SAS® IT Resource Management

z/OS Installation Instructions for Hot Fix 311is04

Introduction

This document describes the steps necessary to install and deploy the SAS IT Resource Management 3.1.1 hot Fix Release 311is04 for the z/OS environment. Prior to installing hot fix 311is04, SAS IT Resource Management 3.1.1 sites must follow the steps listed in SAS Note 30753.

Please take a moment to read through this entire document before beginning the install for this hot fix. There are six installation steps to this hot fix that must be completed:

1. **Extract the updates from the hot fix package**
2. **Copy the updated content to the appropriate target locations**
3. **Deploy (new installations) or Migrate (existing installations) SAS IT Resource Management Metadata**
4. **Check for possible errors that could appear during the execution of the deployITRM_zos.sh script.**
5. **Install the client portion of the Windows hot fix**
6. **Existing SAS IT Resource Management sites must redeploy (a.k.a schedule) all SAS IT Resource Management jobs using SAS Data Integration Studio.**

The hot fix 311is04 addresses the issue(s) in Release 3.1.1 of SAS IT Resource Management software on z/OS as documented in the "Issue(s) Addressed" section of the hot fix download page:

http://ftp.sas.com/techsup/download/hotfix/itrm311.html#311is04

Note: Before installing this hot fix, make sure that the "last updated" date found at the end of this document matches the date of the copy of the 311IS04os.pdf document found in the download page.

IMPORTANT NOTES:

- You must have SAS IT Resource Management 3.1.1 installed on your system before applying this hot fix.
- Apply this hot fix preferably in batch using the sample batch job provided. Your TSO userid or job REGION size parameter should be set to at least 1500M.
- Make sure you have a working backup copy of your SAS IT Resource Management installation.
- The Unix System Service (ZFS or HFS) updates must be performed by the same ID used for the initial installation.
- All currently active SAS sessions, daemons, spawners and servers must be terminated before applying this hot fix. Once the hot fix has been applied, the appropriate servers should be restarted.
- This download is intended for customers running a z/OS server.
- To install the Windows client updates, you must download the Windows version of this hot fix and install the appropriate client components on your Windows system.
- Whether you are applying this hot fix to a new or existing installation of SAS IT Resource Management, you need to invoke the deployITRM_zos.sh script to either deploy the required metadata, or migrate your existing ITMS repository.
- Please contact SAS Technical Support to discuss installing the special consideration zap documented in Problem Note 31661.
- The implementation of this hot fix must be completed before any staging or aggregation jobs are started.

- Applying Hot Fix 311IS04 or later might cause an increase in WORK library disk space in SAS IT Resource Management - see Usage Note 34440.
- **Existing SAS IT Resource Management sites only:** Sites must redeploy all existing SAS IT Resource Management jobs after applying this hot fix. By default, this hot fix will cause the SAS IT Resource Management jobs to rebuild the information maps that already exist. Because rebuilding the information maps is not required as part of this hot fix implementation, the following SAS statement can be placed at the top of each aggregation job that does not require that information maps be rebuilt:

  %LET SKIPINFOMAPS=YES;

  Any future modifications to the aggregation job will require that the job be redeployed. As a result of redeploying the job, this line will not be generated because it will require that the information maps be regenerated.

ATTENTION:

A portion of the content that is being delivered with 311is04 changes the way that metadata is deployed for SAS IT Resource Management. In the event that you need to create a new ITMS repository (or reinitialize your existing ITMS repository) you should follow the deployment steps as specified for the new installation of SAS IT Resource Management.

If you are performing a new installation of SAS IT Resource Management:
You will need to apply this hot fix prior to completing your installation. As a result of software updates provided with this hot fix, you will need to follow a different process to deploy the "Required" and "Adapters" metadata for SAS IT Resource Management. Previously you would follow the steps in the instructions.html document to create the ITMS repository, deploy the Required metadata, and deploy the metadata for the individual Adapter(s). With the application of this hot fix you should STOP following the SAS IT Resource Management specific steps in the instructions.html document AFTER you complete the step entitled "Create the ITMS Repository". You will deploy both Required and Adapter metadata using the deployITRM_zos.sh script as specified in the instructions at the end of this hot fix document. Upon completing the installation of this hot fix, you should return to Appendix R of the Configuration Guide for SAS 9.1.3 Foundation for z/OS to continue with the next step, and continue with the section entitled "Update Default Authorizations".

Using the updated Extract/Deploy functionality for moving IT data marts after installation
Originally provided as a means of moving an IT data mart from one release to another, the functionality contained in the ExtractDeploy.jar file can be used to move an IT data mart between repositories for the same release. If you need to move IT data marts after the successful completion of this hot fix installation, you can find the documentation for this feature here.

Installation Details
The following instructions describe the steps for extracting the contents of the downloaded file, moving the files to your z/OS (OS/390) system and installing the hot fix, running a z/OS server. To install the Windows client updates, you must download the Windows version of this hot fix and install the appropriate client pieces on your Windows system.

1. **Extract the updates from the hot fix package**

The hot fix package downloaded is a CNTL PDS in XMIT format, named 311is04os.xmit. It contains all of the XMIT code necessary to apply this hot fix.

The server portion of the hot fix contains the following files:
- SASAUTOS:
    - rmaplhf.sas
    - rmdplmd.sas
    - rmpdb2dm.sas
    - rmsetftr.sas
    - rmverchk.sas
    - rmvinst.sas
    - rmpurgdm.sas
- SASHELP:
    - itms.sas7bcat
    - itms_formats.sas7bcat
    - itms_msg.sas7bdat
    - itms_msg.sas7bndx
- CPMISC:
    - ITRMExch.DCS
    - ITRMSrvr.DCS

The ITRM metadata server portion of the hot fix contains the following files:

    deployITRM_zos.sh
    ExtractDeploy.jar
    sas.solutions.itms.omil.jar

1.1 Pre-allocate the XMIT file on MVS

Pre-allocate a file on MVS (e.g. 'sas.hotfix.xmit') with the following DCB:

    Organization : PS
    Record format : FB
    Record length : 80
    Block size   : 3120

Check the size of the unzipped xmit file to determine the space requirements for the MVS XMIT file.

1.2 FTP the XMIT file to MVS

FTP the XMIT file into this newly created file. This can be done in one of 2 ways:

Method 1)
Download the packaged hot fix to your PC. The packaged hot fix is a self extracting executable. Launching the executable will extract the z/OS (OS/390) files to a default location
        example: C:\zos\311is04os

You will be prompted during the extraction process to accept or overwrite the default unzip location. The remaining steps in these installation instructions assume that you have unzipped the files to the default location.

After extracting the file, FTP the 311is04os.xmit file to your MVS system doing a **BINARY** upload into the preallocated file created in step 1.

Method 2)

From MVS, FTP to ftp.sas.com using userid=anonymous and password=your.email@address

Once you are logged on, change directory into the following directory:

/techsup/download/hotfix/ITSV_ITRM/311is04/mvs

Issue the following commands where 'sas.hotfix.xmit' is the filename you created in step 1.1

```
binary
get 311is04os.xmit 'sas.hotfix.xmit' (rep
quit
```

1.3 Receive the XMIT file to create the CNTL PDS

On MVS, do a RECEIVE command on the uploaded XMIT file as follows where 'sas.hotfix.xmit' is the preallocated file from step 1.

receive indataset('sas.hotfix.xmit')

After doing this, you will be prompted with something similar to the following:

INMR901I Dataset DATA.SET.NAME from USERID on ????????
INMR906A Enter restore parameters or 'DELETE' or 'END' +

at this prompt you should enter:

DA('sas.hotfix.cntl')

where sas.hotfix.cntl will be a new PDS that contains all of the parts necessary to apply this hot fix.

1.4 Execute the REXX exec

In your new CNTL data set is a REXX exec that will, if applicable, create any new libraries. It will also generate any JCL required to modify SAS catalogs in your SAS system and/or modify any USS content in your SAS system, if applicable. Execute this REXX exec from an ISPF prompt:

ex 'sas.hotfix.cntl(rexx)'

1.5 Run any generated JCL

Run all JCLxxxxx members that were generated in your CNTL data set. Be sure to review job specific instructions that are in the comments of the jobs.

In the JCLUSS1 job for 311is04, the INSTALL_DIR variable can be set to any directory that the submitting userid has write access to. The USS content will be copied to the appropriate target locations in subsequent steps.

1.6 Merge the autocall members with the SAS installation autocall library

Create backups for the following macros in your current 9.1.3 installation AUTOLIB library:

    RMAPLHF *
    RMDPLMD *
    RMPDB2DM
    RMSETFTR
    RMVERCHK *
    RMVINST **

* Denotes macros which exist if you had previously installed hot fix 311IS03
** Denotes macro which exist if you had previously installed hot fix 311IS02 or 311IS03

To merge the new autocall members with the SAS installation autocall library, copy the members in &prefix.SL.H311is04.AUTOLIB to your current 9.1.3 installation AUTOLIB library.

2. Copy the updated content to the appropriate target locations

In the steps below, there are references to several directory locations. In general, these directories are located as follows:

"**ITMS_Repository**"	Similar to /usr/lpp/SAS/SAS_9.1/BI/Lev1/SASMain/MetadataServer/MetadataRepositories/ITMS
"**Backup_Directory**"	Non-temporary location on your file system to backup USS files, a directory residing in a different location from the ones listed below. A backup sub-directory called "itmscore" should also be created under this directory for later use.
"**Utilities_Directory**"	Similar to /usr/lpp/SAS/SAS_9.1/BI/Lev1/Utilities
"**Extraction_Directory**"	The directory specified as INSTALL_DIR in the JCLUSSx jobs. Similar to /usr/lpp/SAS/SAS_9.1/ BI/USER.PREFyy/311IS04 where: /usr/lpp/SAS/SAS_9.1/ is the mount point, USER.PREFIX is the high-level prefix specified by the installer, and yy represents the encoding (e.g. W0).
"**SAS_Installation_Directory**"	The directory specified as INSTALL_DIR in the original USSUNTAR jobs used to install the SAS System. The default name of this directory is similar to /usr/lpp/SAS/SAS_9.1/BI/USER.PREFyy where: /usr/lpp/SAS/SAS_9.1/ is the mount point, USER.PREFIX is the high-level prefix specified by the installer, and yy represents the encoding (e.g. W0).

You should also be logged in to the server hosting your SAS ITRM Metadata Server using the same userid as was used for the original installation. Failure to do so may result in errors due to file system permission limitations.

Note: The Backup_Directory location should have a sub-directory created called "itmscore" for later use.

2.1 Backup existing directories

This hot fix updates the contents of several IT Resource Management installation directories, so you should make sure you have a current backup of these directories. The location that you select to backup these directories should be a non-temporary location on your file system. There are different methods and third-party utilities that can be used to create these backups. Data Facility Data Set Services (DFDSS) is an IBM-licensed program that can be used to copy, move, dump, and restore data sets and volumes. Below you will find some sample DFDSS backup and restore JCL, which you must customize for your site. These dump datasets included in these sample jobs point to installation and datamart mount points. For more information about DFDSS, please consult the **IBM®** documentation.

```
//JOBNAME  JOB (ACCTINFO),'SAMPLE BACKUP JOB',REGION=6M,MSGCLASS=F,
//          NOTIFY=&SYSUID,CLASS=A
//DUMPSTEP EXEC PGM=ADRDSSU
//SYSPRINT DD SYSOUT=*
//TAPE DD UNIT=TAPE,
// DISP=(NEW,CATLG,DELETE),DSN=USER.BACKUP
//SYSIN DD *
 DUMP DATASET(INCLUDE( -
    SAS.INSTALL.MNTPOINT.ZFS,   /* INSTALL DIRECTORY   */ -
    SAS.ITRMVMW.MNTPOINT.HFS,   /* DATAMARTS IF NEEDED */ -
    SAS.ITRMDB2.MNTPOINT.ZFS,   /* DATAMARTS IF NEEDED */ -
    SAS.ITRMCICS.MNTPOINT.ZFS,  /* DATAMARTS IF NEEDED */ -
    SAS.ITRMOTH.MNTPONIT.ZFS,   /* DATAMARTS IF NEEDED */ -
    )) -
 OUTDDNAME(TAPE) OPTIMIZE(4) ALLDATA(*)
```

Optional keywords:

COMPRESS   Specify along with DCB=TRTCH=COMP on the UNIT=TAPE statement to utilize hardware and/or software compression.

TOL(ENQF)   "Tolerate Enqueue Failure" – **Caution!** It is possible that this option can result in a backup copy that is virtually unusable. Without TOL(ENQF), the Data Facility Data Set Services (DFDSS) Backup and Recovery utility will attempt to quiesce the filesystem(s) during the dump to ensure a backup with integrity. However, there may be file systems that sites cannot allow DFDSS to quiesce. One reason could be due to the impact it may have on workloads. As a result, it will require the use of TOL(ENQF).

```
//JOBNAME  JOB (ACCTINFO),'SAMPLE RESTORE JOB',REGION=6M,MSGCLASS=F,
//          NOTIFY=&SYSUID,CLASS=A
//*
//* Before running this job, it is assumed that you have unmounted the
//* file systems that will be restored by this job.  Otherwise, the enqueue
//* enqueue held by the OMVS or ZFS address space will prevent this job
//* from succeeding.
//*
//* Optionally, you may add a RENAME or RENAMEU keyword to rename the
//* restored copies and perform the unmounting at a later time, after
//* which you would unmount the file system(s) and then use IDCAMS to
//* manually ALTER the dataset names.
//*
//DUMPSTEP EXEC PGM=ADRDSSU
//SYSPRINT DD SYSOUT=*
//TAPE DD UNIT=TAPE,
```

// DISP=(OLD,KEEP),DSN=USER.BACKUP
*//SYSIN DD **
RESTORE INDD(TAPE) -
DS(INCL(**)) -
REPLACE

2.2 Copy files from your extracted location

You need to copy the new files from the extraction directory to replace those corresponding files residing in your utilities and installation locations.

<u>Performing a copy from extracted location:</u>

a) Copy the file deployITRM_zos.sh from:

<Extraction_Directory>/311IS04

to your user home directory. Typically:

/u/<userid>

b) Copy the file ExtractDeploy.jar from:

<Extraction_Directory>/311IS04

to:

<Utilities_Directory>/SASITMSCoreComponents/Utilities

for example:

cp /usr/lpp/SAS/SAS_9.1/311IS04/ExtractDeploy.jar /usr/lpp/SAS/SAS_9.1/Lev1/Utilities

c) Copy the file sas.solutions.itms.omil.jar from:

<Extraction_Directory>/311IS04/itmscore

to:

<SAS_Installation_Directory>/itmscore

For example:

cp /usr/lpp/SAS/SAS_9.1/311IS04/itmscore/sas.solutions.itms.omil.jar /usr/lpp/SAS/SAS_9.1/SAS913IW0/itmscore

3. Deploy (new installations) or Migrate (existing installations) SAS IT Resource Management Metadata

In the Introduction section of this document, you were directed to terminate all SAS servers. You will now need to restart your metadata server before proceeding with the steps that follow. You should log into the machine hosting your SAS ITRM Metadata Server using the same userid that was used for both your original installation and hot fix installation.

Note that the two steps described below differ depending on your installation scenario. The first step is for performing a new installation (DACTION=initialize") and the second is for updating an existing installation (DACTION=hotfix).

You should modify the deployITRM_zos.sh script that you copied to your user's home directory in step 2.3. The required changes are listed in the script file, and are reiterated here. You must assign values to the following variables by providing the appropriate site specific information to the right of the equal sign.

- **If you have applied this hot fix as part of a NEW installation of SAS IT Resource Management**

    Set the value of DACTION to "initialize".

- **If you have applied this hot fix to an EXISTING installation of SAS IT Resource Management**

    Set the value of DACTION to "hotfix".

    Important! Existing SAS IT Resource Management sites that apply hot fix 311is04 must redeploy all existing SAS IT Resource Management jobs.

Set the other values depending on your installation settings:

DACTION	initialize –or– hotfix
DSERVER	server hosting the MetadataServer (eg. server.domain.company.com)
DPORT	port that the MetadataServer is listening on
DUSER	userid to connect and perform desired action with (eg. sasadm)
DPASS	appropriate password for specified for DUSER
SAS_ROOT	the path to the SAS installation directory referred to earlier as **SAS_Installation_Directory** (eg /usr/lpp/SAS/SAS_9.1/USER.PREFyy)

If you are using a non-W0 encoding, you MUST use a plaintext version of your DUSER's password for DPASS. Since this is a low use program, the file can be modified after use so that this password remains confidential.

In addition, check to see if you have a valid version and path for the JAVA_HOME environment variable. Use the Unix System Services command:

    echo $JAVA_HOME

Running the following sample batch job to determine the value of $JAVA_Home is optional.

//JOBNAME JOB (ACCTINFO),'CHECK JAVA ENV VAR',REGION=6M,MSGCLASS=F,

```
//         NOTIFY=&SYSUID,CLASS=A
//STEP1   EXEC SAS
//SYSIN   DD  *

 FILENAME CMD pipe
   'echo $JAVA_HOME';

 DATA _NULL_;
   INFILE CMD LENGTH=LEN END=LAST;
   LENGTH LINE $2000.;
   INPUT LINE $VARYING2000. LEN;
   PUT _INFILE_;
 RUN;
```

Check the SAS Log to determine the value being used by the machine hosting your Metadata Server. This should be something similar to /java142/IBM/J1.4.

If you do not have a JAVA_HOME environment variable or Java 1.4.2 version specified, you should uncomment the line in the deployITRM_zos.sh script:

```
        #JAVA_HOME=
```

by removing the "#" sign and supply a valid path for a Java 1.4.2 version. This path should not include the "bin" directory.

Once you have completed the modifications, submit the deployITRM_zos.sh script.   You can submit the script in batch (preferred) using the sample JCL:

```
//JOBNAME  JOB (ACCTINFO),'APPLY MAINT',REGION=1500M,MSGCLASS=F,
//         NOTIFY=&SYSUID,CLASS=A
//STEP1    EXEC PGM=BPXBATCH,
//       PARM='sh /u/userid/deployITRM_zos.sh'  ←case sensitive
//STDOUT   DD PATH='/tmp/bpxbat.stdout',        ←user-defined temp location
//       PATHMODE=(SIRUSR,SIWUSR,
//       SIRGRP,SIWGRP,SIROTH,SIWOTH),
//       PATHOPTS=(OWRONLY,OCREAT,OTRUNC)
```

Optionally, you can submit the script from a Unix System Services shell prompt command line, using the following syntax:

```
        ./deployITRM_zos.sh
```

Whether in batch or from a Unix System Services shell prompt, make sure your TSO userid or job REGION size parameter is set to at least 1500M.

During the execution of this script you should see the following messages output to your shell if DACTION=initialize was selected:

```
        === Starting action: initialize

        === Getting ITMSFactory
        ITMSFactory initialized at <date/time>
```

=== Acquired ITMSFactory: com.sas.solutions.itms.omil.ITMSFactory@<Factory ID>

Beginning to deploy metadata to the ITMS repository
 Deploying initial ITMS metadata.
  Completed deploying initial ITMS metadata.
 Deploying All ITMS Adapters.
  Completed deploying all ITMS Adapters.
 Refreshing Metadata Server.
   Server has been paused.
   Server has been resumed.
 Completed refresh of Metadata Server.

=== Completed run with result:
Completed initialization of the ITMS repository

=== Disposing ITMSFactory: com.sas.solutions.itms.omil.ITMSFactory@<Factory ID>

=== ITMSFactory has been disposed.

Otherwise, if you are applying this hot fix to an ITRM installation that previously had hot fix 311IS03 applied, the following messages will be generated:

=== Starting action: hotfix

=== Getting ITMSFactory
ITMSFactory initialized at <date/time>

=== Acquired ITMSFactory: com.sas.solutions.itms.omil.ITMSFactory@<Factory ID>

Beginning to migrate ITMS repository from 311IS03 to 311IS04
 Deploying new 311IS04 metadata.
  Completed deploying new 311IS04 metadata.
 Modifying ITRM SoftwareComponent for 3.1.1.4.
   SoftwareComponent version has been changed to 3.1.1.4.20080920.03114
 Completed modifying ITRM SoftwareComponent.
 Refreshing Metadata Server.
   Server has been paused.
   Server has been resumed.
 Completed refresh of Metadata Server.
Completed migration of ITMS repository from 311IS03 to 311IS04

=== Completed run with result:
Upgraded from version 3.1.1.3 to 3.1.1.4.

=== Disposing ITMSFactory: com.sas.solutions.itms.omil.ITMSFactory@<Factory ID>

=== ITMSFactory has been disposed.

Some of these messages will be repeated for each Adapter that an existing ITMS repository contains:

>
> Beginning to migrate ITMS repository from 311IS03 to 311IS04
> 311IS04 metadata has already been deployed - will not redeploy updates.
> Modifying ITRM SoftwareComponent for 3.1.1.4.
> SoftwareComponent version has been changed to 3.1.1.4.20080920.03114
> Completed modifying ITRM SoftwareComponent.
> Refreshing Metadata Server.
> Server has been paused.
> Server has been resumed.
> Completed refresh of Metadata Server.
> Completed migration of ITMS repository from 311IS03 to 311IS04
>
> === Completed run with result:
> Upgraded from version 3.1.1.3 to 3.1.1.4.
>
>
> === Disposing ITMSFactory: com.sas.solutions.itms.omil.ITMSFactory@c980c9
>
>
> === ITMSFactory has been disposed.

When selecting "DACTION=hotfix", the amount of time to complete a migration operation will depend on how many and which Adapters have been deployed to the existing 3.1.1 ITMS repository.

4. **Check the *STDOUT* file output location for possible errors that could appear during the execution of the deployITRM_zos.sh script.**

    [**Out of memory, aborting**]
    [ ]
    [*** panic: JVMST017: Cannot allocate memory in initializeMarkAndAllocBits(mark bits1)]
    CEE5207E The signal SIGABRT was received.

    RESOLUTION: Increase BATCH or TSO userid REGION parameter to 1500M

    cd: ./deployITRM_zos.sh 38: /usr/lpp/SAS/tmf/it311/itmscore: EDC5129I No such fi
    le or directory.
    The java class is not found: com/sas/solutions/itms/omil/tools/Deploy
    $ cd /usr/lpp/SAS/SAS_9.1/

    RESOLUTION: Make sure that the location for SAS_ROOT is correct

5. Install the client portion of the Windows hot fix

To install the Windows client updates, you must download the Windows version of this hot fix and install the appropriate client components on your Windows system(s). In the "Windows Installation Instructions for Hot

Fix 311is04" document, you should review both the introduction and section 1 and perform steps 1.1, 2, 3.1, and 3.2 on each client machine.

Note that there are 2 separate client pieces that should be installed: One for the SAS IT Management Solutions Core Components Client and one for the SAS IT Resource Management Client.

6. **Existing SAS IT Resource Management sites must redeploy (a.k.a schedule) all SAS IT Resource Management jobs using SAS Data Integration Studio.**

Existing SAS IT Resource Management sites must redeploy all existing SAS IT Resource Management jobs after applying this hot fix. By default, this hot fix will cause the SAS IT Resource Management jobs to rebuild the information maps that already exist. Because rebuilding the information maps is not required as part of this hot fix implementation, the following SAS statement can be placed at the top of each aggregation job that does not require the information maps to be rebuilt:

%LET SKIPINFOMAPS=YES;

Any future modifications to the aggregation job will require that the job be redeployed. As a result of the redeploying the job, this line will not be generated because it will require that the information maps be regenerated.

This completes the installation of hot fix 311is04 on z/OS (OS/390).

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