



How to do Currency Translation for Financial Application using SAP BPC 7.0 version for Microsoft SQL Server

Applicable Releases:

SAP BPC MS 7.0

Version 1.1

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Document History

Document Version	Description
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1.10	Add more property of Category and checkpoint of Time dimension
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1.00	First official release of this guide
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Typographic Conventions

Type Style	Description
<i>Example Text</i>	Words or characters quoted from the screen. These include field names, screen titles, pushbuttons labels, menu names, menu paths, and menu options. Cross-references to other documentation
Example text	Emphasized words or phrases in body text, graphic titles, and table titles
Example text	File and directory names and their paths, messages, names of variables and parameters, source text, and names of installation, upgrade and database tools.
Example text	User entry texts. These are words or characters that you enter in the system exactly as they appear in the documentation.
<Example text>	Variable user entry. Angle brackets indicate that you replace these words and characters with appropriate entries to make entries in the system.
EXAMPLE TEXT	Keys on the keyboard, for example, F2 or ENTER.

Icons

Icon	Description
	Caution
	Note or Important
	Example
	Recommendation or Tip

Table of Contents

1. Business Scenario	1
2. Background Information	1
3. Prerequisites.....	2
4. Step-by-Step Procedure.....	3
4.1 Create/Modify the Application.....	3
4.2 Required Dimension properties	5
4.3 Business Rules	7
4.4 Script Logic.....	10
4.5 Loading Exchange rates	12
4.6 Loading the Financial data	13
4.7 Executing the Currency Translation task	14

1. Business Scenario

This document describes how to set Currency Translation for Financial application with BPC 7.0 Microsoft SQL Server based version.

This “How to Guide” will focus on what the dimension properties and the relevant setting required for creating the Currency translation using the Business Rules tables and script logic using the “BPC Admin”. This will also show how to setup the data package to run the task using the “BPC Excel.”. Business Rules provide the mathematical foundation for the BPC application, and allows the clients to manage both management and legal consolidation reporting.

SAP Business Planning and Consolidation provides standard support for multicurrency translation and reporting. The default configuration expects all data to be loaded in the local currency (LC) and then translated into one or more common reporting currencies. However, if a significant portion of the LC data is also in the main reporting currency used, there are alternative configurations available that can dramatically improve currency conversion time and save disk space in the relational database. This guide will go through the basic currency translation configuration used in financial application and processes along with the changes required to implement such a partial translation configuration.

2. Background Information

In corporations it is quite common to find multicurrency financial models where a large portion of the data is already in the desired reporting currency. For example, a US based company may have facilities located in Germany and Canada which require data to be loaded in their local currencies for internal reporting purposes. However, for management and external reporting purposes financial statements are prepared only in US Dollars (the reporting currency).

When the reporting currency is different from the currency of the entity which is referred as Local currency then the currency translation comes into play. The currency translation process makes use of an application (typically called Rate) to store the currency exchange rates in and one or more applications which hold the financial data that requires translation. The currency translation process reads in the local currency (LC) records from the financial application, looks up the corresponding currency translation rate in the rate application, and generates a new record in the financial application for the same dimensional intersections as the original record except for the reporting currency value. The original LC records remain unchanged.

Using this process, data that comes into the application either through manual data entry or through data loading is always and only loaded to the reporting currency of LC or then translated to one or more desired reporting currencies.

Currency translation can basically run in two modes:

1. Reporting currency mode: where it converts transaction data recorded in local currency to specified reporting currency.

2. Group mode: where it converts subsidiaries' data to Group's currency.

There are mandatory conditions listed below under the dimension properties session that should be satisfied for the currency translation to run for any type of applications in reporting currency mode.

If you want to run currency translation in group mode, there are some extra conditions that are needed. However this HTG will cover only the type of applications in reporting currency mode. Please refer to the HTG on "How to run Currency translation for Consolidation Application in BPC MS" to see how to run in group mode.

3. Prerequisites

- Successful installation of BPC 7.0 version for Microsoft.
- Completion of Apshell activation.
- Understanding Business Rules for BPC.

Provide information about:

- Relevant SAP Notes
OSS Note – 1254330 Precondition for running currency translation

4. Step-by-Step Procedure

In order for the standard currency conversion function to work you must have the following items in your application set namely the Rate Application, which is used to store the currency rates used for translation into the reporting/group currency? The following is required and must be in place for the currency conversion to work:

1. Currency type dimension: stores the reporting and input currencies for your organization.
2. CURRENCY property in your Entity type dimension: defines the local (functional) reporting currency of the input/submitted values for the entity member.
3. RATETYPE property in your Account dimension: determines the rate and logic to be used in translation of the given account (average, end of month, or none).

Then the BUSINESS RULES for currency conversion are defined with the rates and logic to be applied to each Account Rate Type is set in the business rules table. The SCRIPT LOGIC TASK to invoke the stored procedure and to pass to the program the appropriate parameters is also set. Finally the appropriate Data Package to execute the task is also set.

Note: The Rate application is delivered with Apshell. Also most of the property required for this is also pre-delivered. However it is recommended that it is verified before proceeding further.

4.1 Create/Modify the Application

Currency Translation can run on any type of reporting application. Currency conversion applies to both Financial and Legal Consolidation Applications to which a corresponding Rate Application has been referenced and that the reporting application must contain a currency (type R) dimension.

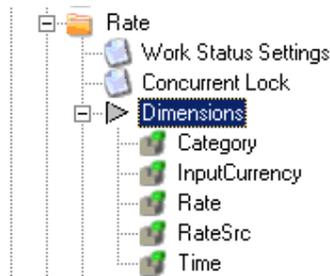
RATE application:

A rate application is a supporting application for financial and consolidation reporting applications. It is used to store exchange rates that support currency conversion in financial applications. The time dimension must be identical to the dimension used by the applications using the rate application to store their foreign currency exchange rates and must have the same category member IDs.

This application must include a currency dimension detailing the exchange rates by each input currency. The currency dimension in a rate application does not need to have the REPORTING property. The Currency conversion process makes use of a RATE application, where the appropriate exchange rates will be searched for each relevant currency. This cube can be named as desired. But we will refer to it as the RATE application, in this document.

Note: The dimension can be shared by application within an application set.

But for RATE application, to fulfill certain requirements, Rate (Account Dimension for RATE application) and RateSrc (Entity Dimension for RATE application) are specific and utilized only by Rate Application.



Rate is utilized to detail the different types of rate (Average, End-of-period, etc.).

RateSrc is used to store type of Rate value source like input or calculated rate.

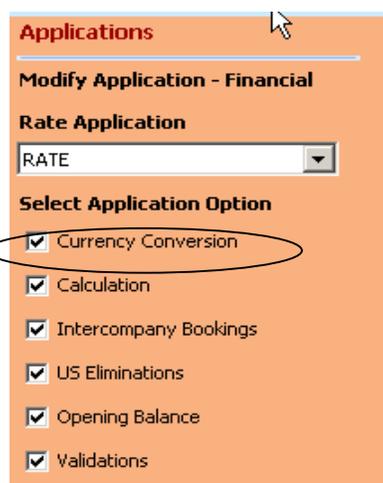
InputCurrency dimension is utilized to store for each applicable local currency.

Time and **Category** dimensions can be shared by all the application involved in consolidation.

In SAP BPC, to do currency translation there should be at least 2 applications:

- Financial
 - Main Application containing all financial data
- Rate
 - Contains all currency exchange rate

Here is the screenshot from the financial type application



The currency conversion business rules tables can also be activated by going through the web admin parameters where the following parameter is set to "1".

FXTRANS	1
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4.2 Required Dimension properties

Currency Translation can run on any type of reporting application. Before running it, there are some required dimension properties that should be checked to ensure that the following conditions, which are mandatory for currency translation to run successfully.

1. **ACCOUNT** Dimension – Property – RATETYPE

The system uses this property to determine Value of this property must be a valid member of RATE account dimension, such as AVG conversion rate for average, END for end of period. Value is optional.

2. **CATEGORY** Dimension – Need to have same properties as Category dimension of Apshell.

Property – CATEGORY_FOR_OPE, FX_DIFFERENCE_ONLY, FX_SOURCE_CATEGORY, OPENING_PERIOD, OPENING_YEAR, RATE_CATEGORY, RATE_PERIOD, RATE_YEAR

Even though we will not use above properties, program will check whether it exists or not. If category dimension doesn't have any one of them, it will make **FX-120 Error**.

3. **ENTITY** Dimension - Property – CURRENCY

This property is used to denote the local currency for current ENTITY, for example, for ENTITY US, the currency is USD, for FRANCE, currency is EUR.

Value of this Property must be a valid member of INPUT_CURRENCY dimension.

Here is the Entity sample file:

ID	CURRENC	ELI	EVDESCRIPTION	FX_TYP	INTCC	OWNER	STORED_C	ALC	PARENTH1
1004	JPY		Japan Inc.			SAP_ALLV816485			CG1
CG1	USD		Consolidate Group 1			SAP_ALLV816485			H1
H1	USD		Investments			SAP_ALLV816485			

4. **CURRENCY** Dimension - Property – CURRENCY_TYPE

The currency dimension must include the properties REPORTING, whose values are Y or blank, and CURRENCY_TYPE, whose values are G for group currency, R for reporting currency, T for transaction currency, or L for local currency.

Note – For Group Currency (this value is mainly used for Consolidation, so for other type of reporting application, it is can be omitted.)

ID	EVDESCRIPTION	REPORTING	MD	SCALE	ENTITY	CURRENC
EUR	EURO	Y				R
LC	Local Currency					L
USD	US Dollar	Y				R

5. **TIME** Dimension - Property – YEAR

This property contains the year information of id. The YEAR property also allows you to filter, sort, and report based on the year. You should place the YEAR properties in chronological order in the file, in order for the EVTIM function in BPC for Excel to give offsets correctly.

For example, if ID is 2009.AUG, YEAR is 2009.

Note: Year property value should be Numeric. Sometimes user uses XXXX for some dummy top node member. In that case, use '0000 instead of XXXX

If Year property has character value, Business Rule will return **FX-120 Error**.

TIME Dimension - Property – PERIOD

This property denotes which period current time belongs to. The PERIOD property allows you to filter, sort, and report based on the period.

For example, if ID is 2009.AUG, period is AUG.

TIME Dimension - Property – TIMEID

This is one of the most important properties that are required for the currency translation to work. The system uses this property to lookup rates from the rate application. This property is a numerical value for current time.

For example, 2009.AUG, TIMEID is 20090800.

TIME Dimension - Property – MONTHNUM

The system uses this property to determine the “Last Period” of prior fiscal year. This property basically helps to determine the opening period rate in the rate formula. This property takes the numerical value of month. For example, 2009.AUG, MONTHNUM is 8.

Note 1: Only base member should have MONTHNUM. If other parent member has it, Business Rule will return **FX-120 Error**.

Note 2: MONTHNUM should be unique in the each year. If it is not, Business Rule will return **FX-120 Error**.

6. **INPUTCURRENCY** Dimension - Property – MD

This property is used to denote the relationship between current currency and the standard currency. It can take two values:

D: Dividend. If Property “MD” does not exist, “D” is default relationship.

M: Multiple. If the rate of a currency to the standard one is a very small number, for example the Italy lira to USD, we can store the amount in lira equal to 1 USD, and mark it as “M”. This property can be used to improve accuracy.

For some optional dimensions, such as DATASRC and FLOW, if they don't exist, Currency Translation will still run successfully. However, if they exist, they will impact the translation process. In this case, following properties in these dimensions are also mandatory.

7. DATASRC Dimension - Property – DATASRC_TYPE

The system uses this property to determine whether the data is “Input” balances and their related “Manual” adjustments. The value of “I” and “M” in the DATASRC_TYPE property means that they are either Input or Manual adjustment. The value of “A” in the DATASRC_TYPE property means that they are either automatic adjustment or elimination.

Note: Only the member with DATASRC_TYPE ≠ A will be converted.

8. DATASRC Dimension - Property – IS_CONVERTED

When the IS_CONVERTED property is set to N or blank, members are ignored in the conversion. When set to Y, members are converted from the local currency to the desired currency. When set to ‘G’ means that the figures are entered directly in Reporting Currencies and only converted to Group Currencies.

9. FLOW Dimension (AcctDetail Dimension) - Property – FLOW TYPE

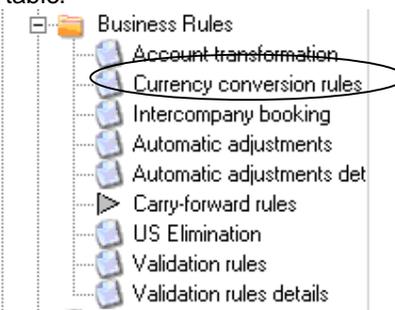
This property is used to define the type of flow of the dimension. The FLOW_TYPE property can take many values, but the most important is the value CLOSING. The business rule of currency translation with FORCE_CLOSING = Y will make use of it.

ID	EVDESCRIPTION	FLOW_TYPE
F_VST	Total Change in scope	
F_VS	Change in scope of consolidation	VARSCP
F_VSM	Variation in Scope : Method	VARSCPMETH
F_VSP	Variation in Scope : Percentage	VARSCPPERC
F_VSN	Variation in Scope : New	VARSCPNEW
F_VSS	Variation in Scope : Sold	VARSCPLEAV
F_100	Opening Balance	OPENING
F_999	Closing balance	CLOSING

This dimension is needed for business rules calculations to breakdown account activity or flow. For example, some accounts, like Fixed Assets, have a FLOW dimension which contains Opening Balances, Additions, Deletions, Transfers and Ending Balances.

4.3 Business Rules

1. In the Admin Console, select the “Financial” application, then “Business Rules” and select the “Currency Conversion rules” table.



2. Fill the currency conversion table based on the requirement (delete the existing content first):

Currency conversion rules Definition:						
	Account rate type	Source flow	Destination account	Destination flow	Formula	
	AVG	...	...	...	...	[AVG]
	END	...	...	...	...	[END]
*						

Basically, this will convert currency value based on the Ratetype. BPC will get the AVG or END rate value from Rate cube and will calculate it.

Usually, financial statement needs more complex rule for CTA calculation or sometimes a specific account doesn't need to be converted. In addition, if user has a FLOW dimension (Acctdetail) it will be more complex. That's the reason why this table has other columns.

Here are the details of each column in the Currency Conversion business rule.

Column Name	Length	Description
Acct rate type	10	The value of the RATETYPE property of the source Account
Source flow	20	The member of the Source Flow
Destination account	20	The ID of the Destination Account (or blank for =source)
Destination flow	20	The ID of the Destination Flow (or blank for = source)
Formula	200	Rate Formula -The factor to apply to the Source value
Force closing	1	To Force The Closing Without Creating a new Line
Apply to periodic	1	If "Y" in an Ytd Application, the rate is applied to the Periodic Value.
Entity FX type	20	FX type Linked to the Entity Property FX_Type.
Remarks	250	A free description of the translation rule

1. Account Rate Type

This is the main driving field, controlling the translation rule to apply to a given account, according to the value of the RATETYPE property of the account.

Note that one RATETYPE may generate more than one translated value. This can be defined entering more than one entry with the same RATETYPE in the business rule interface for currency rules.

2. Source Flow

This field, combined with the RATETYPE field, completes the definition of the criteria that drive the applicability of a given rule. In other words, the instruction can be read as follows: "if the account has the RATETYPE and the FLOW is as defined, then apply this rule...."

The SOURCE- Flow field may contain the following values:

- A valid base level or parent member ID from the FLOW dimension
- A list of members of the FLOW dimension, as defined filtering the members using a value of the DIMLIST property (or any property whose name begins with "DIMLIST")
- If left blank means it will apply to all the base level members.

Note: If Flow is not used in the application then this field is left blank.

3. Formula

This field can contain any arithmetic expression combining any defined RATE as per the ACCOUNT dimension of the RATE cube. All rates with the property RATE_TYPE equal to "FX TRANS" can be used. In the RATE_FORMULA field, the rates must be enclosed in square brackets.

Examples: [END], [END] – [AVG]

The OPENING value of any rate can also be specified adding the prefix "OPE" to the rate itself.

Examples: [OPEEND] - [END] , [OPEAVG]

These OPENING rates do not need to exist in the RATE cube. For example, if there is an [END] rate, the currency translation will also automatically recognize a rate called [OPEEND], which simply corresponds to the [END] rate of the OPENING period (typically last period of last year).

In addition, the RATE_FORMULA field supports the following keywords:

[AS_IS] Leave untouched a value already existing in the destination currency. This keyword cannot be combined with other rates in the same line. The only valid exception is the format [AS_IS]*-1

[COPYLC] This will copy the value of the Local currency into the reporting currency i.e. correspond to applying a rate of 1 in the translation

4. Destination Account

This field only supports an explicit account ID or can be left blank.

5. Destination Flow

This field only supports an explicit FLOW ID or can be left blank.

6. Apply to Periodic

This field should only be used in an YTD application for the cases in which the currency conversion should be performed on the PERIODIC values and not on the YTD values. If this field is set to Y, the engine calculates the difference between current period and prior period amounts, and it applies to it the rate specified in RATE_FORMULA field. At the end, the result is added back to prior period's value and written in current period.

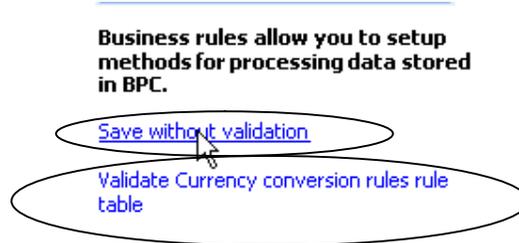
7. Apply Force Closing

This field can be set to Y to force the generation of an additional record where the member of the destination FLOW is the closing balance. The closing balance member of the FLOW dimension is identified as the member with the property FLOW_TYPE = CLOSING.

8. Entity FX Type

This field can be used to enforce a given set of rules to only apply to a desired set of ENTITIES. If this field has a value, the rule will only be applied to the entities having a matching value in a similarly named property (FX_TYPE) of the ENTITY dimension.

3. Click "Save without validation" and then click "Validate Currency conversion rule table"



Note: It is advisable to save first and then validate so that if there are errors during the validation you will not lose the contents of the business rules.

4.4 Script Logic

In BPC MS pre-defined Data Manager Packages and script logic provides the out-of-the box intelligence for Currency Conversion by calling the heart of the consolidation engine **Table Driven SQL Stored procedure**, which perform all the appropriate calculations on a user-selectable region of data, and write the calculated results into the database.

To run those Programs, we make use of the designed Data Manager Packages through Microsoft SQL Server Integration Services (SSIS) to invoke the Programs directly from the scripts logic file and pass to them the appropriate parameters. Following is the currency conversion process that BPC MS supports with its Data Manager SSIS package and Script File and corresponding Business Rules.

Task	Data Manager Package Name	Script Logic Files Name	Business Rule Table Name
Currency Conversion	FX_RESTATMENT	FXTRANS.LGF	Currency Conversion Rules

1. In the Admin Console, select the “Financial” application, then “Script Logic” and select the “FXTRANS.LGF”.



2. Add the following code to the LGF file and click on “Validate and Save”.

```
*RUN_STORED_PROCEDURE=SPRUNCONVERSION('%APP%', '%CATEGORY_SET%', '', 'GLOBAL', '%SCOPETABLE%', '%LOGTABLE%')
```

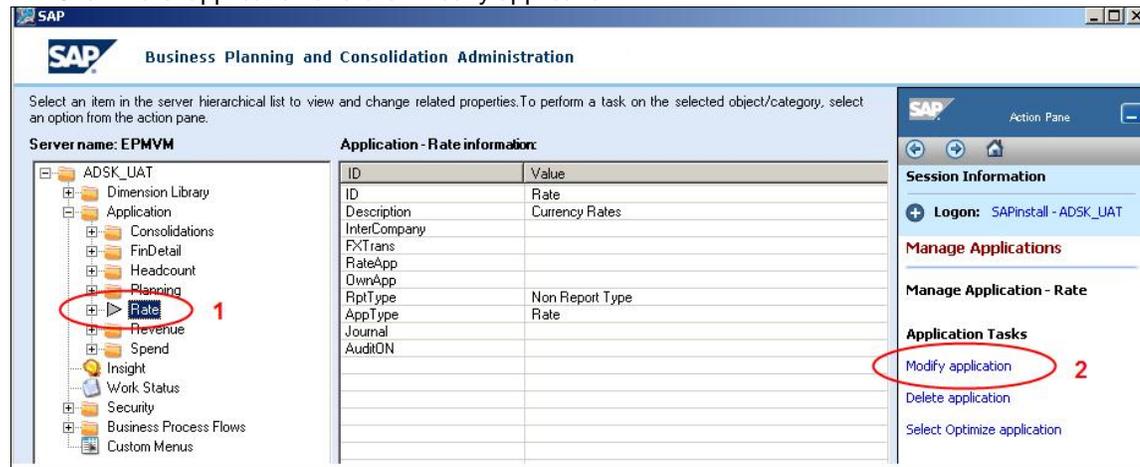
The SPRUNCONVERSION stored procedure performs currency translation calculations using the “Currency Conversion” Business Rules Table.

Note1: In Apshell appset, FXTrans.lgf has ‘MultiCurrencyTrans.LGL’ which is Script logic currency conversion program. We need to remove it and replace it with above statement for using Business Rule Currency Conversion. It will be faster than script logic because it is based on the SQL stored procedure.

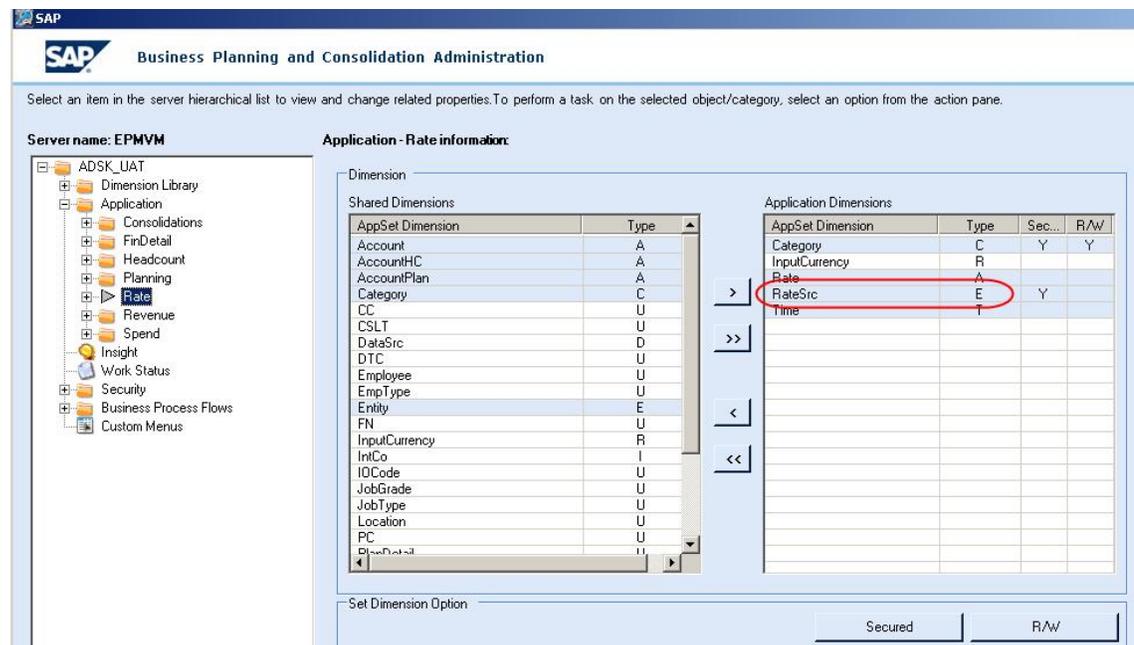
Note2: If your Entity dimension of Rate application doesn't have 'Global' member id, Business Rule will return **FX-230 Error**. So use your member id in the entity dimension of Rate application.

If you don't know what the entity dimension of Rate application is, you can find it in the admin console as below steps.

A. Click 'Rate' application and click modify application.



B. Find out 'E' type dimension. In the below sample, Entity dimension of Rate application is RateSrc dimension.



Note3: based on the name of the dimensions the script will have to be changed. For example if the name of the Category dimension is VERSION then the script line for CATEGORY = %CATEGORY_SET% will be changed to CATEGORY = %VERSION_SET%

4.5 Loading Exchange rates

Loading exchange rate to rate application

The Rate application should store the exchange rates for doing currency conversion. There are several ways to upload the data to rate application, such as utilize the data manager package – Import, or use dynamic templates to send data from the input schedule.

If EVDRE are used, the Rate Account type dimension and Input Currency dimension can be set in Row and Time dimension can be set in column, save the EVDRE as input schedule to send data to the Rate Application. Such input schedule could also be saved as a template in library for sharing and reuse.

Here is an example of the EVDRE input schedule:

		2007.Q1 2007.JAN 2007.FEB 2007.MAR			
		2007 Q1	2007 JAN	2007 FEB	2007 MAR
DZD	AVG	Algeria Dinars	Average Rate		
DZD	END	Algeria Dinars	End of Month Rate		
USD	AVG	United States Dollars	Average Rate	1.00000	1.00000
USD	END	United States Dollars	End of Month Rate	1.00000	1.00000
ARS	AVG	Argentina Pesos	Average Rate		
ARS	END	Argentina Pesos	End of Month Rate		
AUD	AVG	Australia Dollars	Average Rate		
AUD	END	Australia Dollars	End of Month Rate		
ATS	AVG	Austria Schillings	Average Rate		
ATS	END	Austria Schillings	End of Month Rate		
BSD	AVG	Bahamas Dollars	Average Rate		
BSD	END	Bahamas Dollars	End of Month Rate		
BBD	AVG	Barbados Dollars	Average Rate		
BBD	END	Barbados Dollars	End of Month Rate		
BEF	AVG	Belgium Francs	Average Rate		
BEF	END	Belgium Francs	End of Month Rate		
BMD	AVG	Bermuda Dollars	Average Rate		
BMD	END	Bermuda Dollars	End of Month Rate		
BRL	AVG	Brazil Reais	Average Rate		
BRL	END	Brazil Reais	End of Month Rate		
GBP	AVG	United Kingdom Pounds	Average Rate		
GBP	END	United Kingdom Pounds	End of Month Rate		
BGN	AVG	Bulgaria Leva	Average Rate		
BGN	END	Bulgaria Leva	End of Month Rate		
CAD	AVG	Canada Dollars	Average Rate	0.96890	0.98650
CAD	END	Canada Dollars	End of Month Rate	0.94776	0.97554
CLP	AVG	Chile Pesos	Average Rate		
CLP	END	Chile Pesos	End of Month Rate		

Note: Here the exchange rates for the USD are loaded with a value of 1 to indicate that this will act as the standard rate i.e. like reference rate.

How the Rate is selected

For the selection of the correct rate, the following rules apply:

1. The source currency is derived from the property CURRENCY of the entity being translated.
2. The rate to be applied during translation, such as END, AVG, HIST, and so on, is derived from the property RATETYPE of the account being translated.
3. The valid rate indicators are those corresponding to an account of the rate application belonging to the GROUP FX rate.

4. The system does not convert any accounts with a rate type that is not a part of the currency conversion business rules and converts all accounts with a blank rate type with a factor 1.

4.6 Loading the Financial data

After loading the financial data you must create a report to validate that the numbers loaded matches from the source system. In this example data was loaded for 2007.JAN for the Korea Entity and the reporting currency is USD. So we will show the source data loaded through the report.

1. Create an EVDRE report to validate and use the RptCurrency in the column and Account in the row. Here is an example to validate the data loaded for JAN 2007.

Note: The exchanges rate should be loaded for 2006.DEC (Previous year last month) and 2007.JAN in the Rate application.

2. Set the parameters as shown below to show the LC as well as the USD together in the report. Click on “Expand all” icon and check that the LC is populated and USD will be displayed as 0.00.

PARAMETER	EXPANSION 1	EXPANSION 2
ExpandIn	COL	ROW
Dimension	RPTCURRENCY	ACCOUNT
MemberSet	MEMBERS	ALL
BeforeRange		
AfterRange		
Suppress		
Insert		

3. Here is the report that shows the data that is available in 2007.JAN.

Just input LC value and send data to server then USD and EURO will be calculated automatically and will show converted value because default logic includes FXTrans.lgf logic.



App	FINANCE	Financial Application
ACCOUNT	NetIncome	Net Income
CATEGORY	ACTUAL	Actual from GL
DATASRC	INPUT	Company Input
ENTITY	SalesKorea	Sales Korea
INTCO	Non_InterCo	Non Inter-company
MEASURES	Periodic	Periodic
RPTCURRENCY	LC	Local Currency
TIME	2007.JAN	2007 JAN

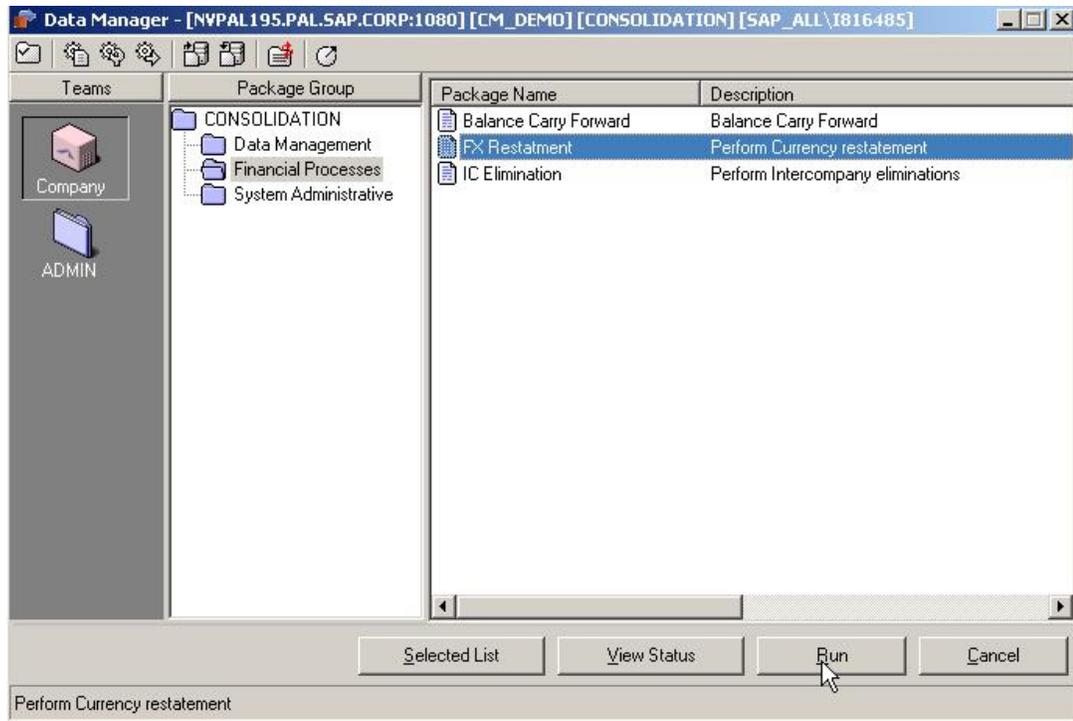
		USD	EUR	LC
		US Dollar	EURO	Local Currency
PRETAXINCOME	Pretax Income	1,754.00	2,496.64	2,000,000.00
OPERATINGINCOME	Operating Income	1,754.00	2,496.64	2,000,000.00
GROSSMARGIN	Gross Margin	1,754.00	2,496.64	2,000,000.00
TOTREV	Total Revenue	1,754.00	2,496.64	2,000,000.00
EXTSALES	External Sales	1,754.00	2,496.64	2,000,000.00
ICSALES	Inter-company sales			
COSTOFGOODS	Cost of Goods Sold			
3RDPARTY	3rd Party Product			
RAWMATERIALS	Raw Materials			
DIRECTLABOR	Direct Labor			

4.7 Executing the Currency Translation DM Package

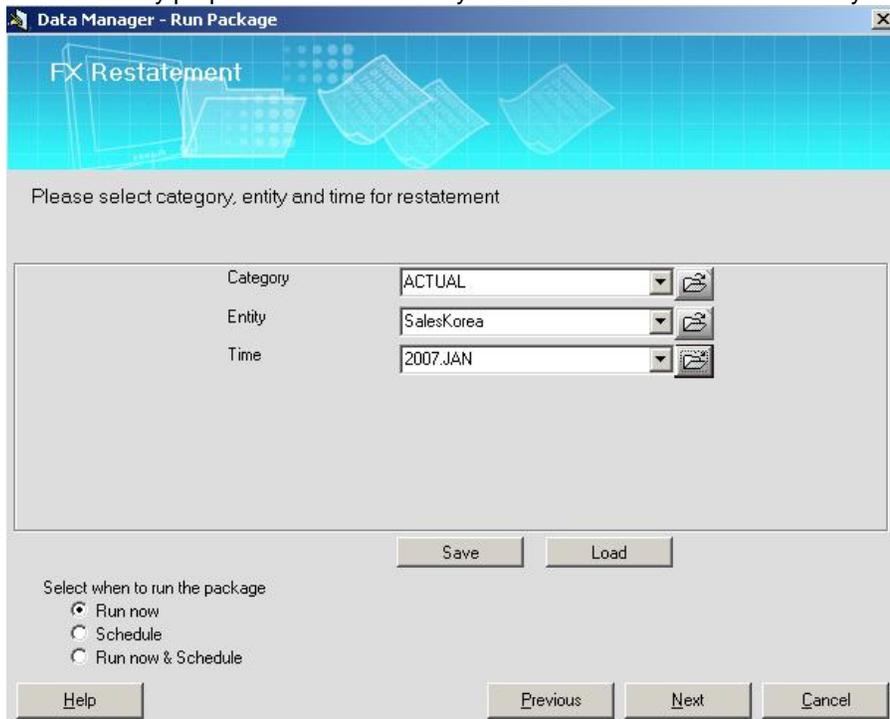
Sometimes user doesn't want to execute Currency translation in the logic file due to performance issue or customer wants to restate all value after change rate value. Of course, user doesn't want to send (submit) data again.

Executing data manager package will solve this. Data Manager Package will run currency conversion logic based on the user selection. Below steps will explain how to do.

1. Click on the "Home" button in the Action Pane, then on "Data Manager" and finally click on "Run a data management package". Select the "FX Restatement" package in "Financial Processes" and set the following parameters and click on "Finish".
 - a. CATOGORY : ACTUAL
 - b. ENTITY : SalesKorea
 - c. TIME : 2007.JAN

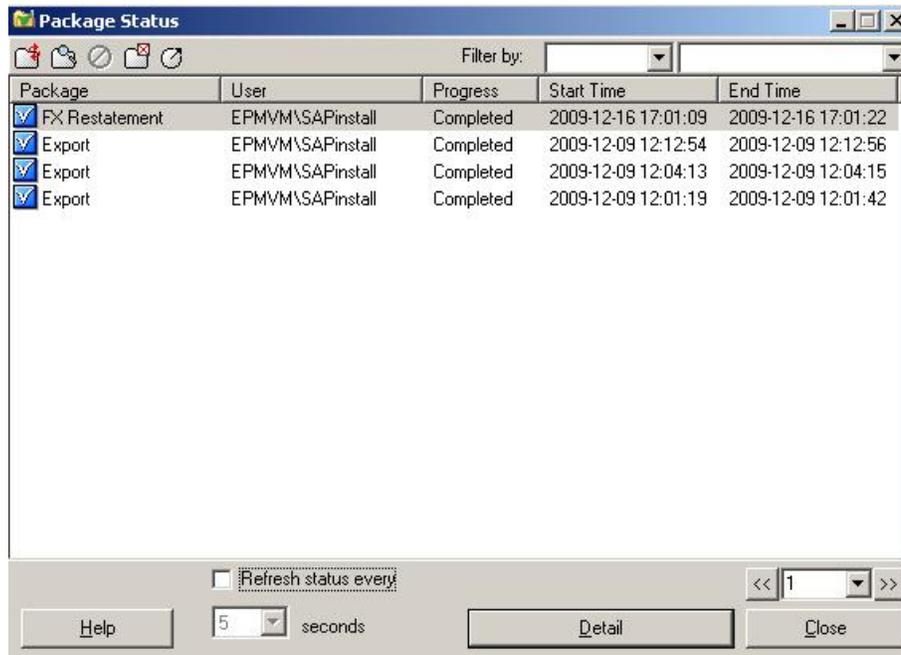


Note: In this example we have to ensure that the exchange rate for 2008.JAN is loaded and all the mandatory properties are set correctly for the task to execute successfully.

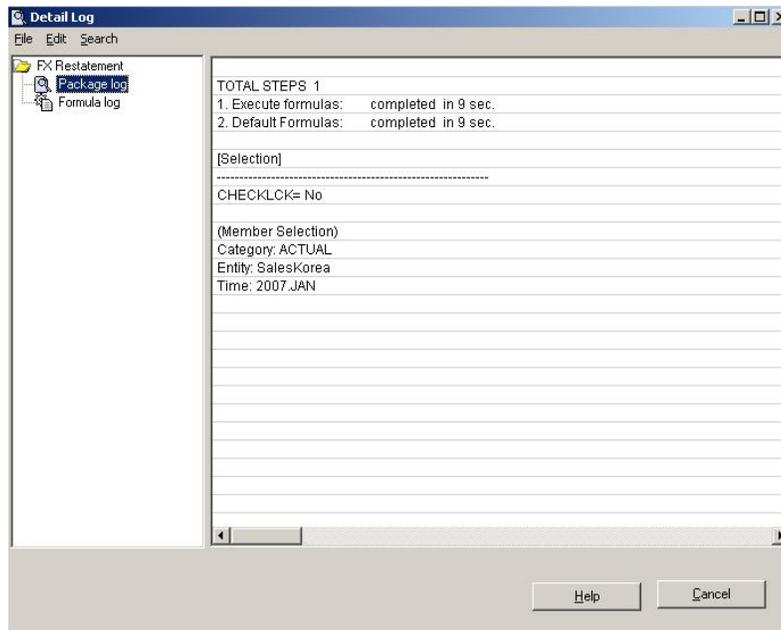


2. Click on "View Status" to check whether the package completed successfully and click on View details.

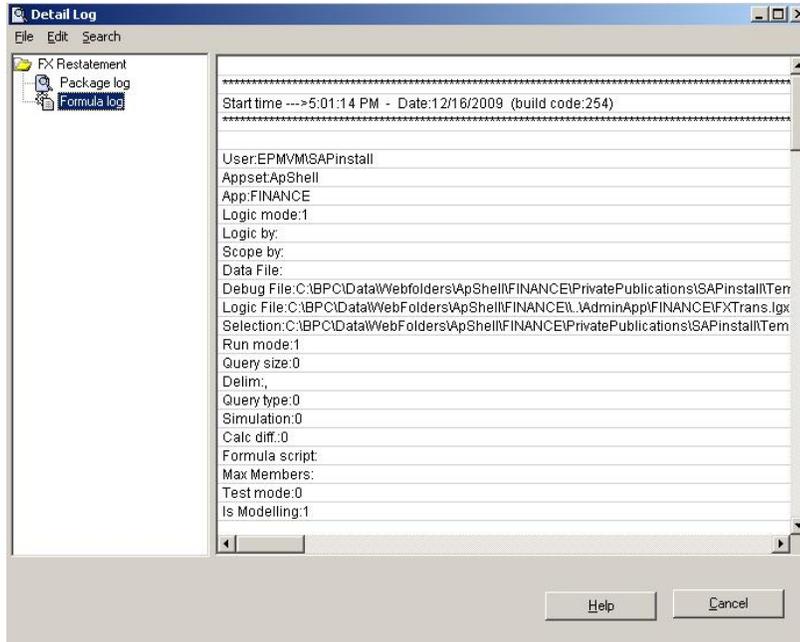
:



3. The details of the task can be viewed here.



4. When you click on the Formula log you can get more details of the task as how many records was submitted and how many was successful as shown below.



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