Page Style

Select **summary** to add additional forms to the bottom of the Summary tab. Typically, you select this option for forms containing a relatively small amount of data that you want users to see on the Summary tab when they first open the object.

Click **tab** to specify that the tab's contents should appear on a separate tab. Use this option for forms, or groups of forms, that require their own page, as in the **Printing** tab example.

Tab Visibility

Click **Show in Wizard** to make the tab visible in the new object wizard in IBM Marketing Operations. If you leave this unchecked, the tab does not display when you create an object using the wizard, but appears once you save the object.This option is available for project/request and program templates.

Click **Show in Request** to make the tab visible for project requests. If you leave this unchecked, the tab does not display when you create a new request using the wizard nor does it display once you save the request. It will still appear in the project. This option is only available for project templates.

Rule-based showing and hiding

When adding forms or custom tabs, you can choose whether to show them as expanded or collapsed by default. Showing the form as collapsed on the template can save time if users do not need to see or enter that information. The user can always expand the form if he or she needs to work with it.

By default, all forms are shown. If desired, you can build rules specifying when to show the forms. For a form with a specified rule, the form will be expended only when the rule is satisfied, otherwise it will be collapsed.

For more information, see "To build rules for showing and hiding forms" on page 61.

To add a tab to a template

1. Navigate to the Tabs page for the template.
2. Click **Add Tab**.
3. Enter a descriptive name for the tab in the **Display Name** text box.

   The name you choose becomes the name of the tab in objects created from this template.
4. Choose whether to show the form on the **Summary** tab or its own custom tab.
5. Optionally, create rules to show and hide the forms. See "To build rules for showing and hiding forms" on page 61.
6. Select a form from the **Form** pull-down list.

   This list contains all the forms available in IBM Marketing Operations, except for the TCS (Target Cell Spreadsheet) forms used by campaign projects.
7. If you are adding a grid, you can select a data validation rule from the **Data Validation Rules** pull-down list.
8. Select the visibility options for the tab.
9. Click **Save Changes** to save the tab, or **Add Tab** to add another tab.

To move a tab or form on a template

1. Navigate to the template's Tabs tab.
2. Click one of the following buttons after **Move**.
   - **Down** to move the tab or form down. Moving a form on the Summary tab down places it lower on the object's **Summary** tab. Moving a custom tab down places it further to the right in the tab list. For example, if the tab was fourth in the list, moving it down once makes it fifth.
   - **Up** to move a tab up. Moves it up or forward one position.

   Note: Forms on the Summary tab must come before custom tabs.

To delete a form or custom tab from a template

Important: Deleting a form or custom tab from a template deletes it from all existing objects created from the template. Do not delete a form or custom tab from a template that has already been used to create items. If you do, data will be lost.

1. Navigate to the template's Tabs page.
2. Scroll to the section that defines the form or custom tab you want to remove and click **Delete** (on the right side of the page).

   The form or custom tab is removed from the object template.
3. Click **Save Changes**.

To build rules for showing and hiding forms

When you add additional forms or custom tabs, you can choose whether to show or hide the forms by default. Hiding the forms can help streamline the process of filling out the template for users; they can always expand the form if needed.

1. After you select the form on the **New Tabs** tab, click the build rule icon ( ). The Rule Builder opens.
2. Select attributes, operators, and resources to create conditions specifying when to show the form. See "Rule Builder" on page 64 for more information.

   Use the AND and OR operators to build compound conditions. Use the **Add** button to connect each condition.
3. When the condition is complete, click **Save Compound Condition** to move it up into the **Compound Condition** box where it is ready to be used.
4. Select the check box next to each condition you want to use in the rule.
5. Click **Save and Finish** to apply the rule.

If the condition is met, the form is shown. If the condition is not met, the form is hidden.

If you do not create any rules, all forms are shown by default.

Template Attachments tab

You can store attachments with a template, so that whenever an object is created from the template, certain images or documents are attached to the object by default.

Use this tab to perform the following actions.

- Add one or more attachment folders to organize attachments; use the **Add a Folder** link.
- Attach one or more files to the template.
- Move folders up or down in the list; use the **Up** and **Down** links to reorder attachment folders.
- Delete default attachments; click the **Delete** link next to the file you want to remove.
- Delete folders; click the **Delete** link next to the folder you want to remove. All attachments under the folder are also deleted.

1. Navigate to a template's **Attachments** page.
2. Click the **Add an Attachment** link next to the folder to contain the asset.

   The **Upload Attachment** dialog appears.
3. Enter the file name and path or use the **Browse** button to locate the attachment.
4. Click **Save Changes** to attach the file.

   The attachment file is displayed in the list under its folder.
5. On the Attachments tab, click **Save Changes** to save the new default attachment.

   Repeat the steps to add as many attachments as needed.

Template Custom Links tab

Use this tab to create custom links that appear on one or more tabs for the object created from this template. For example, you may want to link to an application that your organization uses to generate ID codes for collateral pieces or direct marketing offers.

When adding parameters, the screen contains a series of pull-down menus. The choices you make in one list determine the choices available from the subsequent list. This screen contains the following properties.

Property	Description
Name	Enter a name for the link. This value becomes the name of the link.
ID	Enter the unique internal ID of the custom link.
Description	Enter some descriptive text for the link This text is shown on the mouseover for the link.
URL	Enter the URL to open when users click the link.
Tab Visibility	Check the tab(s) where the link should appear. Links appear at the bottom of the tab.
Options	For project templates, you can check **Show in Request** to make the link available from requests (as well as projects) created from the template.
Add a Custom Link	Click to add a new link; a new group of fields appears. To add the link, fill in the fields and click **Save Changes**.
Add Parameter	Click to add a parameter to the custom link. Name and Value fields appear. Depending on your selections, new name/value field pairs appear. IBM Marketing Operations looks for a question mark(?) at the end of the URL and places the parameters after the question mark. If it does not find a question mark, it appends one to the end of the URL and then adds the parameters.

Property	Description
Delete (link)	Click to delete a custom link. This link appears next to the **Add Parameter** link for the link that you are deleting.
Delete (parameter)	Click to delete a parameter for a custom link. This link appears next parameter you are deleting.
Up Down	If you have more than one custom link, use the **Up** and **Down** links to reorder the custom links.

Template Customize Alerts tab

Use this tab to customize an alert for instances created from this template. In templates, you can customize the locale, subject, header, footer, and message text for event-triggered alerts..

For more information, see "Customizing attributes and tabs for an alert" on page 148.

Budget Approval Rules tab

You can write approval rules on the Budget Approval Rules tab of program, project, and invoice templates to streamline the approval process. Define rules to automatically approve budget and invoice line items using the rule builder. Each time a line item is added or edited, IBM Marketing Operations checks it against the approval conditions set in the program, project, or invoice template. If the line item meets the conditions, then it will trigger an approval process. If the line item change does not meet the conditions, it will be automatically approved.

Each line item requires a separate approval. Depending on the conditions set, a single line item may trigger multiple, parallel approvals from multiple approvers.

For projects and programs, you can build conditions based on any attribute in any form of the object's template. You can also build conditions based on the following budget attributes.

- Expenditure date
- Source account
- Cost category
- Committed amount
- Forecast amount
- Vendor name

For invoices, you can build conditions based on any attribute in any form of the invoice template. You can also build conditions based on the following line item attributes.

- Source account
- Cost category
- Cost per unit
- Quantity
- Total cost

For more information on the approval process, see the *IBM Marketing Operations User's Guide*.

Note: If you do not write any rules, IBM Marketing Operations will not require any approvals and functions as it did prior to version 8.5.0.

Depending on the template, you can build rules using Marketing Operations dummy users. These users can then be mapped to real users in your organization.

- **Program Template**: Program Owner and Account Owner
- **Project Template**: Project Owner and Account Owner
- **Invoice Template**: Invoice Owner and Account Owner

Rule Builder

The following table describes the fields in the Rule Builder window.

Table 16. Controls for building rules

Field	Description
Condition	Lists the condition statements previously built in the IF section of the Rule Builder.
Resource assigned	Lists the resource assigned to a corresponding condition statement in the THEN section of the Rule Builder.
Update	Click to edit an existing rule.
IF the following compound condition is true	A list of one or more conditions that make up a compound condition statement.
Select an Attribute	To begin building a rule, select a value from this list of the custom and default attributes in the project template. this list does not include Marketing Object attributes or TVC attributes (attributes placed on grids or lists). After you select an attribute, additional fields are enabled so that you can complete the condition. For example, if you select the Description attribute, a list appears with the **Ends With**, **Contains**, **=**, or **Starts With** options, and a text field accepts a string.
And/or	For a rule that contains more than one condition, select an operator to connect the current condition with the next condition.
Add	Click to add the current condition to the IF list. You construct and assemble compound conditions one condition at a time.
THEN Assign Approver	A drop-down list from which you can select a user or team to assign when the condition is met.
Save Compound Condition	After you build a condition and select an approver, click to save the complete rule and display it in the Compound Conditions section of the Rule Builder.
Default Action	A drop-down list from which you select a team or user to assign if none of the conditions are met. **Note:** The Default Action field is not available in the rule builder for budget and invoice rules; the default action is to process without approval. If no conditions are met, budget and invoice line items are automatically approved.
Up	Moves the selected condition up in the list.
Down	Moves the selected condition down in the list.
Delete	Deletes the selected condition.
New	Clears selected options before you add another condition.

Table 16. Controls for building rules (continued)

Field	Description
Preview	A tab that contains a printer-friendly version of the rule.

To build budget approval rules

You can write rules to automatically approve line item changes on the Budget Approval Rules tab of program, project, and invoice templates, which streamlines the approval process.

Note: If you do not write any rules, IBM Marketing Operations does not require any approvals.

1. Navigate to the Budget Approval Rules tab of the program, project, or invoice template to which you want to add budget approval rules.
2. Click **Add Approval Rule**. The Rule Builder opens.
3. Select attributes, operators, and resources to create conditions that specify when to show the form. See "Rule Builder" on page 64 for more information.

   Use the AND and OR operators to build compound conditions. Use the **Add** button to connect each condition.
4. In the THEN Assign Approver section, select an approver to receive the request when the condition is met.
5. When the condition is complete, click **Save Compound Condition** to move it up into the **Compound Condition** box where it is ready to be used.
6. After you are finished creating compound conditions, click **Save and Finish**. The rule builder closes.
7. When you are finished building rules, click **Save and Finish** on the Budget Approval Rules tab.

   You can build multiple rules which result in multiple, parallel approvals.

For each rule, if the condition is met, the line item approval request is sent to the assigned approver. If the line item does not meet the conditions for any rules, it is automatically approved.

To edit budget approval rules

1. Navigate to the Budget Approval Rules tab of the program, project, or invoice template on which you wish to edit budget approval rules.
2. Click the Rule Builder icon () in the **Edit Rule** column of the rule you want to change. The Rule Builder opens.
3. Modify or add conditions.
   - To update an existing condition, click **Update** in the Compound Conditions box to move it down into the work area of the Rule Builder. After you make your changes, click **Save Compound Condition**.
   - To add a new condition, follow steps 3 through 5 in "To build budget approval rules."
4. Click **Save and Finish** in the Rule Builder.
5. Click **Save Changes** on the Budget Approval Rules tab.

To delete budget approval rules

1. Navigate to the Budget Approval Rules tab of the program, project, or invoice template from which you want to delete budget approval rules.
2. Select the checkbox next to one or more rules you want to delete.
3. Click **Remove Selected Rule(s)**.
4. Click **OK** to confirm that you want to delete the rule(s).
5. Click **Save Changes** on the Budget Approval Rules tab.

Project template Project Roles tab

Use this tab to specify the project roles of the people who will participate in the projects and project requests created from this template. When you configure the security policies for your organization, you can customize access rights to each tab of the projects created from this template for each the project roles listed here.

A project role must exist before you can add it on the **Project Roles** tab. To create a project role, select **Settings > Marketing Operations Settings > List Definitions > Roles**.

This tab contains the following settings.

Name	Description
Project Request Recipients	The project roles of the team members who receive the requests created from this template. Note that you use the **Request** tab to configure how requests are handled. The values you specify in this field on the **Project Roles** tab appear in the **Recipient Role** field on the **Request** tab.
Team Members	The project roles of the people who participate in projects created from this template. These are the project roles that you can assign to tasks on the Workflow tab.
Reviewers	The project roles of the people who participate as reviewers. These are the roles that can be assigned as reviewers in the projects created from this template.

To add a role, click the **Add Role** list box for **Project Request Recipient**, **Team Members**, or **Reviewers** and select a role from the drop-down list. The available values are populated from the list definitions. Also, if a workflow is imported on the Workflow tab, the roles present in the workflow are added to the list of available roles if they are not already present in the list definitions.

To delete a role, click the **Remove** link next to the role you want to delete. You cannot delete a role that is specified either in a task on the **Workflow** tab or as a recipient on the **Request** tab.

Project template Request tab

The Request tab is available only in Project templates. Use this tab to set up the following for all requests created from this template.

- Request recipients or how request recipients are designated.
- The order in which recipients receive request notifications and in which they must respond to requests.
- The length of time recipients have to respond.

- The way reapprovals are handled.

The Rule Builder on a project template or the Request tab of a project template allows you to set up a condition or series of conditions that determines what recipients receive a project request. Note the following.

- A project request based on a template that has recipient rules uses all of the rules you set up with the Rule Builder.
- If you change the recipient rules in the template, it affects the behavior of all existing requests based on the template. Any other changes you make to a project request template are reflected only in new requests created from the template, not to existing requests based on that template.

Request tab fields

This section describes the fields on the template Request tab.

Setup Project Request

The following table describes the fields in the Setup Project Request section.

Table 17. Fields in the Setup Project Request section

Field	Description
Request description	The description displayed when a user adds a project request. Briefly describe the purpose of the template. Length is limited to 300 characters.
Request re-approval rule	Radio buttons provide the following three options for the way project requests are handled if they are returned and then resubmitted. • If project request returned and then resubmitted, request is processed by all recipients again (the default). • If project request returned and then resubmitted, start process with the person who rejected. • If project request returned and then resubmitted, request owner selects the recipients it needs to go to. In this case, on resubmitting the request the owner of the request can select only required recipients who have accepted the request.

Setup Recipients

The following table describes the fields in the Setup Recipients section.

Table 18. Fields in the Setup Recipients section

Field	Description
Request owner can add and/or delete recipients	If you do not add recipients, you must leave this check box checked or you receive an error message when you save the template. If this check box is checked, a project request that uses this template allows the requester to assign new recipients and change any non-mandatory pre-configured recipient assignments.
Add Recipient Step	A link that enables a set of fields you configure to add request recipients.
Remove selected Recipient Step(s)	A link that enables you to delete the recipients you selected by checking the box at the beginning of the row.

Table 18. Fields in the Setup Recipients section (continued)

Field	Description
Recipient Role	A drop-down list that contains the recipient roles you configured on the **Project Roles** tab.
Recipient Assignment	A drop-down list that enables the following options. • User/Team: Selecting this option enables a drop-down list of users from which you select to assign a user or team to the role you selected in the **Recipient Role** field. If you select a team, the recipient is a team member or team manager (who assigns the request to a team member); this is determined by the option selected in the Request Routing Model section of the Team's summary tab. • Requester Assigned: Allows the requester to assign a user to the role you selected in the **Recipient Role** field. Also, if you set the other fields (such as Default Duration, Sequence, and Project Owner), these values become the defaults for this request recipient, but the requester can change them. • Rule Driven: Selecting this option enables an icon that you click to open a Rule Builder window where you define rules for assigning a user to the role you selected in the **Recipient Role** field. See "Rule Builder" on page 64 for a description of the Rule Builder.
Default Duration	Time allowed for each review step. The way days are counted is set up when IBM Marketing Operations is installed and configured, in the **numberOfHoursPerDay** parameter. See the *Marketing Operations Installation Guide* for a description of the options provided for this setting. If recipients do not respond within the time set as their default duration, they receive an alert. If the recipient is a team, alerts are sent according to the Request Routing Model configured for that team.
Sequence	A text field in which you enter a sequence number. You can specify the sequence number for each recipient to specify the order in which the recipient receives notification of the request and must approve the request. You can control whether recipients act in parallel with other recipients or before or after any other recipient. If you assign the same number to multiple recipients, they would all receive notifications when it is their turn to respond. This field must contain a number; the maximum is 99. By default, each time you add a recipient the value of this field is incremented.
Project Owner	The recipient designated as the project owner becomes the owner if the request is accepted by all required reviewers. The project owner is always a required recipient.

Table 18. Fields in the Setup Recipients section (continued)

Field	Description
Required	A check box that determines whether a recipient is required. Check the box next to each recipient who must approve. If this box is not checked, the recipient is optional. Note the following behavior for required recipients. • If a recipient is required, the next recipient in sequence is not notified (and cannot respond) until the current recipient responds. • If a recipient is required, and that recipient denies the request, then the next sequential recipient is not notified; rather, the request is placed on hold, and the owners are notified. • If multiple recipients have the same sequence number (and therefore can act simultaneously), and one of the required recipients rejects the request, the request process continues until all the required recipients of the simultaneous process respond. After all responses from that step are complete, the system sends a notification to the request owner and recipients who were previously notified of the request. • At least one recipient must be set to Required. The system generates a warning message if someone tries to start a request that contains no required recipients.
Instructions	Opens a window where you can add instructions that this recipient sees on the Summary page of the project request. Length is limited to 1024 characters.

Example: Building a Template Request rule

This example describes how to build a rule for assigning reviewers to a project request. Assume the following scenario.

- You are setting up a project template to use when your organization creates print advertising campaigns.
- You have defined a custom attribute named Region where the region can be specified for a project. The regions are named NA (North America), APAC (Asia-Pacific), and EURO (Europe).
- You want different creative teams to review project requests based on the project's region.
- One Project Request Recipient role is defined for the project: Project Manager.

1. In the Setup Recipients area of the Requests tab of the project template, clear the **Request owner can add and/or delete recipients** box, because you want your rule to control who reviews the project requests (based on region) and you do not want the project requester to be able to add any other reviewers.
2. On the Requests tab of the project template, click **Add Recipient Step**.

   A new row is added in the Setup Recipients area.
3. Select Project Manager in the **Project Role** drop-down list.
4. Select Rule Driven in the **Recipient Assignment** drop-down list and then click the Build Rule icon that appears.

   The Rule Builder window opens.
5. In the Rule Builder window, do the following for each of the three regions:
   a. Select Region in the **Select a Project Attribute** drop-down list.
   b. Select = in the comparison drop-down list.
   c. Type the region name (NA, APAC, or EURO) in the text field.

d. Leave the **And/Or** drop-down list blank.
e. Select the region-appropriate team in the **Assign the following resource** field.
f. Click **Add**.
g. Click **Save Compound Condition**.

   The compound condition moves to the Compound Conditions area.

6. After you build a condition for each of the three regions, select a default resource to receive the request if none of the conditions is met. Click **Add** and click **Save Compound Condition**.
7. Click **Preview** to see your rule as a whole, and to verify that the logic is correct. Print the rule if desired.
8. Click **Save and Finish**.

   The Rule Builder window closes and you return to the Requests tab.
9. Complete the other fields in the Recipient row as desired.

Project template Workflow tab

The Workflow tab identifies and organizes tasks for a project. To review and define a workflow, you use a spreadsheet-style interface. Initially, the Workflow tab displays in view mode. To set up the stages, tasks, milestones, dependencies and other data that make up the workflow, you switch to editing mode.

When you create a template, you can include data on its Workflow tab to provide an initial workflow structure for the individual project instances that users create. Users access a similar spreadsheet interface to update the supplied workflow as needed for individual instances.

For additional flexibility, the data on the Workflow tab in any template or any individual instance can be saved as a separate workflow template component. Template components, which can include metrics and forms in addition to workflows, make designing templates to meet different needs more modular and efficient. Any workflow template component can be imported into any project template, or into any project instance.

Note: When you design the workflow for a template, you can specify team member roles to associate with each task. To do so, you must first define values on the Project Roles tab. For more information, see "Project template Project Roles tab" on page 66.

For detailed information on configuring a workflow, including options for scheduling, calculating dates, and updating tasks, see the *Marketing Operations User's Guide*.

To configure workflow in a template

To set up a project template that includes workflow data, you create the template, specify team member roles, and then edit the Workflow tab.

1. Select **Settings > Marketing Operations Settings**.
2. Click **Templates**.
3. Locate the project template section and click **Add Template**.
4. Complete the fields in the **Template Properties** form and click **Save Changes**.
5. On the **Project Roles** tab, specify participant roles then click **Save Changes**.

6. Select the Workflow tab and click **Edit**. For more information, see "To use edit mode in a workflow spreadsheet" on page 72.
7. Add workflow and approval tasks and organize them into stages. For more information, see "To enter data in a workflow spreadsheet" on page 74.

   Remember to save frequently while you work.
8. Edit task dependencies, define task scheduling and duration, and enter other values to supply when users create instances from this template. For more information, see the *Marketing Operations User's Guide*.

   Remember to save frequently while you work.
9. When the workflow is complete, click **Save and Finish**. The tab returns to view mode. For more information, see "To use view mode in a workflow spreadsheet."
10. If your organization maintains a predefined list of reasons for denying an approval, specify the reasons that apply to this template. For more information, see Chapter 13, "Defining list options," on page 159.
11. To configure additional information for each task, click the task name when the Workflow tab is in view mode. For approval tasks, you can configure approvers. For workflow tasks, you can configure whether attachments are permitted.
12. Optionally, click the **View as a Process Flowchart** icon to display the workflow as a process flowchart.

To use view mode in a workflow spreadsheet

When you initially click the Workflow tab for a project template, it displays in view mode and offers the following user interface controls.

Table 19. Controls on the Workflow tab for projects

Control	Description
Edit link	Changes to edit mode so that you can configure the workflow for this project template.
Save as Template link	Saves the data on this project template Workflow tab as a separate workflow template component.
Import Template link	Populates the Workflow tab of the project with the tasks, approvals, milestones, dependencies, and other values defined in a workflow template. This action replaces all workflow values previously defined for this project.
Approval Options link	Opens a dialog where you identify the options in the Approval Deny Reasons list that are relevant to approvals generated from this template. **Note:** Available only for installations that require reviewers to specify a reason when denying an approval.

Table 19. Controls on the Workflow tab for projects (continued)

Control	Description
	**View as a Spreadsheet**. Presents the workflow in spreadsheet format. Spreadsheet view provides access to granular information about each component in tabular format. When you view the workflow as a spreadsheet, each task name is a link. • Click an approval task to open the Setup Approval dialog, where you select approvers and indicate whether markup can be used. • Click a workflow task to open the Setup Task dialog, where you indicate whether attachments can be added for the task and add notes. Spreadsheet view is the default view.
	**View as a Process Flowchart**. Presents the workflow as a process flowchart, which shows each stage in the workflow as a set of interconnected process boxes.

To select approval options for the template

If your organization requires users to specify a predefined reason when they deny an approval, you identify the set of reasons that apply to each type of project in the template. For more information, see "Configuring the approval process" on page 19.

1. To update a project template, navigate to its Workflow tab.
2. Click **Approval Options**. The Associate Approval Deny Reasons with Template dialog opens. All of the options defined for the Approval Deny Reason list display on the left.
3. To select approval options for the template, click an available reason then click >>. To select multiple reasons you can use Ctrl+click and Shift+click.
4. Click **Save Changes**.

When a user denies an approval, a **Deny reason** must be selected.

About the process flowchart view

The process flowchart view displays the tasks in a network diagram style, as follows.

- Each task is displayed as a box with a task number and ID.
- Tasks that have dependencies are connected to any tasks they depend on.
- Sequential tasks are displayed on the same line.
- Parallel tasks are displayed on different lines.
- Independent/orphan tasks are displayed on their own line, with no connections.

To use edit mode in a workflow spreadsheet

When you switch from view mode to edit mode, you can make changes to the workflow spreadsheet. You click the icons on the toolbar to add and delete stages and tasks and access other options. The following table describes the toolbar.

Table 20. Using the editing toolbar for the Workflow tab

Icon	Description
	**Add Task Row**. Adds a row for a workflow or people task to the spreadsheet. To add the new row after an existing row, select that row then click this icon. Marketing Operations renumbers any subsequent tasks. **Note:** To configure a task, including whether attachments are permitted, you must return to view mode and then click the name of the task.
	**Add Approval Row**. Adds a row for an approval task to the spreadsheet. To add the new row after an existing row, select that row then click this icon. Marketing Operations renumbers any subsequent tasks. **Note:** To configure reviewers for an approval task, you must return to view mode and then click the name of the task.
	**In Series**. By default, tasks are added in series: each task is dependent on the task that precedes it. To use a different dependency option, click this icon and make a selection before you add the next task to the workflow. • No Dependencies • In Series • In Parallel Each task you add uses the same dependency option until you change the selection. You can also change the dependencies for a task manually: click the task name and supply a comma-separated list of task numbers in parentheses. For more information, see "Managing task dependencies" in the *IBM Marketing Operations User's Guide*.
	**Add Stage Row**. Adds a stage to the spreadsheet. You use stages to group tasks. To add the new stage after an existing row, select that row then click this icon. Marketing Operations renumbers any subsequent tasks and stages.
	**Move the Selected Row Up**. Click a task or stage name to select it, then click this icon to move the selected component upward. If you move a stage, all of its associated tasks move with it. **Note:** When you move a row, Marketing Operations does not change its task dependencies.
	**Move the Selected Row Down**. Click a task or stage name to select it, then click this icon to move the selected component downward. If you move a stage, all of its associated tasks move with it. **Note:** When you move a row, Marketing Operations does not change its task dependencies.
	**Delete the Selected Row**. Click a task or stage name to select it, then click this icon to delete the component. **Note:** • You cannot delete the first stage in a workflow spreadsheet. • When you delete a stage, Marketing Operations appends its associated tasks to the previous stage. The tasks are not deleted.

Table 20. Using the editing toolbar for the Workflow tab (continued)

Icon	Description
	**Tools**. Shift+click to select one or more cells in the spreadsheet, then click this icon to apply one of the following options: • **Copy**: copies the contents of the selected cells to the clipboard. • **Paste**: pastes the contents of the clipboard, beginning at the selected cell. • **Paste Rows After**: pastes the contents of the clipboard below the selected row. • **Fill Down/Up**: copies the value of the selected cells to the cells below or above it. • **Clear**: erases all entries in the selected cell or group of cells. • **Clear Column**: erases all entries in the selected column. • **Clear All**: erases all spreadsheet components.
	**Undo the Last Change**. Reverts the workflow to its state before you made the last change.
	**Redo the Last Change**. Reapplies a change that you undid with the Undo action.

To enter data in a workflow spreadsheet

When you work in edit mode on a project template Workflow tab, the workflow displays in spreadsheet format. To represent each task, you add a row to the spreadsheet and then edit the cells in that row to capture information for that task. The following table describes each field and cell you use to enter data on the spreadsheet.

Table 21. Fields and cells on the Workflow tab

Field	Description
Task Code Prefix	When users create projects from this template, the system adds this identifier as a prefix to each task ID in the workflow.
Stages and Tasks	The cells in the first column display the names of the stages and tasks in the workflow. After each task name, the number of the task or tasks that it depends on displays in parentheses. For example, a task labeled "Estimate Costs (2.3)" is dependent on task number 2.3. To indicate additional prerequisite tasks, enter task numbers separated by commas. When you are in edit mode, you can click the name of a stage or task to revise its name and dependencies. When you save your changes and return to view mode: • Click the name of an approval task to open the **Setup Approval** dialog and select approvers. • Click the name of a workflow (or people) task to open the **Setup Task** dialog and indicate whether attachments can be added for the task.
Required	Indicates a required task. In the projects created from this template, required tasks cannot be skipped or deleted and their names cannot be changed.
Enforce Dep.	If this task is dependent on other tasks, determines how strictly the system interprets dependencies. When this option is selected, the system restricts project members from updating this task until the tasks it depends on are finished.

Table 21. Fields and cells on the Workflow tab (continued)

Field	Description
Member Role(s)	You can associate one or more roles with workflow tasks by default. To select a role, click in the field. A list displays the project roles previously defined as Team Members on the **Project Roles** tab for this project template. To define more than one role, click the name of each role. **Note:** To specify approvers for an approval task, return to view mode and click the approval task name to open the **Setup Approval** dialog.
Milestone Type	For tasks, you can specify an optional milestone type. Your system administrator configures the options available for you to indicate that a task is a type of milestone for the project. Example milestones include Job Start, Meeting, and Event. For information about setting up milestone types, see "Customizing milestone types."
Anchored dates	Indicates whether the task is affected by automated date recalculation. Select this option for tasks with fixed dates that are not affected by any date changes made for other tasks.
Default Duration	The amount of calendar time to specify as the default for this task when a project is created with this template. To enter a duration, click in the cell then click the clock icon. Fields for days, hours, and minutes display.
Target Effort	The targeted effort to specify by default for this task when a project is created with this template. To enter the effort, click in the cell then click the clock icon. Fields for days, hours, and minutes display.
Schedule Through	Indicates how to calculate time when the task is scheduled. The options are: • Bus: Business days only, exclude non-work time and weekends. • Wkd: Weekends and business days, exclude non-work time. • Off: Non-work time and business days, exclude weekends. • All: Include every calendar day.

Customizing milestone types

IBM Marketing Operations offers a set of default milestone types for use in project workflows. Users can select an option from the milestone type list when a workflow spreadsheet is in edit mode.

The following options are supplied as milestone types.

- Checkpoint
- Meeting
- Event
- Drop Date
- Job Completion
- Job Start

You can customize the list of milestone types for your Marketing Operations installation. Changes to the milestone type list affect every workflow on your system.

To customize the options that display, you select **Settings > List Definitions** and edit the Workflow Milestone Types list. For more information, see Chapter 13, "Defining list options," on page 159.

Project template Campaign tab

Use this tab to configure communication from IBM Marketing Operations to IBM Campaign if integration is enabled. It contains the following settings.

Table 22. Fields for campaign project templates

Field	Description
Campaign Project template	Select this check box to mark this template as a campaign project template and display the other Campaign Integration fields.
TCS Form	Select the form that contains the Target Cell Spreadsheet to use for projects created from this template. The drop-down list contains all published forms that contain a TCS.
Metric Data Mapping	XML file containing the data map for sending metrics from an IBM Campaign campaign to an IBM Marketing Operations project for reporting purposes.
TCS Form Display Name	The name to display for the selected form on the TCS tab.
Partition ID	Identifies the partition of the IBM Campaign instance in which to create the campaigns that correspond to the campaign projects created using this template. The default value is **partition1**, which is correct if Campaign is installed to a single partition. If Campaign is installed on multiple partitions, you can specify the partition to use for creating campaigns. IBM Marketing Operations allows you to specify any partition. Make sure that you specify a partition to which you have access and for which integration is enabled. For more information about setting up Campaign partitions, the *IBM Campaign Installation guide*.
Show TCS tab in request	Select the check box to display the TCS when the template is used to request a project. If the check box is clear, the TCS displays only in campaign projects and not in requests.
Approval Required	Select the check box to require approval for all the target cells created in the template. If cleared, the TCS grid does not show the **approval** column or **approve all** and **deny all**. **Note:** As part of the upgrade to version 8.2, **Approval Required** is cleared for all upgraded campaign templates. For more information, see "About approving the TCS" on page 77.

Note: Once you create a project using the template, you cannot change a non-campaign template to a campaign template or vice versa. The **Campaign Project template** option is disabled.

The following options are also disabled once a project is created using the template:

- **TCS Form**
- **TCS Form Display Name**

- **Partition ID**
- **Show TCS tab in Request**
- **Approval Required**

You can only change the values for these options if you first delete all of the projects that were created using this template.

About approving the TCS

If the project was created using a template on which the **Approval Required** check box is selected, then every row in the TCS linked to a flowchart must be approved before that flowchart can be executed in production mode in Campaign. If you run the flowchart in production mode and one or more rows on the TCS associated with this flowchart are not approved, Campaign generates an error.

If necessary, you can approve each row on a TCS individually. You can approve rows as soon as they are complete and correct, even if other rows on the TCS are not yet ready to be approved.

If the project was created using a template on which the **Approval Required** check box is not selected, then approval is not required for top-down cells in the TCS. In this case, the TCS grid does not show the **approval** column or **approve all** and **deny all**. Leaving the approval required check box cleared saves time if campaigns do not require TCS approval.

Note: By default, **Approval Required** is cleared. However, after you upgrade to Marketing Operations 8.5, all upgraded campaign templates have **Approval Required** checked.

Import and export

If **Approval Required** is selected, the **is approved** column exports.

If **Approval Required** is cleared, the **is approved** column does not export, and only matching CSV files import.

Working with template components

To review and manage template components, you use the Template Configuration page. To display the page, select **Settings > Marketing Operations Settings**. Then click **Template Configuration**. The templates components section of the page provides links to the different types of template components.

Table 23. Links in the Templates Components section

Link	Description
Forms	Opens the Form Definitions page, which lists the Form Definitions and provides options for creating and working with forms. For more information, see Chapter 6, “Creating and managing forms,” on page 87.
Metrics	Opens a page with sections that list Metrics Templates, Metrics, and Metrics Dimension and provide options for creating and working with them. For more information, see Chapter 8, “Working with Metrics,” on page 127.

Table 23. Links in the Templates Components section (continued)

Link	Description
Workflow	Opens a list of separately created and saved workflow templates. You create workflow templates by saving the work done on the Workflow tab of a project template or instance. This page offers options to delete, enable or disable, import, and export workflow templates. For more information, see "Workflow Templates page."
Data Mapping	For installations with IBM Marketing Operations-Campaign integration enabled, lists the XML files that map data between the two systems. You can use links on this page to add and delete data mapping files. For more information, see "Data Mapping Definitions page" on page 80.
Icons	Opens a page that shows the icons used to represent marketing objects in Marketing Operations. You can use links on this page to add and delete image files. For more information, see "Icons page" on page 82.
Rules	Opens the Rules Definitions page, which lists the XML files that validate data entered into a grid. You can use links on this page to add and delete data validation rules files. For more information, see "About data validation rules" on page 84.
Shared Attributes	Opens a list of the shared attributes in the system, organized by attribute category. For more information, see Chapter 7, "Using attributes on forms," on page 107.

Workflow Templates page

You use the options on the Workflow Templates page to import, export, delete, enable, or disable previously created and saved workflow templates.

The Workflow Templates page lists all the workflow templates and presents the following information and functions.

Table 24. Options on the Workflow Templates page

Control	Description
Name	The name of the workflow template.
Stages / Tasks	The number of stages and tasks in the workflow, separated by a '/' character. For example, the value in this column for a workflow that has 5 stages and 30 tasks is **5 / 30**.
Created Date	The date the template was created.
Last Modified Date	The date of the most recent change made to the template.
Status	Whether the template is enabled or disabled. When a workflow template is created, its status is set to Enabled by default.
Export link	Exports the workflow template to an XML file. You can then import it into another IBM Marketing Operations system.
Import Workflow Template link	Imports an XML file with workflow template data. Typically, you create these files by exporting them from another IBM Marketing Operations system.
Enable/Disable Workflow Template link	Marks the selected templates as enabled or disabled. A disabled workflow template cannot be imported into a project template.

Table 24. Options on the Workflow Templates page (continued)

Control	Description
Delete Selected Workflow Template link	Deletes the selected workflow templates.

To create and edit workflow templates

The workflow that you create on the Workflow tab of any project template or instance can be saved as a workflow template.

1. In any project template or instance, select the Workflow tab. You can start with a new template or instance, or select one that already has a defined workflow.
2. For a new template or instance, change to edit mode. Set up the tasks, dependencies, and values that you want the template to supply as a starting point for new projects. For an existing template or instance, review the workflow.
3. With the Workflow tab in view mode, click task names to review or define settings.

   Note: Workflow templates retain all stage and task definitions and member role settings. However, any approvers configured for approval tasks are not retained. You must configure default approvers in each project template individually, after you import a workflow template.
4. Click **Save as Template**.
5. Enter a descriptive name for the template and click **Continue**.
6. Click **Save**. The workflow template displays on the Workflow Templates page, and can be imported into any template or instance.

To edit a workflow template, you open a project template and import the workflow template you want to edit into its Workflow tab. (Typically, you set up a new template for this purpose because importing a workflow template overwrites any previously defined values.) You can then edit the workflow as needed and resave the workflow as a template with the same or a different name.

To use workflow templates

1. Create the project template. If the workflow template you plan to use includes project roles you do not need to define them. The project roles are imported with the workflow template.
2. Select the Workflow tab.
3. With the Workflow tab in view mode, click **Import Template**.

   The system presents a warning displays that the import will overwrite the existing workflow.
4. Click **OK**.

   A list of workflow templates opens.
5. Select a template from the list and click **Import**.

   The Workflow tab displays the workflow tasks and stages from the workflow template. Any roles referenced by task rows also display on the Project Roles tab.
6. With the Workflow tab in view mode, click approval tasks to configure approvers.
7. To modify or add stages or tasks, click **Edit**.

Then customize the workflow as necessary for the project template. Remember to save your changes.

8. When the workflow is complete, click **Save and Finish** to return to view mode.

To export a workflow template

You can export individual workflow templates. You may want to edit the exported XML file, then reimport the workflow template back into IBM Marketing Operations.

1. Select **Settings > Marketing Operations Settings**.
2. Click **Template Configuration**.
3. Click **Workflow**.
4. Click the **Export** link for the workflow you want to export.
5. Choose a location to save the XML file, and save it.
6. Open the file with a text or XML editor, make your changes, then save the file.
7. Navigate back to the templates library (**Settings > Marketing Operations Settings**).
8. Click **Import Workflow Template** and browse to your edited XML file.
9. Name the file to differentiate it from the previous version.

   For example, if you export `Marketing Collateral`, you could name your edited file `Marketing Collateral 2`. (You can always rename the file later.)
10. Create a template and use the new workflow; or open an existing template and replace the old workflow template with the new one.

Data Mapping Definitions page

The **Data Mapping Definitions** page maps data between Marketing Operations projects and campaigns in Campaign. Use the **Data Mapping** link from the **Template Configuration** page to configure data mapping.

The Data Mapping Definitions page contains the following columns:

Column	Description
Name	The name of the data mapping file.
Type	**Campaign Metrics Import**: maps Marketing Operations project metrics to Campaign contact and response counts. If you have map files from previous versions, you may see other values in the Type column.
Used By	A list of templates that use this data map.

Note: You cannot create a map file within Marketing Operations; use a text or XML editor to create and edit the necessary map files.

Mapping IBM Campaign contact and response counts to Marketing Operations metrics

If you want users to be able to import contact and response counts into Marketing Operations, you must map contact count and the response types to Marketing Operations metrics.

Note: Campaign passes data to Marketing Operations for one audience level only, the audience level that is mapped to the UA_ContactHistory, UA_ResponseHistory, and UA_DtlContactHist system tables. The audience level can be any audience

level, with any number of audience key fields of any data type or name. For details on audience levels, see the Campaign documentation.

The response types are stored in the UA_UsrResponseType system table in the Campaign database. To map a metric to a response type, you must know the name of the response type.

The mappings are stored in an XML file.

To map IBM Campaign contact and response counts to Marketing Operations metrics

1. In Campaign, modify the list of response types in the UA_UsrResponseType table if necessary to include the response types you want to track.
2. Edit the Marketing Operations metrics file being used by your system to include metrics that correspond to contact count and the response types.
3. Create a map file that associates the Marketing Operations metrics with contact count and the response types.
4. Add the map file to Marketing Operations.
5. Create a campaign template and select the map file from the Metric Data Mapping drop-down list.

The contact and response data is mapped to metrics for all projects created using that template.

About the metrics data mapping file

The metrics data mapping file must use the container elements <metric-data-mapping> and </metric-data-mapping>.

The next line in the mapping file must be the following:

```
<datasource type="webservice">
 <service-url>CampaignServices</service-url>
</datasource>
```

The actual mappings must be contained by the elements <metric-data-map> and </metric-data-map>.

metric

Use the <metric> element to define the metric in a mapping. The <metric> element has no value but must contain the child element <data-map-column>. The <metric> element has the following attributes:

Attribute	Description
id	The internal name of the metric
dimension-id	The number of the column into which the value from Campaign should be placed. Columns are numbered from left to right. The first column is column 0.

data-map-column

Use the <data-map-column> element to define the data source (either contact count or a response type) in a mapping. The <data-map-column> element must be

contained by the <metric> element that defines the metric to which contact count or this response type is mapped. The <data-map-column> element has no value but has the following attributes:

Attribute	Description
id	The data source to be mapped to the metric. For contact count, use `contactcount`. For a response type, use `responsecount_<ResponseTypeName>`.
type	This value should always be `number`.

To add a data mapping file

Use a text or XML editor to create or edit a data mapping file. After you have a data mapping file, you add it to Marketing Operations using the following procedure.

1. Select **Settings** > **Marketing Operations Settings**.
2. Click **Template Configuration** > **Data Mapping**.
3. Click **Add a data mapping**.

   The Upload Data Mapping dialog box opens.
4. Enter a name for the data mapping file.
5. Browse to the XML file that defines the data mapping.
6. Click **Continue**.

To edit a data mapping file

If you want to update a data mapping file, you must first edit the XML file, and then reload it back into Marketing Operations.

1. Open the data mapping XML file in a text editor and make your changes.
2. Select **Settings > Marketing Operations Settings**.
3. Click **Template Configuration > Data Mapping**.
4. Click the file name that you are updating.

   The Update Data Mapping dialog box appears.
5. Select **File**, and browse to the XML file.
6. Click **Continue**.

   You are prompted to overwrite the existing file.
7. Click:
   - **Save** to overwrite the existing file with the newer version, or
   - **Cancel** to leave the previous version of the file.

To delete a data mapping file

You cannot delete a mapping file if a template uses it.

1. Select **Settings > Marketing Operations Settings**.
2. Click **Template Configuration > Data Mapping**.
3. Click the **Delete** link for the data mapping file you want to delete.

Icons page

The **Icons** page allows you to view and add icon files. These icons are displayed in various sections of Marketing Operations, and for object templates you choose.

Use the **Icons** link from the **Template Configuration** page to manage icons used in object templates.

The **Icons** page contains the following columns:

Column	Description
Image files	A large and small image for each icon. Click the images to change the icon name or the image files.
Name	The name of icon.
Used By	A list of object templates that use this icon.
Delete	A link to delete the form. This link is only available for icons that are not used in any templates.

When you specify icons, specify two image files for each icon:

- **Main icon**: the large image is displayed when a file of this type is presented in the system. For example, the main icon is shown in the project selector (the dialog box that appears when you create a project; you select from a list of templates).
- **List** icon: the small image appears on the object list page. For example, the project list page contains the list icons for all project on the page.

To add or edit an icon

1. From the **Settings** menu, select **Marketing Operations settings**.
2. Click **Template Configuration**.
3. Click **Icons**.

   The **Icons** list page appears.
4. Click:
   - **Add Icon** at the upper right section of the page, to add an icon, or
   - An icon image (large or small) to edit an icon.

   The **Update Icon** dialog appears.
5. Type or edit the name of the icon.

   Note: If you are updating an existing icon's name only, do not check the box next to the **File** or **List Icon Image File** labels and skip step 6. If you want to update either image, check the box corresponding box and continue to step 6.
6. Enter file names for the icon images:
   - Navigate to a main image file using the **Browse** button of the **File** field to add or change the main image.
   - Navigate to a list image file using the **Browse** button of the **List Icon Image File** field to add or change the list image.

   Note: Marketing Operations is installed with a set of default icons; you can choose from these icons, or add icons customized for your organization. File images have a maximum size of 46 x 54 pixels. List icon images have a maximum size of 20 x 24 pixels.
7. Click **Continue** to load the files into Marketing Operations, or **Cancel** to stop the upload:
8. Click **Save Changes** to confirm the upload, or **Cancel** to stop the upload.

   The new or edited icon appears in the list.

About template validation

Marketing Operations offers two types of predefined template validation checks:

- Database validation
- Attributes validation

You can perform these validation checks on all of your templates at any time: on the Template Configuration page click **Validate Templates**. The system can also include additional validation procedures if defined by your installation. Information on these validation options follows.

About database validation

Database validation checks:

- The validity of the database schema, and
- Whether form attributes match their data type in the database.

Notes about database validation:

- The system performs this type of validation on import, upgrade, and export of templates. For export, only forms not linked to any template are validated.
- On import and upgrade, you can save templates even if invalid. You receive warnings, but can still save.
- When adding a form, you cannot save the form if validation finds any errors.

About attribute validation

The system validates attributes in the following ways:

- Template attributes validation checks whether two or more form columns point to the same table column in both summary tab and other, non-summary tabs.

  The system performs this type of validation when saving a template.

  If two or more form columns point to the same table column, the system generates an error message describing the duplicated references.
- Templates attributes type validation checks whether two form columns from two templates point to same table column but with different type (for example, one has a type of select and the other is multi-select).

  If two or more form attributes with different types point to the same table column, the system generates an error describing the inconsistency.

About data validation rules

Rules are a set of data validation functions that you define in an XML file, then import and associate with a form. If a form has an associated set of data validation rules, Marketing Operations applies them automatically when users enter data for a marketing object instance. For more information on how to set up data validation rules, see "Grid validation" on page 179.

On the Rules Definitions page you can:

- Click **Add Rules Definition** to load an XML rules definition file.

  After you add a rule, you link it to tabs that collect data using a grid-style form: Edit the template and click the Tabs tab. For details, see "Template Tabs tab" on page 59.
- Click **Delete** to delete a rule (if it is not in use by any templates).
- Click a rule to update its rule file, or to change the name of the rule.

Note: If you attempt to overwrite an existing rules file, the system generates a warning.

To navigate to the Rules Definitions page

1. Select **Settings > Marketing Operations Settings**.
2. In the Other Options section, click **Template Configuration**.
3. In the Templates Components section, click **Rules**.

Chapter 6. Creating and managing forms

A form is a collection of attribute fields that gather information about an object. When you create a template, you select the forms you want to include. Each form you add becomes a separate tab or a section of the Summary tab in the object instances users create using that template.

You create and manage forms, you select **Settings > Marketing Operations Settings > Template Configuration > Forms**.

About Target Cell Spreadsheets

The Target Cell Spreadsheet (TCS) is an editable grid that specifies the type of information users must enter to define the target and control cells for a campaign. You use Target Cell Spreadsheets when IBM Marketing Operations-Campaign integration is enabled. Each column on the TCS defines a particular item of information. Each column corresponds to an attribute.

A TCS contains default attributes that are automatically passed to Campaign. In addition to these default attributes, you can create and add an unlimited number of custom attributes.

Cell attributes and grid attributes

A TCS can contain attributes that get passed to IBM Campaign (cell attributes) and attributes that display only in IBM Marketing Operations (grid attributes).

Use cell attributes for information you need to pass to Campaign. For example, attribute values you want to include in an output list, contact history, or report must be created as cell attributes.

Use grid attributes for descriptions, calculations, and data that is not needed in Campaign.

Target Cell Spreadsheets and forms

You create a TCS on a form. (The form can contain other attributes in addition to the TCS.) When you place a TCS grid component on a form, it contains the default cell attributes. You cannot delete the default attributes.

Transfer of cell attribute data

The information in the default attributes is passed automatically to Campaign when a user links a flowchart cell to the TCS row. Custom cell attributes are available automatically in Campaign as IBM Campaign Generated Fields in contact processes. For details on Generated Fields, see the *IBM Campaign User's Guide*.

Target Cell Spreadsheets and templates

A campaign project template can contain only one TCS.

Default cell attributes

The default cell attributes appear in all Target Cell Spreadsheets. They do not appear in the list of cell attributes on the Shared Attributes page in the Administrative Settings.

Table 25. Default cell attributes

Name	Value required for publishing TCS	Description
Cell Name	Yes	Text field
Cell Code	No	Text field
Description	No	Text field
Is Control Cell	Yes	Drop-down list with Yes and No
Control Cell	No	Drop-down list of control cells
Assigned Offers	No	A selection control you can use to select one or more offers or offer lists
Is Approved	No	Drop-down list with Yes and No. This column appears only if **Approval required** is checked in the corresponding campaign project template.
Flowchart	No	Read-only field that displays the name of the flowchart in which the cell is used
Last Run	No	Read-only field that displays the date and time the flowchart containing this cell was last run
Actual Count	No	Read-only field that shows the last run count for this cell (count of unique audience IDs in the cell)
Run Type	No	Read-only field showing the run type for the last run for the flowchart that contains this cell (production or test; flowchart, branch, or process box)

You can edit only the following properties for a default cell attribute:

- Display name
- Description
- Help text
- Sortable
- Sort type
- Alignment

Form Definitions list page

The **Form Definitions** list page lists every form defined in the system. For each form, the following columns are displayed.

Table 26. Columns on the Form Definitions list page

Column	Description
Name	The display name and the description of the form for use in IBM Marketing Operations.
Table	The name of the database table that stores the values that users enter for form attributes.

Table 26. Columns on the Form Definitions list page (continued)

Column	Description
Used By	A list of templates that use this form.
Actions	This column displays an icon representing one of the following actions for the form: • Publish makes the form available for use in object templates. After a form is published, Disable displays until changes are made. • Disable prevents this form from appearing in the Add Tab list when creating a template. Disabling a form does not change existing templates. After a form is disabled, Enabled displays. • Enable makes the form available in the Add Tabs list when creating a template.
Delete/Revert	Click **Revert** to undo changes made to the form since it was last published. If there are no unpublished changes, this link changes to **Delete**. Click **Delete** to delete the form. This link is only available for forms that are not used in any templates.
Export	Click to export the latest published version of the form.
Copy	Click to create a copy of the form.
Manage	Click to manage the lookup values for the form.

The list page contains the following links.

Table 27. Links on the Form Definitions list page

Link	Description
Create New Form	Click to open the Form Editor so you can create a form.
Import Form	Click to select a form to import into your system.

Creating forms

Before creating a form in IBM Marketing Operations, you should design it on paper or in a spreadsheet.

Be sure to consider which fields should appear on each page, how to group them, what to name them, and where to store them. You are extending not just the Marketing Operations user interface (that is, which fields are presented), but also the out-of-the-box system tables.

IBM Marketing Operations creates the database table and columns to store the data that users enter in the forms, but you must specify the table and column names. The tables are created when you publish the form. If you want users to select values from lookup tables when entering information in the form, you must create the lookup tables manually.

Also consider which attributes you want to use on multiple forms. You should create these as shared attributes before you create the form.

To create a form

1. Click **Settings > Marketing Operations Settings**.
2. Under Other Options, click **Template Configuration**.

3. Under Template Components, click **Forms**.
4. At the Form Definitions screen, click **Create New Form**. The Form Editor interface displays. For more information about working with this interface, see "Form Editor interface" on page 91.
5. Fill out the Form Properties tab and click **Save Changes**.

   The Add an Element tab displays.
6. To use previously defined shared attributes on this form, click **Import Shared Attributes** then select them in the Custom Attributes list.
7. To add a local attribute to this form only, click **Create a New Custom Attribute**.
8. Drag the elements and attributes that you want in the form from the Add an Element tab onto the form design area.
9. Click **Save and Exit** to save the form and return to the Form Definitions page.

To create a TCS

Before you create a TCS, you must create any custom cell attributes that you want to include. Cell attributes map to IBM Campaign and can only be created as shared attributes.

1. Select **Settings** > **Marketing Operations Settings**.
2. Under Other Options, click **Template Configuration**.
3. Under Template Components, click **Forms**.
4. At the Form Definitions screen, click **Create New Form**.
5. Fill out the Form Properties tab and click **Save Changes**. The Add an Element tab displays.
6. Click **Create New Grid**.
7. In the **Attribute Type** field, select **Editable Grid** from the drop-down list.
8. Select the **Is TCS** check box.
9. Complete the remaining options and click **Save and Exit**.

   The grid component for the TCS displays in the Form Attributes list in the Custom Attributes list box.
10. Select the grid component for the TCS and drag it onto the group header on the form.

    The default cell attributes display on the grid.
11. Add any attributes you want to the TCS. You can do either of the following.
    - Import custom cell attributes and add them to the TCS to create additional columns that get passed to IBM Campaign.
    - Create or import grid attributes and add them to the TCS to create additional columns that display only in IBM Marketing Operations.
12. Click **Save and Exit** to save the TCS and return to the Form Definitions list page.

To import shared attributes

You can import only attributes that have been enabled.

1. Open the form in which you want to use the shared attributes.
2. On the Add an Element tab, click **Import Shared Attributes**.

   The Shared Attributes dialog box displays.
3. In the list on the left, select the attributes you want to import and click the right-facing arrows to move them into the **Selected Attributes** list.

4. Click **Import and Close**.

Form Editor interface

The Form Editor displays when you create or edit a form. For more information, see "To create a form" on page 89.

The Form Editor consists of a form design area on the left and a set of tabs on the right. The form design area displays the current contents of the form. You supply information for the form and its attributes using the tabs on the right: you can add elements to the form by clicking and dragging.

There are two tabs on the right. The Form Properties tab contains the following fields.

Table 28. Form Editor interface: the Form Properties tab

Field	Description
Form Name	The name of the form for use in IBM Marketing Operations.
Database Table	The name of the database table that stores the answers user enter in the form fields. **Note:** You cannot use the same database table for both a form and a grid within that form.
Form Description	A description of the form. This text appears below the form name on the Form Descriptions page.

The Add an Element tab contains two list boxes:

- The General Elements list box contains form elements, such a group header to identify a related set of attributes.
- The Custom Attributes list box contains a list of the different attributes available for use on the form.

The tab also contains the following links.

Table 29. Form Editor interface: links on the Add an Element tab

Link	Description
Create a New Custom Attribute	Click to display the Create a New Custom Attribute dialog box where you can create a local attribute.
Create New Grid	Click to display the Create a Grid dialog box where you can create an editable or read-only grid.
Delete Selected Attribute	Click to delete the attribute selected in the Custom Attributes list box.
Import Shared Attributes	Click to display a dialog box where you can select previously defined and enabled shared attributes to import for use in this form.

After you create local attributes or import shared attributes, you can add them to the form. To add an element or an attribute to the form, you click it and then drag it into the form design area, directly below a group header.

After you add an element or attribute to the form, you click it to view or edit its settings. When you click a form element or attribute, a popup opens with the current values, covering the tabs on the right. The popup contains an Edit link so

that you can specify how the selected group header or attribute is implemented on this form. For more information, see “Edit Attribute Group screen” or “Attributes reference” on page 111.

Attribute groups

Every attribute or table on a form must be in a group. Groups enable you to logically organize fields for end users. You can also use groups to create a form with both 1-column and 2-column areas.

You can display a header for a group, but headers are not required.

To create an attribute group

You can place a group element directly on a form or on a grid component on a form to identify a related set of attributes.

1. Open the form in which you want the attribute group.
2. Click the **Add an Element** tab.
3. Click the **Attribute Group Header** in the **General Elements** list and drag it onto the form design area.

   A red cursor indicates the placement of the group header on the form.
4. Click the group header to display a pop-up with the current settings for the group name.
5. Click **Edit Attribute Group** to open a dialog where you can change the display name and specify other options.
6. When you are finished editing the group, click **Save and Exit** to close the window and return to the form.

Edit Attribute Group screen

Field	Description
Group Internal Name	The unique name of the group, used internally. Do not use spaces or special characters.
Group Display Name	The group header, used in the form. Spaces are allowed, as well as UTF-8 characters.
Description	A description of the group.
Show Group Heading	Select to display the group display name in the form. Clear to hide the group display name in the form.
Group Layout	How attributes display in the group. Select One Column or Two Columns.

Creating grids

Grids are spreadsheet-like presentations of data. Grids are either editable or read-only. An editable grid is for users to enter information, while a read-only grid displays information entered previously.

Grids have two parts:

- The grid component that defines the database table in which to store the answers or from which to read the data
- Multiple grid attributes that define each column in the table

You determine whether a grid is editable or read-only when you create the grid component. If you want the grid to be editable in one form and read-only in another, you need to create two grid components that contain the same attributes.

You can group attributes within a grid by using an Attribute Group Header on the grid. A grid can contain a mix of grouped and ungrouped attributes.

To create an editable grid

1. Open the form in which you want the grid.
2. Click the **Add an Element** tab and click **Create Grid**.
3. From the **Attribute Type** drop-down list, select **Editable Grid View**.
4. Enter the information for the table and click **Save and Exit**.

   The grid component displays in the **Form Attributes** list in the **Custom Attributes** list box on the **Add an Element** tab.
5. If the form does not already contain the group that you want to contain the table, drag the **Attribute Group Header** from the **General Elements** list box onto the form design area.
6. Drag the grid component for the grid from the **General Elements** list box onto the group.
7. Drag the grid attributes that you want in the grid from the **Custom Attributes** list box onto the grid component name.

   You can change the order of the attributes by clicking an attribute to display the move icon and dragging the move icon to the desired location.

   If you want some of the grid attributes to be grouped, drag the **Attribute Group Header** onto the grid and then drag the grid attributes onto the group header.
8. Click **Save and Exit** to save the form and return to the Form Description list page.

Create a Grid window

Table 30. Fields in the Create a Grid window

Field	Description
Attribute Type	The type of grid you want to create. • Select Editable Grid View to create an editable grid. • Select Line Truncate View to create a read-only grid in which text that is too long to fit in a cell is truncated. • Select Line Wrap View to create a read-only grid in which text that is too long to fit in a cell is continued on a second line within that cell. • Select Two Line Staggered View to create a read-only grid in which text that is too long to fit in a cell is continued on a second line within that cell that is indented.
Is TCS	Leave the check box clear unless you are creating a Target Cell Spreadsheet for use in campaign projects. (This option is only available for editable grids.)
Attribute Internal Name	The name to use when creating files for the grid.
Attribute Display Name	The name for this grid that appears on the form.

Table 30. Fields in the Create a Grid window (continued)

Field	Description
Database Table	The database table that contains the data users enter in the grid (for editable grids) or the database table that contains the data that displays in the grid (for read-only grids). **Note:** The grid database table must not be the same as the form database table.
Table Key Column	For an editable grid, the name of the column to contain the parent ID (the ID of the project or marketing object that holds the grid). If multiple editable grids (including Target Cell Spreadsheets) use the same database table, they must use the same table key column. • For a read-only version of an existing editable grid, use uap_grid_row_id. • For a read-only grid not related to an existing editable grid, the name of a column that uniquely identifies rows in the table that contains the data you want to display. **Note:** You should not change the table key column after you create the grid.
Key Column Type	The data type of the table key column.
Number of rows in one page	The number of rows to display in one page of the form. This value must not be greater than 100.
Data Post URL	The URL of the server to which the data the user selects is sent. (This option is not available for editable grids.)
Filter By Parent ID	Select this check box to filter the read-only grid to show only entries from the current project or marketing object. (This option is not available for editable grids.)
Parent ID Column Name	The value of the Table Key Column for the grid component for the editable grid whose data you want to display as a read-only grid. (This option displays only if the Filter by Parent ID check box is selected.)
Show Export Link	Select this box to enable users to export the grid data or data selections.
Show View Link	Select this check box to enable users to set their viewing options for the grid. (This option is not available for editable grids.)
Show Group By Link	Select this check box to enable users to specify a column by which to group the grid rows. (This option is not available for editable grids.)

Displaying an existing editable grid as a read-only grid

You can display an editable grid as a read-only grid.

The grid component for the read-only grid must have the following properties:

- The attribute type must be Line Truncate View, Line Wrap View, or Two Line Staggered View.
- The database table must be the same as the database table for the grid component for the editable grid.
- The table key column must be uap_grid_row_id.

  Note: IBM Marketing Operations automatically creates this column for all editable grids.
- If you want the read-only grid to display only the values users enter in the grid for this object (for example, this project), select the Filter by Parent ID check box

and enter the editable grid component's Table Key Column value in the read-only grid component's Parent ID Column Name field.

Otherwise, the read-only grid displays all values entered using this grid in all objects.

Note: The form that contains the editable grid must be published before you create the read-only grid. Otherwise, you cannot save the form that contains the read-only grid. If you want the editable grid and the read-only grid to be on the same form, you must create the editable grid, publish the form, and then create the read-only grid.

The attributes that the read-only grid contains must be exact matches of attributes that the editable grid contains. You can accomplish this requirement in one of three ways.

- Copy the form that contains the editable grid. You must delete the grid component for the editable grid, create a component for the read-only grid, and drag the grid attributes onto the new component, but you do not need to recreate the grid attributes.
- Use shared attributes when you create the editable grid so that the attributes can be imported into the Form Editor when you create the read-only grid.
- Recreate the attributes in the Form Editor when you create the read-only grid. The attribute properties must match the original attributes exactly.

Note: The one exception is that read-only grids cannot contain single-select or multi-select object references. If the editable grid contains attributes of these types, you must replace them with single list object reference attributes.

Displaying a grid as a list

You can reference a grid, and display it on another tab as a list. However, to do this correctly, you need to know how Marketing Operations stores grids.

- A list view is read-only and displays all the rows in the specified database table.
- A grid view is read/write, and the rows in the grid "belong" to the parent of the grid, that is the project or marketing object that holds the grid.

So, for example, if you have two projects created from the same template, the rows added by the corresponding grids in both projects are added to the same database table, but the grid for each project only has access to its own data.

To achieve this, a database table that holds grid data needs to have two columns: one to uniquely identify a row, and one to identify the parent ID: the ID of the project or marketing object that contains the grid.

The key column you set for a grid table (when you add a TVC Component to hold the data for the grid) holds the parent ID for the row. All rows in a single grid have the same value for this column. Thus, it cannot uniquely identify a row of data.

The Forms Editor auto generates a column, uap_grid_row_id, for each grid. A list view just requires a column that uniquely identifies rows. Hence, when you would like to use the same table as grid in a list view, you must specify uap_grid_row_id as the key column, not the key column you specified when you specified the grid data table.

To illustrate, look at this example:

- Assume that the Tradeshow template contains a tab, Staff. The Staff tab contains a grid.
- Assume that two tradeshow projects have been created, TRS001 and TRS002.
- Assume that users have entered data into the Staff grid for both TRS001 and TRS002.
- Assume that TRS001 and TRS002 have object IDs of 121 and 122 respectively.

The database table that holds the data for these two grids might look like the following:

Data in Table 'dyn_staffdetails' in 'SJMPlan73' on 'FORTUNA'

object_id	uap_grid_row_id	manager	emp_id	emp_name	salary
121	118	Y	1001	Mary Manager	45000
121	119	N	1002	Art Artiste	25000
121	120	N	1003	Larry Lawyer	200000
121	121	N	1004	Carl Contributor	25000
121	122	Y	1005	Charlie CEO	1000000
122	123	N	5000	Huey Lewis	25000
122	124	Y	5001	Isaac Bashevis Sinc	75000
122	125	N	5002	Carl Sagan	100000
122	126	Y	5003	Emiliani Torrini	300000

The first several rows belong to the grid on TRS001. The final few rows belong to the grid on TRS002.

Each project displays only its own portion of the data in this table. However, if there is a list that uses this table for reference, it displays all the rows in the table, as shown here:

TVCListStaff:

View | Export Data

Employee ID	Name	Base Pay	Manager?
1001	Mary Manager	$45,000.00	Yes
1002	Art Artiste	$25,000.00	No
1003	Larry Lawyer	$200,000.00	No
1004	Carl Contributor	$25,000.00	No
1005	Charlie CEO	$1,000,000.00	Yes
5000	Huey Lewis	$25,000.00	No
5001	Isaac Bashevis Singer	$75,000.00	Yes
5002	Carl Sagan	$100,000.00	No
5003	Emiliani Torrini	$300,000.00	Yes

Since the column name uap_grid_row_id is reserved, you must not use this as a column name when creating a grid's columns.

You can filter a list so that it displays only the grid entries from its own object (project or marketing object). Continuing the previous example, create a project that has two tabs:

- **Staff Form**: contains a grid that you use to enter and edit members of the staff.

- **Staff List**: displays the entries from the Staff Form grid as a list.

To ensure that only the entries from the current project are displayed on the list, filter on the parent ID of the list.

When you create the TVC Component for the list, set the following values:

- **Filter By Parent ID**: selected
- **Parent ID Column Name**: object_id (as shown in the database table shown earlier for this example). This value must match the value in the **Table Key Column** for the grid TVC Component.

Creating lists of marketing objects

This example describes how to display a list of marketing object references.

Scenario

You have a project that has four subordinate marketing objects associated with it:

- Two Brochures
- One Mailer
- One Resource bundle

After you create the project, you periodically check to see which participating marketing objects have already been created.

This example describes the steps necessary to create this scenario in IBM Marketing Operations.

Assumptions

The following items exist in Marketing Operations:

- A project template named **Event planning**
- Marketing object templates for Brochures, Mailers, and Resource bundles.

Tasks

To implement this scenario, perform the following tasks.

1. Using the Forms Editor, create a specification file to hold the following forms:
   - Create a form to hold a custom text attribute, **Originating Project**.

     After you create a participating marketing object, you enter the value of the project code for the originating project in this field.
   - Create a custom tab, **Participating Marketing Objects**.

     For the custom tab, you add a single object reference attribute to a form. To configure this attribute, you must first create a custom view.

   "Creating the custom tab and attribute" describes the details for creating these forms.
2. Create a custom view as described in "Creating the custom view".
3. Load the forms into Marketing Operations, and add the forms to the appropriate templates:
4. Create the objects:
   - a project from the Event planning project template, **EventStuff001**.

- a brochure, **Brochure001**, and set its originating project to the project code for **EventStuff001**.
- a mailer, **Mailer001**, and set its originating project to the project code for **EventStuff001**.

When you open the **Participating Marketing Objects** tab for **EventStuff001**, you see the details for the associated marketing objects:

Creating the custom tab and attribute

We need a tab that can hold the list. We add this tab to a project template in Marketing Operations. We also need to define the custom form to hold the project code. The custom view depends on both these forms using the same database table, so we create them both in this section.

1. In the Forms Editor, create a specifications file to hold two forms, both using the same database table.
2. Create the specifications database table as follows:

Field	Value
Table Name	dyn_mo_table
Display Name	dyn_mo_table
Key Column Name	po_id
Attribute Name	po_id

3. Create the two forms:

Field	Form 1	Form 2
Internal Name	OriginatingProj	linkedMOs
Display Name	Originating Project	Associated MOs
Description	Will hold a single attribute that points to the originating project.	Form to display the linked Marketing Objects in a list.
Attribute Name Database Table	dyn_mo_table	dyn_mo_table

4. For the list TVC component, specify the following:

Field	Value
Reference Database Table	proj_mos_by_proj_code
Reference Table Key Column	mo_id
Filter By Parent ID	checked
Parent ID Column Name	ProjID

5. Create a TVC attribute of type Single List Object Reference. In the Object Reference Properties section, specify the following:

Field	Value
Object Reference Id Column	mo_id
Object Reference Type Column	comp_type_name

6. Create a form attribute of type TVC Component and set the TVC Component to the TVC attribute set in step 3.

7. Create a form attribute to hold the project code as a text attribute. For this attribute, specify the following:

Field	Value
Attribute type	Text - Single-Line
Internal Name	PID
Form	Originating Project
Display Name	Project Code
Database Column	PID

8. Export the forms and save and close the specifications file.
9. Run the SQL script to create the dyn_mo_table and its columns.

Creating the custom view

Typically, you need to create a custom view before you can add an object reference to a list view. In this example, we reference a marketing object on a project, where the marketing object contains a text field that holds a project code.

This example uses three tables to create the view: uap_projects, uap_mktgobject, and the custom table dyn_mo_table. The view is named proj_mos_by_proj_code.

Prerequisite custom table

Before creating the view, ensure that you have created the custom table, dyn_mo_table, and that it contains the following columns:

- po_id: key column, specified in the DB Tables tab for the form
- PID: text column created in the Forms Attribute tab to hold the project code as text.

Custom view details

The view contains the following columns:

- proj_code and project_id from uap_projects
- name, comp_type_name, and mktg_object_id from uap_mktgobject

The actual SQL code to create the view follows:

```
create view proj_mos_by_proj_code (
   asscProj, MOName, ProjID, mo_id, comp_type_name) As
   select PROJ.name as asscProj, MO.name as MOName,
   PROJ.project_id as ProjID, MO.mktg_object_id as mo_id,
   MO.comp_type_name as comp_type_name
   from uap_projects PROJ, dyn_mo_table MOT, uap_mktgobject MO
   where PROJ.proj_code = MOT.PID and MOT.po_id = MO.mktg_object_id
```

The following table shows the column names and some sample rows from this database view:

asscProj	MOName	ProjID	mo_id	comp_type_name
BRAIN-001	RB-005	101	147	creatives
BRAIN-001	RB-006	101	148	creatives
Event Horizon	CampaignMAIL01	149	145	creatives

asscProj	MOName	ProjID	mo_id	comp_type_name
Event Horizon	CampaignBRO01	149	142	creatives
Event Horizon	CampaignRB01	149	143	creatives
Event Horizon	CampaignRB02	149	144	creatives

Exporting forms

You can only export forms that have been published. Any changes made to the form since it was last published are not included in the exported form. To export a form, you must know the database application used by the installation in which the form will be imported. You specify the database application when you export the form.

When you export a form, IBM Marketing Operations creates a form archive zip file that includes the following.

- a map file of the form in XML format
- a create script for the database application you specify
- a drop script for the database application you specify
- a properties file for each locale for which a translation exists
- a create script, drop script, and insert script for every lookup table used by a single-select database attribute or multiple-select database attribute on the form

To export a form

To export a form, you must know the database application used by the system that will import the form.

1. Click **Settings > Marketing Operations Settings**.
2. Click **Template Configuration**.
3. Click **Forms**.
4. Click the **Export** link for the form you want to export.
5. Select the database application used by the Marketing Operations installation that will import this form.
6. Click **Export**.

Importing forms

Only IBM Marketing Operations administrators can import forms. You can import forms only from a system that is running the same version of Marketing Operations.

You can import a form in one of two ways.

- By importing a complete, previously exported form archive (ZIP) file
- By importing a single previously exported form (XML) file

Importing a form archive (ZIP) file imports the form, any localized versions, and scripts to update lookup tables that are referenced by form attributes.

Importing a form (XML) file imports only the form. The form uses the language of the locale in which it was created. If the form attributes use lookup tables, you must create or edit the lookup tables manually.

You can import a new version of a form that exists in the system. If the existing form is unpublished, the new version replaces the old one. If the existing form is published, the Form Definitions page lists the newly imported version below the old version and the **Publish** icon is available. To replace the published version with the new version, you must republish the form.

To import a form

1. Click **Settings > Marketing Operations Settings**.
2. Click **Template Configuration**.
3. Click **Forms**.
4. Click **Import Form**.

   The Upload Form dialog box displays.
5. If you are importing a form file, enter a name for the form.

   Use only alphanumeric characters, the space character, and the underscore character in the form name.

   If you are importing a form archive, Marketing Operations takes the form name from the archive.
6. Select one of the following:
   a. Select **Form Archive** to import a form archive zip file.
   b. Select **Form File** to import only the form xml file.
7. Browse to the zip or xml file you want to import.
8. Click **Continue**.

   If you are importing a form archive file and the form contains attributes that reference lookup tables, Marketing Operations asks if you want to drop or create/update the lookup tables.
9. Select the options you want and click **Continue**.

Troubleshooting when importing forms

This section describes how to correct some common errors you may receive when you attempt to import a form into the Forms Editor.

Error	Solution
Duplicate form name	The form name is the same as one that already exists in the system. Rename the form file, or open a new form and reimport the form file.
Cannot use names	Some <element> tags have the same name. Rename any duplicate names in <element> tags or open a new form and reimport the form file.

Publishing forms

A form is only available to be added to a template if the form has been published. A form must be published again each time it is edited.

To publish a form

1. Click **Settings > Marketing Operations Settings**.
2. Click **Template Configuration**.
3. Click **Forms**.
4. Click the **Publish** link for the form you want to publish.

If the Publish link is not available, the form has not been changed since it was last published.

Moving forms from one computer to another

You can move a form from one computer to another by exporting the form from one computer and importing it into another installation of IBM Marketing Operations. For example, you can move a form from a development installation to a test installation to a production installation.

Managing lookup values for a form

Single- and multi-select attributes present lists of values to users, who then select one or more values from the list. You manage attribute lookup values as follows:

- Work directly with your database administrators to add or remove values in the lookup table associated with the attribute
- Disable lookup values from the Form Definitions screen, as described here. Disabling values from the Form Definitions screen enables you to disable a value without removing it from the database. If the same lookup table is referenced on more than one form, disabling values from the Form Definitions screen also enables you to disable a value for one form and enable it for another.

Notes on disabled lookup values

Note the following system behavior for disabled lookup values:

- The status (enabled or disabled) for lookup values is kept in the `uap_lkup_manager` system table.
- You can disable a value that is selected on existing objects. When users revisit such an object, they see **disabled** next to the value.
- Disabled values are included in the results from an advanced search if they meet the search criteria. Disabled values are indicated by the text **disabled** next to the value.
- If you edit a single or multi-select attribute, the status for all values of that attribute is reset to enabled.
- If a value is set as the default for a form, and is later disabled, the behavior is as follows:
  - The disabled value is still used for existing objects.
  - If a user revisits an existing object, and changes any answers on that form, the user must choose a different value for the field that contains the disabled value.

To disable lookup values without changing the database table

1. Click **Settings > Marketing Operations Settings**.
2. In the **Administrative Settings** screen, click **Template Configuration** (located under **Other Options**).
3. Click **Forms**.

   The **Forms Definitions** list page appears.
4. Click **Manage** for the form that contains the lookup values you want to edit.

   The **Manage Lookup Values** dialog box appears.
5. Clear the **Enabled** check box for any value that you want to disable.

Clicking the checkbox toggles the setting: values that contain a check are enabled, and values that are not checked are disabled.

6. After you make your changes, click **Save Changes**.

Copying forms

You can copy any published form that is currently enabled. IBM Marketing Operations copies the last published version of the form.

The name of the copy is Copy of <form_name>. If Copy of <form_name> exceeds 50 characters, Marketing Operations displays an error message and you must specify a new name for the copy.

The database table name of the copy is copy_of_<original_table_name>. If this table name already exists in the database, you must change it before you can save the form. Any localized properties files that exist for the original form are copied for the new form.

You copy a form by clicking the Copy icon in the row for the form on the Form Definitions screen.

Localizing forms

If your organization supports multiple languages, you can make forms available in multiple languages to enable users to work with forms in their own languages. You localize a form by exporting it and then creating a properties file for each locale that you want to support.

When you export a form, IBM Marketing Operations creates a form archive zip file that contains a form properties file for the form for your locale. You can create a copy of the properties file for each locale your organization supports and translate the group names, field names, descriptions, and help tips into the appropriate language for each locale. If the form uses lookup tables and the database contains localized versions of the lookup tables, you can edit the properties file for a locale to reference the correct lookup table for that locale.

Properties file names

Properties file names must be in the following form:

<*form_name*>_<*locale*>.properties

where <*form_name*> is the name of the form, and <*locale*> is a locale code. The following locale codes are recognized.

Code	Language
de_DE	German
en_GB	English (Great Britain)
en_US	English (United States)
es_ES	Spanish
fr_FR	French
it_IT	Italian
ja_JP	Japanese

Code	Language
ko_KR	Korean
pt_BR	Portuguese
ru_RU	Russian
zh_CN	Chinese

Example properties file

```
columngroup.group1.header=group1
columngroup.group1.description=first group
columngroup.offer.header=offer
columngroup.offer.description=second group
columngroup.offer2.header=offer
columngroup.offer2.description=third group
column.business_unit_id.label=Business Unit
column.business_unit_id.message= Business Unit is a mandatory field
column.business_unit_id.helptip= Business Unit is used for
column.init_type_id.label= Initiative Type
column.init_type_id.message= Initiative Type is a mandatory field
column.offer_codes.label=Offer Code(s)
column.effective_date.label=Effective Date
column.drop_date.label=Drop Date
column.business_unit_id.lookuptable=lkup_business_unit
tvccolumngroup.group1.header=group1
tvccolumngroup.group1.description=group1 description
tvccolumngroup.group1.helptip=group1 helptip
tvccolumn.tvc_not_used_ref_1.label=Single Marketing Object
```

Localizing forms by editing

You can also localize a form for a locale by having a user with that locale as his or her default locale open the form and manually edit the names and descriptions. When the user saves the form Marketing Operations saves the translations entered by the user and they display for other users with that default locale. However, this process is more time consuming and is generally recommended only when the number of forms and the number of supported locales are small.

How IBM Marketing Operations determines the properties file to use

When a user displays a form, Marketing Operations uses the properties file for the first locale in this list for which a properties file exists.

1. user's locale
2. default locale for the system
3. locale in which the form was created

To localize a form

If the form uses lookup tables and you want to provide localized versions of those lookup tables, create the localized tables before you localize the form. You need the name of the localized table.

You can only export forms that have been published.

1. Export the form.
2. Extract the properties file from the form archive zip file.
3. Create a copy of the properties file for each locale your organization supports.

4. Open each properties file in a text editor and translate the display text into the appropriate language for that file. If the form uses lookup tables and there are localized versions of the lookup tables, replace the lookup table names with the names of the corresponding tables for the locale for that file.
5. Add the new properties files to the form archive zip file.
6. Import the form into Marketing Operations.

   The new version of the form appears indented below the published version you exported. The Publish icon is available.
7. Publish the form to replace the previously published version with the version you imported.

   The localized text from the properties files is uploaded to the database and is available to all users.

Enabling data posting of list selections

When you create a read-only list, you can enable users to send their data selections to a specified server by clicking a link in the form. When users click the Post Data link, the selected rows display in a new popup window.

Data posting is done using name-value pairs, as per the HTML POST method. Name is the column name, and value is the value of the column in the selected row. If the user selects multiple rows, value pairs are comma-separated.

For example, assume that a list has two columns, ID and Name, and the data post URL is set to `http://serverRPT/testServlet`. Assume that the list has the following values:

Table 31. Example list values

ID	Name
1	name1
2	name2
3	name3

If a user selects the first and third rows, and then posts the data, the system generates the following HTML form into a new window:

```
<form name="lvcPost" method="POST"
     action="http://serverRPT/testServlet">
     <input type="hidden" name="ID" value="1,3">
     <input type="hidden" name="NAME" value="name1,name3">
</form>
```

If a posted column contains multiple, comma-separated values, these values are enclosed in double quotation marks (“”) when posted. The quotation marks identify these values as belonging to a single column, as the posting method normally comma-separates the values for each column.

Adding a form to existing objects

When you add a new form to an existing object template, the new form does not display in objects previously created from the template. You can manually edit the database table for the form to make the new form display in all objects of a specified type (for example, all projects).

To have the new form appear in existing objects, you must insert all the object IDs for that object type into the database table for the new form using the following SQL statement:

```
INSERT INTO table_name (object_id) SELECT object_id
  FROM object_system_table
```

where

- *table_name* is the name of the table for the form
- *object_id* is the object identifier column for the object type
- *object_system_table* is the name of the system table for the object

This table specifies the ID column and system table name for each object type:

Object	ID column	System table
project	project_id	uap_projects
program	program_id	uap_programs
plan	plan_id	uap_plans
invoice	invoice_id	uap_invoices
marketing objects	mktg_object_id	uap_mktgobject

For example, if you added a form with a table named **dyn_x** to a project template, run the following SQL statement to add the form to all existing projects:

```
INSERT INTO dyn_x (project_id) SELECT project_id FROM uap_projects
```

Chapter 7. Using attributes on forms

An attribute defines a piece of information that you want to gather from a user. The information can be text, integers, dates, a choice from a predefined list, and so on. In Marketing Operations, you define attributes to collect these different types of information, and then place them on forms. One or more forms are then added to templates as tabs. When users create items, they select a template: each attribute corresponds to a field or other user interface control on the tabs that collect information.

For information about all of the available attribute types, see "Attribute types" on page 113.

Standard and custom attributes

Marketing Operations delivers a set of standard attributes that can be used to collect information for all marketing objects. The standard attributes include name and description. To collect additional information, you create custom attributes, enable them, and add them to forms.

Before you begin to create custom attributes, note that Marketing Operations attributes can be shared or local, and that they are categorized based on how they can be used on forms.

Shared and local attributes

Custom attributes are either shared or local, depending on whether they can be used repeatedly on different forms or only on a single form.

- Shared attributes can be imported into and used on any form. You create a shared attribute by clicking **Settings > Marketing Operations Settings > Template Configuration > Shared Attributes**.
- Local attributes apply to a single form only. You create a local attribute directly on that form by clicking **Create a New Custom Attribute**.

Attribute categories

Custom attributes are grouped into categories based on how they can be used to collect information. The attribute categories follow.

- **Form** attributes can be placed on any form.
- **Grid** attributes can be used in a grid interface.

The following attribute categories are available when IBM Marketing Operations and IBM Campaign are integrated. These attributes collect information that is mapped to IBM Campaign.

- **Campaign** attributes can be used in campaign project templates.
- **Cell** attributes can be used in Target Cell Spreadsheets.
- **Offer** attributes can be used in offer templates. Offer attributes are available when optional offer integration is enabled.

Campaign, cell, and offer attributes are available only as shared attributes.

Marking attributes as required

When you create an attribute, you can specify special behavior characteristics for the attribute, including whether the attribute is Required. When you select this special behavior for an attribute and the attribute is implemented as a user interface control on a form, a red double asterisk (**) appears next to the corresponding field. The system also performs an edit check to assure that a value is supplied.

Note: You cannot mark an offer attribute as required. You define special behavior for offer attributes on a form-by-form basis.

Standard attributes

A set of standard attributes is defined for all marketing objects. The standard attributes follow.

Table 32. Standard marketing object attributes

Attribute	Description
Name	The display name for the marketing object.
Description	The text description entered for the marketing object, either when it was created or edited.
TemplateName	The ID for the marketing object template that this marketing object was created from. You set this ID when you create a marketing object template.
Code	The object code for the marketing object.
SecurityPolicy	The ID for the security policy associated with this marketing object. This ID is a foreign key into the **uap_security_policy** table, where you can find the name of the associated security policy.
Status	**Active** or **Deleted**. All marketing objects have a status of Active until they are deleted.
State	The current state for the marketing objects. Each marketing object type has its own set of states and state transitions.
CreatedBy	The user ID for the user who created the marketing object. User IDs are listed in the uap_user table.
CreatedDate	The creation date of the marketing object.
LastModUser	The user ID for the user who last modified the marketing object.
LastModDate	The date of the last modification made to the marketing object.
ComponentID	The internal name for the marketing object type that this marketing object is based on.

In systems that integrate IBM Marketing Operations with Campaign, additional standard offer attributes are available. See the *IBM Marketing Operations and Campaign Integration Guide*.

About attributes for Marketing Operations-Campaign integration

In systems that integrate IBM Marketing Operations and Campaign, you use Marketing Operations to create and enable campaign and cell attributes, and place them on forms and then into campaign project templates. In systems that also enable offer integration, you use Marketing Operations to perform these tasks for offer attributes to create offer templates.

When your templates are complete, users add and maintain campaign projects and offers in Marketing Operations, and periodically publish the results to Campaign.

Campaign attributes

When IBM Marketing Operations and Campaign are integrated, you create custom campaign attributes in Marketing Operations. All campaign attributes are shared, and you use Marketing Operations to add them to the forms that make up your campaign project templates.

When users create the linked campaign for a campaign project from a template that includes custom campaign attributes, the corresponding attributes are created in Campaign. If users change the data they enter in a field created by a campaign attribute after they create the linked campaign, they must update the campaign in order to send the new information to Campaign. You should use campaign attribute descriptions and form descriptions to inform users which fields require them to update the campaign.

To work with attributes, select **Settings > Marketing Operations Settings > Template Configuration > Shared Attributes**.

Cell attributes

Cell attributes are IBM Marketing Operations attributes that map to IBM Campaign for use in Target Cell Spreadsheets. Marketing Operations includes a set of default cell attributes that are included in every TCS.

You can also create custom cell attributes in Marketing Operations. When users create the linked campaign for a campaign project from a template that includes custom cell attributes, the corresponding cell attributes are created automatically in Campaign.

To work with attributes, select **Settings > Marketing Operations Settings > Template Configuration > Shared Attributes**.

Offer attributes

When offer integration is enabled, a set of standard offer attributes is supplied in Marketing Operations to correspond to the standard attributes in Campaign. You can also create custom offer attributes in Marketing Operations. All offer attributes are shared attributes.

To work with attributes, select **Settings > Marketing Operations Settings > Template Configuration > Shared Attributes**.

About creating, editing, and deleting attributes

You create, edit, and delete shared attributes from the Shared Attributes page: select **Settings > MO Settings > Template Configuration > Shared Attributes**. You must manually enable shared attributes before you can use them on a form. Once a shared attribute is enabled, you cannot edit or delete it.

You create, edit, and delete local attributes directly on form definitions. Local attributes are enabled automatically when you create them.

To create and enable a shared attribute

1. Select **Settings** > **Marketing Operations Settings**.
2. Click **Template Configuration**.
3. Click **Shared Attributes**.

   The page that displays contains one section for each shared attribute category.
4. Click **Create a <*category*> Attribute** for the attribute you want to create.

   The Create a New Shared Attribute dialog opens.
5. Supply values to define the attribute.
6. Click **Save and Exit** to create the attribute and return to the Shared Attributes page, or click **Save and Create Another** to create the attribute and enter values for another new attribute.

   You can select a different attribute category.
7. On the Shared Attributes page, click **Enable** in the row for each new attribute to make it available for use on a form.

To edit a shared attribute

You can edit a shared attribute only if it is not enabled.

1. Click **Settings > Marketing Operations Settings**.
2. Click **Template Configuration**.
3. Click **Shared Attributes**.
4. Click the attribute name of the attribute you want to edit.
5. Make the changes you want and then click **Save and Exit**.

To delete a shared attribute

You can delete a shared attribute only if it is not enabled. Once it is enabled, it cannot be deleted.

1. Click **Settings > Marketing Operations Settings**.
2. Click **Template Configuration**.
3. Click **Shared Attributes**.
4. In the row for the attribute you want to delete, click **Delete**.

Shared Attributes list page

The Shared Attributes list page lists every shared attribute defined in the system. The attributes are organized by attribute category: form, grid, campaign, cell, and offer.

For each attribute, the following columns are displayed.

Table 33. Information about the Shared Attributes page

Column	Description
Display Name	The display name of the attribute. This name displays on forms.
Type	The attribute type.
Used By	A list of the forms that use this attribute.
Enable/Delete	Click **Enable** to make an attribute available for use on forms. Once you enable the attribute, **Enable/Delete** is replaced by **Enabled**. Click **Delete** to permanently delete an attribute that is not yet enabled.

The list page contains the following links.

Table 34. Links on the Shared Attributes page

Column	Description
Create a Form Attribute	Click to create an attribute to use on a form.
Create a Grid Attribute	Click to create an attribute to use on a grid.
Create a Campaign Attribute	Click to create an attribute that maps to IBM Campaign.
Create a Cell Attribute	Click to create an attribute that maps to IBM Campaign to use on a Target Cell Spreadsheet.
Create a Offer Attribute	Click to create an attribute that maps to IBM Campaign, if optional offer integration is enabled.

To create a local attribute

1. Open the form for which you want to create the attribute.
2. Click **Create a New Custom Attribute**.
3. Specify the information for the attribute.
4. Click **Save and Exit** to create the attribute and return to the form or click **Save and Create Another** to create the attribute and display the attribute screen for a new attribute.

When you return to the form, the new attribute displays in the Custom Attributes list so that you can drag it onto the form.

To edit a local attribute

You can edit only attributes that are used on the form. You cannot edit an attribute from the attribute list on the Add an Element tab.

1. Open the form for which you want to create the attribute.
2. Click the attribute on the form.

   A pop-up dialog box displays.
3. Click **Edit Custom Attribute** in the pop-up dialog box.
4. Make the changes you want and then click **Save and Exit**.

To delete a local attribute

You cannot delete an attribute that is on the form. You must first remove the attribute from the form.

1. Open the form for which you created the attribute you want to delete.
2. Select the attribute in the **Custom Attributes** list of the Add an Element tab.
3. Click **Delete the selected attribute**. A confirmation window displays.
4. Click **OK**.

Attributes reference

The screen you see when you create an attribute is dependent upon the type and category of the attribute you are creating. However, many of the fields are the same across all attribute types and categories.

Standard attribute fields

This table describes the standard information that you enter for most attribute types. Many attribute types do require additional information to that described in this section. For more information about the attribute types, see "Attribute types" on page 113.

Table 35. Basic Options

Field	Description
Attribute Category	The category of attribute. For a local attribute, defaults to Form Attribute. For a shared attribute, supplied based on the link you clicked on the Shared Attributes page.
Attribute Type	The type of attribute. The attribute type controls the type of data the attribute holds and how it is entered into the database. Available types vary depending on the attribute category you selected. See "Attribute types" on page 113. **Note:** You cannot change the attribute type after you save the new attribute. If you select the wrong type, you must delete the attribute and create a new one.
Attribute Internal Name	The unique name of the attribute, used internally. Do not use spaces or special characters.
Attribute Display Name	The display name for the attribute, used in the form and in the user interface of object instances. Spaces and UTF-8 characters are allowed.
Attribute Database Column Name	Name of the database column where values for the attribute are stored. By default this is the same as the Attribute Internal Name. Do not exceed the character limit for your database and avoid using the words that are reserved for your database.
Edit database column name	Select to edit the supplied Attribute Database Column Name value. Not available for system-supplied attributes.
Description	A description of the attribute.
Help Text	A short message that appears as a help tooltip, next to the field, to guide the user in entering the information correctly.

This table describes the additional information you need to define for most grid attributes:

Table 36. Grid Attribute Options

Field	Description
Sortable	Select this option to enable users to sort on this column in the table.
Sort Type	The direction in which to sort values in this column. Select Ascending to sort in ascending order or Descending to sort in descending order.
Alignment	Alignment of the attribute in the table. You can select Left, Center, or Right. The default is Left.
Summary function	Available only when the Attribute Type is Decimal, Integer, Money, or Calculated. Performs a simple calculation on the column and displays it in a summary row at the bottom of the grid. Options are Sum, Average, Min, or Max. If no columns in the grid have a summary function, the summary row is not present.

This table describes the standard display information you enter for all attributes.

Table 37. Display Options

Field	Description
Form Element Type	The type of field displayed for this attribute on the form, such as a text field, a check box, or a dropdown list. Available types depend on the attribute type.
Special behavior	The options are None, Required, or Read-only. • Select Required to prevent users from saving the form without supplying a value for this field. When selected, an additional field for an **Error message to Display When Not Populated** displays. • Select Read-only to display the attribute, but not allow users to supply a value. Defaults to None. This field is not available for the Image or Calculated attribute types, or for system-supplied attributes.

Database considerations for attribute database columns

Be careful when setting the **Attribute Database Column Name** value for an attribute. Your database has a set of reserved words, and using any of them for attribute names can cause errors when IBM Marketing Operations writes to the database.

Each database management system has a different set of reserved words. It is not feasible to list them all here, as they can change. The following is a short list to illustrate the issue; for an exhaustive list, refer to your database documentation.

DBMS	Some reserved words
MS SQL	Boolean, Browse, File, Group, Plan, Primary
Oracle	Cluster, Group, Immediate, Session, User
DB2®	Blob, Column, Group, Rollback, Values

If you are using an Oracle database, there is a 30-character limit for the **Attribute Database Column Name** value. For all other databases, the limit is 32 characters.

If you are integrating IBM Marketing Operations and IBM Campaign, avoid CLOB fields, as Campaign does not support them.

If you are using a Microsoft SQL Server database, note that the Identity option for the primary key field is not supported.

Attribute types

The following attribute types are available. A description follows of the user interaction that results when an attribute of each type is implemented. Attribute types that require information in addition to the standard fields and display options include a cross-reference for more information.

Table 38. Attribute types

Attribute type	Description
Text - Single-Line	Presents a field for a single line of text. See “Text attribute types” on page 116.
Text - Multi-Line	Presents a field for a multiple-line text response. See “Text attribute types” on page 116.
Single-Select	Displays the items in a hard-coded list for users to select a single item . (Not available for cell attributes.) See “Single-Select attribute types” on page 116.
Single-Select - Database	Displays the values from a database lookup table for users to select a single item. (Not available for cell attributes.) See “Single-Select - Database attribute types” on page 117.
Multiple-Select - Database	Displays the values from a database lookup table for users to select one or more items. (Only available for form and grid attributes.) See “Multiple-Select - Database attribute types” on page 118.
Yes or No	Provides controls for users to choose between two options (such as True and False). See “Yes or No attribute types” on page 119.
Date Select	Displays a field formatted to accept a date, and a control for users to select a date from a calendar.
Integer	Displays a field formatted to accept an integer value, such as a percentile or weight.
Decimal	Displays a field formatted to accept a fractional number, such as 3.45. See “Decimal attribute types” on page 119.
Money	Displays a field formatted to accept a monetary value. See “Money attribute types” on page 120.
User-Select	Displays a list of all system users so that users can select a user. (Only available for form and grid attributes.)
External Datasource	Provides controls to open an LDAP search dialog and populate the field with Active Directory users. (Only available for form attributes.)
Calculated	Displays and stores the result of simple calculations on other fields. See “Calculated attribute types” on page 120.
URL Field	Displays a hyperlink to a web page. (Only available for grid attributes.) See “URL Field attribute types” on page 121.
Single Select Object Reference	References marketing objects on a form or grid. (Only available for form and grid attributes.) See “Object Reference attribute types” on page 122.
Multi Select Object Reference	References marketing objects on a form or editable grid. (Only available for form and grid attributes.) See “Object Reference attribute types” on page 122.
Image	Displays a user-specified graphic. (Only available for form attributes) See “Image attribute types” on page 123.
Creative URL	Provides a control for users to select an existing digital asset or add an asset, then displays a hyperlink to that asset. (Only available for the standard Creative URL attribute.) See “Creative URL attribute types” on page 123.

The following attribute types are available for local attributes only.

Table 39. Attribute types available for local attributes only

Attribute type	Description
Object Attribute Field Reference	Displays an existing attribute of a marketing object. (Only available for form and grid attributes.) See "Object Attribute Field Reference attribute types" on page 123.
Single List Object Reference	Used to reference marketing objects on a read-only grid. (Only available for grid attributes.) See "Single List Object Reference attribute types" on page 124.
Dependent fields	Adds fields whose values are constrained by another field. See "Dependent field attribute types" on page 125.

Attribute types for campaign, cell, and offer attributes

Only attribute types that exist in both IBM Marketing Operations and IBM Campaign are available for campaign and cell attributes.

For systems that also integrate offers, the same constraint applies to offer attributes with the following exception: when published to Campaign, the attribute type for the Creative URL offer attribute changes to Text Field - String.

Table 40. Attribute types for campaign, cell, and offer attributes in Marketing Operations

Attribute type	Campaign attributes	Cell attributes	Offer attributes
Text - Single-Line	X	X	X
Text - Multi-Line	X	X	X
Single-Select	X		X
Single-Select - Database	X		X
Multiple-Select - Database			
Yes or No	X	X	
Date Select	X	X	X
Integer	X	X	
Decimal	X	X	X
Money	X	X	X
User-Select			
External Datasource			
Calculated	X	X	X
URL Field			
Single Select Object Reference			
Multi Select Object Reference			
Image			
Creative URL			X

Note: For attributes that have the Single-Select - Database attribute type, IBM Marketing Operations passes the lookup value (not the display value) of the selection to IBM Campaign. You determine the lookup value and the display value when you create the lookup table.

There is no attribute type in Marketing Operations that corresponds to the "Modifiable drop-down list" that is available for custom attributes in stand-alone IBM Campaign.

Text attribute types

To display text on a form or TVC component (that is, a grid or list), IBM Marketing Operations provides two attribute types.

- Text - Single-Line: Appears as a small text box, allowing only one line of text to be entered and viewed.
- Text - Multi-Line: Appears as a larger rectangular text box, allowing for entering and viewing multiple lines of text.

In addition to the standard attribute fields, text attributes have the following additional display options.

Table 41. Display options for text attributes

Field	Description
Maximum length for the field	The maximum number of characters that users can enter in the field. If you do not want to enter a maximum length, select the Use CLOB check box.
Default value for the field	The value stored in the field if the user does not enter a value.
Use Clob	Use the CLOB data type. If this check box is selected, any value in the **Maximum length** field is ignored. This option is not available for campaign attributes.

Single-Select attribute types

If the list of options is relatively short, and does not change often, you can use the Single-Select attribute type. It can appear on a form as either a drop-down list or a radio button group.

The choices are supplied from a list of pre-defined options that you specify when you create the attribute. The user can select only one choice from the list.

Note: This attribute type is not available for cell attributes.

When you create the attribute, you use the **Field Type** field to specify its appearance:

- Dropdown List (the default)
- Radio Button Group

When you create a Single-Select attribute, you must specify the list of items the user can choose from. The following table describes the fields you use.

Table 42. Options for Single-Select attributes

Field	Description
Allowed values for the field	A text box you use to enter a new value. After you enter a value, click **Add** to add the value to the list of allowed values.

Table 42. Options for Single-Select attributes (continued)

Field	Description
Allowed values list box	A list box that displays all the allowed values for this single-select attribute. The list is presented on the form in the same order as it appears in this list. You can use the buttons to the right of this list box to organize the list: • **Remove**: click to remove the selected value. • **Up**: click to move the selected value up in the list • **Down**: click to move the selected value down in the list.
Default value	A drop-down list you use to specify the default value for the attribute. You can select any of the allowed values.

Single-Select - Database attribute types

The Single-Select - Database attribute type functions the same as a single-select attribute, except that the list of choices comes from a database table containing valid items. If the list of choices is relatively long, or could change, consider using the Single-Select - Database attribute type.

You can make a Single-Select - Database attribute dependent on the value in another field. For example, you could make the choices in a list of cities dependent on which state is selected.

Note: This attribute type is not available for cell attributes.

When you create a single-select database attribute, you must specify the lookup table, and other information as described in the following tables.

Additional Basic Options fields

Single-Select - Database attributes have the following additional basic options:

Table 43. Options for Single-Select - Database attributes

Field	Description
Filter database table name	A value to use to filter the dropdown list of table names for the **Use values from this database table** field. Only those lookup tables with the specified text in their table names are included in the list. If this field is empty, the list contains all lookup tables in the database.
Use values from this database table	Select the table that contains the values that you want to display to users.
Key Column	Select the primary key for the table.
Display Column	Select the database column that contains the values you want to display on the form.
Sort-by Column	Select the column that determines the order of the list when it displays on the form.
Sort Order	Select Ascending or Descending, depending on how you want the list to display.
This field is dependent on the following column	Select the check box and specify the database column from the drop-down list. (This option is not available for global attributes.)

Additional Grid Options

Single-Select - Database attributes have the following additional grid option:

Table 44. Grid options for Single-Select - Database attributes

Field	Description
Do Not Cache Lookup Values	Select the check box to update the values from which users can select every time the grid is saved or refreshed.

Additional Display Options fields

Single-Select - Database attributes have the following additional display options:

Table 45. Additional display options for Single-Select - Database attributes

Field	Description
Default Value	Select a default value for the attribute, or leave this field blank if you do not want to have a default value for the attribute. (The list contains all values in the database column specified in the **Display Column** field.)

Multiple-Select - Database attribute types

You can define an attribute that allows the user to choose multiple values from a valid list of options. For example, when specifying the products for a particular marketing campaign for a bank, you might want to select one, two, or all of the following options:

- 1-year CD
- 5-year CD
- Bank Credit Card

To offer multiple selection in a field, you use an attribute with a type of Multiple-Select - Database. Creating a multiple selection attribute is similar to creating a Single-Select attribute, with some additional setup.

Note: This attribute type is not available for campaign, cell, or offer attributes.

When you create a Multiple-Select - Database attribute, you must specify the lookup table, and other information as described in "Single-Select - Database attribute types" on page 117.

When creating Multiple-Select - Database attributes, keep in mind the following restrictions:

- The value in the **Attribute Database Column Name** field needs to be unique across attribute categories. (You cannot use the same database column name for both a grid attribute and a form attribute.)
- You must not change the data type of the key column after you create the attribute.

You must also specify the following additional display options:

Table 46. Options for Multiple-Select - Database attributes

Field	Description
Multi-Select Join Table Name	The name of the join table to use for this attribute. Every Multiple-Select - Database attribute must have a unique join table.

Yes or No attribute types

You can create an attribute that can only have one of two values (true/false, yes/no, etc.). For example, you can have a form where the user enters either Yes or No to a question. Use the Yes or No attribute type for this purpose.

A Yes or No field can display as a checkbox, a drop-down list, or a radio button group.

Note: This attribute type is not available for offer attributes.

Yes or No attributes have the following additional basic options:

Table 47. Options for Yes or No attributes

Field	Description
Default Value	Specifies the default value for the attribute. You can choose Yes, No, or Not Available. (Not Available is the same as No if you chose Checkbox for the form element type.)
Display name fields	Specify the display name for each possible value. The defaults are Yes, No, and Not Available. Display names are not used if you select Checkbox as the form element type in the display options.
Sort Order fields	The values in these fields specify the order in which the possible values are listed on the form. By default, the order is Yes, No, and Not Available. If you clear the Sort order field for a value, that value does not display to users. The sort order does not apply if you choose Checkbox as the form element type in the display options.

Decimal attribute types

You can use Decimal attributes to display non-integer values. For example, use a decimal attribute to represent a field that contains percentages.

Decimal attributes have the following additional basic option:

Table 48. Options for Decimal attributes

Field	Description
Number of decimal places for the field	The number of digits users can enter after the decimal point. The maximum value is 7.

Decimal attributes have the following additional display option:

Table 49. Display options for Decimal attributes

Field	Description
Default value for the field	The value to use if the user does not enter a value.

Money attribute types

Money attributes represent monetary values, such as salary or item cost.

The currency sign is set from the locale information for the user.

Money attributes have the following additional basic option:

Table 50. Options for Money attributes

Field	Description
Number of decimal places for the field	The number of digits users can enter after the decimal point. The default value is 2. You can specify more decimal places if the attribute displays a conversion rate (typically 5 decimal places) or per unit costs that are in micro-cents. The maximum value is 7.

Money attributes have the following additional display option:

Table 51. Display options for Money attributes

Field	Description
Default value for the field	The value to use if the user does not enter a value.

Calculated attribute types

A Calculated attribute is a read-only field whose value is calculated based on a specified formula.

When you save a form that contains calculated attributes, IBM Marketing Operations checks the formulas to ensure that they are valid.

A Calculated attribute has the following additional basic options.

Table 52. Options for Calculated attributes

Field	Description
Formula	The formula that calculates the value. Any attributes used in the formula must be included on the same form as the calculated attribute.
Number of decimal places for the field	The number of digits to display after the decimal point

Formula syntax

You can perform the following binary operations.

- Addition (+)
- Subtraction (-)
- Multiplication (*)

- Division (/)

You can perform the following operations on an arbitrary number of comma-separated operands.

- **Sum**: for example, `Sum(Salary, 1000, Bonus)`
- **Avg**: arithmetic average, for example, `Avg(BudgQtr1, BudgQtr2, BudgQtr3)`
- **Min**: select the minimum value, for example `Min(IQ, 125)`
- **Max**: select the maximum value, for example `Max(Sale1, Sale2, Sale3, Sale4)`

An operand can be any of the following.

- A decimal constant (for example, 2.5).
- The attribute internal name of an attribute on the current form of the following types: Money, Integer, Decimal, or Calculated. If the formula references an attribute that is not included in the form, saving the form results in an error.

Calculated attribute example

Assume the **Wages** form contains the following currency fields: **BaseSalary**, **Bonus**, **Insurance**, and **FedTax**. You could create a calculated field named **Net pay**, and enter the following formula for it: `BaseSalary+Bonus-FedTax-Insurance`

Example to avoid

Since you can reference one calculated field within another, take care to avoid infinite recursion. For example, consider a form with the following attributes.

- **Salary**: an integer or money attribute
- **Commission** = Salary + (Bonus * 0.10)
- **Bonus** = (Commission * 0.5) + 1000

The **Commission** and **Bonus** attributes refer to each other, creating an infinite loop when the system attempts to calculate the values.

Grid attribute example

Calculated fields can be used in grids, as well as on forms. A simple example is if a grid contains columns for units and cost per unit, you can create a column for the grid to represent the total cost: `Units * CostPerUnit`

URL Field attribute types

To add a hypertext link to grids and forms, you use the URL Field attribute. For grids, you can specify a link to a URL for each row that gets added to the grid.

For URL Field attributes, you specify database columns that hold the actual URL (**DB Column for URL**) and the link text that displays in the final grid or form (**Database Column**).

Note: This attribute type is not available for campaign, cell, or offer attributes.

For example, suppose that you have a grid that contains vendor data, and for each vendor you are required to specify a website for the vendor. In the Forms Editor, you can create a URL Field attribute as follows.

Table 53. Example settings for adding a vendor URL field to a grid

Field	Value	Description
Attribute Type	URL Field	Specifies the URL Field attribute type.
Attribute Internal Name	vendorURL	Unique identifier for the attribute.
Attribute Display Name	Vendor URL	The label that appears in the user interface.
Attribute Database Column Name	textURL	The database column added to hold the display text for the link.
DB Column for URL	linkURL	The database column added to hold the actual URL. You do not have to enter **http://**. For example, to link to Google, you can enter either `www.google.com` or `http://www.google.com`.

After you set up an object in IBM Marketing Operations that uses this form, users who add grid rows or populate a form specify a URL. In a grid, users can specify a URL for each row. Users can then click a link to open the website in a new window.

Object Reference attribute types

You use Object Reference attributes to associate marketing objects with projects or other marketing objects. An Object Reference attribute creates a field with a selector attached. Users can search in the selector for a particular marketing object and then add it to the project or marketing object they are creating or editing.

Multi Select Object Reference and Single Select Object Reference attributes are similar; however, the resulting user interface field can contain multiple entries versus a single entry.

You cannot add these attributes to read-only grids. To add marketing object references to read-only grids, use the Single List Object Reference attribute.

Note: These attribute types are not available for campaign, cell, or offer attributes.

To specify an Object Reference attribute, you enter the following information specific to this attribute type:

Table 54. Options for Object Reference attributes

Field	Description
Marketing Object Type	The marketing object type of the items you want on the list that is displayed to the user.
Template ID	The ID of a specific template for the specified marketing object type. If you select the Auto Create check box below, this template is used to create the object. Otherwise, only marketing objects created using the specified template are displayed to users.
On Click go to	Select the destination screen when you click the object link on a form: • **Summary Tab**: opens the summary page of the marketing object • **Analysis Tab**: opens the analysis page **Note:** This field is available only for grids.

Table 54. Options for Object Reference attributes (continued)

Field	Description
Modifies	Use this option when the object that contains this form is intended to change or update the contents of a marketing object (for example, a Change Order or Work Request project). **Note:** This field is available only for forms.
References	Use this option to indicate that the marketing object is only referenced, not modified. **Note:** This field is available only for forms.
Auto Create	Select this option to create an "empty" marketing object if users choose a template that contains a form with this attribute when they create an object. Note that: • This check box is not available for Multi Select Object Reference attributes. • This check box has no effect if the form is added to a marketing object, as marketing objects cannot automatically create other marketing objects. This field is available only for Single Select Object Reference attributes on forms.

Image attribute types

To enable users to display a graphic on a tab in a project or marketing object, you use an Image attribute. The attribute creates a display area for the image and a field with a Browse button so users can select the graphic to display.

Note: This attribute type is not available for grid, campaign, or cell attributes.

Creative URL attribute types

The Creative URL attribute gives users the ability to include a digital asset from a Marketing Operations asset library in an offer. The Creative URL attribute type provides the user interface controls for users to select an asset and then display a hyperlink to the asset.

Table 55. Options for Creative URL attribute types

Field	Description
Default value for the field	Provides a control for users to select an existing digital asset from an asset library, or to add an asset and then select it. The corresponding field then displays the name of the selected asset as a link to digital file. The same controls display in the user interface for offer instances that include an attribute with this type.

Object Attribute Field Reference attribute types

You add a local Object Attribute Field Reference attribute to a specific form to display information about a marketing object that is linked to the form. For example, if the form contains a Single Select Object Reference attribute for a marketing object named **Brochure01**, you can also add an Object Attribute Field Reference attribute to display any of the attributes for **Brochure01** (such as its status).

Note: You cannot create an Object Attribute Field Reference attribute that corresponds to a Multi Select Object Reference attribute.

The resulting object attribute field information is for display only. Users cannot edit it.

This attribute type is only available as a local attribute.

You can reference both standard marketing object attributes and custom attributes. For custom attributes, you must know the attribute name and the name of the form that contains the attribute in the marketing object template. For a list of standard marketing object attributes, see "Standard attributes" on page 108.

Object Attribute Field Reference attributes require the following additional basic options:

Table 56. Additional basic options for Object Attribute Field Reference attributes

Field	Description
Attribute Name	The name of the marketing object attribute you want to reference. To reference a standard attribute, select it from the drop-down list. To reference a custom attribute, enter the name in the form `<form_name>.<internal_name>` where • `form_name` is the name of the form that contains the custom attribute in the marketing object template • `internal_name` is the value of the Attribute Internal Name field for the custom attribute
Reference Object	The internal name of the attribute on the current form that references the marketing object.

Single List Object Reference attribute types

You add a local Single List Object Reference attribute to a specific form to:

- Reference marketing objects on a list, similar to how you use a Single or Multi Select Object Reference attribute to reference marketing objects on a grid.
- Display a grid as a list for an object (project or marketing object). For details, see "Displaying a grid as a list" on page 95.

This attribute type is only available as a local attribute for grids.

"Creating lists of marketing objects" on page 97 provides an example of using a Single List Object Reference attribute.

To specify a single list object reference attribute, you must enter the following information specific to this attribute type.

Table 57. Options for Single List Object Reference attributes

Field	Description
On Click go to	Used to choose the tab of the object that opens when you click an object link from a list view. You can choose to navigate to either the Summary Tab or the Analysis tab.
Object Reference ID Column	Used to display a list of marketing objects in a list view. If you select this option, the **Object Reference Type Column** field becomes active. Enter a value that corresponds to the object instance ID column for the objects you are mapping.

Table 57. Options for Single List Object Reference attributes (continued)

Field	Description
Object Reference Type Column	Used in concert with the **Object Reference ID Column** field to display marketing object references on list views. Enter a value that corresponds to the object type column for the objects you are mapping.
Grid Object Reference Column	Used to display a grid as a list view. If you select this option, you must enter the following information in the field: • The name of the form that contains the grid. This field indicates the name of the form in Marketing Operations, chosen when the form was uploaded into Marketing Operations. • The internal name of the Single Select Object Reference attribute as defined on the grid. The syntax is *<form_name>.<attribute_name>*. For example, if you have a grid that has a Single Select Object Reference attribute with an internal name of **Brochure**, and the grid is contained on a form that is named **EventCollateral** in Marketing Operations, you enter **EventCollateral.Brochure** in this field.

Dependent field attribute types

Dependent fields are attributes whose values are constrained by another field. For example, if you want to have a field that displays all the cities for a selected state, you could make the city field dependent upon the state field. You can make an attribute dependent on another attribute only when you add it to a specific form. That is, when you create a shared attribute, you cannot make it a dependent field when you create it, only within the context of the forms you add it to.

This section presents the city/state example.

First, you need to create the lookup tables for cities and states. Here are the first few rows of these two tables.

The `lkup_state` table:

state_id (primary key)	state_name
1	Massachusetts
2	New York

The `lkup_city` table:

city_id (primary key)	city_name	state_id (foreign key pointing to primary key for lkup_state)
1	Boston	1
2	Cambridge	1
3	New York	2
4	Albany	2

Once you have these tables, you create the parent (state) and child (city) attributes.

For the state attribute, use the following values:

Field	Value
Database Column	state_id
Use values from this database table	lkup_state
Key Column	state_id
This field is dependent on the following column	Leave this box clear.

For the city attribute, use the following values:

Field	Value
Database Column	city_id
Use values from this database table	lkup_city
Key Column	city_id
This field is dependent on the following column	Check this box and select state (the Internal Name you defined for the state attribute).

Note the following:

- You can have a Multiple-Select - Database attribute be dependent upon a Single-Select - Database attribute, but not the other way around. In the example above, the city field could be a Multiple-Select - Database attribute, but not the state field.
- You can sort lookup values based on either the text description or the ID for the lookup value.

Chapter 8. Working with Metrics

Metrics measure the performance of an object. Typical metrics include financial metrics, such as cost and revenue, and performance metrics, such as the number of contacts and the number of responses in a particular marketing campaign. Metrics are always numeric.

You can define a metric to calculate its value based on other metric values. For example, you can define campaign profit as the revenue minus the cost. You can also define metrics that roll up from projects to programs and from programs to plans.

You associate metrics with metrics templates, which are in turn associated with the templates for other objects. As a result, when you add an object, the metrics identified through both templates display on the Tracking tab.

To organize the metrics you define, you can create groups within your metrics templates. Once established, a group can be added to other metrics templates as needed. You can also define metrics dimensions to track different values for each metric: for example, Actual value, Target value, Projected value (optimistic) and Projected value (pessimistic). Metrics dimensions apply to all metrics templates, and appear to users as entry columns on the Tracking tab.

Types of metrics

In addition to metrics that are user-entered, there are three types of metrics: computed, rollup, and planned. You set the metric type when you add the metric to a particular metrics template. As a result, the same metric can be computed for a project and roll up in a program or plan.

Computed metrics

To specify that a metric is computed, rather than user-entered, you check the **Computed** box and enter a formula when you add the metric to a metrics template.

For example, you create an ROI (return on investment) metric. When you add it to a metrics template, you define that it is computed using the following formula:

```
((TotalRevenue - TotalCost)/TotalCost)*100
```

- When you define a formula for a metric, you use the Internal Name defined for each metric in the formula.
- You can use the following operators in the **Formula** field: +, -, *, /, SUM, AVG, MIN, MAX, and ROLLUP.

Note: If you include a NULL value in the formula, these operators treat the NULL value differently. Aggregation functions (SUM, AVG, MIN, and MAX) ignore the NULL value. Arithmetic calculations treat the NULL value as 0; however, if you enter #/0 or #/NULL, Marketing Operations displays `#DIV/0!`

Metric rollups

When you add a metric to a metrics template, you can specify that the metric will "roll up" from the child object to the parent object. For example, project metrics can roll up to the parent program level, and program metrics roll up to the parent plan level.

Metrics that roll up can display on the Tracking tab of the parent object.

- Any project metrics that you configure for rollup display in the Project Rollups table on the Tracking tab of the parent program.
- Any program metrics that you configure for rollup display in the Program Rollups table on the Tracking tab of the parent plan.

For example, to track the number of responders to all projects in a program, you define the following metrics:

- **NumberOfRespondersPassed**, representing the number of responders from the projects.
- **NumberOfProgramResponders**, representing the number of responders in the program.

Next, you add the metrics to metric templates as follows:

- For the project metric template, add a group (for example, **Performance**) and add the **NumberOfRespondersPassed** metric to it. Do not select **Computed** or **Roll-up** when adding the metric to the group.
- For the program metric template, add a group (for example, **Performance**) and add the **NumberOfProgramResponders** metric to it. Do not select **Computed** or **Roll-up** when adding the metric to the group.
- For the program metric template, add the **NumberOfRespondersPassed** metric in two places:
  - To the metrics template, without a group: click **Manage Metrics** and check the **Roll-up** box.
  - To any group (typically, a group that matches the group in the project metric template: in this example, **Performance**). Clear the **Roll-up** box. Check **Computed** and enter the following formula:
    `NumberOfProgramResponders+ROLLUP(NumberOfRespondersPassed)`

Planned metrics

To include goals and performance expectations for your plans and programs, you can identify metrics as being planned. Planned metrics are similar to rollups in that values are inherited from one object in the hierarchy to another, but in the opposite direction: child objects inherit planned metrics from parent objects.

To define a planned metric, check both the **Roll-up** and **Is Planned** boxes when adding the metric to the plan or program metrics template. Planned metrics appear in the Planned column of the metrics table on the Tracking tab of each child object.

Metric creation overview

To add metrics to objects, create metric templates.

1. From IBM EMM, select **Settings > Marketing Operations Settings > Template Configuration > Metrics**.
2. Add metrics dimensions (optional).

3. Add metrics.
4. Add a metrics template.
5. Manage the metrics on the metrics template by adding them to groups or to the template itself, and by defining the type for the metric.
6. To localize the metrics, export, translate, and import a properties file for each locale (optional).

Working with metrics, metrics dimensions, and metrics templates

To work with metrics, metrics dimensions, and metric templates, go to **Settings > Marketing Operations Settings > Template Configuration > Metrics**.

Metrics and metrics templates are sorted alphabetically by the ID field. Metrics dimensions are sorted by the order in which they were added.

- To add a metric, metrics dimension, or metrics template, click the corresponding **Add** link on the Metrics Templates page. You can add an unlimited number of metrics and metrics templates. You can add up to five metrics dimensions; each one applies to all of your metrics templates.
- To edit a metric, metrics dimension, or metrics template, click the corresponding **Edit** link on the Metrics Templates page.
- To delete a metric, metrics dimension, or metrics template, click the corresponding **Delete** link on the Metrics Templates page. You cannot delete a metric or metrics template that is used by any other object: the **Delete** link is disabled if the item is used by another object.

Metrics properties

When adding or editing metrics, you supply values for the following fields.

Table 58. Metrics properties

Property	Description
Internal Name	The ID of the metric. Avoid spaces and special characters. Metrics are sorted on the Metrics Templates page by this Internal Name. When you identify a metric as computed in a metrics template, you use the internal name to identify each metric in the formula you supply.
Display Name	The name of the metric when used in Marketing Operations. **Note:** Limit this name to three 10-character words (or less). The display limit in metric rollup tables within Marketing Operations is 32 characters. For example, "Mailed Client Savings" displays in full, while "Savings Mailed to Prospective Clients" does not display completely. You can translate the Display Name using properties files.
Description	Descriptive text for the metric. This text is useful for determining the purpose of the metric.
Unit Type	The type of metric. Choose from Number, Decimal, Percent, or Money.

Table 58. Metrics properties (continued)

Property	Description
Display Format	How the metric appears on the Tracking tab for an object. Typically, the Display Format corresponds to the Unit Type. Select: • # - number or decimal • #% - percent • $# - money While you select $# when you define monetary metrics, users can enter values for the metric in the currency for their defined locale.
Precision	The number of digits of precision, up to 9. The precision controls the number of digits after the decimal point for the metric value. Values are rounded using the "half-up" rule. If the digit to the left of the discarded digit is odd, round up. If the digit to the left of the discarded digit is even, round down. For example: • 9/2=4.5 Since the number before 5 is 4 (even number), round down to 4. • 7/2=3.5 Since the number before 5 is 3 (odd number), round up to 4.

Metrics dimensions properties

When adding or editing metrics dimensions, you supply values for the following fields.

Table 59. Metrics dimensions properties

Property	Description
Display Name	The name of the dimension to be used in Marketing Operations. Appears as a column heading on the Tracking tab when users enter metrics for an object. You can translate the Display Name using properties files.
Description	Descriptive text for the dimension. This text is useful for determining the purpose of the dimension.
Type	• Actual: Use to capture metrics that are entered manually or loaded into Marketing Operations from Campaign or some other tracking software. • Target: Use to capture values for metrics that your organization uses for planning and setting targets. Target dimensions are the only dimensions that display in the wizards used to create objects. • Other: Use for any dimension that is not Actual and that you do not want to display in the wizards used to create objects.

Creating metrics templates and metric template groups

A metrics template is a collection of metrics. You add metrics to Marketing Operations by adding metrics templates. Likewise, you attach metrics to an object template by selecting a metrics template.

Each metric template works with only one object type: **plan**, **program**, or **project**. Because each object template can use only one metrics template and there is only one template file for plans, you should not define more than one metrics template with a type of **plan**.

A metric can belong to more than one metric template.

Metrics in a template can be, but do not need to be, organized into metric groups. A metrics template can contain a mix of grouped and ungrouped metrics.

To create or edit a metrics template

Before you can add metrics to object templates, you organize the metrics into metrics templates.

1. Click **Add Metrics Template** or **Edit** on the Metrics Templates page.
2. Enter or edit the **Internal Name**, **Display Name**, and **Description fields**.
3. Select a type of object to use this metrics template: **plan**, **program**, or **project**.

   Note: Since there is only one template for plans, do not define more than one metrics template with a type of **plan**.
4. Add metrics to the template.
   - To add a metric to the template without using a group, click **Manage Metrics**.
   - To add a group of metrics, click **Add Metrics Group**.

     You can select any existing group or create a group.
5. Select an individual metric and define the properties for the metric in this template.
   - If the metric is entered individually by users in the object, clear the **Computed by Formula**, **Roll-up**, and **Planned** check boxes.
   - If the metric is computed, select the **Computed by Formula** check box and enter a **Formula**.
   - If the metric is collected from other metrics, select the **Roll-up** check box. Rollup metrics are available in plan or program templates only.
   - If the metric is planned, select the **Roll-up** and **Planned** check boxes. Planned metrics are available in plan or program templates only.
6. Click **Save Changes** to save the metrics template.

Important: When you edit a metrics template, the changes affect new objects only.

For example, you have a project that uses the "basic campaign" metrics template. You add a metric to this metrics template. The existing project does not get the new metric. However, when you add a project that uses the "basic campaign" metrics template, it does include the new metric.

Metrics groups

In a metrics template, you create metrics groups to organize metrics that are similar or to share common sets of metrics in multiple metrics templates.

After creating a metrics template, you can add a metrics group. Click **Manage Metrics** next to the name of the metrics group to add metrics to the group. You can also order the metrics within the group in the Manage Metrics dialog. The metrics show in this order in your reports.

When you change a metrics group, the change affects all of the metrics templates that include the group. For example, you create a "Financials" metrics group in your "basic campaign" metrics template. Later, you add the "Financials" metrics group to your "seasonal campaign" metrics template. You then edit the "seasonal campaign" metrics template and add a metric to the "Financials" metrics group. The new metric is now also included in the "basic campaign" metrics template.

You can delete a metrics group from a metrics template. If another metrics template contains the same metrics group, the metrics group still exists. You can still add the metrics group to other metrics templates. If you delete all instances of a metrics group from all metrics templates, you also delete the metrics group from Marketing Operations.

Localizing metrics

You can localize metrics using one of these methods.

- Upload properties files translated for different locales.
- Work with users who have different locales set as preferences. A user from each locale can change the **Display Name** and **Description** for the metrics.

To generate a properties file for translation, click **Export Properties File** on the Metrics Templates page. You download a compressed file that contains the properties file for your locale. The file name is in the format `metric-definition_<locale>.properties`.

The display name keys and description keys for metrics are saved in the metrics-related tables for plans, programs, and projects. To distinguish keys from real values, use the key prefix, which is $_$.

While Marketing Operations is running, the system replaces metrics keys with values from the metrics properties file.

Properties file sample:

```
$_$.metric.AVFee.display=Audio Visual Fee ($)
$_$.metric.AVFee.description=Audio Visual Fee
$_$.metric-group.BoothExpenses.display=Booth Expenses
$_$.metric-dimension.metricValue0.display=Actual
$_$.metric-template.CampaignProject.display=Campaign Project
$_$.metric-template.CampaignProject.description=Metrics for
     Campaign Project Template
```

Importing a metrics properties file

After translating the `metric-definition_<locale>.properties` file, you upload the file for the new locale.

1. Click **Import Metrics Template** on the Metrics Templates page.
2. Select the **Properties file** check box.
3. Click **Browse** to select the properties file.
4. Click **Continue**.

Exporting and importing metrics templates

If you have multiple Marketing Operations systems, you can transfer the metadata for your metrics from one instance to another by exporting and importing metrics templates.

To transfer metrics templates between systems, select **Settings > Marketing Operations Settings > Data Migration** and click either **Export** or **Import** next to **Templates**. Select the Metrics check box to create or receive a compressed archive file.

For more information about data migration, see Chapter 15, "Exporting and importing metadata," on page 169.

Note: To import a metrics specification file that was exported from a pre-8.5 version, on the Metrics Templates page click **Import Metrics Template** and select the XML file.

Chapter 9. Setting Up Security

You create and manage users and user groups in the IBM Marketing Platform. Then, in IBM Marketing Operations, you configure security policies that grant those users permissions to access various objects and parts of the product based on access roles.

Marketing Operations provides security through several kinds of access roles and users are assigned access roles in different ways. For example, you and the other system administrators assign security policy roles to users from the User Permissions page, while people who create projects specify which users participate in which roles. But no matter how a user obtains an access role, the permissions granted to that role are determined by a security policy and someone who has not been assigned any roles is governed by the default security policy, Global.

About access roles

To support the collaborative features in IBM Marketing Operations, you can grant varying levels of access to different types of users based on access roles.

There are three types of roles in Marketing Operations - object, project, and security policy - and there are two default security roles that support the Global security policy.

About the default security roles

The default security roles, PlanAdminRole and PlanUserRole, are included in the system's default security policy, Global. These roles are based on the application access levels for Marketing Operations in Marketing Platform and they are always in effect.

- When, in the Marketing Platform, you add a user to a user group that has the PlanAdminRole level of access, that user is assigned the PlanAdminRole user role in Marketing Operations. By default, users with this role have access to all administrative and configuration settings.
- When, in the Marketing Platform, you add a user to a user group with the PlanUserRole level of access, that user is assigned the PlanUserRole user role in Marketing Operations. By default, users with this role are granted few permissions.

You cannot override these role assignments in the **User Permissions** page of Marketing Operations, and you cannot remove them from the Global security policy. To change the system role assigned a user, you must change their user group assignment in the Marketing Platform.

Remember that changes made to users in the Marketing Platform are reflected in Marketing Operations only after the user tables are synchronized. User synchronization occurs programmatically at a regular interval, as specified by **Settings > Configuration > Marketing Operations > umoConfiguration** > `usermanagerSyncTime`.. Or, you or another system administrator can invoke the **Synchronize Users** function from the **Administrative Settings** page in Marketing Operations.

About object access roles

Each object type in IBM Marketing Operations has a set of object access roles. For projects and approvals, object access roles are also called "access levels."

When users do their work in Marketing Operations, the system assigns them the appropriate object access role. For example, a person who creates a project is the project owner, and the users who are assigned to project roles are the project participants. Object roles for projects and approvals are also called access levels because project participants with the appropriate permissions can also assign object roles to participants (in addition to assigning project roles).

Every object type has an owner, by default the person who created it. Many object types also have additional roles, as described in the following table.

Table 60. Object types and associated roles

Object	Roles / Access Levels
Plan	Plan Owner, Plan Participant
Program	Program Owner, Program Participant
Project	Project Owner, Project Participant, Project Requester
Request	Request Recipient, Request Owner
Asset	Asset Owner
Account	Account Owner
Approval	Approval Owner, Approval Approver
Invoice	Invoice Owner
Teams	Teams Manager, Teams Member
Marketing Object	<*Marketing Object Type*> Owner For example, if you have a marketing object type named Creatives, its object role name is Creatives Owner.

You cannot delete object roles from security policies because they support general system processing.

About security policy roles

Security policy roles are exactly that: roles you add to individual security policies. These roles are meant to control access to IBM Marketing Operations functionality based on a job title or function a user performs for your organization as a whole.

For example, perhaps marketing managers need full access to all plans, programs, projects, and so on while individual marketers need to be able to view plans and programs but are allowed to create projects only. In such a case you would add security roles named Marketing Managers and Marketers.

The roles you add to security policies plus the default system roles (Plan Administrator and Plan User), are the roles you assign to individual users on the **User Permissions** page.

Project roles

Project roles represent the job functions of the people who participate in a project or make project requests. Template developers construct a list of appropriate roles on the **Project Roles** tab for each project template. Then, when configuring security

policies, you select the template and the system displays the template's project roles along with the other access roles. That way you can configure different permissions for different templates based on project roles in addition to system, object, and security roles.

Additionally, within individual templates, you can configure different permissions for different tabs (both custom and default tabs). For example, perhaps participants from one project role shouldn't be allowed to edit the workflow; they should just be able to view it. Or perhaps only the user who participates in a project role named "accounting" for an individual project should be allowed to edit the **Budget** tab no matter what their other access roles might be.

Custom security for template tabs based on project roles can be disabled, if necessary. To do so, set the initialization parameter named `customAccessLevelEnabled` to `false` under **Settings > Configuration > Marketing Operations > umoConfiguration**.

Security policies and permissions

Security policies are sets of rules that grant or deny user access to objects or parts of IBM Marketing Operations based on access roles. For example, you can configure security policies that ensure the following.

- Managers have access to all the projects in their business units.
- Users' access to projects is based on both their business unit and their job function.
- Only select users can create new Lists, On-demand Campaigns, or Corporate Campaigns.
- Some users can create projects while others must use requests to start a project.

Any object created in Marketing Operations: plan, program, project, request, and so on, is governed by a security policy. The security policy assigned to a new object is usually determined by the template that was used to create it.

Security policies

A security policy is presented as a set of tables, with one table for each object type (plan, program, etc.). The columns represent the access roles and the rows represent permissions, grouped by the object's tabs.

Object access, system, and security roles are always present. However, when you configure security for project and request templates, the role columns expand to include the project roles specified in the template.

The permissions configured in security policies control access throughout all the functions of IBM Marketing Operations.

For example, the results of searches are constrained by access rights: if a user does not have access to the **Workflow** tab of a specific project, tasks from that project do not appear in the **All Tasks** search. Additionally, if a user does not have the ability to add attachments to a project, that user does not receive the alerts that are triggered when another participant performs an attachment task.

The security policy in effect at a given time for a given object (project, plan, or program, for example) depends on the security policy specified by the object's template. For example, when template developers create project templates, they

specify the security policy on the **Template Properties** tab. Then, when projects are created from that template, access to those projects is determined by the security policy specified in the template.

Security policy permissions

Each object type has its own access control table in the security policies. Each table displays access control sections for each tab, with rows that represent individual actions such as add, edit, delete, view, and so on. To configure permissions, you click the table cell that represents the intersection of an access role and a permission setting. Clicking in the cell toggles through the following settings:

Symbol	Name	Description
Check	Granted	Grants users in the role access to the function.
X	Blocked	For system and security policy roles only, denies users in the role access to the function. (You cannot block functions by project or object roles.)
Blank	Inherited	Users in the role inherit the permission setting for the function either from their other project and object roles, or, if none of those have the permission specified, the appropriate default system role (Plan Administrator or Plan User) from the Global policy. If none of the roles they qualify for grants them permission, they are unable to perform the function.

If a user qualifies for more than one role, his or her access rights are cumulative. For example, if a user's security role grants different permissions than does his or her current project role, that user's access rights include all permissions from both roles.

A permission block supersedes any other setting. For example, if a user's project role grants him access to the **Budget** tab of the projects created from a specific template but his security role blocks access to the tab, that user cannot access the **Budget** tab.

The Global security policy

The Global security policy acts as the system's default security policy. The term "global" does not indicate that every user has global or full access to everything, but rather that this security policy is, by default, associated globally with every user. You can create additional security policies that extend the Global policy, but the Global policy is always in effect, regardless of any other security policies you create.

The Global policy:

- Applies to anyone who logs in to Marketing Operations
- Cannot be disabled
- Supersedes all other policies. The Global policy security role a user qualifies for is always taken into consideration when the system determines access rights.
- Contains permission settings for the default system roles, Plan Administrator and Plan User. The access settings for these roles are used as the fallback or default for any user who does not currently qualify for a project, object or security policy role.

Planning security policies

Before you begin configuring security policies, determine the security needs of your organization and then plan your security strategy.

First, determine how many security roles and project roles you need. Then, determine whether you need to create multiple security policies or whether you can simply modify the Global policy to meet your needs:

- If all the business units in your organization follow the same rules, or, you can implement the appropriate differences in access through a combination of project and security roles, it makes sense to implement one security policy – a modified Global policy. You can add as many security roles as necessary to the Global policy.
- If there are many functional groups in your organization that require very different types of access, leave the Global policy in its default state and add new security policies for each group of users.
- At any given time, a user can have a project role, an object role and a security role. It is best practice to assign a user one security role only from a single security policy. Therefore, if you have users who multi-task in such a way that they need more than one security role in addition to their project and object roles, it is recommended that you create additional security policies and assign that user one role from each of the appropriate security policies.

As a best practice, try to implement the smallest number of security policies possible. Within a single security policy you can configure different permissions for each object type and for each marketing object template based on security roles. Additionally, for each project template you can configure different security role and project role permissions for each tab (custom and default) for both the projects and the requests.

When you set up permissions for the roles, remember that the individual permission settings are granular. For example, if you want users in a particular role to be able to edit the **Summary** tab of a project, you must grant that role both **Edit** and **View** permissions. If you forget to select **View** permissions, users in that role will never see the **Summary** tab so their permission to edit it is useless. In another example, it would not make sense to grant permission to post messages without also granting permission to read them.

About configuring security policies

After you have determined your security strategy, you configure and/or create the appropriate security policies and roles and then specify to which users the people with those roles can assign project roles and access levels.

Editing the Global security policy

If you can implement the security strategy for your organization with one security policy, use the Global security policy as your single policy. In most cases, you do not change the default permissions for the supplied Plan Administrator and Plan User system roles. Instead, you add new security roles to implement your security goals.

1. Select **Settings > Marketing Operations Settings > Security Policy Settings > Global**.
2. Add the new security roles as follows:
   a. Click **Add Another Role**.

b. Enter a name and description for the role.
c. Repeat these steps for each role you add.

3. Click **Save and Edit Permissions**. The **Permissions** page appears so that you can grant or block access to features for each role.
4. From the **Access to** list, select the Plan object type and then use the check boxes to configure permission settings for each security role. You repeat this procedure for each object type listed by **Access to**.

   Note: You can use Shift + click to select multiple cells.
5. For projects, perform these steps.
   a. Configure the **Add Projects** and **View Project in the List** permissions for each object and security role.
   b. Select a template. The security policy displays a column for each project role specified for this template on the **Project Roles** tab in the **Team Members** section. An access control section displays for each tab in the template.
   c. Configure permissions for each tab in the template, including the custom tabs, for the project, object, and security roles.
   d. Repeat steps b) and c) for each project template.
6. For requests, perform these steps.
   a. Configure the **Add Requests** and **View Request in the List** permissions for each object and security role.
   b. Select a project template. The security policy displays a column for each project role specified for the template on the **Project Roles** tab in the **Project Request Recipient** section. An access control section displays for each tab in the template.
   c. Configure permissions for each tab in the template, including the custom tabs, for the project, object, and security roles. When configuring requests, remember that the permissions you set for the **Request Recipient** object role must match the permissions for at least one of the recipient project roles.
   d. Repeat steps b) and c) for each project template for which you want to configure custom permissions for requests.
7. For marketing objects, be sure to configure permissions appropriately for each template.
8. Click **Save Changes** when you are finished.

Creating new security policies

If you must use more than one security policy to implement the security setup for your organization, leave the Global policy in its default state and complete the following steps.

1. Select **Settings > Marketing Operations Settings > Security Policy Settings > Add a Security Policy**.
2. On the Policy Properties page, enter a name and description for the policy. The name must be unique.
3. In the Roles section, enter the names and descriptions for the first two security roles planned for this policy. If you need more than two security roles, click **Add Another Role**.
4. Click **Save and Edit Permissions**.
5. Starting with the plan object type, configure each security role's permission settings appropriately for each object type listed in the **Access to** field.

Note: Use Shift + click to select multiple cells.

6. For projects, do the following:
   a. Configure the **Add Projects** and **View Project in the List** permissions for each object and security role.
   b. Select a template. The security policy now displays columns for the project roles that are listed in the **Team Members** section of the **Project Roles** tab of this template and displays access control sections for each of the template's tabs.
   c. Configure permissions for each tab in the template, including the custom tabs, for the project, object, and security roles.
   d. Repeat steps b) and c) for each project template.
7. For requests, do the following:
   a. Configure the **Add Requests** and **View Requests in the List** permissions for each object and security role.
   b. Select a project template. The security policy now displays columns for the project roles that are listed in the **Project Request Recipient** section of the **Project Roles** tab of this template and displays access control sections for each of the template's tabs.
   c. Configure permissions for each tab in the template, including the custom tabs, for the project, object, and security roles.
   d. Repeat steps b) and c) for each project template for which you want to configure custom permissions for requests.
8. For marketing objects, be sure to configure permissions appropriately for each template.
9. Click **Save Changes** when you finish setting all the permissions.

   To disable the security policy at any time, click Disable. Disabling a security policy means that users cannot select it in any subsequent projects, requests, or approvals that users create and you can no longer assign users to the security policy.

Configuring the user visibility option for security roles

When users create programs, plans, projects, and so on, they specify which users or teams are participants and, for projects, which users or teams are assigned the project roles. By default, there are no restrictions on which users or teams can be added as participants or assigned a project role.

If you configure the user visibility feature for a security role, you can restrict the list of users that appear in the Select Team Members or Select Member Access Levels dialog box for users with that security role.

1. Select **Settings > Marketing Operations Settings > Security Policy Settings**.
2. On the Security Policy Settings page, scroll to the appropriate security policy and select the role. The User Visibility page appears.
3. From the list of user groups and teams, select the appropriate groups or teams and then click the arrow button to move them to the list on the right. People who have this security role can select only those users who belong to the user groups in the list on the right when they add participants or assign project roles.

   Note: When the selection box on the right is empty (the default case), there are no restrictions and users in this role see all groups and teams when adding participants or assigning project roles.

4. Click **Save Changes**. The **Security Policy** page appears.
5. Repeat steps 2 through 4 for each security role you want to configure.

To assign security roles

When you have finished adding security roles to security policies, assign the roles to the appropriate users. If a user is not assigned a security role, the system uses the Global policy to determine the user's access rights.

You assign security roles directly to individual uses from the **User Permissions** page.

1. Select **Settings > Marketing Operations Settings**.

   The Administrative Settings page opens.
2. Click **User Permissions**.

   The User Permissions page opens.
3. In the **User Permissions** page, expand the user group that the user belongs to and select the user. The **Properties** page opens.
4. In the **User Role Assignments** section, in the **Available Roles** list box, expand the security policy with the security role you want to assign this user.
5. Select the security role and use the arrow button to move it from **Available Roles** to **Selected Roles**.

   Assign as many roles as necessary, but remember that it is best practice to assign one security role only from a single security policy.
6. Repeat steps 3 through 5 for each user.
7. Click **Save Changes**.

   The role appears under the Assigned Role(s) column in the User Permissions screen.

About controlling access to templates

As described in the sections about security policies, you use permissions in security policies to control the following kinds of access:

- Based on their security roles, which users can create new projects, plans, programs, and so on
- Based on their security roles, which users are allowed to view and interact with items that others create but not to create things themselves
- Based on their project and object roles, which tabs users have access to when they create projects

You also use security policies to specify which templates a user can select when creating a new item.

When a template developer creates a template, the **Summary** tab includes one or more security policy fields. The value specified in the security policy field determines which users can access the template; if you don’t have a security role that grants you the ability to create objects of that type in the security policy assigned to the template, the template does not appear in your template list when you create an object of that type.

Additional access controls for projects and requests

Depending on how your organization manages projects, you might configure security policies so that only certain users can create projects while other users

must create requests for projects that other users approve or reject. When this is the case, it is also possible that one group of users creates the projects from the requests and then a different group of users works with the projects created by the first group.

To support this business case, project templates have two security policy settings:

- The "view" policy specifies which users can select the template when they create projects or requests for projects. The template developers can specify one or more view policies for each project template.
- The "use" policy specifies who can access a project after a project is created from a request.

The “use” policy can be determined in one of two ways:

- The template developer specifies the policy in the template’s **Summary** tab.
- The template developer configures the template so that the user creating the project or project request can specify the “use” policy.

The way a "use" policy is determined is referred to as the "security policy use model." When the use model is set to `Template`, the template developer specifies the "use" policy. When the use model is set to `User`, the person creating the project request from the template selects the security policy from the list that he or she has access to.

Example security configuration for project requests

This example describes an organization, XYZ Corporation, that has a marketing operations team, a strategic marketing team, and some miscellaneous marketers. Users create two types of projects and requests: trade shows and strategic accounts.

- Trade show projects: junior marketers create requests for trade show projects. The requests can be submitted to anyone in the marketing organization, and the resulting projects can be worked on by anyone as well.
- Strategic account projects: junior marketers also create requests for strategic account projects, but they can supply information on the Summary tab only. Additionally, requests can be submitted to members of the strategic marketing team only, and the strategic marketing team is the only team that participates in the projects.

Security policies

The system administrators at XYZ corporation configured two security policies.

- **Marketing Ops**, for members of the marketing operations team. Security for the templates is configured as follows in this policy:
  - Trade show template: all project roles have access to all tabs.
  - Strategic Accounts template: the Request Owner role has access to the Summary tab only.
- **Strategic Marketers**, for senior members of the marketing staff. Security for the templates is configured as follows:
  - Trade show template: all project roles have access to all tabs.
  - Strategic Accounts template: all project roles have access to all tabs.

Template permissions

To set up the workflow described above, the template developers configured the templates with the following permissions.

- The Summary tab of the **Tradeshow** template has the following security policy settings:
  - **Security Policy Use Model**: User. The user who creates the request specifies the security policy to apply to the request.
  - **View Security policies**: Marketing Ops., Strategic Marketers. (Any user can select the Tradeshow template.)
  - **Use Security Policy**: Blank. When the use model is set to User, the Use security policy field is disabled. When users create projects or requests from this template, they must specify the security policy.
- The Summary tab of the **Strategic Accounts** template has the following security policy settings:
  - **Security Policy Use Model**: Template. The template developer sets the value in the Use security policy field.
  - **View Security policies**: Marketing Ops., Strategic Marketers. (Any user can select the Strategic Accounts template.)
  - **Use Security Policy**: Strategic Marketers. This means that the user who creates the request cannot specify the security policy for it. Instead, the requests created from this template are assigned the Strategic Marketers security policy. Then, only the senior marketers who have security roles assigned from the Strategic Marketers security policy can access the project requests and the projects created from those requests.

Example usage

Consider the following users assigned to the following security polices:

- Strategic Accounts security policy: Mary Manager, Strategic Sam
- Marketing Ops.: Junior Jim, Sophomore Sally

Users create requests and projects as follows:

Table 61. Example project requests

Project or request	Work steps
Trade show project	Junior Jim creates a trade show request and submits the request to Strategic Sam. Strategic Sam approves the request and sets Vendor Vinny as the owner of the project.
Strategic accounts project:	Junior Jim creates a Strategic Accounts request, SA01, providing information for the only tab that he has access to, the Summary tab. The request is automatically assigned the Strategic Accounts security policy and Jim cannot change it.

Summary

- Anyone can create a request for a trade show or a strategic accounts project.
- Anyone can be the recipient of a trade show request, and anyone can be assigned to a trade show project.
- Only users with roles from the Strategic Accounts security policy can work on strategic accounts projects.

Chapter 10. Setting Up Alerts

Alerts are notifications of important events or actions that users need to take regarding a project or approval. An alert could remind you that a program or project is running behind schedule or over budget, or that there is a project that needs your approval.

Users receive alerts in two ways:

- In Marketing Operations: when you receive an alert through Marketing Operations you go to the Alerts page to view it.
- In email: when you receive an alert through email, it goes directly to the Inbox of your mail application.

There are two types of alerts: Event-triggered alerts and alarms.

IBM Marketing Operations sends these alerts at different, configurable frequencies.

About event-triggered alerts

These alerts are messages that are sent to interested parties in response to system events. For example, if someone creates an approval and specifies you as the Approver, the system sends you an alert with a link to the approval.

When template developers create project templates, they can customize the text of the project alerts. And if you configure custom permissions for the tabs of a project template, the system filters alerts appropriately. For example, if some project participants do not have access to the **Attachments** tab, the system does not send them alerts about attachments.

IBM Marketing Operations sends event-triggered alerts almost immediately. When the event occurs (such as a user submits an approval request), Marketing Operations adds it to a queue. At a specified interval, Marketing Operations picks these events off a queue and sends out alerts. You can control this polling interval with the **Settings > Configuration > Marketing Operations > umoConfiguration > Notifications** **`notifyEventMonitorPollPeriod`** parameter. By default, this configuration parameter is set to 5 seconds. That means every 5 seconds, Marketing Operations picks up the events that occurred since the last poll and sends out alerts.

For more information about setting this option, see the *IBM Marketing Operations Installation Guide*.

About alarms

An alarm is any alert not driven by a single, specific event. Alarms usually involve the relationship of an object (such as a task or project) to time, or another object.

For example, to determine whether to send a reminder about an approaching task deadline, IBM Marketing Operations must determine the current date, compare it to the task scheduled dates, check how many days in advance the customer has set reminders, and then determine whether to send a reminder for that task.

Marketing Operations must run through all objects, and perform these checks, periodically. By default, the polling period which the system does these alarm checks is once every 24 hours. You can configure this on an object-by-object basis, using the following configuration parameters under **Settings > Configuration > Marketing Operations > umoConfiguration > notifications**.

- **> approval**: `notifyApprovalAlarmMonitorPollPeriod`
- **> project**: `notifyProjectAlarmMonitorPollPeriod`
- **> asset**: `notifyAssetAlarmMonitorPollPeriod`

For more information on setting these options, see the *IBM Marketing Operations Installation Guide*.

Alerts and date types

When setting up default alerts, an administrator can set notifications for targeted dates, forecast dates, or both.

There are five alerts for targeted dates:

- A workflow task is targeted to start within n day(s)
- A workflow task is targeted to end within n day(s)
- A workflow milestone is targeted to end within n day(s)
- A workflow task is overdue according to targeted dates (alerted at most for n day(s))
- A workflow task is late according to targeted dates (alerted at most for n day(s))

And there are another corresponding five alerts for forecast dates:

- A workflow task is forecasted to start within n day(s)
- A workflow task is forecasted to end within n day(s)
- A workflow milestone is forecasted to end within n day(s)
- A workflow task is overdue according to forecasted dates (alerted at most for n day(s))
- A workflow task is late according to forecasted dates (alerted at most for n day(s))

These settings are in the **Projects | Reminders** section of the **Default Alert Subscriptions** screen.

How IBM Marketing Operations determines the alert sender

When IBM Marketing Operations sends an email alert, the email address of the sender is the first valid address of the following.

1. Email address of the person who initiated the action that triggered the alert
2. Email address for the owner of the object
3. Email address used as the value for `notifyDefaultSenderEmailAddress` under **Settings > Configuration > Marketing Operations > umoConfiguration > email**.

If none of these email addresses are valid, Marketing Operations issues a warning (to the log file) and does not send an email alert.

About setting default alert subscriptions

As an administrator, you can configure which object access roles should receive which alerts. The IBM Marketing Operations objects for which you can can set up default alert subscriptions are the following.

- Projects
- Requests
- Programs
- Approvals
- Assets
- Invoices
- Accounts
- Plans
- Marketing objects; each marketing object has its own alert subscription section

Default subscriptions are set up by object access role (referred to on the Default Alert Subscriptions page as "member type"). For example, you could specify that some alerts be sent to project owners and project participants, but not project requesters, whenever a new member is added to a project.

Users see the default subscriptions when they open a program, project, or project request, click the communications icon in the Marketing Operations toolbar, and select **Subscribe to Alerts** from the drop-down menu.

Notes on setting default alert subscriptions

When you work with the the **Default Alert Subscriptions** page, note the following.

- Remember, you are creating a default setting. If users have permission through the security policies, they can change these default settings for each program, project, or project request.
- When you modify default alert subscriptions, it does not affect existing items; it affects only objects created after your modifications.

User overrides of default alert subscriptions

Users can subscribe to alerts within the following objects.

- Programs
- Projects
- Requests
- Marketing Objects

This allows them to control the alerts that they or members of their team receive, regardless of the default subscriptions that may have been set for the particular object type.

To set default alert subscriptions

1. Select **Settings > Marketing Operations Settings > Default Alert Subscriptions**.

   The **Default Alert Subscriptions** page displays a list of all alerts, grouped by object type.

2. Configure which object access roles should receive which alerts by selecting the appropriate checkboxes.
3. Click **Save Changes**.

Default Alert Subscription page

The page is divided into sections for projects, requests, programs, approvals, assets, invoices, accounts, and plans. Additionally, there is a section for each marketing object type defined in the system. There are two subsection types.

- **Change Tracking**: all objects contains a list of system actions that happen within that specific area of IBM Marketing Operations. For example, **A new project is created from a request** appears in the change tracking subsection of projects.
- **Reminder**: some objects contains a list of reminders for certain points in the life of an object. For example, **A project is 3 days late** appears in the reminder subsection of projects.

Changing the alerts refresh interval

By default, IBM Marketing Operations updates the alert count every three minutes (180 seconds). You can change the default to any value you wish by editing the `alertCountRefreshPeriodInSeconds` parameter under **Settings > Configuration > Marketing Operations > umoConfiguration > notifications**.

Decreasing the refresh interval may have performance implications in a multi-user environment.

Customizing attributes and tabs for an alert

As an administrator, you can customize the locale, subject, header, footer, and message text for event-triggered alerts. You can customize alerts based on events for the entire system, or for a selected template. For example, you can customize the alert that is sent out whenever a program is started. Alternatively, you can customize the alert for one specific program template only, such as the **Tradeshow** sample template.

When you add attributes and links to system tabs, they are displayed as system-defined tags. When the alerts are sent out, the system replaces the tags with the values appropriate for the object.

About adding attributes

You can insert standard planning object attributes or system attributes related to an event. You can add attributes for the subject, body, header, and footer.

About adding links to system tabs

You can provide a link to any system tab of the planning object. The email message then contains a link directly to the selected tab for the planning object. For example, when a project is started, the notification could include a link to the workflow tab of the project.

In templates, you can add links to system tabs for the subject, body, header, and footer. At the system level, you can add system tab links only in the subject and body (not in the header and footer).

To customize an alert

1. Determine whether to customize an alert system-wide, or for a particular template only.
   - To customize an alert system-wide, click **Customize Alerts** from the **Other Options** section in the **Administrative Settings** page.
   - To customize an alert for a particular template, select a template on the Template Configuration page, then select the **Customize Alerts** tab of the template.

   The system displays the Customize Alerts page.
2. Select a locale in the **Locale** field.

   Note: If your system supports multiple languages and/or locales, we recommend you set custom text for each supported locale, for each alert you customize.
3. Select an object in the **Planning Object** field.

   If you are configuring a template, this field may be disabled. For example, if you are working with a project template, **Project** is selected in this field and you cannot select anything else.
4. Select an event in the **Alert Event** field.
5. Enter text for the subject and message of the alert. Optionally, enter text for the header and footer of the alert.
6. Optionally, specify attributes and links to tabs for the subject, body, header, or footer.

   Note the following.
   - Available attributes and tabs are displayed in the tabs located on the right side of the **Customize Alerts** page.
   - Click **Get Alert Details** and **Get Header and Footer** to retrieve the current or default text for the alert and the header and footer, respectively.
   - If you are using detailed task alerts, you can customize the alert header and footer only for workflow task alerts.
   - If you are customizing alerts system-wide, you cannot add links to system tabs in the header and footer.
7. After you have completed the customization for the alert, click **Save Changes** in each section where you made changes to save the alert.

Customize alerts page

This page contains the controls to set custom messages for system events that trigger alerts. It is broken into two sections: **Customize notification** and **Customize header and footer**.

Customize notification

The top area of the page contains the controls to customize the notification itself.

Table 62. Customize alerts page: Customize notification section

Field	Description
Locale	Select the locale for the custom text. Add text for each supported locale. If your system supports multiple languages or locales, we recommend that you set custom text for each supported locale, for each alert you customize.
Planning Object	Select the object for which the custom text applies.
Alert Event	Select the event for which the custom text applies.
Get Alert Details	Fetches the current or default text for this alert.
Subject	Contains the subject for the alert. Enter or replace text, attributes, and links to system tabs to change. In some cases, the page contains two subject boxes: one each for personalized and general text.
Body Message	Contains the message text for the alert. Enter or replace text, attributes, and links to system tabs to change. In some cases, the page contains two message boxes: one each for personalized and general text.
<< and >> buttons	Move selected attributes and system tabs into or out of text boxes.
Attributes andTabs	Select either **Attributes** or **Tab** to add system attributes or links to system tabs to the subject or message text.

Customize header and footer

The bottom area of the page contains the controls to customize the message header and footer.

Table 63. Customize alerts page: Customize header and footer section

Field	Description
Locale	Select the locale for the custom text. Add text for each supported locale. If your system supports multiple languages or locales, we recommend that you set custom text for each supported locale, for each alert you customize.
Get Header & Footer	Fetches the current or default text for the header and footer of the alert.
Header	Contains the heading text for the alert. Enter or replace text to change.
Footer	Contains the footer text for the alert. Enter or replace text, attributes, and links to system tabs to change.
<< and >> buttons	Move selected attributes and system tabs into or out of text boxes.
Attributes and Tabs	Select either **Attributes** or **Tab** to add system attributes or links to system tabs to headers and footers, such as the date of the alert.

General and personalized text boxes

The number of text area fields depends on the selected event. Some events trigger different messages based on users' access level; others do not.

For example, when a project is started, the system sends out the same alert to all affected users. However, when a workflow task is assigned to a user, the system sends out a special message to the assignee (referred to as the **personal** message), and a general message to all other affected users.

If the selected event does not have any associated personal message, the **Customize Alerts** page displays two text boxes for the message: **Subject** and **Body Message**. If the selected event has exclusive and general messages, the **Customize Alerts** page displays four text boxes: **Subject (General)**, **Subject (Personalized)**, **Body Message (General)**, and **Body Message (Personalized)**.

Example of a custom alert

In this example, we construct a custom alert when a new project is created from a request.

1. Navigate to the Customize Alerts screen.

   Locale: English (or choose your locale)

   Planning Object: Request

   Alert Event: A project request is submitted
2. Click **Get Alert Details** in the Customize Alerts section.
3. Delete the default subject and body text and use the attributes and tabs lists to construct the following subject and message.

   Subject

   <attribute>Logged in User</attribute> would like you to approve the request, <attribute>Request Name With Code/</attribute>

   Body Message

   Hello <attribute>Recipient</attribute>,

   Your approval is needed to start this project. This request was created on <attribute>Created Date</attribute>.

   You can approve the project here: <tab link="summary">Summary tab for the project</tab>
4. Click **Save Changes** in the Customize Alerts section.

Assume that Connie Contact submits a request to Mary Manager. Mary receives the following alert:

```
Connie Contact would like you to approve the request, "July Magazines (TRS100)"
Hello Mary Manager,
Your approval is needed to start this project. This request was created on
June 15, 2008.
You can approve the project here: Summary tab for the project.
```

Chapter 11. Setting Up Assets

IBM Marketing Operations provides centralized management, secure storage, and web-based access for digital assets. In Marketing Operations, you store your assets in libraries, which have the following characteristics.

- An asset library is the highest level organizational structure in the digital asset repository.
- You can access libraries and add assets to the libraries (if your Marketing Operations administrator granted you permission in the security policy assigned to the asset).
- You can organize assets using folders.
- You can view all the assets that you own.
- If you do not own an asset, you can view it when it has a status of finalized.
- You must have administrative access to Marketing Operations to create a library.

You can view assets in a library either as a list (Asset List) or as thumbnails (Asset Thumbnails). By default, IBM Marketing Operations displays assets in a list view when you select an asset library.

Table 64. Asset views

View	Description
Asset List	Displays the assets in the library, listed alphabetically in ascending order. You can change the sort order by clicking the **Name** column. You can also sort by any other column by clicking that column to toggle between ascending and descending sort.
Asset Thumbnails	Displays a thumbnail image for each asset in the library. Note that you can upload a thumbnail image for an asset when you add the asset to the library.

To create a library

As an administrator, you must create the libraries where users store assets. You cannot delete or move a library after you create it.

1. Log into IBM EMM.
2. Select **Settings > Marketing Operations Settings**.
3. Click **Asset Library Definitions**.
4. Click **Add a Library**.

   The New Library page appears.
5. Enter a name and description for the library. For example, you could name your library Brand Materials and describe it as the location where all images and documents related to brand management reside.
6. Select the security policy you want the library to use in the **Security Policy** field.

   Note the following:

   - Only users in the chosen security policy can access the library.
   - All folders and assets in a library have the same access control rules specified in this security policy.

- If you want to have different permission apply to a specific set of documents, you should create a library for those documents.

7. Click **Save Changes.**

   Your library appears in the list of libraries.

Disabling and enabling libraries

To disable a library, click **Settings > Marketing Operations Settings > Asset Library Definitions**, and click the **Disable** link next to the library. To enable it again, click the **Enable** link.

When you disable a library:

- Only administrators can edit a disabled library (by clicking the link to the library).
- Users cannot access the disabled library for any purpose. They cannot view or edit assets in that library or browse to the library to create project attachments or add approval items.
- If there is a link in an alert or email message to an asset in a disabled library, users cannot access the asset from the link.
- If an asset in a disabled library is also an attachment in a project or approval, users can access the asset from the project or approval.
- When a user attaches new files to a project or an approval, disabled libraries do not display in the selection list.

Chapter 12. Setting up Accounts

A top-level account represents a specific corporate General Ledger (GL) account that is established by a finance department for the purpose of tracking and controlling expenditures and cash flows for a certain area of the business.

IBM Marketing Operations breaks down accounts into top-level accounts and subaccounts. Subaccounts display under the parent or top-level accounts on the **Accounts Definitions** page. Subaccounts belong to their parent accounts for organizational purposes only; subaccount financial information does not roll up to parent accounts. Functionally, top-level and subaccounts are identical.

Key capabilities related to accounts include the following.

- Defining a hierarchy of accounts and subaccounts.
- Funding or allocating money to the account at the beginning of a time period, typically a year, which can be further seperated into weeks, months, or quarters.
- Tracking estimated and actual withdrawals from those accounts, by time period.

About account administrators

As an account administrator, you may also be a member of the Finance/Accounting department, and be responsible for setting up the accounting framework to track marketing budgets and expenditures. Or, you might be a a member of the Marketing department who is primarily responsible for reporting marketing spend details to the Finance/Accounting department within that framework.

The responsibilities of an account administrator include the following.

- Defining accounts and subaccounts.
- Funding the top-level accounts; that is, entering the top level budget numbers into each account for each time period.
- Assigning account owners to monitor and manage the accounts on an ongoing basis.

Note: An account administrator must be set up as an IBM Marketing Operations administrator to be able to perform all of these tasks.

About account owners

An account owner is typically a mid- to high-level marketing manager who is responsible for managing the budget for a particular business area. In particular, they are responsible for tracking expenditures vs. budgets and cash flows to ensure that their business area is not overdrawn.

The responsibilities of an account owner include:

- Monitoring account levels and status to ensure they are not forecasted to be overdrawn and that balances remain positive (via a combination of alerts, views, and reports).
- Communicating/transferring account activity details back to corporate accounting personnel and systems.

Account owners do not have permission to create or fund subaccounts; these permissions belong to the administrator. This division allows the option of separating accounting functions from marketing functions.

About enabled vs. disabled acounts

Accounts can exist in one of two states: enabled or disabled. For example, you may want to set up an account for the future, before you are ready to start using it. IBM Marketing Operations administrators can toggle the state of any account at will.

- Enabled accounts appear as account options (in the **Source Account** field) for project and program budget line items
- An account that is enabled when invoice or budget line items are linked to it is still active for those line items even if the account is disabled. No new line items can be linked to the disabled account, however.
- Disabled accounts cannot be selected for invoice items or for project and program budget line items.
- Disabled accounts are grayed out on the **Account Definitions** page.
- You can add a subaccount to a top-level account that is disabled. When you are ready to use the account, however (at the beginning of a new fiscal year/period, for example), you must enable it.

To create an account

IBM Marketing Operations administrators can add accounts. You can add either a top-level account or a subaccount. You add subaccounts to an existing account, creating an organizational hierarchy. For example, if you have a top-level account set up to fund marketing efforts in the Northeast United States, you may decide to set up a subaccount for efforts in New York specifically.

1. Select **Settings > Marketing Operations Settings**.
2. In the **Root-Level Object Definitions** section, click **Account Definitions**.
3. Perform one of the following actions:
   - To add a top-level account, click **Add a Top-Level Account**.
   - To add a subaccount, click the **Add** link that is located to the right of the account to which you want to add the subaccount.

   The **Account Properties** page appears.
4. Complete the fields in the **Basic Info** section.
5. Optionally, enter account budget information for each month in the **Budget** table.
6. Click **Save Changes** to save the changes to the account.

Your account appears in the disabled state on the **Account Definitions** page. A subaccount appears below the top-level account to which it belongs.

To add or remove account owners

When you first create an account, you are automatically added as the owner of the account. This topic describes how to add and remove account owners.

1. Navigate to the account you wish to edit.
2. Click **Add/Remove Members** below the **Team Members** field.
3. To add a new member:
   a. Select a user in the **Folders** section.

b. Click the right-pointing arrows to add the user to the **Selected Team Members** field.

   When you add a team member to the **Selected Team Members** field, they automatically become an owner of the account. This allows them to view and edit the account.

4. To remove a member:
   a. Select a user in the **Selected Team Members** field.
   b. Click the left-pointing arrows to remove the user.
5. Click **Save Changes** to save your changes or **Cancel** to cancel your changes.

To enable or disable an account

As an administrator, you can enable or disable an account. Account owners who are not administrators do not have this capability.

1. Select **Settings > Marketing Operations Settings**.
2. In the **Root-Level Object Definitions** section, click **Account Definitions**.
3. Perform one of the following actions:
   - To enable an account, click the grayed out **Enable** link, located to the right of the account or subaccount that you want to enable.
   - To disable an account, click the **Disable** link.

Accounts reference

Use the Accounts screen to add or edit a top-level account. The screen is split into two sections, basic information and budget information.

Account basic information

The **Basic Info** section contains the following fields.

Field Link	Description
Account Name	A unique, text identifier for the account. This is a required field.
Description	An optional description for the account. This description appears on the Accounts list page.
Team Members	List of owners for the account. By default, the creator of the account is listed as an owner. This is a required field.
Add/Remove Members	Displays a screen for adding and removing account owners.
Account Number	A unique, alphanumeric identifier for the account. Spaces are not permitted. This is a required field.
Security Policy	The security policy for the account. Only users in this security policy can access the account. This is a required field.

Account budget information

The **Budget** section contains cells for each month in a three-year period. IBM Marketing Operations tallies the amounts up to the appropriate quarter, and totals the account funds per calendar year.

You have the option of entering an account budget for three years: the current year and the upcoming two years. These years will appear in the **Account Summary For** drop-down list on the **Summary** tab for the account.

Note: If budget or invoice line items draw from the account in other years, those years will also appear on the drop-down list.

Chapter 13. Defining list options

The user interface of IBM Marketing Operations presents several list box controls that you can configure to provide a customized set of options. Examples include a list of the roles, or job functions, held by people in your organization, and a list of the types of days observed as non-working days, such as national and company holidays. As an administrator, you populate these lists by defining options for them.

For information about other ways you can customize IBM Marketing Operations, see "Customizing the IBM Marketing Operations interface" on page 12.

Customizable lists

The lists that you can customize by providing your own site-specific options, and where users encounter these lists in IBM Marketing Operations, follow.

Table 65. List types

List type	Description	Location
Business Areas	An area of business to which a plan can belong. Used primarily to allocate budgeted funds.	When users create or edit a plan, they can specify a **Business Area** for it. Users access this list in the Plan Summary section.
Program Areas	A unit that groups one or more programs in a plan. Program areas are especially useful when allocating funds to a related group of programs that are linked to the plan.	When users create or edit a plan, they can specify a **Program Area** for it. Users access this list in the Plan Summary section.
Cost Categories	A category that helps to define budget or invoice line item costs.	When users create or edit a line item for an invoice or budget, they can select a **Cost Category** for it.
Vendors	The name of the business to which an invoice line item was purchased. For more information, see "Enabling the vendor column for budgets" on page 11.	When users create or edit an invoice, they must select a **Vendor Name** for it. Users access this list in the Invoice Summary section.
Roles	Job functions or skill sets. Roles make it easier to assign people to tasks in a project. **Note:** These roles are functional, and are not the same as the security roles that determine access to areas of the Marketing Operations interface.	When users add or edit a project, they identify the roles needed to complete the project, and assign team members to those roles, on the People tab. Then, on the Workflow tab, users can assign roles or team members to tasks.

Table 65. List types (continued)

List type	Description	Location
Non-working Date Types	Categories for non-work time. For example, national holidays, corporate off-sites, and company holidays. For more information, see "About system wide non-work dates" on page 6.	When administrators enter Non-working Business Days, they identify the **Type** for each date. Then, when users add or edit project workflow tasks, they can specify a **Schedule Through** setting. Task schedules can include only business days, business days and weekends, business days and these non-working date types, or all dates.
Workflow Milestone Types	Milestones that can be included in a project workflow.	When users add or edit a project workflow task, they can identify it as a project milestone by selecting its **Milestone Type**.
Approval Deny Reasons	Reasons for rejecting items received for approval. Applies only to installations that require a reason when an approval is denied. For more information, see "To require a deny reason" on page 19.	When users respond to an approval, they can choose to deny approval. To do so, they must specify a **Deny reason**.
Coremetrics Clients	Client IDs and names from an IBM Digital Recommendations implementation. Applies only to installations that integrate IBM Marketing Operations and Campaign, and that also enable optional offer integration. For more information, see the *IBM Marketing Operations and Campaign Integration Guide*.	Administrators can configure offer templates so that users can select category IDs and names from a Digital Recommendations system, rather than entering them manually. To configure the template, administrators supply the URL for Digital Recommendations and one or more valid **Client IDs**.

To add options to a list

As an administrator, you can populate customizable lists with values. For a description of the lists you can customize, see "Customizable lists" on page 159.

1. Click **Settings > Marketing Operations Settings**.

   The Administrative Settings page displays.
2. Click **List Definitions**.

   The List Definitions page displays.
3. Click the name of the list that you want to populate with options.

   The List Properties page displays.
4. Supply values for the fields on this page. For detail on each field, see "About list properties" on page 161.
5. Click **Save Changes** to save your changes.

About list properties

To define the entries for a customizable list, you supply values on the List Properties page and then click **Save Changes**. For more information, see "To add options to a list" on page 160.

Field	Description
List Name	Displays the name of the selected list.
Description	Enter a description of the list. Marketing Operations provides a default description that you can edit or replace.
Display	Specify how you want options for this list to display and be ordered: by code number followed by name, or by name followed by code number.
Storage Location	Displays the name of the database table that stores options for this list.
New or Selected Item	To add an option, enter a unique identifying code and display name, then click **Accept**. Marketing Operations adds the option to the List Items field. To edit an existing option, click the option in the List Items field to select it. These fields display the code and name for you to edit as needed. Click **Accept** when your changes are complete.
List Items	This field displays all options defined to populate the list.

This page also provides controls to enable, disable, and remove options in the List Items field. For more information, see "To enable, disable, or remove a list option."

Control	Description
Disable	Keeps the selected option in the database but does not display it in the Marketing Operations user interface. The List Items field displays disabled options in gray font. If you disable an option that has already been selected for objects, the option remains associated with those objects. However, users cannot select the option for any other objects.
Enable	Restores a disabled option to full operation in the user interface. By default, new options are enabled.
Remove	Deletes the selected option from the Marketing Operations user interface and the List Items field. You cannot remove an option that has already been selected for objects.

To enable, disable, or remove a list option

After you add an option to a customizable list, it displays in the user interface as a value that users can choose.

As the needs of your organization change, you can remove options that are no longer in use. When you remove an option from a list, it is permanently deleted. If you want to add the option again, you must add it again it.

You can also disable an option, which keeps it available for possible future use while preventing it from appearing on a list. When the option is needed again, you enable it.

1. Follow the procedure described in "To add options to a list" on page 160.

2. From the List Items field, select a value to enable, disable, or remove. You can also use Ctrl+click or Shift+click to select multiple items.
3. Click **Disable**, **Enable**, or **Remove**.
4. Click **Save Changes**.

About localizing lists

When you save a list, the system generates a properties file for the appropriate list. The file name is `<list_category>_<defaultLocale>.properties`. For example, if you edit the list of business areas, and your default locale is en_US, the system generates the following file:

```
BUSINESS_AREAS_en_US.properties
```

The file is saved to the directory specified in the `managedListDir` parameter under **Settings > Configuration > Marketing Operations > umoConfiguration > attachmentFolders**. A code from underlying table is a key, and name from underlying table is a value.

Translate the list and create a properties file for each IBM Marketing Operations supported locale.

You can localize user roles, as well. The localized roles for a project template are based on the localization done for the Roles list.

Note: You must use the default locale to create and update list definitions.

Chapter 14. Implementing project health rules

To help project owners and participants track the overall status of their projects, you configure the system to calculate project health.

Marketing Operations supplies a set of key performance indicators (KPIs) for projects. To objectively determine whether a project is healthy or in a warning or critical state, you select KPIs and supply threshold values for them in health rules. To use different criteria to determine the health of different types of projects, you can associate each of the rules you create with one or more project templates. The system runs batch jobs to automatically apply the correct rule to each project and update health status indicators in the user interface.

To implement project health rules for your organization, you:

1. Assess the default health rule, and configure custom health rules as needed.
2. Assign health rules to project templates.
3. Schedule the start time for the daily batch job, and how frequently during each day additional batch jobs run. For more information, see the Marketing Operations **umoConfiguration | Scheduler | daily** and **intraDay** configuration parameters in the *Marketing Operations Installation Guide*.
4. Optionally, customize the labels and color indicators that display for the health statuses.

You can export health rules defined for one Marketing Operations system and import them into another. For more information, see Chapter 15, "Exporting and importing metadata," on page 169.

When implementation is complete, project owners and participants can use the following methods to monitor health status:

- Subscribe to email notifications generated by the daily batch job.
- Add a Project Health Status portlet to the dashboard.
- Review indicators in the Project Health column of the project list page.
- Open the Project Health tab for an individual project.
- Run the monthly and trend project health reports.

For more information about these features, see the *Marketing Operations User's Guide*.

About the key performance indicators

Health rules include key performance indicators (KPIs) that evaluate project performance against an objective threshold. For example, you consider a project healthy if it has a budget overrun of less than 5%, but you consider a project with a 10% budget overrun to be in a critical state.

Table 66. KPIs for project health

KPI	Description
% Milestone Overdue	For all In Progress and Completed project milestones, compares the total delay time to the total planned time.

Table 66. KPIs for project health (continued)

KPI	Description
% Budget Overrun	For the project, compares the total estimated budget less actual expenses to the total estimated budget. This KPI requires the Financial Management module.
% Time Overdue	For all In Progress and Completed project tasks, compares the total delay time to the total planned time.
% Tasks Delayed	For the project, compares the number of overdue tasks to the total number of incomplete tasks.
% Milestone Tasks Delayed	For the project, compares the number of overdue milestones to the total number of incomplete milestones.

How the system determines overdue tasks and milestones

For several of the KPIs, the system must determine whether tasks or milestones are overdue. To make this determination, Marketing Operations compares the current date (today) to the Forecast/Actual date and the Target end date for the task or milestone.

Note:

- The system uses the date, time, and timezone of the server as the current date.
- The system uses the timestamp of the daily batch job that calculates health status as "today".
- The system always categorizes tasks with the Skipped status as Not Overdue.

Table 67. Results of date comparisons

State / Condition	All other states	Finished
Today > F/A end > Target end	Overdue	Overdue
Today > Target end > F/A end	Overdue	Not Overdue
Target end > Today > F/A end	Not Overdue	Not Overdue
Target end > F/A end > Today	Not Overdue	Not Overdue
F/A end > Target end > Today	Not Overdue	Overdue
F/A end = Blank AND Target end > Today	Not Overdue	Overdue*
F/A end > Today > Target end	Overdue	Overdue
F/A end = Blank AND Today > Target end	Overdue	Not Overdue

* When the task status changes to Finished, the system supplies the Actual end date with a timestamp. During the next health status calculation, the system reassesses the task as Not Overdue.

About the default health rule

Before you create your own project health rules, assess the default health rule supplied by the system. You can use it as a model when you design your own customized rules for determining project health. You can also assign it to project templates as needed.

Table 68. Conditions in the default rule

IF	THEN
% Tasks Delayed = 0 AND % Time Overdue = 0 AND % Budget Overrun <= 0	Healthy
ELSE IF % Tasks Delayed <= 5% AND % Time Overdue <= 5% AND % Budget Overrun <= 5%	Warning
ELSE IF % Tasks Delayed > 5% AND % Time Overdue > 5% AND % Budget Overrun > 5%	Critical
OTHERWISE	Unknown

When you design a custom rule for your organization, note:

- The default health rule includes a condition that resolves to each of the possible project statuses: Healthy, Warning, and Critical. Include a condition for each status in your custom rules.
- The operators and values for the conditions cover a complete range of possible values, without any unassigned values. The system assigns the Unknown status to any value that is not included.

  For example, you change the first condition to set the % Budget Overrun KPI to < 0 instead of <= 0. As a result, the system determines the status of under budget projects, with no task or time delays, to be Unknown instead of Healthy.
- The sequence of the conditions affects what status the system calculates for a project.

  For example, you change the sequence of the conditions in this rule so that the condition that resolves to Warning comes first. As a result, this rule never assigns the Healthy status to any projects.

To configure project health status rules

You can add, edit, and delete project health status rules, and assign rules to project templates. Before you change an existing rule, verify that no other administrators are working with that rule.

1. Click **Settings > Marketing Operations Settings > Health rules**. A page lists the health status rules.
2. To add a rule, click **Add health rule**. The system adds lines with fields for the rule name and a description.

3. Supply a name and description, then click **Build Rule** (). A dialog opens for you to enter the if-then statements that determine project health.
4. Supply the first **IF** clause:
   a. To select the KPI, click **Select an Attribute**.
   b. Click to select an operator.
   c. Enter a threshold value.
   d. Click **Add**. The clause displays in the center of the dialog.
   e. To include more than one KPI in the clause, select **And** or **Or** and then repeat these steps.
5. Supply the **THEN** clause: select the health status to assign to projects that meet the condition.
6. Click **Save Compound Condition**. The condition displays at the top of the dialog.
7. Repeat these steps so that the rule includes conditions for the Healthy, Warning, and Critical health statuses.
8. To review the rule as a series of IF... THEN statements, click **Preview**. To change the rule after your review, click **Conditions**.
9. The system applies the conditions in the order that is shown at the top of the dialog. If necessary, change the sequence by using the check boxes and the **Up** and **Down** controls.
10. Click **Save and Finish**.
11. Click **Save Rule** () for the rule.

To implement the rule, you assign it to one or more project templates. See "To assign a rule to a project template."

To edit a rule, verify that no other administrators are working with that rule. Then, return to the Health rules page and click **Edit rule** () for the rule.

You can delete a rule that is not assigned to any project templates. Verify that no other administrators are working with that rule. Then, on the Health rules page, under **Actions** click  for the rule.

To assign a rule to a project template

You use this procedure to change the assignment of a rule to one or more project templates.

1. Click **Settings > Marketing Operations Settings > Health rules**. A page lists the health status rules.
2. For the rule you want to assign, click **Edit rule** ().

   Note: Before you edit a project health status rule, verify that no other administrators are working with that rule. Object locking does not apply to project health status rules.
3. Click **Modify Template Association** (). A dialog opens with a list of enabled project templates on the left, and a list of templates the rule is assigned to on the right.
4. Use **Select >>** and **Remove <<** to move selected templates from one list to the other. Use Ctrl+click and Shift+click to select multiple templates.

5. Click **Save & Close**. The Health rules page lists the project templates with the rule.
6. Click **Save Rule** ( ) for the rule.

   Note: Until you click Save Rule, your selections are not saved. To cancel your edits, under **Actions** click for the rule.

You can also assign a rule to an individual project template. Edit the template, and on the Properties tab select the **Project Health Status Rule**.

To customize labels and colors

1. Click **Settings > Marketing Operations Settings > Health status**. A page displays the current label and color indicator for each of the possible health statuses.
2. To enter a different display name for a status, click in its **Label** field.

   Note: Enter the label for your default locale. Localization is not supported.
3. To use a different color indicator for a status, click **Choose Color** then click one of the colors.
4. Click **Save > Save and Exit**.

Chapter 15. Exporting and importing metadata

You can transfer data structures (metadata) between IBM Marketing Operations systems using the export and import features.

To transfer metadata efficiently from one Marketing Operations system to another, you export the metadata from one instance and import it into another instance.

For example, you create templates on a test server and then test and refine them to assure they meet the needs of your organization. When you are ready to deploy the templates for general use, you use the export feature on the test server to create a compressed archive file, then use the import feature on the production server to load the file and install the templates.

Marketing Operations offers options to package and migrate metadata in bulk. You can migrate the following types of metadata in bulk.

- Security policies and related user roles
- Project heath status rules
- Teams
- Marketing object types
- Templates

When you migrate metadata from one Marketing Operations system to another, be aware that:

- Both the source and target systems must be running the same version of Marketing Operations.
- The source and target systems can be running under different operating systems.
- The source and target systems can be using different types of database servers.

About exporting metadata

When you export metadata in bulk, Marketing Operations iterates over your entire database for all items of the selected type. As a result, the export process can be time-consuming.

The export process results in a compressed archive file containing one or more xml files. For some types of metadata, a number of additional files are also exported, including properties files or SQL scripts. All exported data uses UTF-8 encoding to preserve locale-specific data.

To export metadata in bulk

1. From the **Settings** menu, select **Marketing Operations Settings**.
2. Click **Data Migration**.
3. Next to **Templates**, **Teams**, **Security Policies**, or **Marketing Object Types**, click **Export**.
4. If you are exporting templates, the **Export Template** dialog opens.
   a. Select the types of templates to include in the export. By default, all template types are selected.

b. Specify the **Database Type** of the system that will receive the template metadata through an import operation. The selected database type determines the format of SQL script files generated during the export.

c. Click **Export**.

5. If you are exporting any other type of metadata, or after you complete the **Export Template** dialog, the standard File Download dialog opens. To proceed with the export, click **Open** or **Save**.

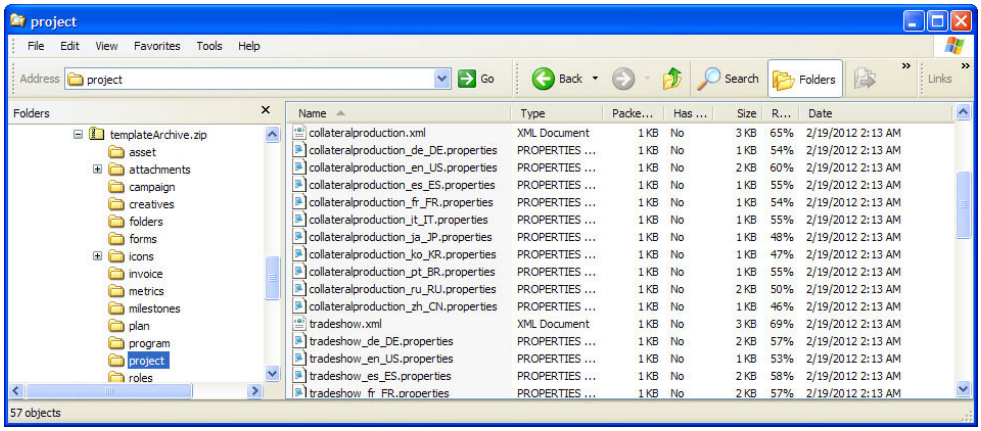
Results of exporting templates

When you export templates, you choose one or more different types of templates to export, such as plan, project, or creative templates. You also specify the database type of the target system receiving the template metadata.

For the selected template types, Marketing Operations produces a compressed archive file that contains:

- An xml file named `<type>_templates.xml`, with metadata for every template of that type.
- An individual directory for each template type that contains a `<name>.xml` file and a set of localized properties files for every template of that type.

  For example:



- Directories for any items associated with templates of the selected types, such as `roles` and `milestones`, with localized properties files for those items.
- An `attachments` directory (if any included item has an attachment), with a subdirectory named for each item containing those attachments.
- A `forms` directory containing form definition files in XML format and separate SQL scripts for the selected database type. These scripts give you control over how you update the target database to work with the new templates when you import them: you can drop all tables and then create new tables for template data, or run only the create or insert scripts to add new columns and tables without deleting existing tables and data.

Table 69. Generated script files

File	Description
`create.sql`	Adds columns to existing tables, and creates new tables needed for the templates.
`createlkup.sql`	Adds columns to existing lookup tables, and creates new lookup tables needed for the templates.

Table 69. Generated script files (continued)

File	Description
drop.sql	Deletes existing tables used by the templates. If you do not mind possibly deleting data, you run this script before create.sql to ensure that the database is set up correctly.
droplkup.sql	Deletes existing lookup tables used by the templates. If you do not mind possibly deleting data, you run this script before createlkup.sql to ensure that the database is set up correctly.
insertlkup.sql	Inserts data into the lookup tables. This script makes it possible to save complete lookup tables (schema plus data) with the template archive.

Results of exporting project health rules

When you export metadata for project health rules, the compressed archive file contains a single health_status_rule.xml file. The file includes the conditions and results, name, and description of every rule on your system.

Results of exporting teams

When you export metadata for teams, the compressed archive file contains an individual xml file for every team defined on your system. Each file is named team<*ID*>.xml.

Results of exporting security policies

When you export metadata for security policies, the compressed archive file contains:

- An individual xml file for every security policy defined on your system, named securityPolicy<*ID*>.xml. All related user roles are included in this file.
- The securityPolicyFunctions.xml file, which contains the list of permissions referred to in each securityPolicy<*ID*>.xml file.

Results of exporting marketing object types

When you export metadata for marketing object types, the compressed archive file contains an individual subdirectory for every supported locale, such as en_US for English (US). Each subdirectory contains the following xml files:

- compTypes.xml contains the metadata of every marketing object type.
- globalstates.xml contains the metadata for every status defined on your system.
- mo_<*name*>_state.xml is provided for each marketing object type. These files contain the metadata for the transitions defined between statuses.

About importing metadata

To import metadata into a Marketing Operations system, you select a previously exported archive file.

The import process validates the archive and its component files: the source and target systems must have the same version of Marketing Operations installed, and all files must be correctly formatted.

Marketing Operations data structures are interrelated. Duplicating the data structures of a source system is an iterative process: you import archive files, perform manual configuration, and potentially reimport archive files.

When you have metadata of more than one type to import, this sequence is the most efficient.

1. Marketing object types

   Import marketing object types first to assure that when you import templates, any templates for those marketing object types are also imported.
2. Project health rules
3. Templates
   - The global security policy for the target system is assigned to any templates that have a security policy that is not present on the target system.
   - Templates with defined rules that involve users who are not present in the target system are not imported.
   - Templates with defined rules that involve teams that are not present in the target system are imported, but do not function.

   Continue by importing security policies and teams, and then either import the template archive again or make updates to the target system as needed.
4. Security policies

   User visibility definitions for teams and user groups that are not present on the target system are not imported. Continue by importing teams, and then either import the security policies again or make updates to the target system as needed.
5. Teams

   After you import teams, review and update rules and user visibility definitions as needed.

After you import a metadata archive, be sure to review the results in the target system. Configure users, rules, teams, user groups, security policies, and templates as needed to integrate new structures into the target system.

To import template metadata

The following procedure applies when you import an archive of template metadata.

1. From the **Settings** menu, select **Marketing Operations Settings**.
2. Click **Data Migration**.
3. Next to **Templates**, click **Import**. The **Import Template** dialog opens.
4. Click **Browse** to select a previously exported archive file.
5. Select the **Template Types** to import. By default, all template types are selected.
6. In the **Update Database** section, select optional database scripts to run during the import process.
   - Drop Tables
   - Create/Update Tables
   - Drop Lookup Tables
   - Create/Update Lookup Tables

   If you do not select any of the scripts, the import process overwrites data values for the template, but does not update corresponding database tables.

   Note: Selecting all of these actions fully imports the selected templates and associated files. However, if the archive file contains templates that exist on the target system and you drop tables, the import process deletes all data for all objects created using the pre-existing templates.

For example, if you use import to update the metadata of a campaign project template and you drop tables, you lose all data in the TCS in any project created using that template.

If you are concerned about overwriting data, you can examine the SQL script files in the template archive and create the necessary tables and columns manually.

7. Click **Continue**. A summary page lists the templates to import and any warnings about current template files to be overwritten.
8. Click **Save**.

Note: The Marketing Operations installation does not install the optional example templates supplied with the product. To use the example templates, follow this procedure to import them. The example template archive files are in the `\tools\admin\sample_templates` folder under your Marketing Operations installation. A different archive file is supplied for each supported database type. For example, use `sample_templatesDB2` if you are using a DB2 database. For details about the example templates, see "List of example templates" on page 50.

Results of importing templates

You can import campaign project templates that you created before your upgrade to Marketing Operations 8.0.0, but the templates are disabled. Users cannot use them to create projects.

Template import fails if the template archive contains any of the following items:

- A campaign project template created before Marketing Operations 8.0.0 with the same name as a campaign project template already in the system.
- A campaign project template with the same name as a non-campaign project template already in the system (and vice versa).
- A TCS form with the same name as a non-TCS form already in the system (or vice versa).
- A shared attribute with the same name but a different data type as a shared attribute already in the system.

Shared attributes used in forms in the template archive are created as shared attributes in the target system.

To import metadata

The following procedure applies when you import an archive of metadata for project health rules, teams, security policies, or marketing object types.

1. From the **Settings** menu, select **Marketing Operations Settings**.
2. Click **Data Migration**.
3. Next to **Project Health Status Rules**, **Teams**, **Security Policies**, or **Marketing Object Types**, click **Import**. The **Import** dialog opens.
4. Click **Browse** to select a previously exported archive file.
5. Click **Continue**. A two-part summary of the items in the archive displays:
   - Items to be created: that is, items with a unique identifier that does not exist on the target system.
   - Items to be overwritten: that is, items with a unique identifier that exists on the target system.
6. Select the items that you want to import.
7. Click **Save**.

Results of importing project health rules

When you import metadata for project health rules, the import process compares the unique identifier of each rule to the rules that exist on the target system.

- If a project health rule does not exist on the target system, the import process creates it using the archive.
- For project health rules that do exist on the target system, the import process overwrites values for the rules and conditions, name, and description.

Note: Associations established on the source system between project health rules and project templates are exported and imported with template metadata.

Results of importing teams

When you import metadata for teams, the import process compares the unique identifier of each selected team to the teams that exist on the target system. If a team does not exist on the target system, the import process creates it using the archive and then:

- Checks security policy data in the archive against security policies that exist on the target system. Team-related data for security policies that exist are copied from the archive. If none of the security policies in the archive exist on the target system, the new team is assigned the default Global security policy.
- Checks member data in the archive for members that exist on the target system. If members exist on the target system and meet definitions in the routing model, they are added to team. If any resulting members or managers do not meet the definitions of the routing model, the team is not imported.

For teams that do exist on the target system, the import process:

- Overwrites values for the team, including the description, status, and skill sets.
- Checks associated security policy data for security policies that exist on the target system. Team-related data for security policies that exist are copied from the archive. If none of the security policies in the archive exist on the target system, the team is assigned the default Global security policy.
- Updates the routing model with data from the archive.
- Checks member data in the archive for members that exist on the target system. Members associated with the team in the archive are added to the team if they exist on the target system. Members associated with the team on the target system are removed if they are not allocated to any task, approval, or project request and they are not present in the archive. If any resulting members or managers do not meet the definitions of the routing model, the team is not imported.

For all teams added or updated on the target system, the import process also:

- Copies alerts and notification settings for each team to the target system.
- Adds an entry to the Analysis tab for the team to record the update.

Results of importing security policies

When you import security policies, the import process compares the unique identifier of each selected policy to the policies that exist on the target system. If a security policy does not exist on the target system, the import process creates it with all of the object and template level permission settings in the archive. For security policies that do exist on the target system, the import process overwrites all values for the policy, removes all user roles and associations, and then copies all user roles from the archive to the target system.

For all security policies added or updated on the target system, the import process also:

- Copies object-level function settings to the target system.
- Checks associated template-level security policy settings in the archive against the templates on the target system, and copies template-level security policy settings for any project or component templates that exist.
- Checks user data in the archive for users that exist on the target system, and copies user role assignments for users that exist.
- Checks group data in the archive for groups that exist on the target system, and copies group visibility for roles for groups that exist.
- Checks team data in the archive for teams that exist on the target system, and copies team visibility for roles for teams that exist.

Results of importing marketing object types

When you import marketing object types, the import process verifies that the archive includes files for the default locale of the target system. For each selected marketing object type, the import process then verifies that:

- The marketing object type does not exist on the target system.
- The marketing object type in the archive passes all restrictions present on the target system.
- All states and state transitions for the marketing object type in the archive are present for the default locale on the target system.

For marketing object types that satisfy these conditions, the import process creates the marketing object type and copies all of its associated data. Alerts and notification settings for each new marketing object type are created on the target system also.

The import process does not upgrade marketing objects that do exist on the target system.

Chapter 16. Advanced Topics

This section provides information about performing technical tasks for advanced customization of the IBM Marketing Operations interface. The following topics are included.

- Populating Summary tab fields programmatically
- Writing custom validation plug-ins

For information about services you can use to integrate Marketing Operations with other applications, see the *Integration Module* guide.

Populating fields programatically

You can set up any field on the Summary tab to populate programmatically based on the values in other fields. To specify that you want a field to populate programmatically, you must specify attribute of type **External Datasource**.

Once you specify that the attribute type is **External Datasource**, a Generate button appears next to the field. When a user clicks the Generate button, IBM Marketing Operations accesses a program that you specify. The program can be a web service (located anywhere) or a java program running on the same server as Marketing Operations.

For example, you could call a program that generates a job number based on values entered in the business unit and product fields.

To specify the program, you must include the <servicedetails> tag within the <column> tag. The <servicedetails> tag can contain the following tags.

Tag	Description
type	Enter either javaclass or webservice as the type.
classname	Enter the serverside custom java class in this tag. This custom class must implement the com.unicacorp.common.template.IdGenerate interface. If you specify a value in this tab, you do not need to specify the <methodname> tag.
param	This tag has the following attributes. • parameter name • type • valuecolumn You must define all parameters in the same map file, such as projectatts.product_id. The order that you specify the parameters must match the order that the program expects them.
wsdl	Enter the webservice definition file located on the Plan server or the URL to the file in this tag.
methodname	Enter the webservice method name in this tag. If you specify the <classname> tag, you do not need to specify this tag.

Examples of programmatically populating fields

The following is an example of how you can use the <servicedetails> tag to set up a server-side Java class application implementing the com.unicacorp.common.template.IdGenerate interface and pass a product ID.

```
<servicedetails>
     <classname>com.unicacorp.uap.webservice.FormIdGenImpl
     </classname>
     <param name="param1" type="string"
     valuecolumn="dyn_projectatts.product_id" />
</servicedetails>
```

Similar to the previous example, the following shows how to configure the same behavior, but with a generic Java class that does not implement com.unicacorp.common.template.IdGenerate interface.

```
<servicedetails>
     <classname>com.unicacorp.uap.webservice.FormIdGenImpl
     </classname>
     <param name="param1" type="string"
     valuecolumn="dyn_projectatts.product_id" />
     <methodname>getFormId</methodname>
</servicedetails>
```

The following is an example of how you can use the <servicedetails> tag to set up a web service application and pass a business unit ID.

```
<servicedetails>
     <wsdl>
          http://rd600:7004/axis/services/Service?wsdl
     </wsdl><!--wsdl>
          C:\\Product\\Plan\\webapp\\conf\\Service.wsdl
     </wsdl -->
<methodname>getFormId</methodname>
<param name="param1" type="string" valuecolumn="dyn_projectatts.business_unit_id" />
<param name="param2" type="string" valuecolumn="dyn_projectatts.prog_type_id" />
</servicedetails>
```

Server-side ID generation and project attribute validation

You can set up a template to use custom routines to generate project IDs and validate values on the Summary tab including the generated ID when the project, plan, or program is saved.

To define a custom ID generator, you must write a Java class that implements the **com.unicacorp.uap.project.helper.PidGenerate** interface. Within the template definition, you can then specify your Java class name as the value for pidGenClass attribute and any desired prefix to append to that generated ID using the pidprefix attribute. In a similar manner, you can also define custom routines to validate attribute values of a project, plan, or program. To define a custom validation routine, you must write a Java class that implements the following interface: **com.unicacorp.uap.common.template.IdValidate**.

Within the project template definition, you can then specify your Java class name as the value for validateClass attribute.

Example Server-side ID generation

For example, assume that you have an offer marketing object template, and you need to generate custom codes for all the offers created from this template. The codes must have the following characteristics:

- The first code should be 900001.

- The range of codes is between 900001 and 999999.
- Codes should be generated sequentially.

To do this, perform the following steps:

1. Create a custom Java implementation named `CustomComponentPidGenerateImpl.java`.

   Note the following:

   - This implementation uses a file, `IDRange.properties`, to hold the minimum and maximum values for the custom IDs.
   - It uses a database table, `CUST_GENIDS`, to hold the current value of the custom ID for each object type that uses the class to generate custom IDs.
2. Compile the class. The compiled class is named `CustomComponentPidGenerateImpl.class`.
3. Copy the class file into the following folder under your Marketing Operations installation:

   `\unwar\WEB-INF\classes\com\unica\uap\component\helper`
4. Create a file named `IDRange.properties`, and add the following text to this file:

   ```
   mktOBJId.min=900001
   mktOBJId.max=999999
   ```
5. Copy this file to the `\unwar\WEB-INF` folder under your Marketing Operations installation.
6. Using your database management program, create a table named `CUST_GENIDS`, with the following columns:

   - `ENTITY_NAME; string, length 50`
   - `ID_VALUE; integer (all in file format)`
7. Restart your web server.
8. Create or edit a marketing object template that can use this custom class, and navigate to its template properties page.
9. In the **ID Generation Class** field, specify the custom class using the fully qualified class name or the canonical name, as shown here:

   `CustomComponentPidGenerateImpl`

   When you create the first **customIDs** marketing object, note that its ID is 900001.

Grid validation

IBM Marketing Operations exposes a validation interface you can use to write custom validation plug-ins. A sample plug-in is provided, which uses the **Validator** interface.

The following validator is delivered with Marketing Operations:

com.unicacorp.uap.grid.validation.plugin.GridValidatorPluginImpl

In most cases, you can use the provided plug-in, rather than writing your own custom validator.

The Grid tab uses the validator to validate input data. When you add a grid tab to a project template, one of the options you can specify is a validator.

Note:

- Rule files use a specific format. When importing a rules XML file, it is validated against the XML schema **gridrules.xsd**.
- Typically, a rule is specific to a form, as the underlying table structure is tightly bound with rules. Hence, we recommend that you use a rule with only one (grid) form.
- Though Marketing Operations ships with a few sample rules (range check, begins with, check unique), we expect the customer (or a consultant) to create and import custom rules files.

Validator interface

The validator interface exposes the following functions.

Function	Description
init(config:GridConfig)	This function initializes the validator.
process(rulesToExecute:Validator.RulesEnum)	This function executes the validation rules. The rulesToExecute parameter determines which type of rule validation plug-in executes. It is an enumerated value that can have the following values: • allRules • gridRules • rowRules
destroy()	This is a destructor for the object, and does garbage collection.

Out-of-box IBM Marketing Operations provides a sample validator, `RangeCheckRule.java`. This object takes a grid as input, then iterates through all of the grid's records validating against rules defined in an XML file.

Validation rules

The validator works by invoking a series of rules, and comparing the input data against the rules. Each rule is an executable Java file that implements the **Rule** interface.

The validation plug-in supports two types of rules.

- ROW: row-level rules are executed first
- GRID: grid-level rules are executed after row-level rules.

All the rules are fired when the grid data is saved. However, all row-level rules are fired first, and then grid-level rules are fired. Rules are fired in the order they are declared in the rules file.

Data validation rules file structure

A validation rules file is an XML file containing one or more rules. Each rule can contain the following tags.

Table 70. Tags for validation rules files

Tag	Description
rule	Begins the rule and sets the rule type, which can be either **ROW** or **GRID**.
name	The name of the rule.
desc	A text description of the rule.
enable	A boolean value for enabling or disabling the rule: • **false**: the rule is disabled • **true**: the rule is enabled
applies-to-tvc-id	The internal name of the TVC component for which the rule applies. To apply the rule to multiple grids, use a separate applies-to-tvc-id tag for each grid component. This tag is optional; if omitted, the rule is applied to all grids on the specified form.
class	The Java class containing the commands for processing the rule. To use the sample range check rule, you enter: `com.unicacorp.uap.grid.validation.rule.basic.RangeCheckRule`
set-property	The set-property tag passes parameters to the rules. Each rule can contain zero or more set-property tags.

IBM Marketing Operations ships with four sample rule types.

Table 71. Sample validation rules

Rule	Description

BeginsWithRule	Ensures the text column being validated begins with the specified character. Set the following properties: **beginCharacter**, and **column**. For example:
	`<set-property property="beginCharacter" value="A"/>`
	`<set-property property="column" value="dyn_vendors.Name"/>`
	
	This rule checks the **Name field** (stored in the **dyn_vendors** database table) to make sure that it begins with the letter **A**. **Class name**:
	`com.unicacorp.uap.grid.validation.rule.basic.BeginsWithRule`

UniqueCheckRule	Ensures the column being validated does not contain duplicate values. Set the **column** property. **Class name**: `com.unicacorp.uap.grid.validation.rule.basic.UniqueCheckRule` **Note:** This rule is always applied across the entire grid, even if you use ROW to indicate that this is a row-level rule.

RangeCheckRule	Ensures the integer column being validated falls within the specified range. Set the following properties: **minValue**, **maxValue**, and **column**. For example:
	`<set-property property="minValue" value="1"/>`
	`<set-property property="maxValue" value="999999"/>`
	`<set-property property="column" value=`
	`"dyn_vendors.numEmployees"/>`
	
	This rule checks the **numEmployees** field (stored in the **dyn_vendors** database table) to make sure that it is between 1 and 999,999. **Class name**:
	`com.unicacorp.uap.grid.validation.rule.basic.RangeCheckRule`

Table 71. Sample validation rules (continued)

Rule	Description

DateCheckRule	Ensures the date column being validated falls within the specified range. Set the following properties: **greaterThan**, **lessThan**, and **column**. For example:
	`<set-property property="greaterThan" value="12/31/1999"/>`
	`<set-property property="lessThan" value="Today"/>`
	`<set-property property="column" value=`
	`"dyn_vendors.invoiceDate"/>`
	
	This rule checks the **invoiceDate** field (stored in the **dyn_vendors** database table) to make sure that it is not before the year 2000. Optionally, you can set the **dateFormat** property. If you add this property, dates must be entered in the specified format. You can set the following format values: dd/MM/yyyy, MM/dd/yyyy, dd/MM/yy, MM/dd/yy, yyyy-MM-dd, yyyy.MM.dd **Class name**: `com.unicacorp.uap.grid.validation.rule.basic.DateCheckRule`

Validation rule example

This section describes how to create a rule, import it into Marketing Operations, add it to a template, and test it on a grid.

1. Create an XML file to contain one or more rules.
2. Upload the rules file into Marketing Operations:
   a. Click **Administration** | **Template Configuration** | **Rules**.
   b. Click **Add Rules Definition**.
   c. In the **Update Rule** dialog box, type in a name and specify a file.
   d. Click Continue to add the rules file to Marketing Operations.
3. Assign the rules file to a tab on a template.
   a. Click **Administration** | **Template Configuration** | **Templates**.
   b. Choose a template, and navigate to the **Tabs** tab.
   c. Add a tab that contains the Vendors grid, and add the rules file to this tab.

      (The **Data Validation Class** field gets populated by the system when you select a rules file.)
4. Create an object from the template, and test the rule by attempting to enter invalid data into the **empNum** field:

   We attempted to enter an invalid value (5000) in the **# of Employees** field, and received an error message, and were prevented from saving this grid row. This indicates the rule is working as designed.

Sample Java interface

This section describes the following:

- Interface - IdValidate
- Interface - IDGenerate
- Custom ID generator

Interface - IdValidate

```
package com.unicacorp.uap.common.template;
import java.util.HashMap;
/**
This is an interface to be implemented by the end user of a Marketing Operations
system for the purpose of validating system generated id values
```

```
as per business logic.
Implementations of this Interface are called by the Marketing Operations Server.
*/
public interface IdValidate
{
/**
Returns true if the specified attribute values are valid.
*
* @param id - current project or program id.  This will be the
       value if it is new project/program
* @param values - This is a set of name/value pairs, referring to
         a current database connection, the appropriate
         template id and another HashMap that contains
         name/value pairs, corresponding to the fields and
         values on the screen.
* @return true       - if it is valid; otherwise returns false or throws
        exception.
* @throws      com.unicacorp.uap.user.IdValidateException
*         Should contain a message value that is meaningful
         about what went wrong.
*/
public boolean isValid(int id, HashMap values) throws
  IdValidateException;
/**
  The name of the hashkey in the HashMap passed to IdValidate.isValid(..)
  that refers to a current database connection to the Marketing Operations
  system tables.
  This connection is available for use to implementations of this
  interface.
*/
  public final String PLAN_DB_CONNECTION = "dbconnection";
  /**
   * The name of the hashkey in the HashMap passed to
   idValidate.isValid(..) that refers to the id of the related
   template.
   */
 public final String OBJECT_TEMPLATE_ID = "templateid";
  /**
   * The name of the hashkey in the HashMap pass to
   * IdValidate.isValid(..) that refers to another Hashmap which
   * contains name/value pairs. The name corresponds to a field on
   * the screen for project/program and the value corresponds to the
   * user entered text or selection.
   */
 public final String OBJECT_ATTRIB_VALUES = "attributeValues";
 }
```

Interface - IDGenerate

```
package com.unicaorp.uap.common.template;
import java.util.HashMap;
/* This is an interface to be implemented by the end user
* of a Marketing Operations
* system for the purpose of generating unique Project Code (PIDs). The intent
* is to allow users to attach to existing enterprise systems to help make
* project IDs meaningful in their enterprise.
*
* Implementations of this Interface are called by the Marketing Operations Server.
* It is the responsibility of the Marketing Operations Server
* to assure that there is
* only one ID being generated at a time. When implementation of this
* interface are called, they can assume that there are no other IDs
* that are being generated concurrently.
*/
public interface IdGenerate {
    /**
  * Returns a string code used to define a Project object with Marketing Operations
```

```
     *
     * @param uniqueId - This is an integer value that is generated by
     *  the Marketing Operations system. This is guaranteed to be unique across
     *  the system; hence, if the project ID returned is the string
     *  representation of this integer, it will be a unique
     *  Project Code (PID).
     *
     * @param values - This is a set of name/value pairs, referring to the current
     *  database connection, appropriate template id, code prefix,
     *  request flag, and another HashMap that contains name/value
     *  pairs, corresponding to the fields and values on the screen.
     *
     * @param uniqueChecker - An implementation used to verify the uniqueness of
     *  of ID's generated by this instance.
     *
     * @return    - A string that represents the ID of the project we are
              creating.
     *
     * @throws com.unicacorp.uap.user.IdGenerateException
     *  Should contain a message value that is meaningful about
     *  what went wrong
    */
        public String generateID (int uniqueId, HashMap values, IdUniqueChecker
     uniqueChecker)
     throws IdGenerateException;
    /**
     * The name of the hashkey in the HashMap passed to IdValidate.isValid(..)
     * that refers to a current database connection to the Marketing Operations
     * system tables.
     * This connection is available for use to implementations of this interface.
     */
    public final String PLAN_DB_CONNECTION = "dbconnection";
    /**
     * The name of the hashkey in the HashMap passed to IdValidate.isValid(..)
     * that refers to the id of the related template.
     */
    public final String OBJECT_TEMPLATE_ID = "templateid";
    /**
     * The name of the hashkey in the HashMap passed to IdValidate.isValid(..)
     * that refers to the desired string prefix to prepend the generated id.
     */
    public final String OBJECT_CODE_PREFIX = "pidprefix";
    /**
     * The name of the hashkey in the HashMap passed to IdValidate.isValid(..)
     * that refers that indicates whether the calling object is a request.
     */
    public final String OBJECT_REQUEST_FLAG = "flagprojectrequest";
    /**
     * The name of the hashkey in the HashMap pass to IdValidate.isValid(..)
     * that refers to another Hashmap which contains name/value pairs. The name
     * corresponds to a field on the screen for project/program and the value
     * corresponds to the user entered text or selection.
     */
    public final String OBJECT_ATTRIB_VALUES = "attributeValues";
    /**
     * Default start plan code start number
     */
    public final int PLAN_CODE_SUFFIX_START = 1000;
    /**
     * Default start program code start number
     */
    public final int PROGRAM_CODE_SUFFIX_START = 1000;
    /**
     * Default start project code start number
     */
    public final int PROJECT_CODE_SUFFIX_START = 1000;
```

```
 /**
  * Default start rfq code start number
  */
 public final int RFQ_CODE_SUFFIX_START = 1000;}
```

Custom ID generator

```
package com.unica.uap.component.helper;
import com.unicacorp.uap.common.db.*;
import com.unicacorp.uap.common.template.*;
import org.apache.commons.lang.StringUtils;
import java.io.File;
import java.io.FileInputStream;
import java.sql.Connection;
import java.sql.PreparedStatement;
import java.sql.ResultSet;
import java.sql.SQLException;
import java.util.HashMap;
import java.util.Properties;

/**
* The Class CustomComponentPidGenerateImpl.
*/
public class CustomComponentPidGenerateImpl implements IdGenerate,
 IdUniqueChecker {
 /** The lower limit. */
 public static int LOWER_LIMIT = 0;
 /** The upper limit. */
 public static int UPPER_LIMIT = 0;
 static {
  Properties attrPro = new Properties();
  try {
   String planHome = System.getProperty("plan.home");
   System.out.println("planHome : " + planHome);
   File file = new File(planHome + "/unwar/WEB-INF/IDRange.properties");
   FileInputStream fi = new FileInputStream(file);
   if (fi != null) {
    attrPro.load(fi);
    String min = (String) attrPro.get("mktOBJId.min");
    String max = (String) attrPro.get("mktOBJId.max");
    LOWER_LIMIT = Integer.parseInt(min);
    UPPER_LIMIT = Integer.parseInt(max);
    System.out.println("Lower Limit :" + LOWER_LIMIT);
    System.out.println("Upper Limit :" + UPPER_LIMIT);
   } else {
    System.out.println("IDRange Property file can not be found");
    throw new RuntimeException("IDRange Property file can not be found");
   }
  } catch (Exception e) {
   e.printStackTrace();
   throw new RuntimeException("IDRange Property file can not be found");
  }
 }

 /**
  * The Constructor.
  */
 public CustomComponentPidGenerateImpl() {
 }
 /**
  * Generate ID.
  *
  * @param uniqueChecker the unique checker
  * @param values the values
  * @param instanceId the instance id
  *
  * @return the string
  *
  * @throws IdGenerateException the id generate exception
```

```
*/
 public synchronized String generateID(int instanceId, HashMap values,
IdUniqueChecker uniqueChecker) throws IdGenerateException {
print("inside 'generateID' method");
print("instanceId : " + instanceId);
print("###################\n" + values + "###################\n");
String prefix = (String) values.get("pidprefix");
print("prefix : " + prefix);
String templateid = (String) values.get("templateid");
print("templateid : " + templateid);
Connection con = (Connection) values.get("dbconnection");
//int nextValue = -1;
boolean isEmptyPrefix = false;
try {
 if (StringUtils.isEmpty(prefix)) {
  isEmptyPrefix = true;
 }
 //GET THE CURRENT VALUE OF THE TEMPLATE ID - from CUST_GENIDS table
 String sqlString = "SELECT ID_VALUE FROM CUST_GENIDS WHERE ENTITY_NAME = ?";
 print("sqlString : " + sqlString);
 PreparedStatement ps = null;
 ResultSet rs = null;
 int cnt = 0;
 try {
  ps = new UAPSQLPreparedStatement(con, sqlString);
  UAPSQLUtils.setupPreparedStatement(ps, 1, templateid, "string");
  rs = ps.executeQuery();
  if (rs.next()) {
   cnt = rs.getInt(1);
  }
  print("current ID vlaue :" + cnt);
  UAPSQLUtils.closeResultSet(rs, ps);
 } catch (SQLException ex) {
  ex.printStackTrace();
  UAPSQLUtils.closeResultSet(rs, ps);
  throw new RuntimeException(ex);
 } catch (Exception exception) {
  exception.printStackTrace();
  UAPSQLUtils.closeResultSet(rs, ps);
  throw new RuntimeException(exception);
 }
 if (cnt == 0) {
  //insert first new record for the template id into table
  cnt = LOWER_LIMIT;
  String sqlInsertStr = "INSERT INTO CUST_GENIDS values (?,?)";
  print("sqlInsertStr : " + sqlInsertStr);
  ps = new UAPSQLPreparedStatement(con, sqlInsertStr);
  ps.setString(1, templateid);
  ps.setInt(2, cnt);
      }

      else if ((cnt >= LOWER_LIMIT) && (cnt < UPPER_LIMIT)) {
  //increase the counter and update the row for the template id
  cnt++;
  String sqlUpdateStr =
   "UPDATE CUST_GENIDS SET ID_VALUE= ? WHERE ENTITY_NAME = ?";
  print("Update : " + sqlUpdateStr);
  ps = new UAPSQLPreparedStatement(con, sqlUpdateStr);
  ps.setInt(1, cnt);
  ps.setString(2, templateid);
 } else {
  print("Current ID is out of range, ID Range [" + LOWER_LIMIT +
   "-" + UPPER_LIMIT + "]");
   //throw exception that can not generate id, limit is over
   throw new IdGenerateException(
    "Current ID is out of range, ID Range [" + LOWER_LIMIT +
    "-" + UPPER_LIMIT + "]");
```

```
      }
  //UAPSQLUtils.beginTransaction(con);
  ps.execute();
  //UAPSQLUtils.endTransaction(con, true);
  String pid = (isEmptyPrefix ? "" : prefix) + cnt;
  print("return from 'generateID'  method with pid : " + pid);
  return pid;
 } catch (Exception ex) {
  ex.printStackTrace();
  throw new IdGenerateException(ex);
 }
}
/**
 * Checks if is unique.
 *
 * @param values the values
 * @param Id the Id
 *
 * @return true, if is unique
 */
public boolean isUnique(String Id, HashMap values) {
 print("inside 'isUnique' method");
 //provide actual implementation for uniqueness check
 return true;
 }
/**
 * Print.
 *
 * @param str the str
 */
private void print(String str) {
 System.out.println(str);
}
```

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- Detailed steps to reproduce the issue.
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