IBM Marketing Operations
Version 9 Release 0
January 15, 2013

Installation Guide

IBM

Note
Before using this information and the product it supports, read the information in "Notices" on page 93.

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. Preparing to install IBM

The installation process involves working with a number of software and hardware elements, including some that IBM® does not provide. The IBM documentation provides guidance for installing, configuring, and upgrading the IBM EMM product. For information about working with systems that IBM does not provide, see the documentation for those products.

Before you begin to install the IBM EMM software, plan your installation, including both your business objectives and the hardware and software environment that is required to support them.

Where to install Marketing Operations and the Marketing Platform

The following diagram provides a brief overview of where to install Marketing Operations. It illustrates the most basic functional installation. You may require a more complex, disparate installation to meet your security and performance requirements.
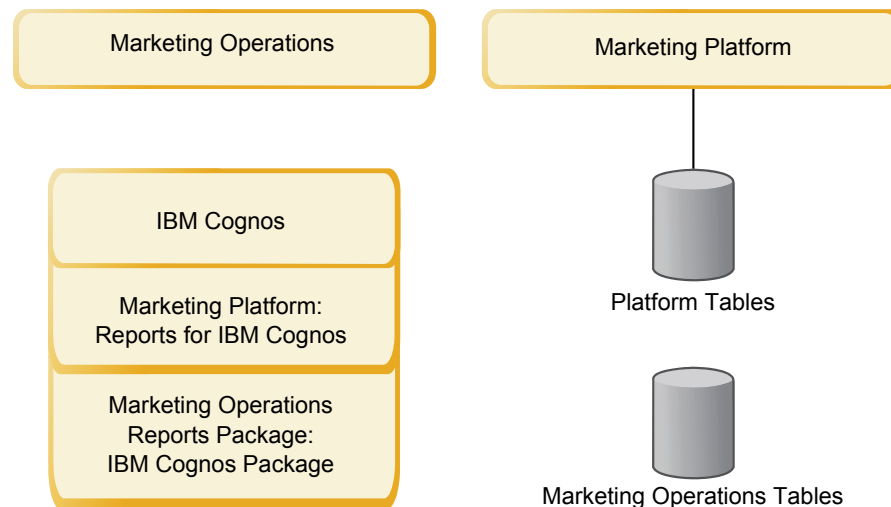
Marketing Operations: For best performance, install Marketing Operations on its own machine, where no other IBM EMM products are installed, or on a machine that it shares with only the Marketing Platform.

The Marketing Operations system tables should be **on a separate machine**.

Marketing Operations reports package: The reports package for Marketing Operations contains the IBM Cognos® package only. (Other applications also have reporting schemas to configure, but Marketing Operations does not.) Install the reports package on the IBM Cognos system.

Marketing Platform: The Marketing Platform application contains the IBM common navigation, reporting, user administration, security, scheduling, and configuration management features. For each IBM EMM environment, you must install and deploy the Marketing Platform once.

Prerequisites

The following are prerequisites for installing IBM EMM products.

System requirements

For detailed system requirements, see the *Recommended Software Environments and Minimum System Requirements* guide.

JVM requirement

IBM EMM applications within a suite must be deployed on a dedicated Java™ virtual machine (JVM). IBM EMM products customize the JVM used by the web application server. If you encounter JVM-related errors, you may need to create an Oracle WebLogic or WebSphere® domain that is dedicated to the IBM EMM products.

Network domain requirement

IBM EMM products that are installed as a suite must be installed on the same network domain to comply with browser restrictions designed to limit cross-site scripting security risks.

Marketing Platform requirement

Before you install any IBM EMM products, the Marketing Platform must be installed.

For each group of products that will work together, you need to install the Marketing Platform only once.

Important: Each product installer checks to see if required products are installed. If your product or version is not registered in Marketing Platform, you will receive a notification that before you proceed with your installation, you must upgrade or install, and the installer will exit. The message will only be shown if your product was found with an older version or was not found.

The Marketing Platform must be deployed and running before you can set any properties on the **Settings > Configuration** page.

Knowledge requirement

To install IBM EMM products, you must possess or work with people who possess a thorough knowledge of the environment in which the products are installed. This knowledge includes the operating systems, databases, and web application servers.

Client machines

Client machines should meet the following configuration requirements.
- The browser should not cache pages. In Internet Explorer, select **Tools > Internet Options > Settings** and choose the option that causes the browser to check for a newer version of the page on each visit.
- If pop-up blocker (ad blocker) software is installed on the client machine, Marketing Operations might not function properly. We recommend disabling pop-up blocker software while running Marketing Operations.

Access permissions

Verify that your network permissions allow you to perform the procedures in this guide, and that you have access to all appropriate logins, including the following.

- The administrative password for your web application server.
- Administration access for all necessary databases.
- Write permission for all files that you must edit.
- Write permission for all directories where you must save a file, such as the installation directory and the backup directory if you are upgrading.
- Appropriate read/write/execute permissions to run the installer.
- The operating system account that you use to run the web application server and IBM EMM components must have read and write access to the relevant directory and subdirectories.
- On UNIX, the user account that performs the IBM product installation must be a member of the same group as the user account that installed the web application server on which it will be deployed. This is because the web application server needs access to the product's file system.

  On UNIX, all of the installer files for IBM products must have full execute permissions (for example, rwxr-xr-x).

Where to find more information

The instructions in this guide are designed to enable you to successfully perform a basic installation of IBM Marketing Operations. Basic installation is a necessary step, but it is not the end of the installation process. IBM EMM products typically require additional configuration steps to prepare them for use in achieving your business objectives.

A basic installation involves:

- Installing all components of the product.
- Configuring a system user with administrator-level access to Marketing Operations system tables.

You can find information about additional configuration options as shown in the following table.

Table 1. References available for advanced configurations

Topic	Guide
Customizing reporting schemas	*IBM EMM Reports Installation and Configuration Guide*
Supporting multiple locales	*IBM Marketing Operations Administrator's Guide*
Integrating with an LDAP server	*IBM Marketing Platform Administrator's Guide*
Integrating with web access control platforms	*IBM Marketing Platform Administrator's Guide*
Implementing SSL	*IBM Marketing Platform Administrator's Guide*

If you are upgrading

You should always read and understand the installation process as a whole before performing an installation. In addition, if you are upgrading, you should read and understand the section on preparing to upgrade and the upgrade section for each IBM EMM product.

Chapter 2. Preparing the IBM Marketing Operations data source

Before you can install IBM Marketing Operations, you must set up the database and the JDBC connection for the Marketing Operations system tables.

Print the "Marketing Operations data source information checklist" on page 8 located at the end of this chapter. Then, as you complete each task in this chapter, fill in the information in your checklist. Having this information written down makes it easier for you to provide the database connection information when you run the IBM installer later in the installation process.

Step: Set up the Marketing Operations database

1. Work with a database administrator to create the required database for Marketing Operations.
2. Have the database administrator create an account for you to specify for a system user later in the installation process.

   This account must have CREATE, SELECT, INSERT, UPDATE, DELETE, and DROP rights for both tables and views, as appropriate. In addition:
   - The database must use UTF-8 encoding.
   - If you are using SQL Server, ensure that TCP/IP is enabled.
   - If you are using DB2®, ensure that the buffer pool for the table space is at least 32K.
3. Print and complete the "Marketing Operations data source information checklist" on page 8. You use this information later in the installation process.

Step: Configure the web application server for your JDBC driver

Use the following procedure to obtain the correct JDBC driver for your installation of Marketing Operations, and to configure your web application server to use it.

Note: If you are installing Marketing Operations on the same machine where you installed Marketing Platform, this task is already complete. Continue to "Step: Create the JDBC connections in the web application server" on page 6.

1. Obtain the latest Type 4 JDBC drivers and any required associated files (for example, Oracle requires several associated files) for the database you plan to use.

   You should always use the latest vendor-provided Type 4 driver.
   - If the driver does not exist on the machine where Marketing Operations will be installed, obtain it and copy it to any location on the Marketing Operations machine.
   - If you obtain the driver from a machine where the database client is installed, verify that the version is the latest supplied by the database vendor. See your IBM consultant for a list of supported JDBC drivers.

   The following list provides the driver file name or names for database types supported for IBM EMM system tables.

Table 2. Supported database types and drivers

Database type	File for jre 1.5	File for jre 1.6
Oracle 11	ojdbc5.jar	N/A
Oracle 11g	ojdbc5.jar	ojdbc6.jar
DB2 9.7	db2jcc.jar db2jcc_license_cu.jar	db2jcc.jar db2jcc_license_cu.jar
SQL Server	sqljdbc.jar with JDBC2	sqljdbc4.jar with JDBC3

2. Include the full path to the driver in the `CLASSPATH` of the web application server where you plan to deploy Marketing Operations, as follows.

- For all supported versions of WebLogic, add the `jar` files to the `CLASSPATH` variable in `DOMAIN_DIR\bin\setDomainEnv.cmd`. Yours must be the first entry of the `CLASSPATH` values to ensure that the web application server uses the correct driver. For example, if you are using SQL Server you might set the path as follows.

  ```
  set CLASSPATH=c:\SQLDRIVER\sqljdbc.jar;%PRE_CLASSPATH%;
  %WEBLOGIC_CLASSPATH%; %POST_CLASSPATH%;%WLP_POST_CLASSPATH%
  ```

- For all supported versions of WebSphere, set the `CLASSPATH` in the Administration Console.

Step: Create the JDBC connections in the web application server

The Marketing Operations web application must be able to communicate with both the Marketing Platform system tables and the Marketing Operations system tables. You create these JDBC connections in the web application server where you plan to deploy Marketing Operations.

Important: For the connection to the database holding the Marketing Operations system tables, you must use `plands` as the JNDI name. This value is the required JNDI name.

Important: For the connection to the database holding the Marketing Platform system tables, you must use `UnicaPlatformDS` as the JNDI name. This is the required JNDI name. If you are deploying Marketing Operations and Marketing Platform in the same JVM, this connection should already exist.

If you expect to have many concurrent users in Marketing Operations, you may need to increase the number of connections in your web server. For best results, set your web server to allow 50 connections.

Information for creating JDBC connections

When you create a JDBC connection, you can use this section to help you determine some of the values you must enter.

Note: If you are not using the default port setting for your database, make sure you change it to the correct value.

This information does not reflect all of the information required by the web application servers. Where this section does not provide explicit instructions, you can accept the default values. Consult the application server documentation if you need more comprehensive help.

WebLogic

Use these values if your application server is WebLogic.

SQLServer
- Database Driver: Microsoft MS SQL Server Driver (Type 4) Versions: 2008, 2008R2
- Default port: 1433
- Driver class: `com.microsoft.sqlserver.jdbc.SQLServerDriver`
- Driver URL: `jdbc:sqlserver://`
  `<your_db_host>:<your_db_port>;databaseName=<your_db_name>`
- Properties: Add user=`<your_db_user_name>`

Oracle 11 and 11g
- Driver: Other
- Default port: 1521
- Driver class: `oracle.jdbc.OracleDriver`
- Driver URL:
  `jdbc:oracle:thin:@<your_db_host>:<your_db_port>:<your_db_service_name>`

  Enter the driver URL using the format shown. IBM EMM applications do not allow the use of Oracle's RAC (Real Application Cluster) format for JDBC connections.
- Properties: Add user=`<your_db_user_name>`

DB2
- Driver: Other
- Default port: 50000
- Driver class: `com.ibm.db2.jcc.DB2Driver`
- Driver URL: `jdbc:db2://<your_db_host>:<your_db_port>/<your_db_name>`
- Properties: Add user=`<your_db_user_name>`

WebSphere

Use these values if your application server is WebSphere.

SQLServer
- Driver: N/A
- Default port: 1433
- Driver class:
  `com.microsoft.sqlserver.jdbc.SQLServerConnectionPoolDataSource`
- Driver URL: N/A

In the **Database Type** field, select **User-defined**.

After you create the JDBC Provider and Data Source, go to the Custom Properties for the Data Source, and add and modify properties as follows.
- `serverName=<your_SQL_server_name>`
- `portNumber =<SQL_Server_Port_Number>`
- `databaseName=<your_database_name>`
- `enable2Phase = false`

Oracle 11 and 11g

- Driver: Oracle JDBC Driver
- Default port: 1521
- Driver class: `oracle.jdbc.OracleDriver`
- Driver URL:
  `jdbc:oracle:thin:@<your_db_host>:<your_db_port>:<your_db_service_name>`

  Enter the driver URL using the format shown. IBM EMM applications do not allow the use of Oracle's RAC (Real Application Cluster) format for JDBC connections.

DB2

- Driver: DB2 Universal JDBC Driver Provider
- Default port: 50000
- Driver class: `com.ibm.db2.jcc.DB2Driver`
- Driver URL: `jdbc:db2://<your_db_host>:<your_db_port>/<your_db_name>`

Add the following custom property:

Name: `webSphereDefaultIsolationLevel`

Value: `2`

Datatype: `Integer`

Marketing Operations data source information checklist

Table 3. Data source information checklist

Item	Value
Data source type	
Data source name	
Data source account user name	
Data source account password	
JNDI name	`plands`
Path to the JDBC driver	

Chapter 3. Installing IBM Marketing Operations

After you have prepared the data sources, you are ready to install IBM Marketing Operations. You obtain the installer, obtain the required connection information, and then run the installation wizard. If you are installing Marketing Operations in a cluster, you finish this set of tasks by creating an EAR file.

How the IBM EMM installers work

You should read this section if you are not familiar with the basic functions of the IBM EMM installers.

Single directory requirement for installer files

When you install IBM EMM enterprise products, you use a combination of installers.

- A master installer, which has `IBM_EMM_Installer` in the file name
- Product-specific installers, which all have the product name as part of their file names

To install IBM EMM products, you must place the master installer and the product installers in the same directory. When you run the master installer, it detects the product installation files in the directory. You can then select the products you want to install.

When multiple versions of a product installer are present in the directory with the master installer, the master installer always shows the latest version of the product on the IBM EMM Products screen in the installation wizard.

Installing patches

You might be planning to install a patch immediately after you perform a new installation of an IBM EMM product. If so, place the patch installer in the directory with the base version and master installer. When you run the installer, you can select both the base version and the patch. The installer then installs both in correct order.

Choosing product installation directories

You can install to any directory on any network-accessible system. You can specify an installation directory by entering a path or by browsing and selecting it.

You can specify a path relative to the directory from which you are running the installer by typing a period before the path.

If the directory you specify does not exist, the installer creates it, assuming that your login has the appropriate permissions.

The default top-level directory for IBM EMM installations is `/IBM/EMM` (UNIX) or `C:\IBM\EMM` (Windows). The product installers then install product files in individual subdirectories under the `EMM` directory.

Installation types

The IBM EMM installer performs the following types of installation.

- **New installation**: When you run the installer and select a directory where an IBM EMM product has never been installed, the installer automatically performs a new installation.

- **Upgrade installation**: When you run the installer and select a directory where *an earlier* version of an IBM EMM product is installed, the installer automatically performs an upgrade installation. For products where installers automatically update the database, upgrade installation adds new tables but does not overwrite data in existing tables.

  For products where installers automatically update the database, errors can occur during an upgrade because the installer does not create tables in the database if they exist. You can safely ignore these errors. See the chapter on Upgrading for details.

- **Reinstallation**: When you run the installer and select a directory where *the same* version of an IBM EMM product is installed, the installer overwrites your existing installation. To preserve any existing data, back up your installation directories and your system table databases before reinstalling.

  Typically, reinstallation is not recommended.

Installation modes

The IBM EMM installer can run in the following modes.

- Console (command line) mode

  In console mode, options are presented in numbered lists. You supply a number to select the option you want. If you press Enter without entering a number, the installer uses the default option. The default option is indicated by one of the following symbols.

  --> To select an option when this symbol appears, type the number of the option you want then press Enter.

  [X] This symbol indicates that you can choose one, several, or all of the options in the list. If you type the number of an option that has the [X] symbol next to it then press Enter, you clear or deselect that option. If you type the number of an option that is not currently selected (it has [ ] next to it), that option is selected when you press Enter.

  To deselect or select more than one option, enter a comma-separated list of numbers.

  See "Example installation prompts" on page 16 for an example of the prompts that display during console mode. You can use this example to help you gather required information before you begin your installation.

- Windows GUI or UNIX X-windows mode

- Unattended, or silent, mode, which allows no user interaction

  Unattended mode can be used to install an IBM EMM product multiple times, for example when you set up a clustered environment. For more information, see "Installing multiple times using unattended mode."

Installing multiple times using unattended mode

If you must install IBM EMM products multiple times, for example when setting up a clustered environment, you may want to run the IBM EMM installers in unattended mode, which requires no user input.

About the response files

Unattended mode (also known as silent mode) requires a file or set of files to provide the information that a user would enter at the installation prompts when using the console or GUI modes. These files are known as response files.

You can use either of the following options to create response files.
- You can use the sample response file as a template for directly creating your response files. The sample files are included with your product installers in a compressed archive named `ResponseFiles`. The sample response files are named as follows.
  - IBM EMM master installer - `installer.properties`
  - Product installer - `installer_` followed by initials for the product name and numbers for the version. For example, the Campaign installer has a response file named `installer_ucN.N.N.N.properties`.
  - Product reports packs installer - `installer_` including initials for the report pack and the product name, plus numbers for the version. For example, the Campaign reports pack installer has a response file named `installer_urpcN.N.N.N.properties`.

  Edit the sample files as needed and place them in the same directory with your installers.
- Alternatively, before you set up an unattended run, you can run the installers in Windows GUI or UNIX X-windows mode or in Console mode and choose to create the response files.

  The IBM EMM master installer creates one file, and each IBM EMM product you install also creates one or more files.

  The response files created when you run the installers have `.properties` extensions, such as `installer_productversion.properties` and the file for the IBM EMM installer itself, which is named `installer.properties`. The installer creates these files in the directory you indicate.

  Important: For security reasons, the installer does not record database passwords in the response files. When you create response files for unattended mode, you must edit each response file to enter database passwords. Open each response file and search for PASSWORD to find where you must perform these edits.

Where the installer looks for response files

When the installer runs in unattended mode, it looks for the response file as follows.
- First, the installer looks in the installation directory.
- Next, the installer looks in the home directory of the user performing the installation.

All response files must be in the same directory. You can change the path where response files are read by adding arguments to the command line. For example:

`-DUNICA_REPLAY_READ_DIR="myDirPath" -f myDirPath/installer.properties`

Effect of unattended mode when you uninstall

When you uninstall a product that was installed using unattended mode, the uninstall is performed in unattended mode (without presenting any dialogs for user interaction).

Unattended mode and upgrades

When you are upgrading, if a response file was previously created and you run in unattended mode, the installer uses the installation directory that was previously set. If you want to upgrade using unattended mode when no response file exists, create a response file by running the installer manually for your first installation, and be sure to select your current installation directory in the installation wizard.

Creating EAR files for clustered deployments

IBM supports clustering. The supported web application servers allow you to deploy and manage deployments from a single administration console. To take advantage of these features, you must use enterprise archive (EAR) files for deployments.

The master installer can create one or more EAR files containing the installed products that you specify. You then deploy the EAR file or files that include the products.

If you deploy more than one EAR file in a domain, the name you give the EAR file must be unique within that domain.

You can use the IBM installer to create an EAR file of your installed products at any time after your initial installation. See "To create an EAR file after running the installer" on page 15.

IBM Site ID

The installer might prompt you to enter your IBM Site ID. Your IBM Site ID can be found on the IBM Welcome letter, Tech Support Welcome letter, Proof of Entitlement letter, or other communications sent when you purchased your software.

IBM might use data provided by the software to better understand how customers use our products and to improve customer support. The data gathered does not include any information that identifies individuals.

If you do not want to have such information collected, after the Marketing Platform is installed, log on to the Marketing Platform as a user with administration privileges. Navigate to the **Settings > Configuration** page, and set the **Disable Page Tagging** property under the **Platform** category to **True**.

Step: Obtain the installation archive

The IBM EMM product installation files are named according to the version of the product and the operating system with which they are meant to be used, except for UNIX files intended to be run in console mode, which are not operating system-specific. For UNIX, different files are used depending on whether the installation mode is X-windows or console. For example:

UNIX X-windows mode: *ProductN.N.N.N*`_solaris64.bin` is version *N.N.N.N* and is intended for installation on the Solaris 64-bit operating system.

UNIX console mode: *ProductN.N.N.N*`.sh` is version *N.N.N.N* and is intended for installation on all UNIX operating systems.

Step: Obtain required information

The installer prompts you to enter some information about your Marketing Platform system table database and Marketing Operations deployment. Gather this information before you start the installation.

Database connection information

The installation wizard must be able to communicate with the Marketing Platform system table database, to register menu items, security information, and configuration properties. Each time you run the installer in a new location, you must enter the following database connection information for the **Marketing Platform system table database**.

- Database type.
- Database host name.
- Database port.
- Database name or schema ID.
- User name and password for the database account.

You obtained this information when you created the database or schema and filled out the Marketing Platform database information checklist.

The installer can create the Marketing Operations system tables during installation. If your company policy permits you to use this feature, you must provide the following connection information for the **Marketing Operations system table database** so the installer can automatically configure the database:

- Database type.
- Database host name.
- Database port.
- Database name or schema ID.
- User name and password for the database account.

You obtained this information when you created the database or schema and filled out the Marketing Operations database information checklist.

Marketing Operations deployment information

Obtain the following information about your planned Marketing Operations deployment.

- Protocol: HTTP or HTTPS if SSL is implemented in the web application server.
- Host: The name of the machine on which Marketing Operations will be deployed.
- Port: The port on which the web application server listens.
- Domain name: The company domain of each machine where IBM products are installed. For example, `mycompany.com`. All IBM products must be installed in the same company domain, and you must enter the domain name in all lower-case

letters. If there is a mis-match in domain name entries, you may encounter problems when you attempt to use Marketing Operations features or navigate among products. You can change the domain name after the products are deployed by logging in and changing values of the relevant configuration properties in the product navigation categories on the **Settings > Configuration** page.

Check for a JAVA_HOME environment variable

If you have a `JAVA_HOME` environment variable defined on the machine where you are installing an IBM EMM product, verify that it is pointing to version 1.6 of the Sun JRE.

This environment variable is not required for installing IBM EMM products, but if it is present, it must point to the 1.6 version of the Sun JRE.

If you have a `JAVA_HOME` environment variable, and it points to an incorrect JRE, you must unset the `JAVA_HOME` variable before you run the IBM EMM installers. You can do this as follows:
- Windows: In a command window, enter

  `set JAVA_HOME=`*leave empty and press return key*
- UNIX-type systems: In the terminal, enter

  `export JAVA_HOME=`*leave empty and press return key*

After the environment variable is unset, the IBM EMM installers use the JRE bundled with the installers.

You can reset the environment variable after installation is complete.

Step: Run the IBM installer

Before you run the IBM installer, verify that you have met the following prerequisites.
- You downloaded the IBM installer and products you plan to install, and you put both the IBM installer and the product installers in the same directory.
- You gathered the information described in "Step: Obtain required information" on page 13 and have it available. To help you gather required information, see "Example installation prompts" on page 16.

Run the IBM installer as described here, and follow the instructions to complete the prompts.
- See the other topics in this section for details about the information you provide during installation.
- An annotated example of the installation prompts, using console mode on a UNIX server, follows if you need help entering information during the installation.

Note: Do not run the product installer directly. IBM does not support installations performed in this way.
- **Console mode**

  Open a command prompt and from the directory where you downloaded the IBM software, run the `IBM_EMM_Installer` executable file as follows.

– On Windows, run the `IBM_EMM_Installer` executable file with `-i console`. For example:

`IBM_EMM_Installer_N.N.N.N_OS -i console`

– On UNIX, run the `IBM_EMM_Installer_N.N.N.N.sh` file with no switch.

- **Windows GUI or UNIX X-windows mode**

Run the `IBM_EMM_Installer` file. On UNIX, use the `.bin` file.

- **Unattended mode**

Open a command prompt and from the directory where you downloaded the IBM software, run the `IBM_EMM_Installer` executable file with `-i silent`. On UNIX, use the `.bin` file.

– To specify a response file located in the same directory as the installer. For example:

`IBM_EMM_Installer_N.N.N.N_OS -i silent`

– To specify a response file in a different directory, use `-f filepath/filename`. Use a fully qualified path. For example:

`IBM_EMM_Installer_N.N.N.N_OS -i silent -f filepath/filename`

For more information about unattended mode, see "Installing multiple times using unattended mode" on page 10.

To create an EAR file after running the installer

To create an EAR file (typically for use in a cluster installation), you run the installer in console mode, from the command line. For Marketing Operations cluster installations, typically you create an EAR that includes the `unica.war` and the `plan.war`. Then you deploy the EAR on each of the servers in your cluster.

1. Put the WAR files in a single directory.
2. Make a backup copy of the installer `.properties` file for each of your installed products.

   Find the `.properties` files in the same directory as the IBM product installers. They are named `installer_<product>.properties`, except for the file for the IBM installer itself, which is named `installer.properties`.

   This backup step is especially important when you run the installer in unattended mode and your installation requires more than one EAR. When the installer runs in unattended mode, it clears these files. To create an EAR file, you need the information that the installer writes in the `.properties` files during the initial install.
3. Open a command window and change directories to the directory that contains the installer.
4. Run the installer executable with this option:

   `-DUNICA_GOTO_CREATEEARFILE=TRUE`

   On UNIX-type systems, run the `.bin` file rather than the `.sh` file.

   The installer wizard runs.
5. Follow the instructions in the wizard.
6. If you need to create additional EAR files, overwrite the `.properties` file or files with the backup(s) you created before you ran the installer in console mode for the first time.

Example installation prompts

For reference, an example of the prompts that display during installation on a UNIX server using console mode follows. Be sure to read and follow the instructions that display during your actual installation.

After you enter information, most prompts display your response and require a yes or no (Y/N) confirmation before you continue. These prompts give you the opportunity to make corrections when needed.

Use this example to help you gather required information before you begin your installation, and for reference during your installation.

Table 4. Example installation prompts and responses

Prompt	Response
`-bash-4.0S`	Initial prompt. Supply the name of the master installer file and any variables for the database setup utility that you want to use for the installation.
`Choose Locale`	Supply a number to choose one of the listed languages. To use the default locale, 2- English, press Enter.
`Introduction`	If a previous version of the product is installed, an upgrade is performed. See Chapter 9, "Upgrading IBM Marketing Operations," on page 41. If the same version of the product is installed, proceeding drops all tables and data.
`Response Files Generation`	Supply a number to choose whether to generate response files for use in an unattended installation. If you generate response files, you can supply a destination path.
`Choose Product Features`	A numbered list of features displays. Features with a check mark [X] are selected for installation, features with no check mark [ ] are not selected. To change the selections, supply numbers to switch from selected to cleared (or vice versa) using a comma-separated list, then press Enter. For example, you see this list of features: `1- [X] IBM Marketing Platform` `2- [X] IBM Marketing Operations` To install Marketing Platform *only*, supply 2 and press Enter.
Master (Marketing Platform) installation	
`Installation Directory`	
`Select Application Server`	
`Platform Database Type`	Supply information for the Marketing Platform system table database.
`Platform Database Host Name`	
`Platform Database Port`	
`Platform Database Name/System ID (SID)`	
`Platform Database User Name`	

Table 4. Example installation prompts and responses (continued)

Prompt	Response
Platform Database Password	
JDBC Connection	
JDBC Driver Classpath	
Product-specific (Marketing Operations) installation	
Introduction	For each product feature you chose to install, the specific product name displays followed by the reinstallation warning.
Installation Directory	
Marketing Operations Database Setup	Supply a number to choose automatic or manual. • Automatic setup uses the same information for this feature that you supplied for the master installation. • Manual setup prompts you for each database and JDBC characteristic separately to accommodate any feature-specific differences.
Marketing Operations Server/Host	
Marketing Operations Server Port	
Marketing Operations Domain Name	Supply the same company domain, in all lowercase, for every feature you install.
Supported Locales	Supply a number to choose a language. You can also supply a comma-separated list to select multiple locales.
Default Locale	Supply a number to choose a language.
Deployment EAR File	Supply a number to choose whether to create an enterprise archive (EAR) file.

Chapter 4. Configuring IBM Marketing Operations before deployment

Whether you need to perform any of the tasks in this chapter depends on your installation. For example, if your company policy allowed you to use the installer to automatically configure your system tables, you do not need to do so manually.

Review the tasks in this chapter and complete any that are required for your installation before you deploy the IBM Marketing Operations web application

Step: Create and populate the Marketing Operations system tables with the umodbsetup utility, if necessary

The IBM installer can create the Marketing Operations system tables during installation, but if your company policy does not permit you to create database tables in this way, you must manually run the database setup utility, `umodbsetup`.

The `umodbsetup` utility does one of the following.
* Option 1: Creates the required system tables in the Marketing Operations database and populates the tables with required default data.
* Option 2: Outputs the database creation and population scripts to a file that you or your DBA can then run in your own database client.

Configure environment variables

Before you run the `umodbsetup` utility, complete the following steps to configure the environment variables properly:

1. From the *<IBM_EMM_Home>\<MarketingOperations_Home>*\tools\bin directory, locate and open the `setenv` file in a text editor.
2. Verify that the JAVA_HOME variable indicates the correct directory for your installation of Java, and that the JDBC drivers are the first entry for the DBDRIVER_CLASSPATH variable. For more information about setting this environment variable, see "Check for a JAVA_HOME environment variable" on page 14.
3. Save and close the file.
4. From the *<IBM_EMM_Home>\<MarketingOperations_Home>*\tools\bin directory, locate and open the `umo_jdbc.properties` file.
5. Set values for the following parameters. (See comments in the file for examples.)
   * umo_driver.classname
   * umo_data_source.url
   * umo_data_source.login
   * umo_data_source.password
6. Save and close the file.

Run the database setup utility

From a command prompt or UNIX shell, navigate to the *<IBM_EMM_Home>*\
<MarketingOperations_Home>\tools\bin directory. Run the umodbsetup utility and
provide appropriate input for the parameters required for your situation.

For example, the following command runs a full database installation (rather than
an upgrade), sets the locale to en_US, and sets the logging level to high:

```
./umodbsetup.sh -t full -L en_US -l high
```

Following is a description of all the possible variables for the utility:

Table 5. Variables for the umodbsetup.sh *utility*

Variable	Description
-h	Provides help for the utility.
-l	Records the output from the actions that the umodbsetup utility performs in the umo-tools.log file. This file is located in the *<IBM_EMM_Home>**<MarketingOperations_Home>*\tools\logs directory. This variable specifies the logging level. You can set the logging level to high, medium, or low.
-L	Sets the default Locale for the installation. For example, use -L de_DE for a German installation. The valid entries for locales include de_DE, en_GB, en_US, es_ES, fr_FR, it_IT, ja_JP, ko_KR, pt_BR, ru_RU, and zh_CN.
-m	Outputs the scripts to a file in the *<IBM_EMM_Home>**<MarketingOperations_Home>*\tools directory, which you can then run manually. Use this option if there is a reason you need to run scripts from your own database client application. When you use this variable, the umodbsetup tool does not run the script.
-t	Type of database installation. Valid values are full and upgrade. For example, -t full
-v	Verbose.
-b	For upgrades only. Identifies the base version of the database that you are attempting to upgrade. By default, the utility detects the version of the database you are upgrading. However, if an earlier attempt to upgrade the database failed in some way, the version may have been updated even though the upgrade failed. When you have corrected the problem and run the utility again, you use this variable with the -f variable to specify the correct base version. For example, -f -b 9.0.0.0
-f	For upgrades only. Instructs the utility to use the base version specified by the -b variable, overriding the base version it may detect in the database. See the description of the -b variable.

Run the database scripts manually, if necessary

If you used the -m variable to output the scripts so you can run them from your
own database client application, run the scripts now.

Do not deploy the `plan.war` file before you create and populate the system tables.

Step: Register Marketing Operations manually, if necessary

If the Marketing Operations installer cannot connect to the Marketing Platform database to register the product, it displays an error message that notifies you of this failure. The installation process will proceed, but in this case you must import the product information into the Marketing Platform system tables manually.

The `configTool` utility mentioned in this procedure is located in the `tools/bin` directory under your Marketing Platform installation. For detailed instructions on using the `configTool` utility, see Appendix B, "The configTool utility," on page 51.

1. Set an environment variable named `NAVIGATION_DIR` to the Marketing Operations `conf` directory.
2. Run the `configTool` utility, using the following example commands as guidelines.

   This imports configuration properties and menu items. Note that you run the utility as many times as there are files.

   ```
   configTool.bat -v -i -p "Affinium" -f "%NAVIGATION_DIR%\
   plan_registration.xml"
   ```

   ```
   configTool.bat -v -i -p "Affinium|suite|uiNavigation|mainMenu" -f
   "%NAVIGATION_DIR%\plan_navigation_operations.xml"
   ```

   ```
   configTool.bat -v -i -p "Affinium|suite|uiNavigation|mainMenu" -f
   "%NAVIGATION_DIR%\plan_navigation_financials.xml"
   ```

   Note: Run this command if the Financial Module is installed in Marketing Operations.

   ```
   configTool.bat -v -i -p "Affinium|suite|uiNavigation|mainMenu|Analytics"
   -f "%NAVIGATION_DIR%\plan_navigation_analytics.xml"
   ```

   ```
   configTool.bat -v -i -p "Affinium|suite|uiNavigation|settingsMenu" -f
   "%NAVIGATION_DIR%\plan_navigation_settings.xml"
   ```

   ```
   configTool.bat -v -i -p "Affinium|suite|uiNavigation|alerts" -f
   "%NAVIGATION_DIR%\plan_alerts_registration.xml"
   ```

Step: Set environment variables (WebLogic/Windows only)

Perform this task only if you are planning to deploy Marketing Operations on a WebLogic web application server installed on a Windows machine.

On the machine where WebLogic is installed, add the following to the value of the `Path` System environment variable.

- Full path to the `bin` directory where the Sun JDK is installed.
- Full path to the `server\bin` directory where WebLogic is installed.

Chapter 5. Deploying IBM Marketing Operations

This chapter provides general guidelines for deploying Marketing Operations on WebSphere and WebLogic. If you created an EAR file after running the installer and your EAR file includes any other IBM products, you must follow all the deployment guidelines detailed in the individual install guides for the products included in the EAR file in addition to those listed in this chapter.

It is assumed that you know how to work with your web application server. Consult your web application server documentation for details about things like how to use the Administration console.

Guidelines for deploying Marketing Operations on WebSphere

Prerequisites

Verify that your version of WebSphere Application Server meets the requirements that are described in the *Recommended Software Environments and Minimum System Requirements* document, including any necessary fix packs or upgrades.

You use the WebSphere Integrated Solutions Console to configure your WebSphere Application Server. The steps that follow provide guidance for setting specific controls.

Note: Different versions of WebSphere Application Server present user interface controls in varying sequences and with alternative labels.

Set up the environment

1. Define a custom property: On the **Application servers > *<server>* > Web container > Custom properties** form, click **New** and enter:

   Name: `com.ibm.ws.webcontainer.invokefilterscompatibility`

   Value: `true`

2. Create the JDBC provider: On the **Resources > JDBC > JDBC providers** form, click **New**. Complete the **Create a new JDBC provider** wizard, including the following.

   - For **Implementation type**, select `Connection pool data source`.
   - Specify the location of the `ojdbc6.jar` file on your server.
   - Specify the **Native library path** on your server.

3. Create the data source: On the **Resources > JDBC > Data sources** form, click **New**. Complete the **Create a data source** wizard, including the following.

   - Specify a **Data source name**.
   - For **JNDI name**, enter `plands`.
   - Select the **JDBC provider** that you created in step 2.
   - Specify the **Database name** and **Server name**.
   - For **Mapping-configuration alias** select `WSLogin`.

4. Define custom properties for the data source: On the **JDBC providers > *<database provider>* > Data sources > *<plan>* > Custom properties** form, click **New** to add two properties:

   - **Name**: `User`

- **Value**: *<user name>*
- **Name**: Password
- **Value**: *<password>*

  If your Marketing Operations system tables are in DB2, locate the
  resultSetHoldability property and set its value to 1. If this property does not
  exist, add it.

5. Configure the JVM: On the **Application servers > *<server>* > Process
   definition > Java Virtual Machine** form, identify the **Classpath** then add the
   following entries as **Generic JVM arguments**, separated by a space:
   - `-Dplan.home=<IBM_EMM_Home>\<MarketingOperations_Home>`

     where *<IBM_EMM_Home>* is the path to the top-level IBM directory and
     <MarketingOperations_Home> is the path to the directory where you installed
     Marketing Operations. Typically this path is `IBM_EMM/MarketingOperations`.
   - `-Dclient.encoding.override=UTF-8`

Deploy the WAR or EAR file

When you deploy a new enterprise application, the WebSphere Integrated
Solutions Console presents a series of forms. The steps that follow provide
guidance for setting specific controls on these forms. Different versions of
WebSphere can present controls in another sequence or with other labels.

1. Select **Applications > New Application > New Enterprise Application**.
2. On the initial form, select **Remote file system** and then **Browse** to the
   `plan.war` file or your EAR file.
3. On the next **Preparing for the application installation** form:
   - Select **Detailed**.
   - Select **Generate Default Bindings**.
   - Select **Override existing bindings**.
4. On the **Select installation options** form:
   - Select **Precompile JavaServer Pages files**.
   - For **Application name**, enter `plan`.
   - Select **Override class reloading settings for Web and EJB modules**.
   - For **Reload interval in seconds**, enter an integer such as 4.
5. On the **Map modules to servers** form, select the **Module**. If you deployed an
   EAR, select every WAR file.
6. On the **Provide options to compile JSPs** form, select the **Web module**. If you
   deployed an EAR, select every WAR file.
   - If you are using WebSphere 7.5, set the **JDK Source Level** to 15.
   - If you are using WebSphere 8, set the **JDK Source Level** to 16.

   If you deployed an EAR, set the **JDK Source Level** for each WAR file.
7. On the **JSP reloading options for Web modules** form, select **JSP enable class
   reloading** and for **JSP reload interval in seconds** enter 5.
8. On the **Map shared libraries** form, select the **Application** and the **Module**.
9. On the **Map shared library relationships** form, select the **Application** and the
   Module.
10. On the **Map resource references to resources** form, for **Target Resource JNDI
    Name** enter `plands`.
11. On the **Map context roots for Web modules** form, for **Context Root** enter
    `/plan`.

12. Review and save your settings.

Define the class loader policy

1. On the **Enterprise Applications > plan > Class loader** form, select **Override class reloading settings for Web and EJB modules**.
2. For **Class loader order**, select **Classes loaded with local class loader first (parent last)**.
3. For **WAR class loader policy**, select **Single class loader for application**.
4. Click **Apply**.

Define settings for cookies

1. Go to the **Enterprise Applications > *plan* > Session management** form.
2. Select **Override session management**.
3. Select **Enable cookies**.
4. Click **Apply**, then go to the **Enterprise Applications > *plan* > Session management > Cookies** form.
5. Change the Marketing Operations **Cookie name** from JSESSIONID to UMOSESSIONID.
6. Click **Apply**.

Define EAR module settings (optional)

If you deployed an EAR, you must define settings for the individual WAR files that are contained by the EAR.

1. Go to **Enterprise Applications** and select the EAR file.
2. On the **Manage Modules** form, select one of the WAR files; for example, Campaign.war.
3. On the **Enterprise Applications > *EAR* > Manage Modules > *WAR*** form:
   - Set **Starting weight** to 10000.
   - For **Class loader order**, select **Classes loaded with application class loader first**.
4. On the **Enterprise Applications > *EAR* > Manage Modules > *WAR* > Session management** form, select **Enable cookies**.
5. On the **Enterprise Applications > *EAR* > Manage Modules > *WAR* > Session management > Cookies** form:
   - Set the **Cookie name** to CMPJSESSIONID.
   - For the **Cookie maximum age**, select **Current browser session**.
6. On the **Enterprise Applications > *EAR* > Manage Modules > *WAR* > Session management** form:
   - Select **Allow overflow**.
   - For **Maximum in-memory sessions**, enter 1000.
   - For **Session timeout**, select **Set timeout** and enter 30.
7. Define the same settings for each of the other WAR files, including unica.war and plan.war.

   Note: If the Campaign.war file also exists in the EAR and you plan to integrate Marketing Operations with Campaign, define the same settings for the Campaign.war file.

Guidelines for deploying Marketing Operations on WebLogic

Before you begin, note the following:

- IBM EMM products customize the JVM used by WebLogic. You may need to create a WebLogic instance dedicated to IBM EMM products if you encounter JVM-related errors.
- Do not install more than one Marketing Operations application under the same WebLogic domain.
- Verify that the SDK selected for the WebLogic domain you are using is the Sun SDK by looking in the startup script (`startWebLogic.cmd`) for the `JAVA_VENDOR` variable. It should be set to `JAVA_VENDOR=Sun`. If it is set to `JAVA_VENDOR=BEA`, JRockit has been selected. JRockit is not supported. To change the selected SDK, refer to the WebLogic documentation.

Complete the following steps.

1. AIX® only. If your operating system is AIX, extract the Marketing Operations WAR file, delete the `xercesImpl.jar` file from `WEB_INF/lib` directory, and recreate the WAR file.

   If the installer combined products in an EAR file, you must first extract that file to obtain the WAR file, and you must recreate the EAR file.

2. If you are configuring WebLogic to use the IIS plug-in, review the WebLogic documentation to determine whether you have additional requirements.

3. From the `bin` directory under your WebLogic domain directory, locate and open the `setDomainEnv` script in a text editor.

   Scroll to the `JAVA_OPTIONS` property, and add the following entries. Use a space to separate entries.

   - `-Dplan.home=<IBM_EMM_Home>\<MarketingOperations_Home>`

     Where `<IBM_EMM_Home>` is the path to the top-level IBM directory and `<MarketingOperations_Home>` is the path to the directory where you installed Marketing Operations. Typically this directory is `IBM_EMM/MarketingOperations`.

   - `-Dfile.encoding=UTF-8`
   - `-DPLAN_CONFIG_GUID=Plan`

4. Save and close the file.

5. Restart WebLogic.

6. Deploy Marketing Operations as a web application module: select `plan.war`.

7. Start the deployed web application.

Chapter 6. Configuring IBM Marketing Operations after deployment

After you deploy and start the Marketing Operations application, you can log in and verify the installation. This chapter describes some basic configuration steps (configuring the system user and a test user, setting up email and markup) but there are additional system setup tasks in the *Marketing Operations Administrator's Guide*.

In addition, if you are using the IBM EMM reporting feature, you must perform the tasks described in Chapter 7, "Installing reports," on page 31.

Step: Verify your installation

1. Access the IBM EMM URL using Internet Explorer.

   If you entered a domain when you installed, the URL is the following, where *host* is the machine where the Marketing Platform is installed, *domain.com* is the domain in which the host machine resides, and *port* is the port number on which the web application server listens.

   `http://host.domain.com:port/unica`

2. Log in using the default administrator login, which is `asm_admin`. You should have already changed this user's password when you verified your Marketing Platform installation.

   The first time you log in, the default value of this user's password is `password`. You are asked to change the password. You can enter the existing password, but you should choose a new one.

   The default home page is the Dashboard, which is a blank page until dashboards are set up. If you see a "404 page not found" message, it means that the Dashboard's WAR file has not been deployed properly. See the *Marketing Platform Installation Guide* for instructions about deploying the Dashboard WAR file.

3. Select **Settings** > **Configuration** and verify that Marketing Operations appears in the list on the left. Then expand the Marketing Operations section and verify that the **umoConfiguration** category appears in the list.

4. Optional. Make this page your "home" page until you configure the dashboard. That way you will not see a blank page each time you log in.

Step: Give the asm_admin user access to Marketing Operations

The default admin user, asm_admin, has access to the Marketing Operations configuration properties automatically. However, there are no default users with access to the Marketing Operations application until you configure them.

1. Create a group. For example, select **Settings > User groups > New Group** and set up Default-MarketOps-Group.

2. Assign the PlanAdminRole and PlanUserRole roles to the group.

3. Assign the asm_admin user to the group.

4. Restart the application server.

5. Log back in as asm_admin.

6. Verify that you have access to Marketing Operations features by selecting **Operations > Plans**.

Step: Configure the markup option, if necessary

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.)

Optional. Configure the Adobe markup option

When you deploy Marketing Operations, the system is configured to use the native markup option by default. If you want to use the Adobe markup option instead, in Marketing Operations select **Settings > Configuration > Marketing Operations > umoConfiguration > markup**. Then configure the markup properties with the following values:

- Set **markupServerType** to SOAP.
- Set **markupServerURL** to the URL of the Marketing Operations host server, including the fully qualified host name and the port where the web application server listens. Use the path format shown here, with your values substituted for *<server>* and *<port>*.

  http://*<server>*:*<port>*/plan/services/collabService?wsdl
- Set **useCustomMarkup** to True.

These configuration settings enable Adobe markup for all users.

Optional. Install and configure Adobe on client machines

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

After each installation on a Microsoft Windows platform, you must copy the customized UMO_Markup_Collaboration.js file, located in *<MarketingOperations_Home>*\tools under the Marketing Operations installation directory, to the client machine. 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. This file is replaced by the `UMO_Markup_Collaboration.js` file.

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 reboot 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.

Step: Configure the email settings

Marketing Operations workflows rely heavily on notification emails so it is a good idea to identify your SMTP server during installation.

1. Select **Settings > Configuration > Marketing Operations > umoConfiguration > email.**
2. Click **Edit Settings**.
3. Set the value of the `notifyEMailMonitorJavaMailHost` property to the machine name or IP address of your organization's SMTP server.
4. Specify a valid email address for the `notifyDefaultSenderEmailAddress` property. The system uses this address to send emails when there is no valid email address available to send a notification email to.
5. Save your changes.

Step: Configure the integration with Campaign, if necessary

Marketing Operations optionally integrates with IBM Campaign. When Marketing Operations and Campaign are integrated, you can use the marketing resource management features in Marketing Operations to create, plan, and approve campaigns.

When Campaign integration is enabled, you also have the option to enable offer integration so that you can perform offer lifecycle management tasks in Marketing Operations.

To enable your integration with Campaign, log in to Marketing Operations and set the following properties on the **Settings > Configuration** page:

- **IBM EMM > Platform**:
  - IBM Marketing Operations - Campaign integration (MO_UC_integration must be enabled)
  - IBM Marketing Operations - Offer integration (optional, if Campaign integration is enabled)
- **IBM EMM > Campaign > partitions > partition[n] > server > internal**:
  - MO_UC_integration (Set this option to Yes if you plan to enable any of the following three optional settings)
  - MO_UC_BottomUpTargetCells
  - Legacy_campaigns
  - IBM Marketing Operations - Offer integration
- **IBM EMM > Marketing Operations > umoConfiguration > campaignIntegration**:

– defaultCampaignPartition
– webServiceTimeoutInMilliseconds

For more information, see the *Marketing Operations and Campaign Integration Guide*.

Step: Configure DB2 database for integrated systems

If your installation uses a DB2 database, integrates IBM Marketing Operations with Campaign, and also integrates offers, you must configure timing parameters for the database.

1. Use the DB2 admin utility (`get db cfg`) to review the settings for the **LOCKTIMEOUT** and **DLCHKTIME** parameters.
2. Set the lock timeout period to 10 seconds as follows:

   `update db cfg using LOCKTIMEOUT 10`
3. Set the deadlock check time to 15,000 milliseconds as follows:

   `update db cfg using DLCHKTIME 15000`

These settings prevent deadlock conditions from occurring when multiple users access database tables simultaneously.

Chapter 7. Installing reports

For its reporting feature, Marketing Operations integrates with IBM Cognos, a separate business intelligence application. Reporting relies on the following components:

- An IBM Cognos installation that meets the requirements that are specified in *Recommended Software Environments and Minimum System Requirements*.
- A set of IBM Enterprise Marketing Management (EMM) components that integrate the IBM system with the IBM Cognos installation.
- The example reports for the Marketing Operations application, which are built with IBM Cognos Report Studio.

Marketing Platform provides the IBM side of the reporting integration. To finish installing reporting, you run all of the following report package installers on the IBM Cognos system:

- IBM
- IBM Marketing Platform
- IBM Marketing Operations

For information about how to install and set up reporting for IBM Marketing Operations, and information about the individual components and how they interact with each other, see the *IBM EMM Reports Installation and Configuration Guide*.

Next steps for reporting

After you finish testing your configuration with authentication configured, reporting is working properly and the example reports are in their default state.

- If you configured the system to use the "authenticated per user" mode, ensure that the appropriate IBM users can run the reports from the IBM applications. The easiest way to do this is to assign the default ReportsUser role to the appropriate user groups or users.
- For general information about the Framework Manager data models and Report Studio reports, see the chapter named "Configuring Reporting" in the *IBM Marketing Platform Administrator's Guide*. For information about configuring and customizing the Marketing Operations reports, see the chapter on "Using Reports" in the *IBM Marketing Operations Administration Guide*.
- To use the Cognos dashboard reports in your dashboards, see the chapter on "Creating and Managing Dashboards" in the *IBM Marketing Platform Administrator's Guide*.

Chapter 8. Installing IBM Marketing Operations in a cluster

To install IBM Marketing Operations in a cluster, follow the instructions from chapters 2 through 7 and supplement those instructions with information from this chapter.

When you install Marketing Operations in a cluster, there are many ways to configure the installation. However, the basic process follows.

1. Run the installers on one system: typically, the administration server (or whatever the equivalent is for your application server type).
2. Create and share a file directory to hold the upload files for all the Marketing Operations installations.
3. Create the EAR file, and then deploy it on each machine in the cluster.
4. Configure each system to share the same Marketing Platform system tables and the same Marketing Operations system tables.
5. Configure each system to use the shared file directory.
6. Determine which machine in the cluster should send notifications. Then suppress the notification process on all the other machines.
7. Enable the UMOSESSIONID cookie for all servers in the cluster.
8. Configure `plan_ehcache.xml` for distributed caching of templates and offer folders.

Installing on a cluster in WebLogic

If you are installing Marketing Operations on a cluster in WebLogic, use the following changes and additions when completing the tasks in chapters 2 through 7.

Preparing to install

Before you begin, you must create a WebLogic domain for the cluster. For help with this step, see the WebLogic documentation.

Preparing the data sources

The data source chapter instructs you to create a database for Marketing Operations and then configure a JDBC data source for it in your application server. When you complete these tasks for a cluster, note the following additional instructions:

- You must configure the web application servers to use the correct JDBC driver on all machines in the cluster.
- Create the data source for the Marketing Platform system tables (UnicaPlatformDS) on both the administration server and the cluster members.
- When you create the data source for the Marketing Operations system tables (plands), deploy it to the cluster, and not to the administration server. Select **All servers in the cluster**.

Installing the products

When you run the installer, be sure that you install Marketing Platform and Marketing Operations once on the machine designated as the administration server for the cluster. You do not need to install the software on each cluster member. Instead, you install it once (on the administration server), create the EAR, and then deploy the EAR file on each cluster member.

Additional pre-deployment steps

Before you deploy Marketing Operations, complete the following tasks in addition to the ones specified in the pre-deployment configuration chapter:
- Share the top-level directory in which Marketing Operations is installed. For example, say that Marketing Operations is installed in the following directory: `C:\MktOpsCluster\IBM_EMM\MarketingOperations`. In this case, you would share the entire `MktOpsCluster` directory.
- Create and share a folder on the administration server to contain the upload files for Marketing Operations. This folder is known as the `Shared_UMO_Artifacts` folder. All cluster members must have full control (read, write, change, and delete) of this folder. Placing this folder below the IBM home directory in the local file system hierarchy is optional.

Deploying the applications on WebLogic

In addition to the instructions in the deployment chapter, note the following additions and one exception.

1. Set Source accessibility option

When you deploy the EAR on the administration server, set the **Source accessibility** option to **Use the defaults defined by the deployment's targets**.

2. Additional instructions for setting the JAVA_OPTIONS

Remember to configure the JAVA_OPTIONS property in the `setenv` file **on each machine** in the cluster.

The path you specify in the `plan.home` property must point to the **shared installation directory**.

Following additional parameter must be set for clusters:
- On the machines that should not send notifications, set the "suppress notifications" parameter as follows:

  `-Dplan.suppressNotifications=true`

  Verify that the `suppressNotifications` property is set to `false` on the machine designated to send notifications. Set this property to `true` on every other machine.

3. Define an alternate ehcache file

The `plan_ehcache.xml` file defined in the `CONF` directory is used for every node in the cluster. To override this default file on a node, edit `startWeblogic.cmd` (Windows) or `startWeblogic.sh` (UNIX) on that node to configure the JAVA_OPTIONS property: add the `-plan_ehcache` parameter to specify the location of another `plan_ehcache.xml` file.

Configure session management cookie

To define the name of the session management cookie used by servers in the cluster, you edit the plan.war file that is created by the installer and deployed on your application server.

1. Open a Command Prompt and verify that the Java version is the same as the JRE used by Marketing Operations: type java -version.
2. Copy plan.war into a temporary folder and rename the original plan.war file.
3. Unpack the contents of the new, temporary plan.war archive: type jar -xvf plan.war.
4. Delete the unpacked plan.war: type rm plan.war.
5. Change to the WEB-INF directory: type cd WEB-INF.
6. Edit the web.xml file to add this tag to override the cookie name:

   ```
   <init-param>
       <param-name>CookieName</param_name>
       <param-value>UMOSESSIONID</param-value>
   </init-param>
   ```

7. Repack the plan.war: type cd .. then jar -cvf * plan.war.
8. Copy the updated plan.war back to its original location on the server.
9. Deploy the updated plan.war.

Additional post-deployment steps

If you are using a plug-in for load balancing, you must perform the following configuration steps.

- For IBM Marketing Operations to work effectively in a clustered environment, users must remain on a single node for their entire session. This option for session management and load balancing is known as sticky sessions or sticky load balancing. For more information about configuring your installation to use this option, see the documentation for your application server.

  Note: When a node fails on a system that uses this configuration option, every user session on that node also fails. The load balancer does not, and should not, switch users to another available node, as user authentication applies only to a single node in Marketing Operations. Users are prompted to log in again, and in some cases an unexpected error and corresponding data loss can occur.

- Log in to Marketing Operations and select **Settings > Configuration**. Configure the following URL parameters so that all references to the Marketing Operations server use the proxy host and port:
  - Marketing Operations | navigation | serverURL
  - Marketing Operations | umoConfiguration | markup | markupServerURL
  - Marketing Operations | umoConfiguration | notifications | notifyPlanBaseURL

Installing on a cluster in WebSphere

If you are installing Marketing Operations on a cluster in WebSphere, use the following changes and additions when completing the tasks in chapters 2 through 7.

Preparing the data sources

The data source chapter instructs you to create a database for Marketing Operations and then configure a JDBC data source for it in your application server. When you complete these tasks for a cluster on WebSphere, note the following additional instructions:

- The Marketing Operations database must be on a machine that is accessible to all machines in the cluster, but it does not need to be on a machine in the cluster.
- When configuring the JDBC provider, specify the cluster as the scope.

Installing the products

When you follow the instructions for running the installer, be sure that you install Marketing Platform and Marketing Operations once, on a machine that is accessible to all machines in the Marketing Operations cluster.

You do not need to install the software on each cluster member. Instead, you install it once, create the EAR, and then deploy the EAR file on each cluster member.

Additional pre-deployment steps

Before you deploy Marketing Operations, complete the following tasks in addition to the ones specified in the pre-deployment configuration chapter:

- Share the top-level directory in which Marketing Operations is installed. For example, say that Marketing Operations is installed in `C:\MktOpsCluster\ IBM_EMM\MarketingOperations`. In this case, you would share the entire `MktOpsCluster` directory.
- Create and share a folder on the administration server to contain the upload files for Marketing Operations. This folder is known as the `Shared_UMO_Artifacts` folder. All cluster members must have full control (read, write, change, and delete) of this folder. Placing this folder below the IBM home directory in the local file system hierarchy is optional.

Additional deployment steps

In addition to the instructions in the deployment chapter, note the following additions

1. Map modules to servers

When you set the options in the **Select Installation Options** wizard for WebSphere, select the cluster and the web server when mapping modules to servers.

2. Additional instructions for the Generic JVM property

Remember to configure the Generic JVM property on **each machine** in the cluster.

The path you specify in the `plan.home` and other properties must point to the **shared installation directory**.

You set the following additional parameters:
- `-DPLAN_CONFIG_GUID=Plan`

- `-Dplan.log.config=\\`*`umoMachine`*`\`*`SharedUnicaHome`*`\MarketingOperations\conf\ plan_log4j_client.xml`
- `-Dplan.local.log.dir=`*`local_log_dir`* (where *local_log_dir* is the writeable folder on the physical machine where Marketing Operations creates logs)
- On the machines that should not send notifications, set the "suppress notifications" parameter as follows:

  `-Dplan.suppressNotifications=true`

  Set this property on every node except one: the one you want to send notifications.
- To use a different `plan_ehcache.xml` file in place of the default file defined in the `CONF` directory for a node, set the `-plan_ehcache` parameter for that node to specify the location of the file.

Configure session management cookie

You must define the name of the session management cookie used by servers in the cluster. To configure the session management cookie:

1. In the WebSphere console, access the properties for a server in the cluster. Navigate to the web container settings and open the session management configuration.
2. Enable cookies and specify `UMOSESSIONID` as the cookie name.
3. Save the settings and repeat this procedure for all servers in the cluster.

Additional post-deployment steps

If you are using a plug-in for load balancing, you must perform the following configuration steps.

- For IBM Marketing Operations to work effectively in a clustered environment, users must remain on a single node for their entire session. This option for session management and load balancing is known as session affinity. For more information on configuring your installation to use session affinity, refer to the documentation for your application server.

  Note: When a node fails on a system that uses this configuration option, every user session on that node also fails. The load balancer does not, and should not, switch users to another available node, as user authentication applies only to a single node in Marketing Operations. Users are prompted to log in again, and in some cases an unexpected error and corresponding data loss can occur.
- Log in to Marketing Operations, select **Settings > Configuration**, and configure the following URL parameters so that all references to the Marketing Operations server use the proxy host and port.
  – Marketing Operations | navigation | serverURL
  – Marketing Operations | umoConfiguration | markup | markupServerURL
  – Marketing Operations | umoConfiguration | notifications | notifyPlanBaseURL

Configure the shared folder properties

Before you deployed the Marketing Operations application, you created a folder known as the `Shared_UMO_Artifacts` folder. Now you need to set the values of the properties that specify the folder for various upload files to point to that location.

1. Log in and select **Settings > Configuration**.

2. Select **Marketing Operations > umoConfiguration > templates**.

3. Click **Edit Settings** and then update the value for the `templatesDir` property to point to a subfolder in the `Shared_UMO_Artifacts` folder.

4. Save your changes

5. Select **Marketing Operations > umoConfiguration > attachmentFolders**.

6. Click **Edit Settings** and then update the values for all the properties in this category to point to subfolders in the `Shared_UMO_Artifacts` folder.

7. Save your changes.

Configuring ehcache

Ehcache is an open source Java distributed cache for general-purpose caching, Java EE, and light-weight containers. Every node in the cluster can use the same `plan_ehcache.xml` file, or you can indicate a different `plan_ehcache.xml` file for each node.

For installations in a cluster, you can edit the `plan_ehcache.xml` file so that changes to templates or offer folders do not require a system restart. Select one of the procedures that follow based on whether you are using RMI or multicast for cache replication.

Important: If your installation is upgraded from a previous version, some or all of the sections in the `plan_ehcache.xml` file may not be present. In that case, add and edit the file as shown in the sections that follow.

To configure ehcache with RMI

Marketing Operations systems that have the following topography typically use RMI:
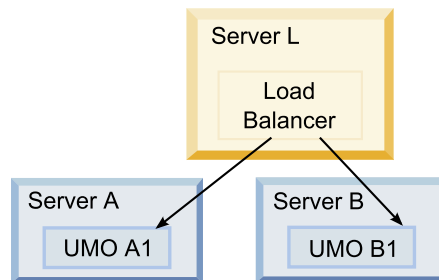
Clustered topography 1:
Configure ehcache with RMI

Navigate to the *<IBM_EMM_Home>\<MarketingOperations_Home>*\conf directory and open the `plan_ehcache.xml` file in a text editor. Then make the following edits:

- Uncomment the following section of the file.

  You must customize the items shown in bold (machineA, machineB, and port) to reflect your environment. Provide a pipe-separated list of all machines in the cluster, using fully qualified host names.

```
<!--
<cacheManagerPeerProviderFactory
class="net.sf.ehcache.distribution.RMICacheManagerPeerProviderFactory"
properties="peerDiscovery=manual,
rmiUrls=//<machineA>:40000/planApplicationCache|//<machineB>:
40000/planApplicationCache"/>
```

```
<cacheManagerPeerListenerFactory
class="net.sf.ehcache.distribution.RMICacheManagerPeerListenerFactory"
properties="port=40000, socketTimeoutMillis=20000"/>
-->
```

- Uncomment the following section of the file.

```
<!--
<cacheEventListenerFactory
class="net.sf.ehcache.distribution.RMICacheReplicatorFactory"
properties="replicateAsynchronously=true, replicatePuts=true,
replicateUpdates=true, replicateUpdatesViaCopy=true,
replicateRemovals=true"/>
<cacheEventListenerFactory
class="com.unicacorp.uap.common.cache.PlanCacheEventListenerFactory
"net.sf.ehcache.distribution.RMIBootstrapCacheLoaderFactory" />
-->
```

- If the following lines are present in the file, remove them.

```
<bootstrapCacheLoaderFactory class=net.sf.ehcache.distribution.
RMIBootstrapCacheLoaderFactory"/>
```

To configure ehcache with multicast

Marketing Operations systems that have the following topography typically use
multicast:
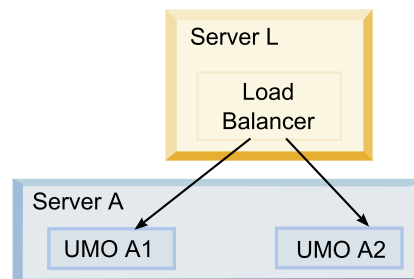
Clustered topography 2:
   Configure ehcache with Multicast

Navigate to the *<IBM_EMM_Home>**<MarketingOperations_Home>*\conf directory and
open the plan_ehcache.xml file in a text editor. Then make the following edits:

- Uncomment the following section of the file.

  You must customize the items shown in bold (multicastGroupAddress and
  multicastGroupPort) to reflect the multicast group and port in your
  environment.

```
<!--<cacheManagerPeerProviderFactory
class="net.sf.ehcache.distribution.RMICacheManagerPeerProviderFactory"
properties="peerDiscovery=automatic, multicastGroupAddress=230.0.0.1,
multicastGroupPort=4446, timeToLive=32"/>

<cacheManagerPeerListenerFactory
class="net.sf.ehcache.distribution.RMICacheManagerPeerListenerFactory"/>
-->
```

- Uncomment the following section of the file.

```
<!--
<cacheEventListenerFactory
class="net.sf.ehcache.distribution.RMICacheReplicatorFactory"
properties="replicateAsynchronously=true, replicatePuts=true,
replicateUpdates=true, replicateUpdatesViaCopy=true,
```

```
replicateRemovals=true"/>
<cacheEventListenerFactory
class="com.unicacorp.uap.common.cache.PlanCacheEventListenerFactory" />
-->
```

- Also, if the following lines are present in the file, remove them.

```
<bootstrapCacheLoaderFactory
class="net.sf.ehcache.distribution.RMIBootstrapCacheLoaderFactory"/>
```

Chapter 9. Upgrading IBM Marketing Operations

Before you upgrade from an earlier version of Marketing Operations, be sure to read all of the topics in this section to ensure a successful upgrade process.

Upgrade prerequisites for all IBM EMM products

To upgrade any IBM EMM product, you must meet all of the prerequisites listed under "Prerequisites" on page 2 in the "Preparing to Install" chapter.

In addition, you must meet the prerequisites listed in this section.

Remove response files generated by previous installations

Before you run the installer to upgrade from pre-8.6.0 versions, you must delete any response files generated by previous installations.

Old response files are not compatible with 8.6.0 and later installers because changes were made to installer behavior and response file format.

Failure to remove old response files can result in having incorrect data pre-filled in installer fields when the installer is run, or in the installer failing to install some files or skipping configuration steps.

The response files are named `installer_<product><version>.properties`, except for the file for the IBM installer itself, which is named `installer.properties`. The installer creates these files in the directory specified by the user during installation. The default location is the user's home directory.

User account requirement (UNIX only)

On UNIX, the same user account that installed the product must perform the upgrade.

32-bit to 64-bit version upgrades

If you are moving from a 32-bit to a 64-bit version of an IBM EMM product, ensure that the following conditions are met.
* The database client libraries for your product data sources are also 64-bit
* All relevant library paths (for example, startup or environment scripts) correctly reference the 64-bit versions of your database drivers

Knowledge requirements

These instructions assume that the person performing the upgrade has an understanding of the following areas:
* The basic function of the IBM installer, as described in "How the IBM EMM installers work" on page 9
* General IBM EMM product functionality and components, including the structure of the file system

- The installation and configuration process for the source product version and for the new version
- Maintaining configuration properties in the source and target systems
- The installation and configuration process for reports, if you are using these reports

Where to look for error and warning messages

The system logs the messages that it produces during the upgrade process. For reference, you can find the log files with these messages in the following files and database tables.

- *<IBM_EMM_Home>*/Unica_Installer_InstallLog.log
- *<MarketingOperations_Home>*/MarketingOperations_InstallLog.log
- *<Platform_Home>*/Platform_Installa.log
- /mnt/data/home1/*<machine_name>*/*<username>*/UnicaInstaller_stdout.log
- /mnt/data/home1/*<machine_name>*/*<username>*/UnicaInstaller_stderr.log
- /mnt/data/home1/*<machine_name>*/*<username>*/Platform_stdout.log
- /mnt/data/home1/*<machine_name>*/*<username>*/Platform_stderr.log
- /mnt/data/home1/*<machine_name>*/*<username>*/MarketingOperations_stdout.log
- /mnt/data/home1/*<machine_name>*/*<username>*/MarketingOperations_stderr.log
- WAS_Profile_Home/logs/server1 contains system logs for IBM Marketing Operations

About upgrading with existing campaign projects or requests

If you are upgrading a Marketing Operations system that is integrated with Campaign and you have existing campaign projects for which you have not created the corresponding linked campaigns, create the linked campaigns before you upgrade to Marketing Operations. Likewise, if you have existing project requests for campaign projects, accept or reject the requests before you upgrade to Marketing Operations.

If you do not link them before you upgrade, then when you attempt to create the campaigns for these projects or accept these requests after the system is upgraded, the campaigns will not be linked properly to the Marketing Operations projects.

Marketing Operations upgrade scenarios

Follow these guidelines for upgrading Marketing Operations.

Table 6. Supported upgrade paths for Marketing Operations 9.0.0

Source version	Upgrade path
8.x.x	Upgrade your installation to version 9.0.0 as described in this guide.
7.5.x	You must upgrade to Marketing Operations 8.5.0 before you can upgrade to Marketing Operations 9.0.0. For information about upgrading to version 8.5.0, see the *IBM Marketing Operations 8.5 Installation Guide*.

To upgrade Marketing Operations

Note that older versions of Marketing Operations were named Affinium Plan. All versions are now referred to as Marketing Operations in this guide.

To upgrade Marketing Operations, you back up your existing installation, ensure that Marketing Platform is upgraded and running, run the installer, restore any trigger procedures, deploy the upgraded applications, and then run some post-deployment processes.

Step: Back up the system before you begin the upgrade

Before you begin your upgrade process, complete the steps in this task to ensure that you have properly backed up everything in your current installation.

1. Undeploy your existing version of Marketing Operations.
2. Back up all files and directories in your existing installation folder.

   Note: If you have modified the sample trigger procedures or the `procedure_plugins.xml` file, you must restore files from the backup after upgrading, to avoid losing trigger procedures. The files you must restore are in the `/devkits/integration/examples/src/procedure` folder.

3. Back up the database that holds your Marketing Operations system tables.

Step: Verify that the Marketing Platform has been upgraded

You must upgrade and deploy the Marketing Platform before you upgrade Marketing Operations.

Verify that the Marketing Platform was successfully upgraded and deployed before you continue.

Step: Run the installer and update the configuration properties

Before you run the installer, ensure that you have the appropriate database connection information for both the Marketing Platform database and the Marketing Operations database.

1. Run the IBM installer and specify your existing installation directory as the installation directory to use. For more information, see "Step: Run the IBM installer" on page 14.

   The installer detects that you have an earlier version installed and runs in upgrade mode.

2. Follow the instructions in the installation wizard. Note that the installer can upgrade the database automatically. If your company policy does not permit you to use this feature, select the **Manual database setup** option and then run the scripts manually after installing the software and before deploying the web application.

3. When the installer finishes, log in to the upgraded Marketing Platform application. Select **Settings > Configuration**. Review the properties in the Marketing Operations categories and set or change any parameters that are new for the current version of Marketing Operations.

Step: Upgrade your database manually, if necessary

The IBM installer can upgrade the Marketing Operations database during the upgrade, but if your company policy does not permit you to upgrade the database in this way, you must use the database setup utility, umodbsetup, to upgrade the tables manually.

The umodbsetup utility does one of the following.

- Option 1: Upgrades the system tables in the Marketing Operations database and populates the tables with required default data.
- Option 2: Outputs the database upgrade and population scripts to a file that you or your DBA can then run in your own database client.

Configure environment variables

Before you run the umodbsetup, complete the following steps to configure the environment variables properly:

1. From the *<IBM_EMM_Home>**<MarketingOperations_Home>*\tools\bin directory, locate and open the setenv file in a text editor.
2. Verify that the JAVA_HOME variable indicates the correct directory for your installation of Java, and that the JDBC drivers are the first entry for the DBDRIVER_CLASSPATH variable. For more information about setting this environment variable, see "Check for a JAVA_HOME environment variable" on page 14.
3. Save and close the file.
4. From the *<IBM_EMM_Home>**<MarketingOperations_Home>*\tools\bin directory, locate and open the umo_jdbc.properties file.
5. Set values for the following parameters. (See comments in the file for examples.)
   - umo_driver.classname
   - umo_data_source.url
   - umo_data_source.login
   - umo_data_source.password
6. Save and close the file.

Run the database setup utility

From a command prompt or UNIX shell, navigate to the *<IBM_EMM_Home>*\ *<MarketingOperations_Home>*\tools\bin directory. Run the umodbsetup utility and provide appropriate input for the parameters required for your situation.

For example, the following command runs an upgrade, sets the locale to en_US, and sets the logging level to medium:

```
./umodbsetup.sh -t upgrade -L en_US -l medium
```

Following is a description of all the possible variables for the utility:

Table 7. Variables for the `umodbsetup.sh` *utility*

Variable	Description
-b	For upgrades only. Identifies the base version of the database that you are attempting to upgrade. By default, the utility detects the version of the database you are upgrading. However, if an earlier attempt to upgrade the database failed in some way, the version may have been updated even though the upgrade failed. When you have corrected the problem and run the utility again, you use this variable with the -f variable to specify the correct base version. For example, -f -b 9.0.0.0
-f	For upgrades only. Instructs the utility to use the base version specified by the -b variable, overriding the base version it may detect in the database. See the description of the -b variable.
-h	Provides help for the utility.
-l	Records the output from the actions that the `umodbsetup` utility performs in the `umo-tools.log` file. This file is located in the `<IBM_EMM_Home>\<MarketingOperations_Home>\tools\logs` directory. This variable specifies the logging level. You can set the logging level to `high`, `medium`, or `low`.
-L	Sets the default Locale for the installation. For example, use -L de_DE for a German installation. The valid entries for locales include de_DE, en_GB, en_US, es_ES, fr_FR, it_IT, ja_JP, ko_KR, pt_BR, ru_RU, and zh_CN.
-m	Outputs the scripts to a file in the `<IBM_EMM_Home>\<MarketingOperations_Home>\tools` directory, which you can then run manually. Use this option if there is a reason you need to run scripts from your own database client application. When you use this variable, the `umodbsetup` tool does not run the script.
-t	Type of database installation. Valid values are `full` and `upgrade`. For example, -t full
-v	Verbose.

Run the database scripts manually, if necessary

If you used the -m variable to output the scripts so you can run them from your own database client application, run the scripts now.

Do not deploy the `plan.war` file before you upgrade and populate the system tables.

Step: Deploy the upgraded web application and run the upgrade processes

1. Deploy Marketing Operations in your web application server as described in Chapter 5, "Deploying IBM Marketing Operations," on page 23.
2. Restart the application server.
3. When the application is running, log in and verify that the upgrade worked properly. Select **Settings > Configuration** and verify that **Marketing**

Operations is in the list on the left. Then expand the **Marketing Operations** section and verify that the **umoConfiguration** category is in the list.

4. Select **Settings > Marketing Operations Settings**.

5. Scroll down and click **Marketing Operations Upgrade**. A list of upgrade processes displays. These processes change the configuration of the application by upgrading database tables and the files that store site-specific customizations.

   For information about an upgrade process, click **Help** next to that process.

6. To run the selected processes, click **Upgrade**.

Step: Verify the upgrade

The following steps are recommended to confirm that the upgrade completed successfully.

1. Review the log files in the WAS_Profile_Home/logs/server1 directory for error messages. The message "UAPContext Init failed" indicates that the upgrade did not complete successfully.

2. Use Internet Explorer or another supported browser to access the IBM EMM URL.

3. Navigate to different Marketing Operations features, including the asset file.

4. Create instances of different Marketing Operations objects, including plans, programs, projects, and your own custom marketing object types.

5. Select **Settings > Marketing Operations Settings > Template Configuration** and then click **Validate Templates**.

6. If your installation customizes Marketing Operations with the application programming interface, verify that your customizations are not affected by compatibility issues.

7. If you use trigger procedures, restore them.

Step: Restore trigger procedures, if necessary

If you were using triggers, complete the steps in this task to restore them.

1. Restore the procedures and the procedure_plugins.xml file from the backup you made earlier. Put them in the default location for the files:

   <IBM_EMM_Home>*<MarketingOperations_Home>*\devkits\integration\examples\ src\procedure

2. If necessary, rebuild the integration services procedures using the build file located in the *<IBM_EMM_Home>**<MarketingOperations_Home>*\devkits\ integration\examples\build directory under your Marketing Operations installation.

3. Update the following parameters on the **Settings > Configuration > Marketing Operations > umoConfiguration > attachmentFolders** page. Set the values to point to the directories you created in the previous step.

   • Set **graphicalRefUploadDir** to *<IBM_EMM_Home>**<MarketingOperations_Home>*\ graphicalrefimages

   • Set **templateImageDir** to *<IBM_EMM_Home>**<MarketingOperations_Home>*\ images

   • Set **recentDataDir** to *<IBM_EMM_Home>**<MarketingOperations_Home>*\ recentdata

   • Set **workingAreaDir** to *<IBM_EMM_Home>**<MarketingOperations_Home>*\umotemp

Upgrading Marketing Operations in a clustered environment

Use the following guidelines when you upgrade multiple instances of Marketing Operationsin a clustered environment.

- Undeploy all of the instances of Marketing Operations.
- Follow the directions in this chapter to upgrade.
- Use your web application server's automatic deployment features to deploy the EAR file in your cluster.

Appendix A. Uninstalling IBM products

You might need to uninstall an IBM product if you are doing the following.
- Retiring a system.
- Removing an IBM product from your system.
- Freeing up space on a system.

When you install IBM EMM products, an uninstaller is included in the `Uninstall_Product` directory, where *Product* is the name of your IBM product. On Windows, an entry is also added to the **Add or Remove Programs** list in the Control Panel.

Running the IBM uninstaller ensures that all configuration files, installer registry information, and user data are removed from the system. If you manually remove the files in your installation directory instead of running the uninstaller, the result might be an incomplete installation if you later reinstall an IBM product in the same location. After uninstalling a product, its database is not removed. The uninstaller only removes default files that get created during installation. Any file created or generated after installation is not removed.

To uninstall IBM products

Follow these instructions to properly remove IBM products from your system.

Note: On UNIX, the same user account that installed IBM EMM must run the uninstaller.

1. If your IBM product has a web application deployed, undeploy the IBM EMM product web application from WebSphere or WebLogic.
2. Shut down WebSphere or WebLogic.
3. Stop any running processes that are related to the product you are removing.

   For example, stopping the Campaign or Contact Optimization Listener services before uninstalling those products.
4. Check your product installation directory for a `ddl` directory, and if one exists, you can run scripts provided there to drop tables from the system table database.
5. Run the IBM EMM uninstaller and follow the directions in the wizard.

   The uninstaller is in the `Uninstall_Product` directory, where *Product* is the name of your IBM EMM product. The `Uninstall_Product` directory is in your product installation directory.

   When you uninstall a product that was installed with the unattended mode, the uninstall also runs in unattended mode (without presenting any dialogs for user interaction).

Appendix B. The configTool utility

The properties and values on the Configuration page are stored in the Marketing Platform system tables. The `configTool` utility imports and exports configuration settings to and from the Marketing Platform system tables.

When to use configTool

You might want to use `configTool` for the following reasons.

- To import partition and data source templates supplied with Campaign, which you can then modify and duplicate using the Configuration page.
- To register (import configuration properties for) IBM EMM products, if the product installer is unable to add the properties to the database automatically.
- To export an XML version of configuration settings for backup or to import into a different installation of IBM EMM.
- To delete categories that do not have the **Delete Category** link. You do this by using `configTool` to export your configuration, then manually deleting the XML that creates the category, and using `configTool` to import the edited XML.

Important: This utility modifies the `usm_configuration` and `usm_configuration_values` tables in the Marketing Platform system table database, which contain the configuration properties and their values. For best results, either create backup copies of these tables, or export your existing configurations using `configTool` and back up the resulting file so you have a way to restore your configuration if you make an error when using `configTool` to import.

Valid product names

The `configTool` utility uses product names as parameters with the commands that register and unregister products, as described later in this section. With the 8.0.0 release of IBM EMM, many product names changed. However, the names recognized by `configTool` did not change. The valid product names for use with `configTool` are listed below, along with the current names of the products.

Product name	Name used in configTool
Marketing Platform	`Manager`
Campaign	`Campaign`
Distributed Marketing	`Collaborate`
eMessage	`emessage`
Interact	`interact`
Contact Optimization	`Optimize`
Marketing Operations	`Plan`
CustomerInsight	`Insight`
Digital Analytics for On Premises	`NetInsight`
PredictiveInsight	`Model`
Leads	`Leads`

Syntax

```
configTool -d -p "elementPath" [-o]

configTool -i -p "parent ElementPath" -f importFile [-o]

configTool -x -p "elementPath" -f exportFile

configTool -r productName -f registrationFile [-o]

configTool -u productName
```

Commands

-d -p "*elementPath*"

Delete configuration properties and their settings, specifying a path in the configuration property hierarchy.

The element path must use the internal names of categories and properties, which you can obtain by going to the Configuration page, selecting the wanted category or property, and looking at the path displayed in parentheses in the right pane. Delimit a path in the configuration property hierarchy using the | character, and surround the path with double quotation marks.

Note the following.
- Only categories and properties within an application may be deleted using this command, not whole applications. Use the **-u** command to unregister a whole application.
- To delete categories that do not have the **Delete Category** link on the Configuration page, use the **-o** option.

-i -p "*parentElementPath*" -f *importFile*

Import configuration properties and their settings from a specified XML file.

To import, you specify a path to the parent element under which you want to import your categories. The configTool utility imports properties *under* the category you specify in the path.

You can add categories at any level below the top level, but you cannot add a category at same level as the top category.

The parent element path must use the internal names of categories and properties, which you can obtain by going to the Configuration page, selecting the desired category or property, and looking at the path displayed in parentheses in the right pane. Delimit a path in the configuration property hierarchy using the | character, and surround the path with double quotation marks.

You can specify an import file location relative to the tools/bin directory or you can specify a full directory path. If you specify a relative path or no path, configTool first looks for the file relative to the tools/bin directory.

By default, this command does not overwrite an existing category, but you can use the **-o** option to force an overwrite.

-x -p "*elementPath*" -f *exportFile*

Export configuration properties and their settings to an XML file with a specified name.

You can export all configuration properties or limit the export to a specific category by specifying a path in the configuration property hierarchy.

The element path must use the internal names of categories and properties, which you can obtain by going to the Configuration page, selecting the wanted category or property, and looking at the path displayed in parentheses in the right pane. Delimit a path in the configuration property hierarchy using the | character, and surround the path with double quotation marks.

You can specify an export file location relative to the current directory or you can specify a full directory path. If the file specification does not contain a separator (/ on Unix, / or \ on Windows), configTool writes the file to the tools/bin directory under your Marketing Platform installation. If you do not provide the xml extension, configTool adds it.

-r *productName* -f *registrationFile*

Register the application. The registration file location may be relative to the tools/bin directory or may be a full path. By default, this command does not overwrite an existing configuration, but you can use the -o option to force an overwrite. The *productName* parameter must be one of those listed above.

Note the following.
- When you use the -r option, the registration file must have <application> as the first tag in the XML.

  Other files may be provided with your product that you can use to insert configuration properties into the Marketing Platform database. For these files, use the -i option. Only the file that has the <application> tag as the first tag can be used with the -r option.
- The registration file for the Marketing Platform is named Manager_config.xml, and the first tag is <Suite>. To register this file on a new installation, use the populateDb utility, or rerun the Marketing Platform installer as described in the *IBM Marketing Platform Installation Guide*.
- After the initial installation, to reregister products other than the Marketing Platform, use configTool with the -r option and -o to overwrite the existing properties.

-u *productName*

Unregister an application specified by *productName* . You do not have to include a path to the product category; the product name is sufficient. The *productName* parameter must be one of those listed above. This removes all properties and configuration settings for the product.

Options

-o

When used with -i or -r, overwrites an existing category or product registration (node).

When used with **-d** allows you to delete a category (node) that does not have the **Delete Category** link on the Configuration page.

Examples

- Import configuration settings from a file named Product_config.xml located in the conf directory under the Marketing Platform installation.

  configTool -i -p "Affinium" -f Product_config.xml

- Import one of the supplied Campaign data source templates into the default Campaign partition, partition1. The example assumes that you placed the Oracle data source template, OracleTemplate.xml, in the tools/bin directory under the Marketing Platform installation.

  configTool -i -p "Affinium|Campaign|partitions|partition1|dataSources" -f OracleTemplate.xml

- Export all configuration settings to a file named myConfig.xml located in the D:\backups directory.

  configTool -x -f D:\backups\myConfig.xml

- Export an existing Campaign partition (complete with data source entries), save it to a file named partitionTemplate.xml, and store it in the default tools/bin directory under the Marketing Platform installation.

  configTool -x -p "Affinium|Campaign|partitions|partition1" -f partitionTemplate.xml

- Manually register an application named productName, using a file named app_config.xml located in the default tools/bin directory under the Marketing Platform installation, and force it to overwrite an existing registration of this application.

  configTool -r product Name -f app_config.xml -o

- Unregister an application named productName.

  configTool -u productName

Appendix C. IBM Marketing Operations configuration properties

This section describes the IBM Marketing Operations configuration properties on the **Settings > Configuration** page.

Marketing Operations

supportedLocales

Description

> Specifies the locales available in your installation of IBM Marketing Operations. List only the locales that you are actually using. Each locale you list uses memory on the server. The amount of memory used depends on the size and number of templates.

> If you add locales after the initial installation or upgrade, you must run the upgrade servlets again. See upgrade documentation for details.

> If you change this value, you must stop and restart your Marketing Operations deployment before the change takes effect.

Default value

> en_US

defaultLocale

Description

> Specifies the supported locale in which you want IBM Marketing Operations to display for all users, unless explicitly overridden for specific users by Marketing Operations administrators.

> If you change this value, you must stop and restart your Marketing Operations deployment before the change takes effect.

Default value

> en_US

Marketing Operations | navigation

welcomePageURI

Description

> The Uniform Resource Identifier of the IBM Marketing Operations index page. This value is used internally by IBM EMM applications. Changes to this value are not recommended.

Default value

> affiniumPlan.jsp?cat=projectlist

projectDetailpageURI

Description

The Uniform Resource Identifier of the IBM Marketing Operations detail page. This value is used internally by IBM EMM applications. Changes to this value are not recommended.

Default value

blank

seedName

Description

Used internally by IBM EMM applications. Changes to this value are not recommended.

Default value

Plan

type

Description

Used internally by IBM EMM applications. Changes to this value are not recommended.

Default value

Plan

httpPort

Description

The port number that is used by the application server for connections to the IBM Marketing Operations application.

Default value

7001

httpsPort

Description

The port number that is used by the application server for secure connections to the IBM Marketing Operations application.

Default value

7001

serverURL

Description

The URL of the IBM Marketing Operations installation. Accepts locators with either the HTTP or HTTPS protocol.

Default value

http://*<server>*:*<port>*/plan

logoutURL

Description

Used internally. Changes to this value are not recommended.

IBM Marketing Platform uses this value to call the logout handler of each registered application if the user clicks the logout link in suite.

Default value

>/uapsysservlet?cat=sysmodules&func=logout

displayName

Description

>Used internally.

Default value

>`Marketing Operations`

Marketing Operations | about

The **Marketing Operations > about** configuration properties list information about your IBM Marketing Operations installation. You cannot edit these properties.

displayName

Description

>The display name of the product.

Value

>IBM Marketing Operations

releaseNumber

Description

>The currently installed release.

Value

>*<version>.<release>.<modification>*

copyright

Description

>The copyright year.

Value

>*<year>*

os

Description

>The operating system on which IBM Marketing Operations is installed.

Value *<operating system and version>*

java

Description

>The current version of Java.

Value *<version>*

support

Description

Read documentation and place service requests.

Value

`http://www-947.ibm.com/support/entry/portal/open_service_request`

appServer

Description

The address of the application server on which IBM Marketing Operations is installed.

Value

<IP address>

otherString

Description

Value

blank

Marketing Operations | umoConfiguration

serverType

Description

Application Server Type. Used for Calendar export.

Valid values

`WEBLOGIC` or `WEBSPHERE`

Default value

<server type>

usermanagerSyncTime

Description

Time in milliseconds to between scheduled synchronizations with IBM Marketing Platform.

Default value

10800000 (milliseconds: 3 hours)

firstMonthInFiscalYear

Description

Set to the month that you would like your account fiscal year to begin. The Summary tab for the account contains a view-only table which lists budget information by month for the fiscal years of the account. The first month in this table is determined by this parameter.

January is represented by 0. To have your fiscal year to begin in April, set **firstMonthInFiscalYear** to 3.

Valid values

> Integers 0 to 11

Default value

> 0

maximumItemsToBeRetainedInRecentVisits

Description

> The maximum number of links to recently visited pages to display on the **Recent** menu.

Default value

> 10 (links)

maxLimitForTitleString

Description

> The maximum number of characters that can display in a page title. If titles are longer than the specified number, IBM Marketing Operations clips them.

Default value

> 40 (characters)

maximumLimitForBulkUploadItems

Description

> The maximum number of attachments you can upload at the same time.

Default value

> 5 (attachments)

workingDaysCalculation

Description

> Controls how IBM Marketing Operations calculates durations.

Valid values

> - bus: Business days only, includes working days only. Does not include weekends and days off.
> - wkd: Business days + Weekends, includes working days and weekends. Does not include days off.
> - off: Business days + Days off, includes all working days and days off. Does not include weekends.
> - all: includes all days in the calendar.

Default value

> all

validateAllWizardSteps

Description

> When creating a program, project, or request with the wizard, IBM Marketing Operations automatically validates that the required fields on

the current page have values. This parameter controls whether Marketing Operations validates the required fields on all pages (tabs) when a user clicks **Finish**.

Valid values

- `True`: Marketing Operations checks the required fields on pages that the user did not visit (except workflow, tracking, and attachments). If a required field is blank, the wizard opens that page and displays an error message.
- `False`: Marketing Operations does not validate required fields on pages the user did not visit.

Default value

`True`

enableRevisionHistoryPrompt

Description

Ensures that users are prompted to add change comments when saving a project/request or approval.

Valid values

`True | False`

Default value

`False`

useForecastDatesInTaskCalendar

Description

Specifies the type of dates used when displaying tasks in calendar view.

Valid values

- `True`: uses forecast and actual dates to display tasks.
- `False`: uses target dates to display tasks.

Default value

`False`

copyRequestProjectCode

Description

Controls whether you want to carry the Project Code (PID) over from a request to a project. If you set this parameter to `False`, the project and the request use different codes.

Valid values

`True | False`

Default value

`True`

projectTemplateMonthlyView

Description

Controls whether the monthly view is allowed in the workflow for a project template.

Valid values

    `True | False`

Default value

    `False`

disableAssignmentForUnassignedReviewers

Description

Specifies how work is assigned by role for approvals. The `disableAssignmentForUnassignedReviewers` parameter controls the behavior of **Assign work by Role** on the People tab for assignment of approvers in workflow approvals.

Valid values

- `True`: unassigned reviewers in the People tab are not added to the approval as new steps.
  - Append option: The existing, owner-assigned approvers without an assigned role do not change. New approver steps are not added even if the People tab has reviewers with the role "unassigned."
  - Replace option: The existing owner assigned approvers without a role are replaced with a blank. New approver steps would not be added even if the people tab has reviewers with the role "unassigned."
- `False`: unassigned reviewers are added to the approval.
  - Append option: All reviewers without a role are appended to the approval as reviewers if the approval has owner assigned steps without defined roles.
  - Replace Option: The existing approvers of approvals are replaced with the unassigned approvers in the People tab.

Default value

    `False`

enableApplicationLevelCaching

Description

Indicates whether application-level caching is enabled or not. For best results in a clustered environment on which multicasting of caching messages is not enabled, consider turning off application level caching for Marketing Operations.

Valid values

    `True | False`

Default value

    `True`

customAccessLevelEnabled

Description

Determines whether you use custom access levels (project roles) in IBM Marketing Operations.

Valid values

- `True`: user access to projects and requests is evaluated according to Object Access Levels and Custom Access Levels (project roles), and tab security is enabled for custom tabs.
- `False`: user access to projects and requests is evaluated only according to Object Access Levels (object implicit roles), and tab security is turned off for custom tabs.

Default value

`True`

enableUniqueIdsAcrossTemplatizableObjects

Description

Determines whether you use unique internal IDs for all of the objects created from templates, including programs, projects, plans, and invoices.

Valid values

- `True` enables unique internal IDs across all objects created from templates. This configuration simplifies cross-object reporting by allowing the system to use the same table for different object types.
- `False` disables unique internal IDs across all objects created from templates.

Default value

`True`

FMEnabled

Description

Enables and disables the Financial Management Module, which determines whether the Accounts, Invoices, and Budget tabs appear in the product.

Valid values

`True | False`

Default value

`False`

FMProjVendorEnabled

Description

Parameter used to show/hide vendor column for project line items.

Valid values

`True | False`

Default value

`False`

FMPrgmVendorEnabled

Description

Parameter used to show/hide vendor column for program line items.

Valid values

```
True | False
```

Default value

```
False
```

Marketing Operations | umoConfiguration | Approvals

specifyDenyReasons

Description

Enables a customizable list of reasons for denying an approval. When enabled, administrators populate the Approval Deny Reasons list with options, then associate deny reasons with each workflow template and each project template that defines a workflow. Users who deny an approval, or an item within an approval, are required to select one of these predefined reasons.

Valid values

```
True | False
```

Default value

```
False
```

Marketing Operations | umoConfiguration | templates

Important: Changes to the default values supplied for these parameters are not recommended.

templatesDir

Description

Identifies the directory that contains all of your project template definitions, which are stored in XML files.

Use a fully qualified path.

Default value

```
<IBM_EMM_Home>/<MarketingOperations_Home>/templates
```

assetTemplatesFile

Description

The XML file that defines the templates for assets. This file must be in the directory that is specified by **templatesDir**.

Default value

```
asset_templates.xml
```

planTemplatesFile

Description

The XML file that defines the templates for plans. This file must be in the directory that is specified by **templatesDir**.

Default value

```
plan_templates.xml
```

programTemplatesFile

Description

The XML file that defines the templates for programs. This file must be in the directory that is specified by **templatesDir**.

Default value

program_templates.xml

projectTemplatesFile

Description

The XML file that defines the templates for projects. This file must be in the directory that is specified by **templatesDir**.

Default value

project_templates.xml

invoiceTemplatesFile

Description

The XML file that defines the templates for invoices. This file must be in the directory that is specified by **templatesDir**.

Default value

invoice_templates.xml

componentTemplatesFile

Description

The XML file that defines the templates for custom marketing object types. This file must be in the directory that is specified by **templatesDir**.

Default value

component_templates.xml

metricsTemplateFile

Description

The XML file that defines the templates for metrics. This file must be in the directory that is specified by **templatesDir**.

Default value

metric_definition.xml

teamTemplatesFile

Description

The XML file that defines the templates for teams. This file must be in the directory that is specified by **templatesDir**.

Default value

team_templates.xml

offerTemplatesFile

Description

The XML file that defines the templates for offers. This file must be in the directory that is specified by `templatesDir`.

Default value

`uap_sys_default_offer_comp_type_templates.xml`

Marketing Operations | umoConfiguration | attachmentFolders

uploadDir

Description

The upload directory where attachments for projects are stored.

Default value

`<MarketingOperations_Home>/projectattachments`

planUploadDir

Description

The upload directory where attachments for plans are stored.

Default value

`<MarketingOperations_Home>/planattachments`

programUploadDir

Description

The upload directory where attachments for programs are stored.

Default value

`<MarketingOperations_Home>/programattachments`

componentUploadDir

Description

The upload directory where attachments for marketing objects are stored.

Default value

`<MarketingOperations_Home>/componentattachments`

taskUploadDir

Description

The upload directory where attachments for tasks are stored.

Default value

`<MarketingOperations_Home>/taskattachments`

approvalUploadDir

Description

The upload directory where approval items are stored.

Default value

<MarketingOperations_Home>/approvalitems

assetUploadDir

Description

The upload directory where assets are stored.

Default value

<MarketingOperations_Home>/assets

accountUploadDir

Description

The upload directory where attachments for accounts are stored.

Default value

<MarketingOperations_Home>/accountattachments

invoiceUploadDir

Description

The upload directory where attachments for invoices are stored.

Default value

<MarketingOperations_Home>/invoiceattachments

graphicalRefUploadDir

Description

The upload directory where attribute images are stored.

Default value

<MarketingOperations_Home>/graphicalrefimages

templateImageDir

Description

The upload directory where template images are stored.

Default value

<MarketingOperations_Home>/images

recentDataDir

Description

The temporary directory that stores the recent data (serialized) for each user.

Default value

<MarketingOperations_Home>/recentdata

workingAreaDir

Description

The temporary directory that stores CSV files that are uploaded during grid imports.

Default value

<MarketingOperations_Home>/umotemp

managedListDir

Description

The upload directory where managed list definitions are stored.

Default value

<MarketingOperations_Home>/managedList

Marketing Operations | umoConfiguration | Email

notifyEMailMonitorJavaMailHost

Description

Optional string that specifies either the DNS host name of the email notifications mail server or its dot-formatted IP address. Set to the machine name or IP address of your SMTP server.

This parameter is necessary if you have not provided IBM Marketing Operations with an existing JavaMail session that uses the session parameter above and the delegate is marked "Complete."

Default value

[CHANGE-ME]

notifyDefaultSenderEmailAddress

Description

Set to a valid email address. The system sends email messages to this address when there is no valid email address available to send the notification email messages.

Default value

[CHANGE-ME]

notifySenderAddressOverride

Description

Use this parameter to specify a standard value for the REPLY-TO and FROM email addresses for notifications. By default, these addresses are populated with the email address of the event owner.

Default value

blank

Marketing Operations | umoConfiguration | markup

IBM Marketing Operations provides markup tools for making comments on attachments. You can use either Adobe Acrobat markup or native Marketing Operations markup. Use the properties in this category to configure which option to use.

markupServerType

Description

Determines which markup option to use.

Valid values

- SOAP enables users to edit and view markups in PDF documents. Adobe Acrobat Professional is required for markups. If specified, users cannot view markups made previously in a web browser with the native Marketing Operations method.

  If you specify SOAP, you must also configure the **markupServerURL** and **useCustomMarkup** parameters.

- MCM enables the native Marketing Operations markup method that allows users to edit and view markups in a web browser. If specified, users cannot edit or view markups made previously in a PDF with Adobe Acrobat.

- If blank, the markup function is disabled and the **View/Add Markup** link does not appear.

Default value

MCM

markupServerURL

Description

Dependent on **markupServerType** = SOAP.

Set to the URL for the computer that hosts the markup server, including the number of the port the web application server uses for listening. The URL must contain the fully qualified host name.

Accepts locators with either the HTTP or HTTPS protocol.

Default value

http://*<server>*:*<port>*/plan/services/collabService?wsdl

useCustomMarkup

Description

Determines whether Windows users can send and receive markup comments using the **Acrobat Send Receive Comments** button.

Valid values

- True: Windows users can use only the **Acrobat Send Receive Comments** button to send and receive markup comments. The UMO_Markup_Collaboration.js file must be available in the javascripts folder of the client-side Acrobat installation.

  Dependent on markupServerType = SOAP.

- False: Windows users can use only the Marketing Operations custom **Send Comments** button to send and receive markup comments. They cannot use the Acrobat button and must configure Acrobat to enable the IBM Marketing Operations**Comments** toolbar. For more information about reviewing PDF files, see the *IBM Marketing Operations User's Guide*.

Default value

True

instantMarkupFileConversion

Description

If `True`, IBM Marketing Operations converts PDF attachments to images as soon as they are uploaded, rather than doing this conversion the first time a user opens the item for markup.

Valid values

`True | False`

Default value

`False`

Marketing Operations | umoConfiguration | grid

gridmaxrow

Description

An optional integer to define the maximum number of rows to be retrieved in grids. The default, `-1`, retrieves all rows.

Default value

`-1`

reloadRuleFile

Description

An optional boolean parameter that indicates whether the grid validation plug-in needs to be reloaded or not.

Valid values

`True | False`

Default value

`True`

gridDataValidationClass

Description

An optional parameter to specify custom grid data validation class. If not specified, the default, the built in plug-in is used for grid data validation.

Default value

blank

tvcDataImportFieldDelimiterCSV

Description

Delimiter to use to parse data imported into a grid. Default is comma (,).

Default value

`,` (comma)

maximumFileSizeToImportCSVFile

Description

Represents the maximum file size in MB that can be uploaded while importing comma-separated data for TVC.

Default value

0 (unlimited)

maximumRowsToBeDisplayedPerPageInGridView

Description

Specifies the number of rows to display per page in grid view.

Valid values

positive integers

Default value

100

griddataxsd

Description

Name of grid data XSD file.

Default value

griddataschema.xsd

gridpluginxsd

Description

Name of grid plug-ins XSD file.

Default value

gridplugin.xsd

gridrulesxsd

Description

Name of grid rules XSD file.

Default value

gridrules.xsd

Marketing Operations | umoConfiguration | workflow

hideDetailedDateTime

Description

Optional show/hide parameter for detailed date time in the tasks page.

Valid values

True | False

Default value

False

daysInPastRecentTask

Description

> This parameter determines how long tasks are considered "recent." If the task is "active" and started less than this number of days ago, or the Target End Date of the task is between today and this number of days in the past, the task displays as a recent task.

Valid values

> positive integers

Default value

> 14 (days)

daysInFutureUpcomingTasks

Description

> This parameter determines how many days in the future to look for upcoming tasks. If the task starts in the next `daysInFutureUpcomingTasks` or does not end before the current date, it is an upcoming task.

Valid values

> positive integers

Default value

> 14 (days)

beginningOfDay

Description

> Begin hour of the working day. This parameter is used to calculate the datetimes in workflow using fractional durations.

Valid values

> integers from 0 to 12

Default value

> 9 (9 AM)

numberOfHoursPerDay

Description

> Number of hours per day. This parameter is used to calculate the datetimes in workflow using fractional durations.

Valid values

> integers from 1 to 24

Default value

> 8 (hours)

mileStoneRowBGColor

Description

Defines the background color for workflow tasks. To specify the value, insert the # character before the six-character Hex code for the color. For example, #0099CC.

Default value

#DDDDDD

Marketing Operations | umoConfiguration | integrationServices

enableIntegrationServices

Description

Enables and disables the Integration Services module that can be used by third-party users to access IBM Marketing Operations functionality using web services and triggers.

Valid values

True | False

Default value

False

integrationProcedureDefinitionPath

Description

Optional full file path to the custom procedure definition XML file.

Default value

<IBM_EMM_Home>/*<MarketingOperations_Home>*/devkits/integration/
examples/src/procedure/procedure-plugins.xml

integrationProcedureClasspathURL

Description

URL to the class path for custom procedures.

Default value

file:///*<IBM_EMM_Home>*/*<MarketingOperations_Home>*/devkits/
integration/examples/classes/

Marketing Operations | umoConfiguration | campaignIntegration

defaultCampaignPartition

Description

When IBM Marketing Operations is integrated with IBM Campaign, this parameter specifies the default Campaign partition if the campaign-partition-id is not defined in the project template.

Default value

partition1

webServiceTimeoutInMilliseconds

Description

Added for Web Service integration API calls. This parameter is used as a timeout for web services API calls.

Default value

1800000 milliseconds (30 minutes)

Marketing Operations | umoConfiguration | reports

reportsAnalysisSectionHome

Description

Indicates the home directory for the Analysis Section reports.

Default value

/content/folder[@name='Affinium Plan']

reportsAnalysisTabHome

Description

Indicates the home directory for the Analysis Tab reports.

Default value

/content/folder[@name='Affinium Plan - Object Specific Reports']

cacheListOfReports

Description

This parameter enables caching of a list of reports on object instance's analysis page.

Valid values

True | False

Default value

False

Marketing Operations | umoConfiguration | invoiceRollup

invoiceRollupMode

Description

Specifies how rollups occur. Acceptable values follow.

Valid values

- immediate: rollups occur every time that an invoice is marked PAID.
- schedule: rollups occur on a scheduled basis.

  If this parameter is set to schedule, the system uses the following parameters to determine when rollups occur.

  – invoiceRollupScheduledStartTime
  – invoiceRollupScheduledPollPeriod

Default value

immediate

invoiceRollupScheduledStartTime

Description

If **invoiceRollupMode** is `schedule`, this parameter is used as follows.

- If this parameter contains a value (for example, 11:00 pm), that value is the start time for the schedule to start.
- If this parameter is undefined, the rollup schedule starts when the server starts.

If **invoiceRollupMode** is `immediate`, this parameter is not used.

Default value

11:00 pm

invoiceRollupScheduledPollPeriod

Description

If **invoiceRollupMode** is `schedule`, this parameter specifies the poll period in seconds for rollup to occur.

If **invoiceRollupMode** is `immediate`, this parameter is not used.

Default value

3600 (1 hour)

Marketing Operations | umoConfiguration | database

fileName

Description

Path to file for loading data sources using JNDI lookup.

Default value

plan_datasources.xml

sqlServerSchemaName

Description

Specifies the database schema to use. This parameter applies only if you are using SQL Server for your IBM Marketing Operations database.

Default value

dbo

db2ServerSchemaName

Important: Changes to the default value supplied for this parameter are not recommended.

Description

Used internally by IBM EMM applications.

Default value

blank

thresholdForUseOfSubSelects

Description

Specifies the number of records beyond which a subquery should be used in the IN clause of SQL (for listing pages) instead of the actual entity IDs in the IN clause. Setting this parameter improves performance for IBM Marketing Operations installations that have a lot of application data. As a best practice, do not change this value unless you encounter performance issues. If this parameter is missing or commented out, the database behaves as if the threshold is set to a large value.

Default value

3000 (records)

commonDataAccessLayerFetchSize

Description

This parameter specifies resultset fetch size for certain performance sensitive, critical queries.

Default value

0

commonDataAccessLayerMaxResultSetSize

Description

This parameter specifies maximum resultset size for certain performance sensitive, critical queries.

Default value

-1

useDBSortForAllList

Description

This parameter is used to configure ALL IBM Marketing Operations List Handlers. Use another `useDBSortFor<module>List` parameter to override the paging behavior of a particular list.

Valid values

- `True`: get one page of list data from the database at a time.
- `False`: cache all list data.

Default value

True

useDBSortForPlanList

Description

This parameter is used to configure the Plan List Handler.

Valid values

- `True`: get one page of list data from the database at a time.
- `False`: cache all list data.

Default value

```
True
```

useDBSortForProjectList

Description

This parameter is used to configure the Project List Handler.

Valid values

- `True`: get one page of list data from the database at a time.
- `False`: cache all list data.

Default value

```
True
```

useDBSortForTaskList

Description

This parameter is used to configure the Task List Handler.

Valid values

- `True`: get one page of list data from the database at a time.
- `False`: cache all list data.

Default value

```
True
```

useDBSortForProgramList

Description

This parameter is used to configure the Program List Handler.

Valid values

- `True`: get one page of list data from the database at a time.
- `False`: cache all list data.

Default value

```
True
```

useDBSortForApprovalList

Description

This parameter is used to configure the Approval List Handler.

Valid values

- `True`: get one page of list data from the database at a time.
- `False`: cache all list data.

Default value

```
True
```

useDBSortForInvoiceList

Description

This parameter is used to configure the Invoice List Handler.

Valid values

- `True`: get one page of list data from the database at a time.
- `False`: cache all list data.

Default value

> `True`

useDBSortForAlerts

Description

> This parameter is used to configure the Alerts List Handler.

Valid values

- `True`: get one page of list data from the database at a time.
- `False`: cache all list data.

Default value

> `True`

Marketing Operations | umoConfiguration | listingPages

listItemsPerPage

Description

> Specifies how many items (rows) are displayed in one list page. This value should be greater than 0.

Default value

> `10`

listPageGroupSize

Description

> Specifies the size of visible page numbers in the list navigator in the list page. For example, pages 1-5 is a page group. This value should be greater than 0.

Default value

> `5`

maximumItemsToBeDisplayedInCalendar

Description

> The maximum number of objects (plans, programs, projects, or tasks) the system displays on calendars. Use this parameter to limit the number of objects that display when users select the calendar view. The number 0 indicates that there is no restriction.

Default value

> `0`

listDisplayShowAll

Description

> Display "Show All" link on listing pages.

Default value

```
False
```

Valid Values

```
True | False
```

Marketing Operations | umoConfiguration | objectCodeLocking

enablePersistentObjectLock

Description

This parameter must be set to `True` if IBM Marketing Operations is deployed in a clustered environment. The object lock information is persistent in the database.

Valid values

```
True | False
```

Default value

```
False
```

lockProjectCode

Description

Determines whether users can edit the Project Code or PID on the Summary tab of a project.

Valid values

- `True`: enables locking.
- `False`: disables locking.

Default value

```
True
```

lockProgramCode

Description

Determines whether users can edit the Program Code or PID on the Summary tab of a program.

Valid values

- `True`: enables locking.
- `False`: disables locking.

Default value

```
True
```

lockPlanCode

Description

Determines whether users can edit the Plan Code or PID on the Plan Summary tab for a plan.

Valid values

- `True`: enables locking.
- `False`: disables locking.

Default value

> True

lockMarketingObjectCode

Description

> Determines whether users can edit the Marketing Object Code or PID on the Summary tab of a marketing object.

Valid values

- True: enables locking.
- False: disables locking.

Default value

> True

lockAssetCode

Description

> Determines whether users can edit the Asset Code or PID on the Summary tab of an asset.

Valid values

- True: enables locking.
- False: disables locking.

Default value

> True

Marketing Operations | umoConfiguration | thumbnailGeneration

trueTypeFontDir

Description

> Specifies the directory where the True Type fonts are located. This parameter is required for thumbnail generation on non-Windows platforms that use Aspose. For Windows installations, this parameter is optional.

Default value

> blank

coreThreadPoolSize

Description

> Specifies the number of persistent threads kept in the thread pool for thumbnail generator threads.

Default value

> 5

maxThreadPoolSize

Description

> Specifies the maximum number of threads allowed in the thread pool for thumbnail generator threads.

Default value

> 10

threadKeepAliveTime

Description

> Parameter to configure the keep-alive time for thumbnail generator threads.

Default value

> 60

threadQueueSize

Description

> Parameter to configure the thread queue size for thumbnail generator threads.

Default value

> 20

disableThumbnailGeneration

Description

> Determines whether thumbnail images are generated for uploaded documents. A value of True enables thumbnail generation.

Default value

> False

Valid values

> True | False

markupImgQuality

Description

> Magnification or zoom factor to apply to the rendered page.

Default value

> 1

Marketing Operations | umoConfiguration | Scheduler | intraDay

schedulerPollPeriod

Description

> Defines how frequently, in seconds, a batch job to calculate project health status runs each day.
>
> **Note:** Only the daily batch job updates the project health status history, which is used by reports.

Default value

> 60 (seconds)

Marketing Operations | umoConfiguration | Scheduler | daily

schedulerStartTime

Description

Defines the start time for a batch job that calculates project health status. This job also:

- Updates the project health status history that is used by reports.
- Initiates distribution of email notifications to users who subscribe to them.

Note: The system initiates this batch job only if the calculation is not already running. Define this parameter so that the job starts at a different time than the `intraDay` parameter, and at a time when users are not likely to request this calculation manually.

Default value

11:00 pm

Marketing Operations | umoConfiguration | Notifications

notifyPlanBaseURL

Description

The URL for your IBM Marketing Operations deployment, including the host name and port number. Marketing Operations includes this URL in notifications that contain links to other information in Marketing Operations.

Note: Do not use "localhost" as a server name unless your mail client and IBM Marketing Operations server are running on same machine.

Default value

http://*<server>*:*<port>*/plan/affiniumplan.jsp

notifyDelegateClassName

Description

The fully qualified Java class name of the delegate implementation to be instantiated by the service. This class must implement the `com.unicacorp.afc.service.IServiceImpl` interface. Defaults to a local implementation if not specified.

Default value

blank

notifyIsDelegateComplete

Description

Optional boolean string that indicates whether the delegate implementation is complete. Defaults to `True` if not specified.

Default value

True

Valid Values

```
True | False
```

notifyEventMonitorStartTime

Description

Specifies when the event notification monitor process begins for the first time after IBM Marketing Operations starts. Format the value according to the short version of the `java.text.DateFormat` class for the current locale. For example, in US English locale, a valid string might be 11:45 pm.

Default value

blank (Immediately after Marketing Operations is started.)

notifyEventMonitorPollPeriod

Description

Defines the approximate time, in seconds, for the event monitor to sleep between polls. Events accumulate in the event queue between polling periods; shorter polling periods process notifications sooner, but impose more system overhead. If you erase the default and leave the value blank, the poll period defaults to a short period, usually under a minute.

Default value

5 (seconds)

notifyEventMonitorRemoveSize

Description

Specifies the number of events to remove from the queue in one shot. The event monitor removes events from the event queue in the increments specified by this value until none are left.

Note: You can set this value to a number other than 1 to increase event processing performance. However, if the service host goes down before removed events are processed, there is a risk of event loss.

Default value

10

alertCountRefreshPeriodInSeconds

Description

Specifies, in seconds, the system-wide alert count refresh period for the alerts count. This count displays near the top of the navigation bar after a user logs in.

Note: Changing the refresh period to poll faster can have performance implications in a multi-user environment.

Default value

180 (3 minutes)

Marketing Operations | umoConfiguration | Notifications | Email

notifyEMailMonitorStartTime

Description

Specifies when the email monitor process runs for the first time after IBM Marketing Operations starts. Format the value according to the short version of the `java.text.DateFormat` class for the current locale. For example, in US English locale, a valid string might be `11:59 pm`.

Default value

blank (Immediately after IBM Marketing Operations starts.)

notifyEMailMonitorPollPeriod

Description

Defines the approximate time, in seconds, for the email monitor to sleep between polls.

Note: As with events, email messages accumulate in the queue between polling periods; shorter polling times send email messages sooner, but can increase system overhead.

Default value

`60` (seconds)

notifyEMailMonitorJavaMailSession

Description

JNDI name of an existing, initialized JavaMail Session to use for email notifications. If not specified and the delegate is marked `Complete`, then the JavaMail host parameter must be supplied so IBM Marketing Operations can create a session.

Default value

blank

notifyEMailMonitorJavaMailProtocol

Description

Specifies the mail server transport protocol to use for email notifications.

Default value

`smtp`

notifyEMailMonitorRemoveSize

Description

Specifies the number of email messages to remove from queue at one time. The email monitor continues to remove messages from the email queue incrementally until none remain.

Note: You can set this value to a number other than 1 to increase email processing performance. However, if the service host goes down before removed email messages are processed, there is a risk of message loss.

Default value

> 10 (messages)

notifyEMailMonitorMaximumResends

Description

> Specifies the maximum number of times the system attempts to send an email message that failed in the first attempt to send it. When a send fails, the email is put back into the queue until it reaches the maximum number of attempts allowed by this parameter.

> For example, `notifyEMailMonitorPollPeriod` is set to poll every 60 seconds. Setting this `notifyEMailMonitorMaximumResends` property to 60 attempts causes the email monitor to try to resend a failed message once in each poll (that is, every minute), for up to one hour. A value of 1440 (24x60) causes the email monitor to try every minute for up to 24 hours.

Default value

> 1 (attempt)

showUserNameInEmailNotificationTitle

Description

> Specifies whether the IBM Marketing Operations notification and alert systems includes the user name in the **From** field of email notifications.

> **Note:** This setting is applicable only to email messages sent by the notification and alert systems in IBM Marketing Operations.

Valid values

> - `True`: Marketing Operations appends the user name to the title of the message and displays both in the **From** field of the email
> - `False`: Marketing Operations displays only the message title in the **From** field

Default value

> `False`

notifyEMailMonitorJavaMailDebug

Description

> Specifies whether JavaMail debug mode is set.

Valid values

> - `True`: enables JavaMail debug.
> - `False`: disables debug tracing.

Default value

> `False`

Marketing Operations | umoConfiguration | Notifications | project

notifyProjectAlarmMonitorStartTime

Description

Specifies when the project alarm monitors run for the first time after IBM Marketing Operations starts. Format the value according to the short version of the `java.text.DateFormat` class for the current locale. For example, in US English locale, a valid string might be 11:59 pm. If you erase the default and leave the value blank, this monitor starts immediately after you create it.

Default value

> 10:00 pm

notifyProjectAlarmMonitorPollPeriod

Description

> Defines the approximate time, in seconds, for the project and program alarm monitors to sleep between polls.

Default value

> blank (60 seconds)

notifyProjectAlarmMonitorScheduledStartCondition

Description

> Defines the number of days before the start date of a project for IBM Marketing Operations to send notifications to users.
>
> **Note:** If this value is -1, then Marketing Operations does not send these notifications.

Default value

> 1 (day)

notifyProjectAlarmMonitorScheduledEndCondition

Description

> Defines the number of days before the end date of a project for IBM Marketing Operations to send end notifications to users.
>
> **Note:** If this value is -1, then Marketing Operations does not send these notifications.

Default value

> 3 (days)

notifyProjectAlarmMonitorTaskScheduledStartCondition

Description

> Defines the number of days before the start date of a task for IBM Marketing Operations to send start notifications to users.
>
> **Note:** If this value is -1, then Marketing Operations does not send these notifications.

Default value

> 1 (day)

notifyProjectAlarmMonitorTaskScheduledEndCondition

Description

> Defines the number of days before the end date of a task for IBM
> Marketing Operations to send end notifications to users.

> **Note:** If this value is -1, then Marketing Operations does not send these
> notifications.

Default value

> 3 (days)

notifyProjectAlarmMonitorTaskLateCondition

Description

> Defines the number of days after the start date of a task for IBM Marketing
> Operations to send users notification that a task did not start.

> **Note:** If this value is -1, then Marketing Operations does not send these
> notifications.

Default value

> 3 (days)

notifyProjectAlarmMonitorTaskOverdueCondition

Description

> Defines the number of days after the end date of a task for IBM Marketing
> Operations to send users notification that a task did not finish.

> **Note:** If this value is -1, then Marketing Operations does not send these
> notifications.

Default value

> 3 (days)

notifyProjectAlarmMonitorTaskScheduledMilestoneCondition

Description

> Defines the number of days before the start date of a milestone task for
> IBM Marketing Operations to send notifications.

> **Note:** If this value is -1, then Marketing Operations does not send these
> notifications.

Default value

> 1 (day)

Marketing Operations | umoConfiguration | Notifications | projectRequest

notifyRequestAlarmMonitorLateCondition

Description

Defines the number of days for IBM Marketing Operations to send a
notification that the request is late.

Note: If this value is **-1**, then Marketing Operations does not send these
notifications.

Default value

3 (days)

notifyRequestAlarmMonitorScheduledEndCondition

Description

Defines the number of days before the end date of a request for IBM
Marketing Operations to send end notifications to users.

Note: If this value is **-1**, then Marketing Operations does not send these
notifications.

Default value

1 (day)

Marketing Operations | umoConfiguration | Notifications | program

notifyProgramAlarmMonitorScheduledStartCondition

Description

Defines the number of days before the start date of a program that IBM
Marketing Operations sends start notifications to users.

Note: If this value is **-1**, then Marketing Operations does not send these
notifications.

Default value

1 (day)

notifyProgramAlarmMonitorScheduledEndCondition

Description

Defines the number of days before the end date of a program thatIBM
Marketing Operations sends end notifications to users.

Note: If this value is **-1**, then Marketing Operations does not send these
notifications.

Default value

3 (days)

Marketing Operations | umoConfiguration | Notifications | marketingObject

notifyComponentAlarmMonitorScheduledStartCondition

Description

Specifies the number of days before the start date of a marketing object for
IBM Marketing Operations to send start notifications to users.

Note: If this value is -1, then Marketing Operations does not send these notifications.

Default value

1 (day)

notifyComponentAlarmMonitorScheduledEndCondition

Description

Specifies the number of days before the end date of a marketing object for IBM Marketing Operations to send end notifications to users.

Note: If this value is -1, then Marketing Operations does not send these notifications.

Default value

3 (days)

Marketing Operations | umoConfiguration | Notifications | approval

notifyApprovalAlarmMonitorStartTime

Description

Specifies when the approval alarm monitor begins processing for the first time after IBM Marketing Operations starts. Format the value according to the short version of the `java.text.DateFormat` class for the current locale. For example, in US English locale, a valid string might be 11:59 pm. If you delete the default and leave this value blank, the monitor starts immediately after it is created.

Note: For best results, configure the alarm monitors to start during off-peak hours and stagger their start times to spread out the data processing load.

Default value

`9:00 pm`

notifyApprovalAlarmMonitorPollPeriod

Description

Specifies the approximate time, in seconds, for the approval alarm monitor to sleep between polls.

Default value

blank (60 seconds)

notifyApprovalAlarmMonitorLateCondition

Description

Specifies the number of days after the start date of an approval for the system to begin notifying users that the approval is late.

Note: If this value is -1, then Marketing Operations does not send these notifications.

Default value

3 (days)

notifyApprovalAlarmMonitorScheduledEndCondition

Description

Specifies the number of days before the end date of an approval for the system to begin sending end notifications to users.

Note: If this value is **-1**, then Marketing Operations does not send these notifications.

Default value

1 (day)

Marketing Operations | umoConfiguration | Notifications | asset

notifyAssetAlarmMonitorStartTime

Description

Specifies when the asset alarm monitor process runs for the first time after IBM Marketing Operations starts. Format the value according to the short version of the `java.text.DateFormat` class for the current locale. For example, in US English locale, a valid string might be `11:59 pm`. If you delete the default and leave this value blank, the monitor starts immediately after it is created.

Note: For best results, configure the alarm monitors to start during off-peak hours and stagger their start times to spread out the data processing load.

Default value

`11:00 pm`

notifyAssetAlarmMonitorPollPeriod

Description

Specifies the time, in seconds, for the asset alarm monitor to sleep between polls.

Default value

blank (60 seconds)

notifyAssetAlarmMonitorExpirationCondition

Description

Specifies the number of days before an asset is going to expire for IBM Marketing Operations to notify users that the asset is about to expire.

Note: If this value is **-1**, Marketing Operations does not check for expiration.

Default value

5 (days)

Marketing Operations | umoConfiguration | Notifications | invoice

notifyInvoiceAlarmMonitorStartTime

Description

> Specifies when the invoice alarm monitor process runs for the first time after IBM Marketing Operations starts. Format the value according to the short version of the `java.text.DateFormat` class for the current locale. For example, in US English locale, a valid string might be 11:59 pm. If you delete the default and leave the value blank, the monitor starts immediately after you create it.

> **Note:** For best results, configure the alarm monitors to start during off-peak hours and to stagger their start times to spread out the data processing load.

Default value

> `9:00 pm`

notifyInvoiceAlarmMonitorDueCondition

Description

> Specifies the number of days before the due date for IBM Marketing Operations to notify users that an invoice is due.

> **Note:** If this value is **-1**, then Marketing Operations does not send these notifications.

Default value

> 5 (days)

Contacting IBM technical support

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

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

Information to gather

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

System information

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

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

You can access the About page by selecting **Help > About**. If the About page is not accessible, you can obtain the version number of any IBM application by viewing the `version.txt` file that is located under the installation directory for each application.

Contact information for IBM technical support

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

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

Notices

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

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

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

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

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

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

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

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

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

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

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

IBM Corporation
170 Tracer Lane
Waltham, MA 02451
U.S.A.

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

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

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

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

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

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

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

COPYRIGHT LICENSE:

This information contains sample application programs in source language, which illustrate programming techniques on various operating platforms. You may copy, modify, and distribute these sample programs in any form without payment to IBM, for the purposes of developing, using, marketing or distributing application programs conforming to the application programming interface for the operating platform for which the sample programs are written. These examples have not

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

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

Trademarks

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

Privacy Policy and Terms of Use Considerations

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

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

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

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

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

IBM ®

Printed in USA