SAS® Intelligent Clustering for Retail 4.2

Installation Guide for Hot Fix 1

The Power to Know.

The correct bibliographic citation for this manual is as follows: SAS Institute Inc. 2009. *SAS® Intelligent Clustering for Retail 4.2: Installation Guide for Hot Fix 1***.** Cary, NC: SAS Institute Inc.

SAS® Intelligent Clustering for Retail 4.2: Installation Guide for Hot Fix 1

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

July 2009

Contents

1 Introduction *1*
2 Installation of Hot Fix 1 for Intelligent Clustering for Retail 4.2 ..... *3*

Figures

Figure 1. *Example of a jobparam Data Set* *9*

Tables

Table 1. *New Folders Added* *4*
Table 2. *New Files to be Added* *5*
Table 3. *Files to be Replaced* *5*
Table 4. *Files and Folders to be Deleted* *6*
Table 5. *Parameters Table* *6*
Table 6. *New Job Parameters Added in jobparam Data Set* *10*
Table 7. *Job Parameters Removed from jobparam Data Set* *10*

CHAPTER

1 Introduction

1.1 Overview *1*
1.1.1 Purpose of This Document *1*
1.1.2 Audience *1*
1.2 Package Contents *1*

1.1 Overview

SAS Intelligent Clustering for Retail addresses business areas in retail. It satisfies the needs of merchandise planners in terms of generating and maintaining store clusters.

The solution provides analytical intelligence to the statistically segmented stores based on similar selling patterns of merchandise as well as demographic and product attributes. The solution also generates cluster profiles to analyze and correlate selling market with each cluster. This helps in maintaining appropriate product assortment with regard to each market cluster.

1.1.1 Purpose of This Document

This document provides the installation instructions for Hot Fix 1 of SAS Intelligent Clustering for Retail 4.2. It provides the required information to install and configure the Hot Fix 1 of the solution.

1.1.2 Audience

This document is intended for business domain experts, business consultants, data architects, analysts, instructors, testers, and subject matter experts in the service provider's project team.

It is recommended that business analysts, analysts, and project managers in the customer's project team also read this document.

1.2 Package Contents

The installable files for Hot Fix 1 for SAS Intelligent Clustering for Retail 4.2 that are included in this package are listed here.

Filename	Description
ic_4.2_hf1.zip	This file contains the code files for Hot Fix1 of SAS Intelligent Clustering for Retail 4.2.

CHAPTER 2

Installation of Hot Fix 1 for Intelligent Clustering for Retail 4.2

2.1 Overview of Installation *3*
2.1.1 Back-up of the Existing Setup *3*
2.2 Prerequisites *3*
2.3 Installing Hot Fix 1 for SAS Intelligent Clustering for Retail *4*
2.4 Configuring the Solution *6*
2.5 Creating Macro Catalog *6*
2.6 Modifying and Configuring the SMD File *7*
2.7 Creating Purge Cluster Function *8*
2.8 Configuring the Initial Parameters *8*
2.8.1 Using Worksheet-Specific jobparams from the Base Pack *9*
2.8.2 Setting the Store Status Method Parameter *10*
2.9 Troubleshooting *11*

2.1 Overview of Installation

This chapter details the procedure for installing and configuring Hot Fix 1 for SAS Intelligent Clustering for Retail. This chapter does not describe the installation procedure for software components that are a prerequisite for this installation.

2.1.1 Back-up of the Existing Setup

Before starting the installation of this hot fix, it is recommended that the back-up of the `mx_analytics` and `Data` folder of SAS Intelligent Clustering for Retail is taken. This helps the user to rollback in case there are any problems during the installation.

2.2 Prerequisites

Software components that should be installed before installing Hot Fix1 for SAS Intelligent Clustering for Retail are listed.

Software	Version/Components
SAS Intelligent Clustering for Retail	4.2
E9BB61 SAS MSG Hotfix (Windows and/or UNIX)	-

Note: It is assumed that historical data is loaded and available in SAS Merchandise Planning.

2.3 Installing Hot Fix 1 for SAS Intelligent Clustering for Retail

Copy and unzip SAS Intelligent Clustering Hot Fix 1 package (`ic_4.2_hf1.zip`) to a location other than the base pack solution installation location. The hot fix package contains the modified code files and new code files.

Note: For the installation on a platform other than Windows, transfer all of the source code files to the destination platform using the FTP command-line utility with ASCII upload.

Perform the following steps to apply the Hot Fix 1 of SAS Intelligent Clustering for Retail:

1. Create new folders at the specified location (*see Table 1: New Folders Added*). These folders must be created manually at the location specified.
2. Add new code files to the base pack files (*see Table 2: New Files to be Added*).
3. Replace the specified code files in the base pack with the modified files provided in the hot fix pack (*see Table 3: Files to be Replaced*).
4. Delete the files and the folders that are no longer valid for the hot fix (*see Table 4: Files and Folders to be Deleted*).

Note: In this document,

`<Hotfix root>` refers to the location where the hot fix package is unzipped (for example, `…/temp/hotfix1`).

`<Code root>` refers to the location at which mx_analytics folder was located in the previous installation of the base pack (for example, `…/sas/retail/mx_analytics`).

`<Data root>` refers to the location at which the Data folder was located in the previous installation of the base pack (for example, `…/sas/retail/mx_analytics/Data`).

The following table lists the name and location of the folders that are required to be created manually by the user. However, the user need not create these folders if they are already present at the specified location.

Table 1. New Folders Added

Folder Path	Folder Name
<Data root>	macro_catalog
<Data root>/macro_catalog/	ic
<Data root>/staged/	work
<Code root>/Reports/	plots
<Code root>	macode_ic

Note: These folder names are case sensitive and must be created as specified.

The following table lists the new code files and the location at which these files must be added in the base pack.

Table 2. New Files to be Added

Path	Files Added	To be Copied at Location
<hotfix root>/mx_analytics/Data/staged	TestDataDictionary.txt	**<Data root>**/staged
<hotfix root>/mx_analytics/Data/staged	Worksheet_Naming_Def.csv	**<Data root>**/staged
<hotfix root>/mx_analytics/doc	CreateCatalog_IC.sas	**<Code root>**/doc
<hotfix root>/mx_analytics/doc	I18N_IC.sas	**<Code root>**/ doc
<hotfix root>/mx_analytics/doc	p_purge_cluster_v1.sql	**<Code root>**/doc
<hotfix root>/mx_analytics/doc	smd2ds.sas	**<Code root>**/doc
<hotfix root>/mx_analytics/nls	icmsg_en.smd	**<Code root>**/ nls
<Hotfix root>/mx_analytics/macode_ic	data_utils.sas	**<Code root>**/macode_ic
<Hotfix root>/mx_analytics/macode_ic	mm_extract12.sas	**<Code root>**/macode_ic
<Hotfix root>/mx_analytics/macode_ic	utils2.sas	**<Code root>**/macode_ic

The following table lists the code files that are required to be replaced as a result of installation of Hot Fix 1 for SAS Intelligent Clustering for Retail. It also gives the location at which these files must be replaced in the base pack.

Table 3. Files to be Replaced

Hotfix Root Path	Files to be Replaced	To be Replaced at Base Location
<**Hotfix root**>/mx_analytics/	params.sas	**<Code root>**
<**Hotfix root**>/mx_analytics/	process_server.sh	**<Code root>**
<Hotfix root>/mx_analytics/Data	jobparam.xpt	**<Data root>**
<Hotfix root>/mx_analytics/iccode	ic_auto_seg.sas	**<Code root>**/iccode
<Hotfix root>/mx_analytics/iccode	ic_cluster.sas	**<Code root>**/iccode
<Hotfix root>/mx_analytics/iccode	ic_dataprep.sas	**<Code root>**/iccode
<Hotfix root>/mx_analytics/iccode	ic_export.sas	**<Code root>**/iccode
<Hotfix root>/mx_analytics/iccode	ic_extract.sas	**<Code root>**/iccode
<Hotfix root>/mx_analytics/iccode	ic_get_attribs.sas	**<Code root>**/iccode
<Hotfix root>/mx_analytics/iccode	ic_get_crit.sas	**<Code root>**/iccode
<Hotfix root>/mx_analytics/iccode	ic_import_utils.sas	**<Code root>**/iccode
<Hotfix root>/mx_analytics/iccode	ic_ini.sas	**<Code root>**/iccode
<Hotfix root>/mx_analytics/iccode	ic_integrate.sas	**<Code root>**/iccode
<Hotfix root>/mx_analytics/iccode	ic_new_store.sas	**<Code root>**/iccode
<Hotfix root>/mx_analytics/iccode	ic_profile_analysis.sas	**<Code root>**/iccode
<Hotfix root>/mx_analytics/iccode	ic_report.sas	**<Code root>**/iccode
<Hotfix root>/mx_analytics/iccode	ic_report_utils.sas	**<Code root>**/iccode
<Hotfix root>/mx_analytics/iccode	ic_utils.sas	**<Code root>**/iccode
<Hotfix root>/mx_analytics/iccode	ic_validation.sas	**<Code root>**/iccode
<Hotfix root>/mx_analytics/iccode	mm_cluster.sas	**<Code root>**/iccode

Hotfix Root Path	Files to be Replaced	To be Replaced at Base Location
<**Hotfix root**>/mx_analytics/iccode	mm_cluster_assign.sas	<**Code root**>/iccode

The following table lists the files and folders that are not required after the Hot Fix 1 is installed. The user must delete these files and folders from the **`<Code root>`**.

Table 4. Files and Folders to be Deleted

Folder Path	File/Folder Name
<**Code root**>/nls/en	en_us.smd
<**Code root**>/nls	en

2.4 Configuring the Solution

The **`params.sas`** file contains the configurable parameters. This file is located in the **`<Code root>`**. Perform the following steps to configure the analytic components.

1. Change **`PATH_PGM`** (in the `params.sas` file) so that it points to the **`<Code root>`** folder for the current installation. If required, other data paths in `params.sas` can be changed.

Note: The paths and field names should be validated and modified, if required.

Table 5. Parameters Table

Parameter	Sample Value	Description
PATH_PGM	C:/SAS/Retail/mx_analytics	Path to the root directory.
PATH_DATA	<Data root>	Path to the Data directory. Use the network pathname to the server and shared folder.
PATH_REPORT	C:/SAS/Retail/mx_analytics/Reports	Path to the Report directory.
IC_EM_DATA	C:/EM_Projects/EM_Data	Path to the SAS Enterprise Miner data directory. This is an optional parameter. It is used if SAS Enterprise Miner is used

2. Modify the following variables in `params.sas` so that `MAXDATA` and `MAXAPP` libraries are assigned appropriately.
   - **`%let dbtype=oracle;`**
   - **`%let dbpassword=<enter the password>;`**
   - **`%let dsn=MX6;`**

Note: Do not change the default library names `MAXDATA` and `MAXAPP`.

2.5 Creating Macro Catalog

A SAS catalog file is created after compilation of SAS macros. This catalog file is specific to the operating system. Therefore, before executing the first clustering request from SAS Intelligent Clustering for Retail Hot Fix 1 on Windows or UNIX, or any other operating system, SAS catalog file must be created on the operating system that is being used.

The compilation of this file is required to be done once, after installation and then after each modification in the source code.

To create the SAS catalog file:

1. Close all SAS sessions. Open `CreateCatalog_IC.sas` code file in a new SAS session (location: **`<Code root>/doc`**).
2. Edit the path of variable `path_data` and `path_pgm` that points to the **`<Data root>`** folder and **`<Code root>`** folder respectively.
3. Execute the code.
4. Ensure that there are no errors in the log. Catalog file is created in the `cat_ic` library.

2.6 Modifying and Configuring the SMD File

The file, `icmsg_en.smd` contains messages for the Hot Fix 1 of SAS Intelligent Clustering for Retail. Modification to these messages is done in this file. The default setting of messages in this file is in English language.

For the solution to display messages in a location-specific language, `icmsg_xx.smd` file is created with messages in the local language, where `xx` is the code for that language.

The two SAS files that enable all messages for the solution are:

- **I18N_IC.sas:** This file is used to create `icmsg` (solution messages) data set. This data set is used to display all messages in the solution. The file, `I18N_IC.sas` requires an input message file called `icmsg_en.smd`, which is the default message file provided by the solution.
- **smd2ds.sas:** This file contains the routine `smd2ds` that converts `.smd` file to SAS data set.

These files are available in **`<Code root>/doc`** folder.

Note: If there are any modifications done in the `icmsg_xx.smd` file, then this file must be executed for the changes to become applicable.

Execute the following steps to enable messages in the solution:

1. Open `I18N_IC.sas` file in the SAS session.
2. Specify appropriate path for `path_data` and `path_pgm` to the **`<Data root>`** and **`<Code root>`** folders respectively.
3. Execute `I18N_IC.sas` file that creates `icmsg` data set in the `Catalog` library.

Note: If there is a change in the default language then before executing `I18N_IC.sas` user must provide the language specific `.smd` file (`icmsg_xx.smd`) at the location **`<Code root>/nls`**. The file, `icmsg_en.smd` is present at this location by default.

Execute the following steps to create language-specific `.smd` file:

1. Create a copy of `icmsg_en.smd` file at the location **`<Code root>/nls`** and rename this file with appropriate language code. For example, for French language, name the file as `icmsg_fr.smd`. Do not remove `icmsg_en.smd` file from this location.
2. Replace the messages in the new file with appropriate language-specific messages. Do not modify the variable names in the locale specific `.smd` file. For example, for MA_CHECK_LOG_ERR = “Error: Check log. No import was done." change the message in the locale-specific language. The variable name MA_CHECK_LOG_ERR must remain same.

Note: SAS software must be configured to the specific local language to display the messages in that local language.

3. Open `I18N_IC.sas` file in SAS Session. Modify the value of variable LOCAL_LANG for the specific language used. For example, set LOCAL_LANG= fr for French language (default value is LOCAL_LANG=en for English language).
4. Execute `I18N_IC.sas` file to apply the changes. It creates the language-specific `icmsg` data set in `catalog` library.
5. Verify changes in `icmsg` data set that is present in the `Catalog` library. The data set `icmsg` contains the default messages in English as well as in the locale-specific language set by the user. Messages are displayed based on the local language that is set for the SAS software.

2.7 Creating Purge Cluster Function

Creating the purge cluster function is a one-time activity. The purge procedure can be called as and when required.

Execute the following steps to create the purge cluster function:

1. Connect to Oracle by providing the appropriate credentials.
2. Execute `p_purge_cluster_v1.sql` (location: **`<Code root>/doc`**)

   For example, `SQL> @C:\mx_analytics\doc\p_purge_cluster_v1.sql`
3. Confirm that procedure (`p_purge_ic_cluster`) is created.

2.8 Configuring the Initial Parameters

The solution provides the SAS data set `jobparam`. This data set is in SAS Xport Transport File (XPT) format and must be imported in the respective operating system (OS).

The data set `jobparam` contains all the required parameters for a job. These parameters control the clustering workflow and other clustering features.

To import SAS data sets in the respective OS:

1. Copy and paste the following code in SAS session:

```
%let sysparm=mx6;

%let paramfilepath=<Path of Params.sas file>;

%let path_data=<Data root>;

%include "&paramfilepath/params.sas";

Filename jp "&path_data/jobparam.xpt";

PROC CIMPORT data=mmdata.jobparam file=jp;

RUN;
```

2. Change the path of variable `paramfilepath` so that it points to `params.sas` file (for example, `<Path of Params.sas file>=c:/sas/retail/mx_analytics/`). Change the path of `path_data` as per the **`<Data root>`**.
3. Execute the code to import `jobparam` data set.

Note: The `jobparam` data set is modified in the Hot Fix 1 of SAS Intelligent Clustering for Retail. Therefore, user must delete all the worksheet-specific `jobparams`. To use worksheet-specific `jobparam` from the base pack, execute the steps mentioned in *2.8.1 Using Worksheet-Specific jobparams from the Base Pack*.

The following figure illustrates an example of a `jobparam` data set.

VIEWTABLE: Mmdata.Jobparam

	Group Key	FIELDKEY	TYPE	NAME	SRCFIELD	DESCRIPTION	VALUE	PARAM_TYPE
152	0	ALL	ic	ic_default_cluster_template		For cluster assignment needs id of cluster process template	12074	0
153	0	ALL	ic	ic_filter_prior_hist		# of periods that must have history of total period in prior_periods parameter	10	0
154	0	ALL	ic	ic_filter_prior_periods		# of total periods for filter	52	0
155	0	ALL	ic	ic_hist_num_periods		num of periods to extract (override)		1
156	0	ALL	ic	ic_hist_per_graph		number of histogram per graph	20	0
157	0	ALL	ic	ic_hist_start_date		history start date override (LY used by default)		0
158	0	ALL	ic	ic_icfield_name		ic fieldname	cluster_attr1	0
159	0	ALL	ic	ic_ictable_name		ic table name	maxdata.mlt_attr	0
160	0	ALL	ic	ic_kpi_calc_1		Calculates the demand value. Only field name must be used in the calculation. For example, posit_mvmt-posit_mvmt_clrnc. If there is no calculation, field ic_kpi_calc_n must contain at least one field.	net_sales_items-SALES_ITEMS_3	0
161	0	ALL	ic	ic_kpi_calc_2		Calculates the demand value. Only field name must be used in the calculation. For example, posit_mvmt-posit_mvmt_clrnc. If there is no calculation, field ic_kpi_calc_n must contain at least one field.	net_sales_items	0
162	0	ALL	ic	ic_kpi_calc_3		Calculates the demand value. Only field name must be used in the calculation. For example, posit_mvmt-posit_mvmt_clrnc. If there is no calculation, field ic_kpi_calc_n must contain at least one field.	net_sales_items-SALES_ITEMS_3	0
163	0	ALL	ic	ic_kpi_calc_4		Calculates the demand value. Only field name must be used in the calculation. For example, posit_mvmt-posit_mvmt_clrnc. If there is no calculation, field ic_kpi_calc_n must contain at least one field.	net_sales_items	0
164	0	ALL	ic	ic_kpiset_1		Can be plan, history, or forecast DB table.field	mfinc.net_sales_items,mfinc.SALES_ITE	0
165	0	ALL	ic	ic_kpiset_2		Can be plan, history, or forecast DB table.field	mfinc.net_sales_items	0

Figure 1. Example of a jobparam Data Set

To set a parameter in the `jobparam` data set:

1. Identify the parameter to be modified in the NAME column and select its value.
2. Enable the edit mode in the SAS console and modify the value of selected parameter.
3. Save the data set.

Note: For `ic_jobparam_validation`, `criteria`, and `ic_group` the same data set from the base pack must be used. However, in `Criteria` table user can also give CumPct. CumPct method has been added as the new Auto-Segmentation method in the Hot Fix 1 of SAS Intelligent Clustering for Retail. This method is in addition to the existing methods namely, Even, User-defined, PCTAVG, and CAT. For details on CumPct method see *section 3.1.1.1 New Auto-segmentation Method: CumPct* in *SAS Intelligent Clustering for Retail Hot Fix 1: Release Notes*.

2.8.1 Using Worksheet-Specific jobparams from the Base Pack

To use worksheet-specific jobparams from the base pack:

1. Add the column `group_key` to the `jobparam_xxxx` data set (if required).
2. Add an observation for each new job parameter in the `jobparam_xxxx` data set. Provide appropriate value for each new job parameter added. The following table lists the new job parameters that are required to be added in the `jobparam` data set.

Table 6. New Job Parameters Added in jobparam Data Set

Type	Name	Description	Default Value
IC	`ic_time_version`	Sets the extract data option. Possible values are: TY, LY, LLY, TY_LY, and LY_LLY.	LY_LLY
IC	`ic_kpi_calc_n`	Calculates the demand value. Only field name must be used in the calculation. For example, `posit_mvmt - posit_mvmt_clrnc`. If there is no calculation, field `ic_kpi_calc_n` must contain at least one field. **Note:** Calculation can contain only those fields that are specified in corresponding field, `ic_kpiset_n`.	net_sales_items
IC	`ic_optimize`	Optimize the data extraction.	1
IC	`ic_autoseg_tree`	0=Hierarchical Auto-Segmentation is Off. 1=Hierarchical Auto-Segmentation is 'On'.	0
MA	`ma_max_rsubmit`	Maximum submit sessions.	6

3. Remove the observations pertaining to the job parameters that are not required for Hot Fix 1 from `jobparam_xxxx` data set. The following table lists the job parameters that must be removed from the `jobparam` data set.

Table 7. Job Parameters Removed from jobparam Data Set

Type	Name
IC	`ic_locale`
MA	`output_format_type`

2.8.2 Setting the Store Status Method Parameter

The parameter `IC_STORE_STAT_METHOD` provides access to the appropriate SAS Merchandise Planning tables. This parameter is in the `jobparam` data set. A user can set this parameter to determine the store status.

Parameter	Description	Sample Value
`IC_STORE_STAT_METHOD`	To derive comp, non-comp, and new stores: • If `IC_STORE_STAT_METHOD` = 1 then Method 1 is used. Method 1 = loc_attr_flag from maxdata.loc_attr • If `IC_STORE_STAT_METHOD` = 2 then Method 2 is used Method 2 = lt_comp_store_count from maxdata.loc_time_2d • If `IC_STORE_STAT_METHOD` = 3 then Method 3 is used Method 3 = all stores are comp	1

2.9 Troubleshooting

To display intelligent clustering reports on a machine on which SAS is not installed, follow the instructions given on the support site (http://support.sas.com/kb/10/102.html: Usage Note 10102: Requirements for displaying graphs produced by the SAS/GRAPH ACTIVEX device driver).