SAS®
IT Resource Management 3.1.1
Migration Documentation

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SAS® IT Resource Management 3.1.1: Migration Documentation

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Contents

Chapter 1 Migrating PDBs to IT Data Marts 1
Introduction 1
Pre-Migration Checklist 4
Using the %RMPDB2DM Macro to Migrate Your PDB 5
What is Produced by %RMPDB2DM() 14
Subsequent Tasks 24
Chapter 2 Changes from SAS IT Resource Management 2.7 to 3.1.1 27
Normalized Values Are Now Weighted Rates 27
Pre-set Values for SHIFT Are Ignored 28
Certain HP-PCS Tables Are No Longer Supported 28
Missing Formats Messages Are in the Migration Status Report 28
Improved Support for Sum of Weights Is Available 29
Chapter 3 Other Resources 31
If You Need Help 31
References 32

CHAPTER 1

Migrating PDBs to IT Data Marts

Introduction 1
Actions Performed by Migration 3
Pre-Migration Checklist 4
Using the %RMPDB2DM Macro to Migrate Your PDB 5
%RMPDB2DM Syntax 5
%RMPDB2DM Details 6
%RMPDB2DM Notes 11
%RMPDB2DM Examples 12
Example 1: Migrate All Tables for All Collectors 12
Example 2: Migrate Specified Collectors 13
Example 3: Migration Using the z/OS Traditional File System 13
Example 4: Migration Using the z/OS UNIX File System 14
What is Produced by %RMPDB2DM() 14
Overview 14
Metadata 14
Formulas 15
IT Data Mart 16
Objects in the IT Data Mart that Are Created for Each Adapter 16
Physical Storage 22
Special Considerations for z/OS Physical Storage 22
Status Report 22
Subsequent Tasks 24
Update ITMS Properties of Staging Transformations 24
Fill in SAS Code for User-written Transformations 24
Review Computed Columns 25
Consider Removing Information Map Transformations 26
Process Exit Considerations 26
Generate, Deploy, and Schedule Jobs for Execution 26

Introduction

In SAS IT Resource Management 3.1.1, the IT data mart is the logical collection of the jobs, data, information maps, tables, and other elements that support the extracting, transforming, and loading (ETL) of IT data. The IT data mart is conceptually similar to, but architecturally quite different from, the PDB (performance data base) that was supported in SAS IT Resource Management 2.7.

This document describes how to use the tools and methodologies that are necessary to migrate data from a SAS IT Resource Management 2.7 PDB into the SAS IT Resource Management 3.1.1 software. Note that the only supported migration path for SAS IT Resource Management PDBs is from SAS IT Resource Management 2.7 to 3.1.1. Users that are running earlier versions of SAS IT Resource Management must first migrate their PDBs to SAS IT Resource Management 2.7 before migrating to SAS IT Resource Management 3.1.1.

Note: The instructions in this document do not apply to upgrading from SAS IT Resource Management 3.1 to SAS IT Resource Management 3.1.1. Upgrading from SAS IT Resource Management 3.1 to 3.1.1 is an upgrade install. For more information, see

the *Planning Installation Edition Kit* and the SAS installation instructions that are available from the SAS Install Center at
`http://support.sas.com/documentation/installcenter/index.html`. Δ

The migration of a PDB results in an IT data mart that includes the following information organized in folders:

- definitions of jobs
- staging and aggregation transformations
- staging and aggregation tables (data from the PDB is used to populate the aggregation tables
- information maps
- formulas for the following data:
  - SHIFT
  - Holiday
  - aging definitions

SAS IT Resource Management 3.1.1 is integrated with SAS Data Integration Studio. As part of this integration, certain functionality of SAS IT Resource Management 2.7 is implemented via functionality from SAS IT Resource Management 3.1.1 and SAS Data Integration Studio. The following table shows some SAS IT Resource Management 2.7 functionality and its equivalent implementation in SAS IT Resource Management 3.1.1:

Table 1.1 SAS IT Resource Management 2.7 Functionality and Its Equivalent Implementation in SAS IT Resource Management 3.1.1

2.7 Functionality	3.1.1 Implementation
Process Exits	User-written transformations.
Derived Variables	Computed columns are defined on a staged table.
Formula Variables	Computed columns are defined on an aggregation output table.
%CxPROCES	The staging phase of %CxPROCES is implemented as a separate staging or user-written transformation. The resulting DETAIL table from %CxPROCES is now a simple aggregation output table of an aggregation transformation.
%CPREDUCE	Summarized aggregation output tables of an aggregation transformation.
SHIFT Definition	SHIFT formula definition and associated computed columns. As with SAS IT Resource Management 2.7, if the data is in a HOLIDAY, the SHIFT has the value of the holiday shift.
HOLIDAY Definitions	HOLIDAY formula definition and associated computed columns. This formula is set to a value of **Y** or **N** depending on whether the data is for a holiday or not.

Note: Here are some additional considerations when comparing the functionality of SAS IT Resource Management 2.7 and 3.1.1:

- PDB migration does not provide for the implementation of process exits.
- For migration of SAS IT Resource Management 2.7 collectors that are not supported as SAS IT Resource Management 3.1.1 adapters (including user-written, *generic* collectors from SAS IT Resource Management 2.7), user-written transformations are created to stage the data. Users provide the SAS code for user-written transformations. Δ

Actions Performed by Migration

The PDB migration macro performs the following steps:

1. Validates the parameters to the macro.
2. Constructs a new IT data mart as per the supplied parameters. A new IT data mart is created each time the macro is executed.
3. Constructs formulas in the **ITRMSoftwareTree** folder to support the following parameters:
    a. The SHIFT definition used by the PDB.
    b. The HOLIDAY definitions used by the PDB / SITELIB.
    c. The DAY, WEEK, MONTH, and YEAR datetime mapping formula that is needed for computed columns in the stage table and are ultimately used to support aging. The WEEK computation respects the SAS IT Resource Management 2.7 **Start of Week** setting from the SAS IT Resource Management 2.7 PDB options.
4. Performs the following tasks for each adapter that is present in the SAS IT Resource Management 2.7 PDB:
    a. Constructs a staging job with an appropriate staging transformation and output staged tables. The staged table includes computed columns for DAYDATE, WEEKDATE, MONTHDATE, YEARDATE, SHIFT, and HOLIDAY.
    b. Performs the following tasks for each staged table:
        i. Constructs a job to perform the aggregations that are currently implemented in the 2.7 PDB on this staged table. This job consists of the input staged table, an aggregation transformation, the output aggregation tables, and information map transformation for each output table.
        ii. Copies the data from the SAS IT Resource Management 2.7 PDB detail and summary tables to the counterpart aggregation tables in SAS IT Resource Management 3.1.1.
        iii. Updates the metadata with status information about each table that is copied (for example, number of rows, earliest datetime stamp, and latest datetime stamp).
    c. Constructs an overall ETL job that includes the staging and aggregation jobs.

d Copies any other necessary constructs such as data duplication status information and any formats that are needed to facilitate the migration of the PDB to the IT data mart.

5 Generates a report (to SASLIST) detailing what actions were taken.

Pre-Migration Checklist

The following prerequisites must be satisfied before migrating a PDB:

- The existing SAS IT Resource Management 2.7 installation is running with the latest SAS IT Resource Management hotfix. Refer to **`http://ftp.sas.com/techsup/download/hotfix/itrm27.html`** for the latest SAS IT Resource Management hotfix.
- SAS IT Resource Management 3.1.1 software must be installed, configured, and verified as operational.
- For any SAS IT Resource Management 2.7 table that is to be migrated, the SAS IT Resource Management 3.1.1 adapter that is required to support the table (if the adapters exists) must be deployed in order for IT Resource Management 3.1.1 to provide staging transformation support.
- Sufficient disk space for the resulting IT data mart must exist. Approximately twice the allocation of the existing PDB libraries must be available. For z/OS, disk space can be in the traditional z/OS file system or in a hierarchical directory (HFS or ZFS recommended).
- Sufficient disk space for the migration utility to use for temporary files must exist. For z/OS, this disk space must be in a hierarchical directory (HFS or ZFS).
- A valid user ID and password is required for connecting to the SAS IT Resource Management 3.1.1 Metadata Server. The user ID needs authority to define objects in the ITMS Repository.
- A valid user ID and password is required for running the SAS macro to perform the migration. This user ID needs authority to create files and the physical storage for the IT data mart.
- A workspace server must be defined for the host system where the migration executes. If the workspace server is named something other than SASMain, then the name must be specified in the IOMServer= parameter of the %RMPDB2DM macro.
- The TCP/IP service (port) that the SAS Metadata Server is listening on must be known in order to specify it to the %RMPDB2DM macro.
- The SAS IT Resource Management 2.7 SITELIB that was associated with the PDB must be identified by the user.
- The SAS IT Resource Management 2.7 PDB should not be accessed by any programs while migration is in progress.
- No outstanding reduction checkpoints or other issues with the PDB should exist.
- The SAS IT Resource Management 2.7 PDB must be accessible on the same host file system that SAS IT Resource Management 3.1.1 will use for IT data mart storage.
- If you do not want to migrate all of the tables in a PDB, then mark these tables as “not kept” before running the migration utility. Use either the SAS IT

Resource Management 2.7 %CPDDUTL utility or the SAS IT Resource Management 2.7 user interface to mark tables as "not kept."

Using the %RMPDB2DM Macro to Migrate Your PDB

PDB migration is performed by invoking the %RMPDB2DM SAS macro that is part of the SAS IT Resource Management 3.1.1 software. This macro should be invoked in a SAS session on the same system where the workspace server for SAS IT Resource Management 3.1.1 and SAS Data Integration Studio is executed. For best results, execute this macro in batch rather than interactively from SAS Data Integration Studio.

The macro %RMPDB2DM creates a new IT data mart according to the parameters that are provided and migrates tables, definitions, and data for the adapters that are requested. When processing is complete, a status report is generated to SASLIST (the SAS Output area).

%RMPDB2DM Syntax

```
%RMPDB2DM
   (PDB= SAS IT Resource Management 2.7 PDB path
    ,SiteLib= SAS IT Resource Management 2.7 SITELIB path
    ,WorkDir= directory path for work files
    ,MetaServer= hostname or IP address for the metadata server
    ,MetaPort= service or port for the metadata server
    ,MetaUser= userid for metadata server access and definition
    ,MetaPassword= password for MetaUser
    ,ITDataMart= name of the data mart to create
    ,DefaultRootPath= root directory for the data mart
    <,AdminPath= path to the IT Data mart ADMIN library>
    <,SpinPath= path to the IT Data mart SPIN library>
    <,IOMServer= SASMain | user-specified logical workspace server>
    <,StagePathRoot= root directory for staged tables>
    <,SimplePathRoot= root directory for simple tables>
    <,SummaryPathRoot= root directory for summary tables>
    <,StagePathIsRoot= Y | N >
    <,SimplePathIsRoot= Y | N >
    <,SummaryPathIsRoot= Y | N >
    <,Device= z/OS UNIT= value for allocation>
    <,PrimaryCyls= z/OS primary space allocation cylinders>
    <,SecondaryCyls= z/OS secondary space allocation cylinders>
    <,Adapter= ALL | blank-delimited list of adapters>
    <,HP_PCS= HP-OVREP | HP-OVPA>
```

```
<,Cleanup= Y | N>
<,CopyData= Y | N>
<,_rc=macro variable name to hold return code>
);
```

%RMPDB2DM Details

The following parameters apply to the %RMPDB2DM macro:

PDB= *SAS IT Resource Management 2.7 PDB path*
Specifies the path to the SAS IT Resource Management 2.7 PDB that is to be migrated. This parameter is required.

SiteLib= *SAS IT Resource Management 2.7 SITELIB path*
Specifies the path to the SAS IT Resource Management 2.7 SITELIB that has been associated with the PDB to be migrated. This parameter is required.

WorkDir= *directory path for work files*
Specifies a directory where %RMPDB2DM can write temporary external files. If this directory does not exist, then it will be created. For z/OS, this parameter needs to be a UNIX System Services directory path (HFS or ZFS file system). This parameter is required.

MetaServer= *hostname or IP address for the metadata server*
Specifies the hostname or TCP/IP address of the metadata server. This parameter is required. Note that the metadata server does not need to be on the same host platform as the application server.

MetaPort= *service or port for the metadata server*

Specifies the TCP/IP service name or port number that the metadata server is listening on. This parameter is required.

MetaUser= *userid for metadata server access and definition*
Specifies the user ID for accessing the metadata server. This parameter is required. The user ID should be configured according to the SAS IT Resource Management configuration and installation instructions that are available from the SAS Install Center at **http://support.sas.com/documentation/installcenter/index.html**.

MetaPassword= *password for MetaUser*
Specifies the password for connecting the user ID to the metadata server. This parameter is required.

ITDataMart= *name of the data mart to create*
Specifies the name of the IT data mart. This parameter is required. The name of the IT data mart must be unique to avoid potential difficulty when using other SAS tools. The name can contain a maximum of 60 characters.

Note: The name of an IT data mart cannot contain any of the following characters: * ? " ' | \ / [ ] $ & > < ( ) { } : ; ` ~ % ^ @ # !
In addition, this field cannot contain a newline or tab character.Δ

DefaultRootPath= *root directory for the data mart*
Specifies the default root path to the IT data mart. This parameter is used as the root path for the libraries and data created and contained in the IT data mart. This parameter is required.

The syntax of the default root path determines the syntax that is used as the default for any other paths that are specified. For example, if you specify a default root path for a traditional z/OS file system, then the default paths to the administrative library, spin library, staged data, summarized data, and simple data should also be in the traditional z/OS file system.

If no other path parameters are specified, then the default root path is used to specify the paths to the administrative library, spin library, staged tables, summarized aggregation tables, and simple aggregation tables. For example, if you specified the default root path as **C:\ITRM\MyDataMart**, then the paths to the libraries and data are as follows:

- **C:\ITRM\MyDataMart\admin** for the administrative library
- **C:\ITRM\MyDataMart\spin** for the spin library
- **C:\ITRM\MyDataMart\stage** for the staged tables
- **C:\ITRM\MyDataMart\simple** for the simple aggregation tables
- **C:\ITRM\MyDataMart\summary** for the summarized aggregation tables

AdminPath= *path to the IT Data mart ADMIN library*
Specifies the path to the administrative library of the IT Data mart. This parameter is optional. If not specified, the administrative library is created as the ADMIN subdirectory under the DefaultRootPath= parameter. This parameter follows the same syntax checking rules as the DefaultRootPath= parameter.

SpinPath= *path to the IT Data mart ADMIN library*
Specifies the path to the spin library of the IT data mart. This parameter is optional. If not specified, the spin library is created as the SPIN subdirectory under the DefaultRootPath= parameter. This parameter follows the same syntax checking rules as the DefaultRootPath= parameter.

IOMServer= *SASMain | user-specified logical workspace server*
Specifies the logical workspace server to use when registering data libraries that are created as part of the IT data mart. This parameter is optional. The default value is SASMain.

StagePathRoot= *root directory for staged tables*
Specifies the default root path for the libraries and data for the staged tables that are part of the IT data mart. This parameter is optional. This parameter enables you to control where the staged tables are stored, irrespective to other allocation specifications for the IT data mart. If not specified, the stage path root is created as the **stage** subdirectory under the DefaultRootPath= parameter. This parameter follows the same syntax rules as the DefaultRootPath= parameter.

SimplePathRoot= *root directory for simple tables*
Specifies the default root path for the libraries and data for the simple aggregation tables that are part of the IT data mart. This parameter is optional. This parameter enables you to control where the simple aggregation tables are stored, irrespective to other allocation specifications for the IT data mart. If not specified, the simple path root is created as the **simple** subdirectory under the

DefaultRootPath= parameter. This parameter follows the same syntax rules as the DefaultRootPath= parameter.

SummaryPathRoot= *root directory for summary tables*
Specifies the default root path for the libraries and data for the summary aggregation tables that are part of the IT data mart. This parameter is optional. This parameter enables you to control where the summary aggregation tables are stored, irrespective to other allocation specifications for the IT data mart. If not specified, the summary path root is created as the **summary** subdirectory under the DefaultRootPath= parameter. This parameter follows the same syntax rules as the DefaultRootPath= parameter.

StagePathIsRoot= *Y | N*
You can specify whether each path for staging allocation is the root (parent) location of multiple libraries (Y) or the location of a single library (N). This parameter is optional and defaults to multiple libraries (Y).

If you specify multiple libraries, then the path is treated as a higher-level root directory. For each SAS table that is generated in the data mart, a separate physical subdirectory and a corresponding SAS library is created.

If you specify a single library, then the path is treated as a single SAS library in that it is a single directory that has no subdirectories. This library contains multiple SAS tables.

In order to ensure that library names are unique across IT data marts, a random number is added as a suffix to the names of the staged libraries (for example, ***Staged Library 12345***).

Note: In a traditional z/OS file system, the path is treated as a high-level qualifier of multiple SAS libraries. These data libraries are the equivalent of multiple z/OS data sets. In a traditional z/OS file system, the data library is also the equivalent of a single z/OS data set.Δ

SimplePathIsRoot= *Y | N*
You can specify whether the path for simple aggregation allocation is the root (parent) location of multiple libraries (Y) or the location of a single library (N). This parameter is optional and defaults to multiple libraries (Y).

If you specify multiple libraries, then the path is treated as a higher-level root directory. Multiple SAS libraries (which are physically subdirectories) can be created under this root directory. One SAS table is stored in each SAS library.

If you specify a single library, then the path is treated as a single SAS library in that it is a single directory that has no subdirectories. This library contains multiple SAS tables.

In order to ensure that library names are unique across IT data marts, a random number is added as a suffix to the names of the simple libraries (for example, ***Simple Library 12345***).

Note: In a traditional z/OS file system, the path is treated as a high-level qualifier of multiple SAS libraries. These data libraries are the equivalent of multiple z/OS data sets. In a traditional z/OS file system, the data library is also the equivalent of a single z/OS data set.Δ

SummaryPathIsRoot= *Y | N*
You can specify whether the path for summary aggregation allocation is the root (parent) location of multiple libraries (Y) or the location of a single library (N). This parameter is optional and defaults to multiple libraries (Y).

If you specify multiple libraries, then the path is treated as a higher-level root directory. Multiple SAS libraries (which are physically subdirectories) can be created under this root directory. One SAS table is stored in each SAS library.

If you specify a single library, then the path is treated as a single SAS library in that it is a single directory that has no subdirectories. This library contains multiple SAS tables.

In order to ensure that library names are unique across IT data marts, a random number is added as a suffix to the names of the simple libraries (for example, ***Summary Library 12345***).

Note: In a traditional z/OS file system, the path is treated as a high-level qualifier of multiple SAS libraries. These data libraries are the equivalent of multiple z/OS data sets. In a traditional z/OS file system, the data library is also the equivalent of a single z/OS data set.Δ

Device= *z/OS UNIT= value for allocation*
Specifies the UNIT= allocation parameter to use for allocation of IT data mart libraries in a z/OS traditional file system. This parameter is optional and if it is not specified, then it defaults to the value of the **FILEDEV** SAS system option. This parameter is case insensitive.

PrimaryCyls= *z/OS primary space allocation cylinders*
Specifies the number of primary cylinders to use when allocating IT data mart libraries in a z/OS traditional file system. This parameter is optional and if it is not specified, then it defaults to the value of the **FILESPPRI** SAS system option.

SecondaryCyls= *z/OS secondary space allocation cylinders*
Specifies the number of secondary cylinders to use when allocating IT data mart libraries in a z/OS traditional file system. This parameter is optional and if it is not specified, then it defaults to the value of the **FILESPSEC** SAS system option.

Adapter=*_ALL__| blank-delimited list of adapters*
Specifies the list of SAS IT Resource Management 2.7 collectors to migrate from the PDB that is specified by the PDB= parameter. This parameter is optional. If this parameter is not specified, then all collectors are migrated. This action is the same as specifying the special keyword value **_ALL_** for this parameter.

For the list of collectors, separate each collector by white space. For example, to migrate tables for just the NTSMF and PATROL collectors, specify **Adapter=NTSMF PATROL**. This parameter is not case sensitive.

Here is a list of the valid values for the adapters that SAS IT Resource Management 2.7 supports:

- DCOLLECT
- EREP
- GENERIC

- HP-PCS
- IMF
- NTSMF
- PATROL
- SAPR3
- SAR
- SMF
- TMON2CIC
- TMONDB2
- TMS
- TPF
- VMMON

Note: This list of the possible valid values for this parameter is not exclusive. SAS IT Resource Management 2.7 users can manually modify adapter names for in-house, generic collectors and these values might be valid for the Adapter= parameter. However, if you specify a value that is not in the preceding list, then verify that the value that you specify is correct because the %RMPDB2DM macro does not generate an error or warning message for invalid values.Δ

HP_PCS= *HP-OVREP | HP-OVPA*

This parameter is required if any of the SAS IT Resource Management 2.7 tables to be migrated are for the HP-PCS collector. In SAS IT Resource Management 3.1.1, this data can be staged by two separate mechanisms:

- Select **HP-OVREP** if you are staging this data from the database for HP OpenView Reporter.
- Select **HP-OVPA** if you are staging this data from the text file from HP OpenView Performance Agent.

This parameter has no default value and the valid values are not case sensitive.

Cleanup= *Y | N*

The %RMPDB2DM macro generates numerous intermediate items to complete its work. All of these intermediate items are cleaned up when the macro terminates, regardless of success or failure. Specifically, the macro performs the following tasks:

- Creates text files in the directory that is specified by the WORKDIR= parameter.
- Creates SAS data sets and catalogs in the WORK library.
- Creates macro variables.
- Sets certain system options.

This optional parameter enables you to skip the cleanup phase if wanted. If you have problems with the %RMPDB2DM() macro, then SAS Technical Support might request that you specify **Cleanup=N** in order to investigate the problem. This parameter is case insensitive.

CopyData= *Y | N*

The %RMPDB2DM macro essentially performs two types of work:

- metadata definition work to define the libraries, tables, folders, jobs and formulas
- data copy work to copy over the existing SAS IT Resource Management 2.7 data

This optional parameter enables you to choose not to perform the data copy operation. You might choose to start with a fresh IT data mart based on a SAS IT Resource Management 2.7 PDB. This parameter is not case sensitive.

_rc= *macro variable name to hold return code*

Specifies the name of a macro variable that holds the return code value from the execution of this macro. This optional parameter is not case sensitive.

%RMPDB2DM Notes

Here are some notes about %RMPDB2DM that you might consider when using the macro:

- Each time %RMPDB2DM is executed, a new IT data mart is created (even if there is already an IT data mart with the same name).
- A PDB can be migrated multiple times because each migration results in a new IT data mart.
- If the directory that is specified by the WORKDIR= parameter already exists, then make sure that it is empty before executing %RMPDB2DM.
- If any of the following parameters are specified with a value of **N**, then ensure that the related path parameter is set such that it does not overwrite the storage for an existing IT data mart:
  - **StagePathIsRoot=**
  - **SimplePathIsRoot=**
  - **SummaryPathIsRoot=**
- The syntax of a path is validated according to its operating environment. For the IT data mart, the syntax of the default root path determines the syntax that is used for any other paths that are specified unless you override them. For example, if you specify a default root path for a traditional z/OS file system, then the paths to the administrative and spin libraries, as well as the staged data, simple data, and summarized data locations will also default to the traditional z/OS file system.

  For Windows operating environments that run SAS IT Management Solutions, the following characters * ? " | < > / \ are not allowed. In addition, the newline and tab characters are not allowed.

  For UNIX and z/OS operating environments using the ZFS or HFS file systems that run SAS IT Management Solutions, the following characters &* @ \ / | [ ] ^ { } $! > < ( ) % ? " ' ; are not allowed. In addition, a space, newline, tab, and open quotation character are not allowed.

For traditional z/OS file system operating environments that run SAS IT Management Solutions, the following rules apply:

- The length of the data set name can be a maximum of 44 characters. (If you checked the option to allow the location to be a root location instead of a library, then part of the 44 characters are needed by SAS IT Resource Management in order to completely specify the associated locations. Therefore, in this case, the maximum length of the data set name is 26 characters.)
- The data set name consists of segments that are separated by a period (.). The length of each segment can be a maximum of eight characters.
- z/OS restricts the following characters in a segment name:
  - Numerals (0-9), the pound character (#), and the hyphen (-) character are not allowed as the first character of a segment name.
  - The first character of each name must be either an alphabetic character (Aa–Zz) or a dollar sign ($).
  - The remaining seven characters of a segment name can include alphabetic characters (Aa–Zz), numeric characters (0–9), dollar signs ($), pound characters (#), and hyphens (-).

- Individual tables can be omitted from migration by marking them as "not kept" in SAS IT Resource Management 2.7.
- %RMPDB2DM is not intended for migrating across different host platforms (for example, migrating a PDB on Windows to an IT data mart on UNIX).
- SAS IT Resource Management 2.7 tables that are created by the %CPAVAIL macro are migrated as if they were generic collector tables. Note that staging code is not provided for these tables. For best results when performing migration, mark these tables as KEPT=NO in SAS IT Resource Management 2.7 and do not attempt to migrate these tables to SAS IT Resource Management 3.1.1.

%RMPDB2DM Examples

Example 1: Migrate All Tables for All Collectors

In this UNIX example, the **/u/itrm/prod-pdb** PDB is migrated to the Production Metrics IT data mart.

```
%rmpdb2dm(

PDB=/u/itrm/prod-pdb,

workdir=/tmp/itrm/migrate,

metaserver=sasmeta01,

metaport=8561,

metauser=sasadm,

metapassword=AdminAdmin1,

ITDataMart=Production Metrics,
```

```
defaultRootPath=/u/itrm/prod-itdm,

sitelib=/u/itrm/sitelib) ;
```

Example 2: Migrate Specified Collectors

In this Windows example, the **c:\server-pdb** PDB is migrated to the Server Metrics IT data mart. Only the data for the PATROL and NTSMF collectors is migrated in this example.

```
%rmpdb2dm(

PDB=c:\server-pdb,

workdir=c:\temp\migrate,

metaserver=sasmeta01,

metaport=8561,

metauser=sasadm,

metapassword=AdminAdmin1,

ITDataMart=Server Metrics,

defaultRootPath=c:\server-metrics-itdm,

sitelib=c:\sitelib,

adapter=Patrol NTSMF) ;
```

Example 3: Migration Using the z/OS Traditional File System

In this z/OS example, the **SYS2.ITRM.RMF.PDB** PDB is migrated to the zOS RMF IT data mart. The physical storage for the data mart is in the traditional z/OS file system. Space and UNIT allocation values are provided. Note that the WORKDIR= parameter must be in a z/OS UNIX file system such as HFS or ZFS. Also note that the metadata server does not have to be on z/OS.

```
%rmpdb2dm(

PDB=SYS2.ITRM.RMF.PDB,

workdir=/tmp/itrm/migrate,

metaserver=sasmeta01,

metaport=8561,

metauser=sasadm,

metapassword=AdminAdmin1,

ITDataMart=%str(zOS RMF),

defaultRootPath=SYS2.RMF.DATAMART,
```

```
sitelib=SYS2.ITRM.SITELIB,

device=DISK,

primarycyls=50,

secondarycyls=20) ;
```

Example 4: Migration Using the z/OS UNIX File System

In this z/OS example, the **SYS2.ITRM.RMF.PDB** PDB is migrated to the z/OS RMF IT data mart. The physical storage for the data mart is in the z/OS UNIX System Services hierarchical file system.

```
%rmpdb2dm(

PDB=SYS2.ITRM.RMF.PDB,

workdir=/tmp/itrm/migrate,

metaserver=sasmeta01,

metaport=8561,

metauser=sasadm,

metapassword=AdminAdmin1,

ITDataMart=%str(z/OS RMF),

defaultRootPath=/u/itrm/rmf_dm,

sitelib=SYS2.ITRM.SITELIB) ;
```

What is Produced by %RMPDB2DM()

Overview

Executing the %RMPDB2DM macro produces the following three categories of items:

- metadata
- physical storage
- status report

These items are explained in more detail in the following sections.

Metadata

Every table, column, computation, and data transformation, as well as the organizational structure of these items, is described by metadata in the SAS Metadata

Server. The %RMPDB2DM macro defines all of the metadata to support the migrated PDB.

Specific metadata items that are created include the following:

- formulas
- the IT data mart
- objects in the IT data mart that are created for each adapter:
  - libraries
  - staged tables
  - simple aggregation tables
  - summarized aggregation tables
  - jobs

Note: The folder that contains these items created by the same invocation of %RMPDB2DM is named in the form <*logical folder name*> <*unique number*>. A unique random number is generated for each invocation of the migration macro and is used for identification and organizational purposes. For example, here are folders that were constructed for a single run of %RMPDB2DM:

- Migration Formulas 13376
- Simple Aggregation Tables for SAR job 13376 Δ

Each of these items is described in more detail below.

Formulas

In SAS IT Resource Management 2.7, the term *formula* was used to describe a column in a table that was calculated via user-written expression. In IT Resource Management 3.1.1, this functionality is now accomplished by means of computed columns. However, SAS IT Resource Management 3.1.1 does use an object that is called a formula. In SAS IT Resource Management 3.1.1, a formula is a reusable expression that is associated with one or more computed columns in order to allow a single definition to be shared and replicated.

In SAS IT Resource Management 2.7, all levels of a table used the column DATETIME in the class list. In SAS IT Resource Management 2.7, the DATETIME read into DETAIL was transformed in some way to be the DATETIME at the other levels.

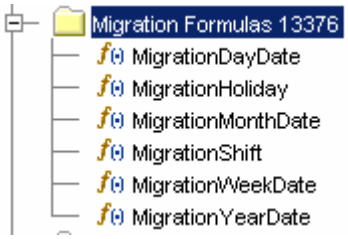
SAS IT Resource Management 3.1.1 uses a different approach. Aggregation transformations perform no transformation of the aging and datetime stamp variables. Therefore, the values that are needed for summarization must be computed as columns that are part of the table used as input to the aggregation transformation.

Migration does this computation by means of formulas that are used on the staging tables. These formulas are used to create the staged columns DAYDATE, WEEKDATE, MONTHDATE, and YEARDATE. The source code that is used to define the WEEKDATE formula respects the setting of the *start of week* that was used in the PDB.

In addition to the formulas that are used for aging, the staged column SHIFT is created by a formula that %RMPDB2DM creates, based on the SHIFT definition used with the SAS IT Resource Management 2.7 PDB. This formula also honors the *holiday shift* that is used by the PDB.

In addition, a new staged column is created named HOLIDAY. This column has values of **Y** or **N**, depending upon whether the date of the observation is for a holiday. This formula is based on the active list of holidays that are read from the SITELIB that is used during migration.

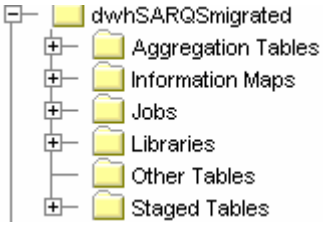
Figure 1.1 Formulas and Folder Created by %RMPDB2DM



IT Data Mart

Each invocation of %RMPDB2DM creates a new IT data mart. The IT data mart is a logical metadata container of related SAS IT Resource Management tables, jobs, and other objects. Multiple IT data marts can be created with the same name, although this practice is discouraged.

Figure 1.2 An IT Data Mart Created by %RMPDB2DM



Objects in the IT Data Mart that Are Created for Each Adapter

In each IT data mart, there are sets of objects that are created for each migrated SAS IT Resource Management 2.7 collector. These objects include staged tables, simple aggregation tables, summarized aggregation tables, the libraries for these tables, jobs that load these tables, and information maps.

Staged Tables

Staged tables are populated by user-written staging code or staging transformations that SAS IT Resource Management supplies. These tables hold the metrics as presented by the data source adapter.

The %RMPDB2DM macro determines the columns are needed for each staging table by determining the columns that are in existence in the SAS IT Resource Management 2.7 PDB. Staged tables also include computed column definitions that are mentioned in the “Formulas” section.

Additional ***name*_RATE** columns are defined to the staged tables of SAS IT Resource Management 2.7 tables of type INTERVAL, for columns that had a variable

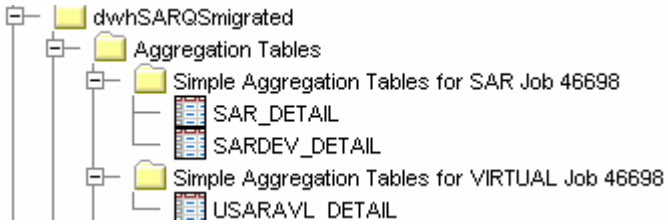
interpretation type of COUNT, TIME, or TIMETICKS. For more discussion about this scenario, see the chapter "Changes from SAS IT Resource Management 2.7 to 3.1.1."

Figure 1.3 Staged Tables and Folders Created by %RMPDB2DM

Simple Aggregation Tables

Simple aggregation tables are analogous to the SAS IT Resource Management 2.7 DETAIL tables. All simple aggregation tables for a given adapter that are migrated by an invocation of %RMPDB2DM are grouped into a single folder under the **Aggregation Tables** folder of the IT data mart.

Figure 1.4 Simple Aggregation Tables and Folders Created by %RMPDB2DM



- In SAS IT Resource Management 2.7, an age limit of 0 for the DETAIL level was a special setting that caused %CPREDUCE to purge the DETAIL table after it was summarized. In SAS IT Resource Management 3.1.1, this same functionality is accomplished by specifying the following settings in the **Specify purging and aging criteria** page of the summarized aggregation transformation wizard:
  - Ensure that the check box for **Purge output table before loading new data** is selected.
  - Ensure that the check box for **Perform aging for output table** is not selected.

  Configuring these specifications causes the existing data in the simple aggregation table to be purged before loading new data when the aggregation transformation is executed.
- In SAS IT Resource Management 2.7 data could be loaded into the DETAIL level even if it should be aged out based on the age limit settings. The purpose of this capability was to allow post-processing (such as user-written chargeback routines) to read the DETAIL data. In SAS IT Resource Management 3.1.1 you can select the option **Allow incoming data even if it precedes the age limit** to enable this same functionality for simple aggregation tables that have been migrated.
- In SAS IT Resource Management 2.7 the aging column for the DETAIL level was always named DATETIME. In the SAS IT Resource Management 3.1.1 simple

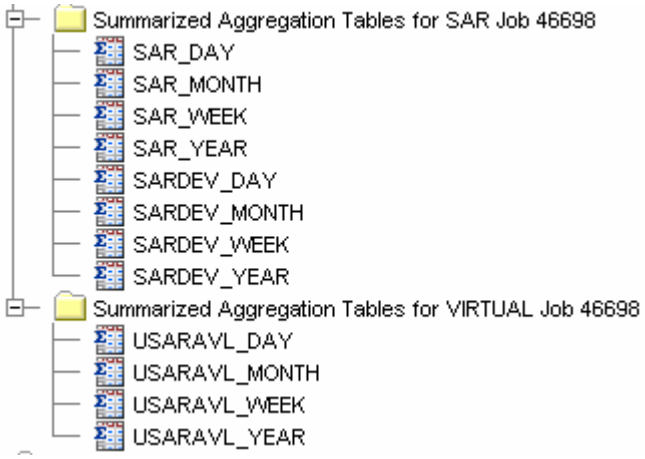
aggregation table that was migrated, a separate aging column named DAYDATE is used to support the aging.

- In SAS IT Resource Management 2.7 the table name was the same at each level of the PDB. In SAS IT Resource Management 3.1.1 the simple aggregation table that is created by migration is named <*table name*>_DETAIL (for example, SARDEV_DETAIL).

Summarized Aggregation Tables

Summarized aggregation tables are analogous to the DAY, WEEK, MONTH, and YEAR tables in SAS IT Resource Management 2.7. All summarized aggregation tables for a given adapter that are migrated by an invocation of %RMPDB2DM are grouped into a single folder under the **Aggregation Tables** folder of the IT data mart.

Figure 1.5 Summarized Aggregation Tables and Folders Created by %RMPDB2DM



- In SAS IT Resource Management 2.7 an age limit of 0 for a summary level table would deactivate summarization for that level. In SAS IT Resource Management 3.1.1 this same functionality is accomplished by selecting **Purge output table before loading new data** and turning off aging.
- In SAS IT Resource Management 2.7 the aging column for all summary levels was always named DATETIME. In the summarized aggregation table that results from a migration to SAS IT Resource Management 3.1.1, a separate aging column that is named appropriate to the summarization is used to support the aging. These columns are created as computed columns in the staging tables. The names of these columns are DAYDATE, WEEKDATE, MONTHDATE, and YEARDATE. The WEEKDATE column honors the SAS IT Resource Management 2.7 “Start of Week” setting from the PDB.
- In SAS IT Resource Management 2.7 the table name was the same at each level of the PDB. In SAS IT Resource Management 3.1.1 the summarized aggregation table created by migration is named <*table name*>_<*level*> (for example, SARDEV_WEEK).

Libraries

The creation of the IT data mart results in the creation of the Admin and Spin libraries. Additional libraries are created to store the staged tables, simple aggregation tables, and summarized aggregation tables.

Figure 1.6 Libraries Created by %RMPDB2DM

If you specified to put all tables of a certain type (such as staged) into a single library, then only a single library for that type is created. However, if you choose the recommended default of putting each table in a separate library, then numerous libraries of that type are created (one for each table).

Jobs

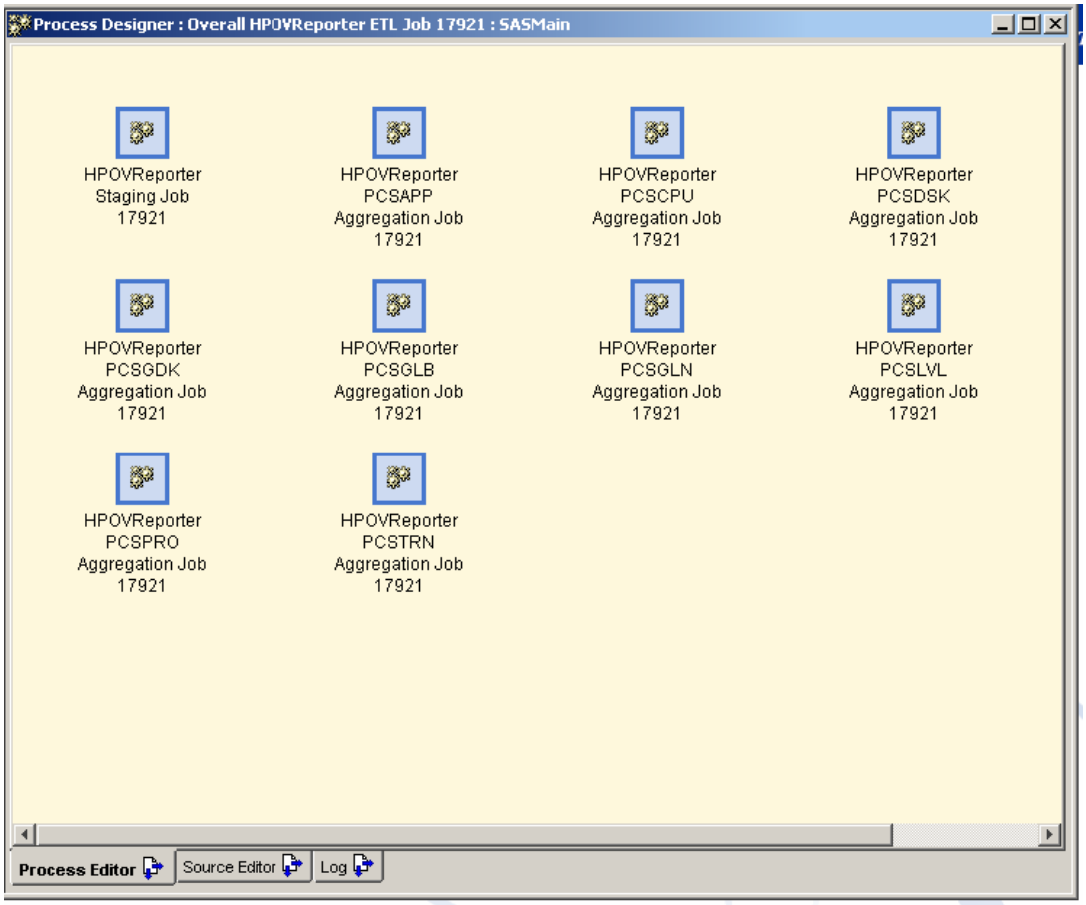
Each adapter creates the following jobs:

- An overall job for the adapter. This overall job includes the staging job and the aggregation jobs.
- A staging job. The staging job populates the staged tables in the IT data mart from raw data sources.
- An aggregation job for each staged table. The aggregation job populates the simple aggregation table and the summarized aggregation tables that are based on the given staged tables.

Figure 1.7 Jobs and Folders Created by %RMPDB2DM

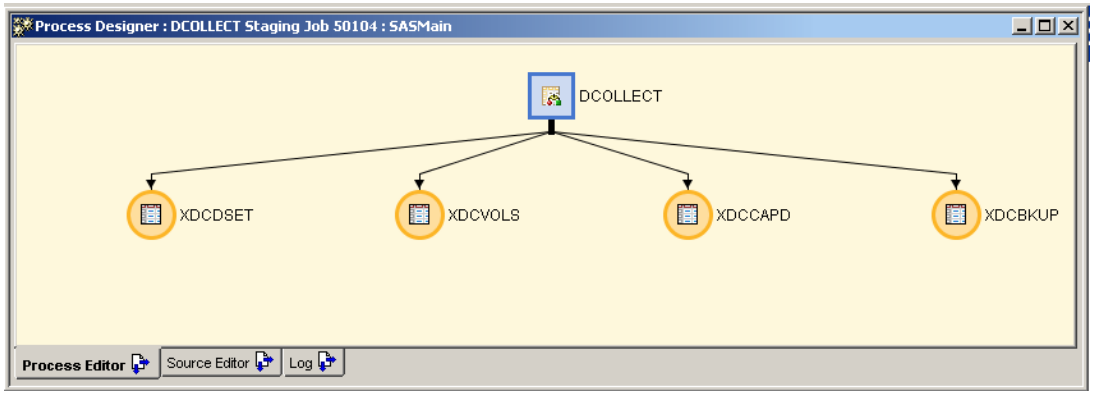
The overall job for each adapter contains the staging job for the adapter and all of the aggregation jobs for the adapter. After the customization work that is described in the "Subsequent Tasks" section is completed, this job can be deployed or the individual jobs can be deployed separately.

Figure 1.8 Contents of the Overall Job Created for an Adapter by %RMPDB2DM



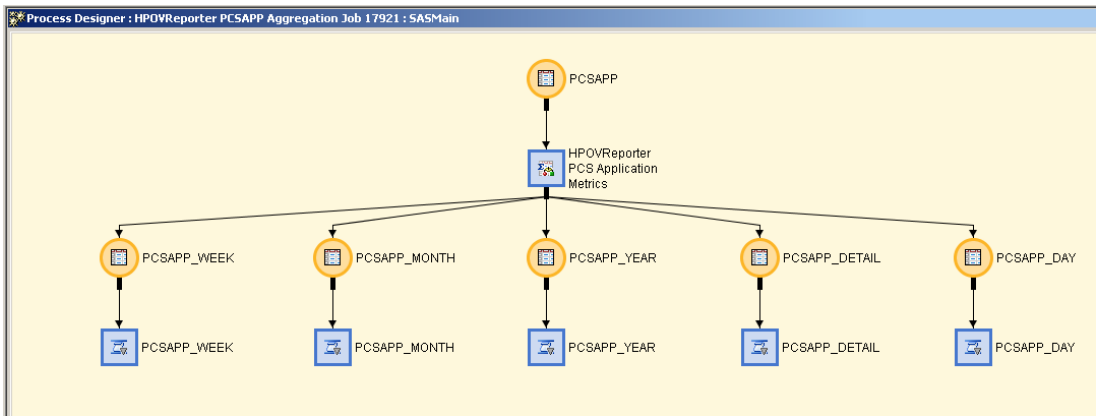
If the adapter being migrated is supported by SAS IT Resource Management 3.1.1, then the staging job for the adapter has a staging transformation for the specific adapter as the starting point of the job. Otherwise, the first element of the job is a user-written transformation. In either case, the outputs of the first transformation of the staging job are the staged tables for the adapter.

Figure 1.9 Staging Job Created for an Adapter by %RMPDB2DM



An aggregation job is created for each table that is staged by the staging job. The aggregation job starts with the staged table as the input to an aggregation transformation. This transformation functions similarly to the SAS IT Resource Management 2.7 %CxPROCES and %CPREDUCE macros. The outputs of the aggregation transformation are the simple and summarized tables. Each of these tables is input to information map transformations that create information maps for use in other SAS solutions such as SAS Web Report Studio and SAS Enterprise Guide.

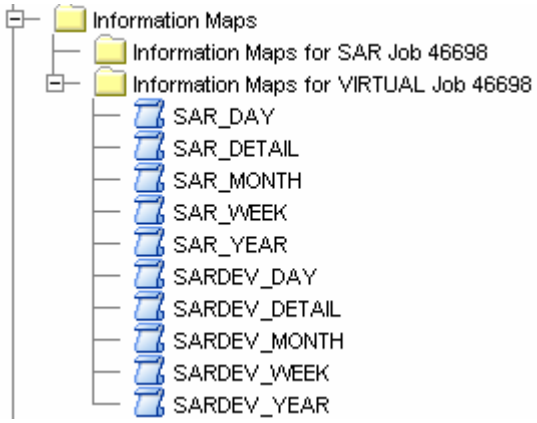
Figure 1.10 Aggregation Job Created by %RMPDB2DM for an Adapter Staged Table



Information Maps

The aggregation jobs that are defined by %RMPDB2DM also include an information map transformation for each output aggregation table. The information maps are not actually created until the aggregation job is executed. These information maps do not include any filters. The information map transformations that are created using SAS IT Resource Management 3.1.1 define filters based on rank columns. SAS IT Resource Management 2.7 does not support rank columns. Therefore, %RMPDB2DM cannot create filter definitions.

Figure 1.11 Information Maps and Folders Created by %RMPDB2DM



Physical Storage

Not only does %RMPDB2DM create metadata, it also creates the physical SAS libraries and tables that are needed to store the data. These libraries are allocated in accordance with the parameters that are specified to the macro. In addition the simple and summarized aggregation tables are created and the data is loaded into these tables from the PDB.

The storage location or locations that are specified need to be accessible to the SAS session where the macro is executed. These locations can be on a networked drive or other device. If you specify separate locations (for example, for simple and summarized aggregation tables) the locations do not need to be on the same device or file system.

Special Considerations for z/OS Physical Storage

For z/OS systems the IT data mart can be created in the traditional z/OS file system or in the UNIX file system that is managed by UNIX Systems Services (ZFS or HFS). One advantage of using a UNIX file system is that you do not need to specify additional allocation information.

If you choose to use the traditional file system, then you might find it necessary to use the DEVICE=, PRIMARYCYLS=, and SECONDARYCYLS= parameters in order to ensure adequate space.

Regardless of whether the traditional or UNIX file system is chosen, you can still choose whether to put like categories of tables in a single SAS library or an individual library per table. For best results regarding scalability, ensure that each table resides in a separate library.

Note: This behavior is the default.

Status Report

At the completion of %RMPDB2DM, a status report is written to the SAS output area (SASLIST). The following figure shows an example of this report.

Figure 1.12 Status Report Produced by %RMPDB2DM

```
                    ITRM Migration Report       17:09 Monday, June 25, 2007

ITRM 2.7 Migration started at 5:09:42 PM on Monday, June 25, 2007
PDB to be migrated: C:\ITRM\HPOVPA-PDB

Using Metadata Server itrm.metaserver.com on port 8561 with userid itrmuser

Creating Formulas:
 MigrationDayDate formula created
 MigrationMonthDate formula created
 MigrationYearDate formula created
 MigrationWeekDate formula created
 MigrationHoliday formula created
```

```
 MigrationShift formula created

IT datamart MigratedHPOVREP created successfully

Tables for the following adapters will be Migrated: HPOVReporter

 Created Staging Job for HPOVReporter
 Created Aggregation Job for PCSAPP
 Created Aggregation Job for PCSCPU
 Created Aggregation Job for PCSDSK

Begin Migration Data Copy
  Processing PCSAPP
   Creating empty MONTH PCSAPP table
   Copying MONTH data for table PCSAPP
   Creating empty DETAIL PCSAPP table
   Copying DETAIL data for table PCSAPP
   Creating empty YEAR PCSAPP table
   Copying YEAR data for table PCSAPP
   Creating empty WEEK PCSAPP table
   Copying WEEK data for table PCSAPP
   Creating empty DAY PCSAPP table
   Copying DAY data for table PCSAPP

  Processing PCSDSK
   Creating empty DETAIL PCSDSK table
   Copying DETAIL data for table PCSDSK
   Creating empty DAY PCSDSK table
   Copying DAY data for table PCSDSK
   Creating empty MONTH PCSDSK table
   Copying MONTH data for table PCSDSK
   Creating empty WEEK PCSDSK table
   Copying WEEK data for table PCSDSK
   Creating empty YEAR PCSDSK table
   Copying YEAR data for table PCSDSK

  Processing PCSCPU
   Creating empty WEEK PCSCPU table
   Copying WEEK data for table PCSCPU
   Creating empty YEAR PCSCPU table
   Copying YEAR data for table PCSCPU
   Creating empty MONTH PCSCPU table
   Copying MONTH data for table PCSCPU
   Creating empty DETAIL PCSCPU table
   Copying DETAIL data for table PCSCPU
   Creating empty DAY PCSCPU table
   Copying DAY data for table PCSCPU

ITRM 2.7 Migration completed at 5:25:26 PM on Monday, June 25, 2007
```

Subsequent Tasks

After %RMPDB2DM has been used to migrate a PDB, you need to perform the following tasks in order to continue loading the IT data mart with incoming data:

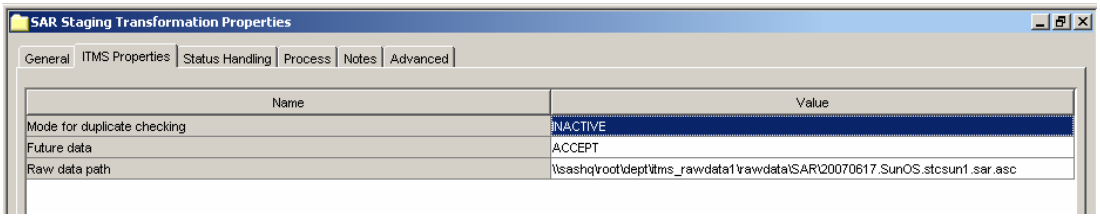
- Update the ITMS properties of staging transformations for supported SAS IT Resource Management 3.1.1 adapters (especially the path to the raw data).
- Supply SAS code for user-written transformations.
- Review computed columns (migrated formulas) to ensure that they are correct, including their use of formulas.
- Consider removing information map transformations from aggregation jobs.
- If you used process exits in SAS IT Resource Management 2.7, then enhance job flow to provide necessary functionality.
- Generate, deploy, and schedule jobs for execution.

Each of the tasks above is explained in more detail in the following sections.

Update ITMS Properties of Staging Transformations

If the SAS IT Resource Management 2.7 tables being migrated are supported by a SAS IT Resource Management 3.1.1 adapter, then the staging job that is created for each supported adapter includes a staging transformation. Open the Properties dialog box for the transformation and choose the **ITMS Properties** tab. On this tab, specify the adapter-specific attributes such as data duplication checking options and the location of the raw data. These options vary depending upon the specific adapter.

Figure 1.13 ITMS Properties of a Staging Transformation for a Supported Adapter



Fill in SAS Code for User-written Transformations

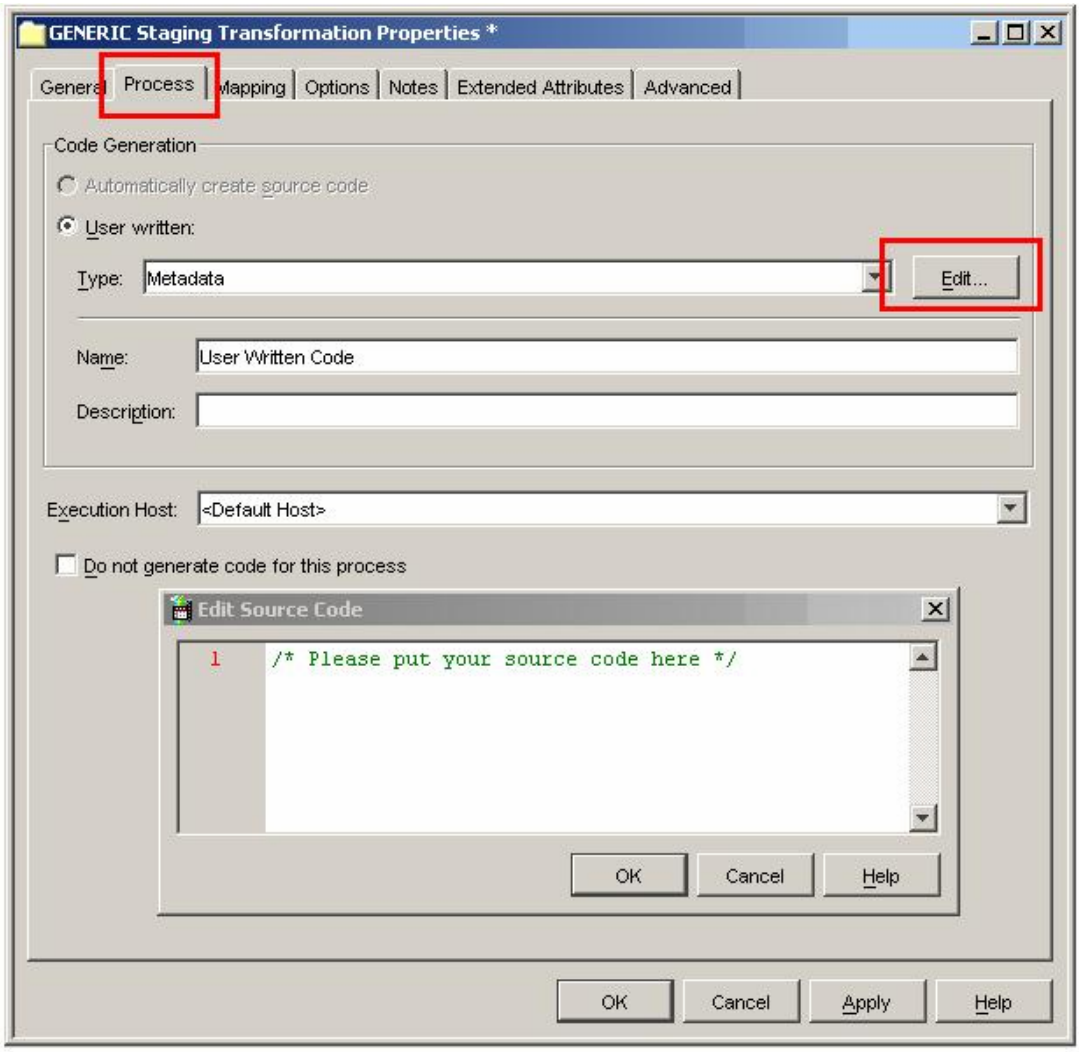
Not all SAS IT Resource Management 2.7 collectors or *generic* collectors have a corresponding SAS IT Resource Management 3.1.1 adapter. A separate staging job (and set of folders) is created for each distinct collector set of SAS IT Resource Management 2.7 tables that are migrated by %RMPDB2DM and are not supported by SAS IT Resource Management 3.1.1. For example, if the PDB that is being migrated included tables for the WEBLOG collector and for various GENERIC collectors, then two staging jobs would be created: one for WEBLOG and one for GENERIC.

In each of these staging jobs the staging transformation is essentially a placeholder for user-written code to perform the staging. These transformations are commonly referred to as a user-written transformation. Open the Properties dialog box for the transformation, navigate to the **Process** tab, and click **Edit** to open the code window.

You can supply the code in this window to populate the target table or tables for the migrated collector.

Note: If you have multiple generic collectors in your PDB, then only a single staging job is created for all of the generic collectors. You might want to split this staging job into separate jobs because not all the staging tables are from the same generic collector or the same staging code.

Figure 1.14 Specifying User-written Transformations



Review Computed Columns

As part of the migration process, computed columns are created to provide like functionality for the SAS IT Resource Management 2.7 derived variables and formulas. Derived variables result in computed columns in the staging tables. Formula variables result in computed columns in the appropriate simple and summarized aggregations.

You should review the source code for each of these computed columns to ensure that they function correctly in this new context. Here are some examples of problems that can occur with the migrated source code:

- using formats or informats that cannot be located.
- referencing other statistics where the referenced statistics were of interpretation type COUNT, TIME, or TIMETICKS. These statistics might now be weighted rate statistics; therefore, a different variable name should be used. For more information, see the section "Normalized Values are Now Weighted Rates."

Consider Removing Information Map Transformations

Aggregation jobs that are produced by %RMPDB2DM contain information map transformations. Information maps facilitate the process of generating reports on your data and they are the required input for SAS Web Report Studio. However, if your job generates several information maps, processing can take a long time.

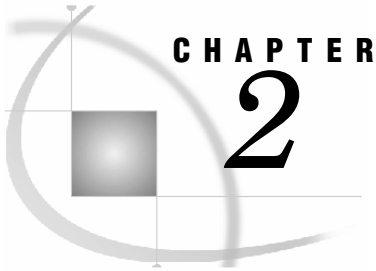
If you do not intend to use the information maps, then you can save execution time by removing the unneeded information map transformations from the aggregation jobs. If at a later time you want to use the information maps, then you can update the job by adding in the information map transformations and redeploying the job. For more information about performing this task, see the "Best Practices" appendix in *SAS IT Resource Management 3.1.1: Administrator's Guide*.

Process Exit Considerations

SAS IT Resource Management 2.7 allowed for the use of process exits. In SAS IT Resource Management 3.1.1 the architecture has changed such that process exits are no longer supported. In some cases, the same functionality is possible via attributes of the transformations, tables, or columns (including computed columns). For exit processing that cannot be accomplished via these mechanisms, you can alter the process flow diagram to include your own transformations to accomplish the same work as the process exits.

Generate, Deploy, and Schedule Jobs for Execution

After all job customization is complete, you can generate each job, deploy it to the server, and schedule the job for execution. Do not using SAS Data Integration Studio to execute any of the jobs that are generated by %RMPDB2DM. For more information about generating, deploying, and scheduling jobs for execution, see the SAS IT Resource Management Help and *SAS IT Resource Management 3.1.1: Administrator's Guide*.



CHAPTER 2

Changes from SAS IT Resource Management 2.7 to 3.1.1

Normalized Values Are Now Weighted Rates 27
Pre-set Values for SHIFT Are Ignored 28
Certain HP-PCS Tables Are No Longer Supported 28
Missing Formats Messages Are in the Migration Status Report 28
Improved Support for Sum of Weights Is Available 29

Normalized Values Are Now Weighted Rates

In SAS IT Resource Management 2.7, the use of variable interpretation types influenced the behavior of summarization. Specifically, columns with an interpretation type of COUNT, TIME, or TIMETICKS in INTERVAL tables underwent a normalization transformation before summarization.

In this normalization process, the incoming value was first turned into a rate by dividing the metric by DURATION. If a weight variable had been specified, then the metric would instead be divided by the weight variable. The resulting value is what was used in computations by %CPREDUCE.

In SAS IT Resource Management 3.1.1 no such implicit normalization occurs. However, in order to provide results that are consistent with the existing data that migrated from SAS IT Resource Management 2.7, %RMPDB2DM creates a corresponding *rate* column in the staged table for each COUNT, TIME, and TIMETICKS type column migrated for an interval table. This *rate* column is then used with weighted statistics (such as weighted mean), specifying DURATION or the indicated SAS IT Resource Management 2.7 weight variable, to provide the same computations that are achieved through the SAS IT Resource Management 2.7 normalization technique.

For example, if you had a COUNT column named PGFAULT in an SAS IT Resource Management 2.7 interval table, then the SAS IT Resource Management 3.1.1 staged table would include a computed column named PGFAULT_RATE. The source code for the computation would be as follows:

```
IF DURATION GT 0 THEN PGFAULT_RATE = PGFAULT / DURATION;
ELSE PGFAULT_RATE = .;
```

The statistics that are affected by the normalization are computed from the _RATE column with the result being stored in the same column name as was used by SAS IT Resource Management 2.7. For example, the Standard Deviation of PGFAULT would be stored in PGFAULTD, although the statistic is actually a statistic on PGFAULT_RATE and not on PGFAULT. The use of the weighted rate gives the same result as the implicit normalization.

Pre-set Values for SHIFT Are Ignored

In SAS IT Resource Management 2.7, it was possible to set the value for SHIFT in the underlying data (for example, through MXG customization), and not use the SAS IT Resource Management SHIFT definitions.

In SAS IT Resource Management 3.1.1, this capability is no longer supported. SHIFT is a computed column in the tables that are produced by staging transformations. This computed column uses a Migration_Shift formula that is created by %RMPDB2DM.

If you want to alter the logic for assigning SHIFT, then you have the following two choices:

1. Change the source code for the Migration_Shift formula. This change affects the computation of SHIFT in all staged tables in the IT data mart. You will need to locate the Migration_Shift formula in the appropriate **Migration Formulas** folder created for this invocation of %RMPDB2DM.
2. Change the source code for SHIFT computed column. This change affects only this particular SHIFT column.

Certain HP-PCS Tables Are No Longer Supported

The following SAS IT Resource Management 2.7 tables for the HP-PCS collector are no longer supported by a staging transformation in SAS IT Resource Management 3.1.1:

- PCSGDK (PCS Global Disk Metrics)
- PCSGLN (PCS Global LAN Metrics)

In SAS IT Resource Management 2.7, these tables were populated by retrieving data from the PCSGLB (Global) table. In SAS IT Resource Management 3.1.1, you should use the PCSGLB table instead. Note that the PCSGDK and PCSGLN staged tables and aggregations are migrated; however, the staging transformation does not populate these tables.

Missing Formats Messages Are in the Migration Status Report

The migration process verifies that any associated SAS formats can be located. If not, the list of missing formats is displayed as part of the migration status report. Missing formats do not cause migration or the generated jobs to fail; however, missing formats might yield unexpected results in reporting. Additionally, any formats that are used by computed column or formula code need to be in the format search path. Migration does not verify source code for computed columns.

Figure 2.1 Missing Formats Listed in Migration Status Report

ITRM Migration Report

ITRM 2.7 Migration started at 9:55:51 AM on Friday, June 22, 2007
PDB to be migrated: SYS2.ITRM.SMF.PDB

Using Metadata itrm.sas.com on port 8561with userid itrmuser

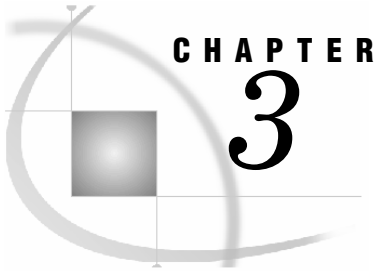
The following formats are needed but do not exist: $MGDBPT. $MGDBTT. MGDBTY.
. . .

Improved Support for Sum of Weights Is Available

Both SAS IT Resource Management 2.7 and SAS IT Resource Management 3.1.1 enable you to request computation of weighted statistics. This request typically involves the computation of the sum of weights. SAS IT Resource Management 2.7 treated the sum of weights the same as the sum of the weight variable. For example, if X (the analysis variable) was to be weighted by Y, then the sum of weights was simply the sum statistic requested on Y.

In cases where the analysis has no missing values, this treatment is entirely correct. However, if the analysis variable has a missing value, then this treatment can lead to erroneous results.

SAS IT Resource Management 3.1.1 more correctly maintains the sum of weights for an analysis variable as a separate statistic. This statistic is the sum of the weight variable where the analysis variable is not missing and thus it is the sum of Y with respect to X not missing.



CHAPTER 3

Other Resources

If You Need Help 31
References 32

If You Need Help

For more information about migration, check with your SAS Installation Representative or with SAS Technical Support.

Contact SAS Technical Support at **http://support.sas.com/techsup/contact/index.html**.

If you are having a problem with PDB migration, then follow these directions and include the specified information when you open a tracking entry:

- Specify CLEANUP=N on the %RMPDB2DM macro.
- Create an empty SAS library to backup the contents of the work directory just before ending the SAS session.
- Just before the invocation of %RMPDB2DM, include the following SAS statements:

```
OPTIONS MPRINT;
LIBNAME SNAPDIR 'location of snapshot library';
PROC OPTIONS OPTION=JREOPTIONS; RUN;
PROC JAVAINFO; RUN;
```

- Just after the invocation of %RMPDB2DM, include the following SAS statements:

```
OPTIONS NOMPRINT OBS=MAX;
%PUT _ALL_;
PROC COPY IN=WORK OUT=SNAPDIR; RUN;
PROC CPORT LIB=SNAPDIR FILE='some external file'; RUN;
```

- Attach the SASLOG and SASLIST output to the tracking entry.
- Attach the contents of the path that is specified by the WORKDIR= parameter. You might need to zip this file in order to upload it, or you might have to contact technical support for information about transferring the file via FTP.
- Attach the external file from the PROC CPORT invocation. You might need to zip this file in order to upload it, or you might have to contact technical support for information about transferring the file via FTP.
- Attach the Java output and error files (tkjni.out and tkjni.err) to the support track. The %RMPDB2DM macro uses the SAS DATA Step Java Object support feature. The tkjni.out and tkjni.err files serve as the *standard output* and *standard error* locations where Java writes any messages or errors.

  The location of these files depends upon your server platform.

- On Windows, these files can be found in the directory **C:\Documents and Settings\<userid>** where <*userid*> is the ID that is used to run the migration code.
- On z/OS, these files are pointed to by the directives that are specified in the TKMVSENV data set that is used as part of the SAS invocation.
- On UNIX, contact SAS Technical Support for assistance.

If you have difficulty locating the tkjni.out and tkjni.err files or need to transfer them via FTP, please contact technical support for assistance.

References

The following documentation can be viewed online at **http://support.sas.com/documentation**.

- *Introduction to SAS IT Resource Management 3.1.1*
  This document provides an overview of the architecture and the major features of SAS IT Resource Management 3.1.1.
- *SAS IT Resource Management 3.1.1: Administrator's Guide*
  This document provides a detailed description of SAS IT Resource Management 3.1.1 for data administrators.
- *SAS IT Resource Management 3.1.1: Glossary*
  This document is a complete glossary of terms used by SAS IT Resource Management 3.1.1 software and documentation.
- SAS IT Resource Management 3.1.1 Adapter Metrics Web page
  This web site includes detailed information about the aggregation metrics that are provided by SAS IT Resource Management 3.1.1 adapters.
- *SAS IT Resource Management Report Conversion Guide: 2.7 to 3.1.1*
  This document provides instructions for converting SAS IT Resource Management 2.7 reports for use with SAS IT Resource Management 3.1.1.
- Installation Instructions
  SAS IT Resource Management 3.1.1 is installed with your SAS software. For more information, see the *Planning Installation Edition Kit* and the SAS installation instructions that are available from the Install Center at **http://support.sas.com/documentation/installcenter/index.html.**

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