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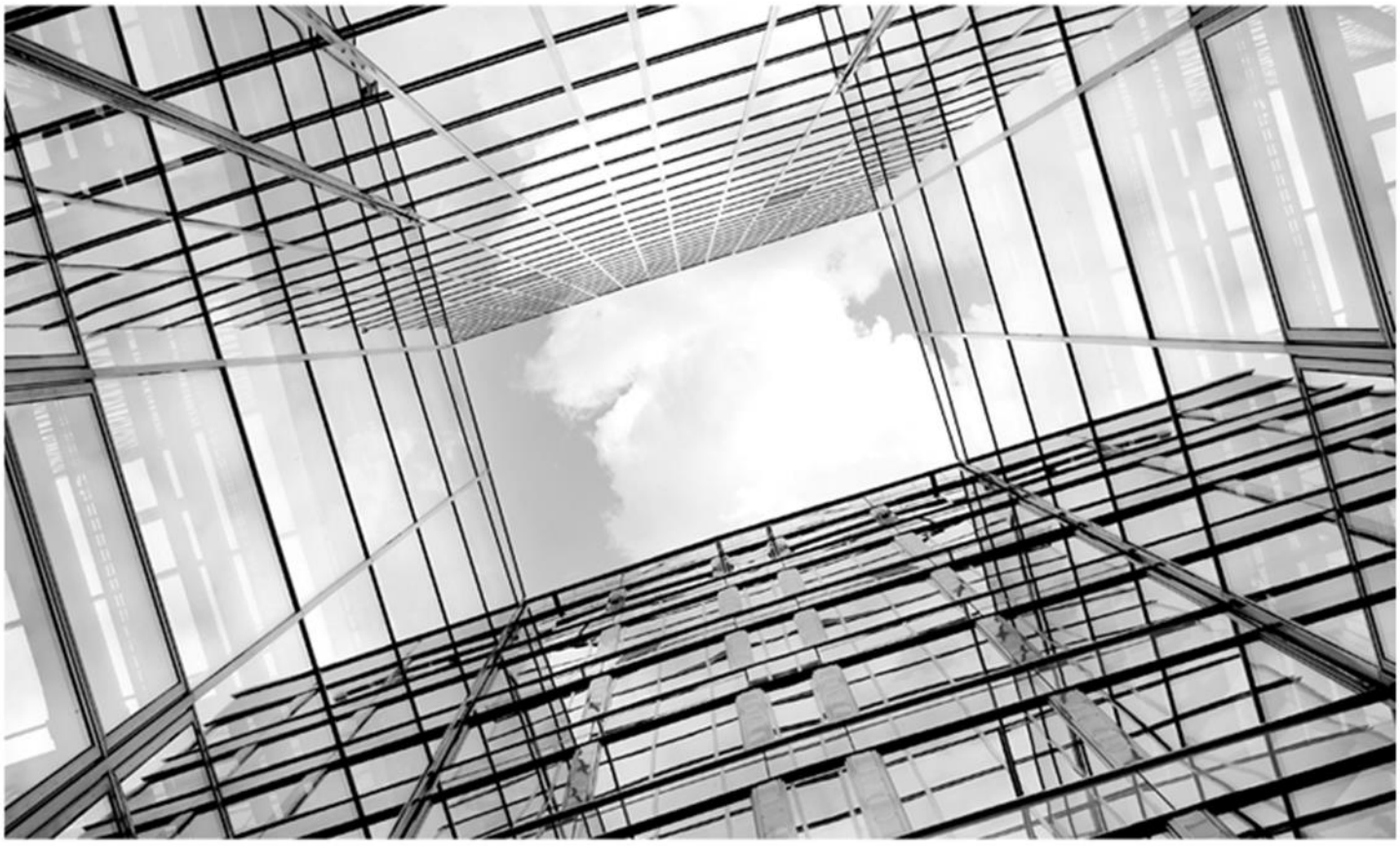

Global PAYplus

Currency Conversion

Business Guide

Copyright

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Version Control

Version	Date	Summary of Changes
1.0		Document Created
2.0		Updated 0Exchange Rate Data Profile and Rate Usages Profile. Added FXVERIFY and additional descriptions to Message Attributes and Audit & Errors. Added Rate Usage information to High Level Workflow.
3.0	November 2015	Document updated for Rebranding

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1 Overview

1.1 Introduction

Global PAYplus (GPP) uses a Currency Conversion mechanism to handle the conversion between two currencies, either by using a quoted rate between them or by using a cross currency to obtain a conversion rate.

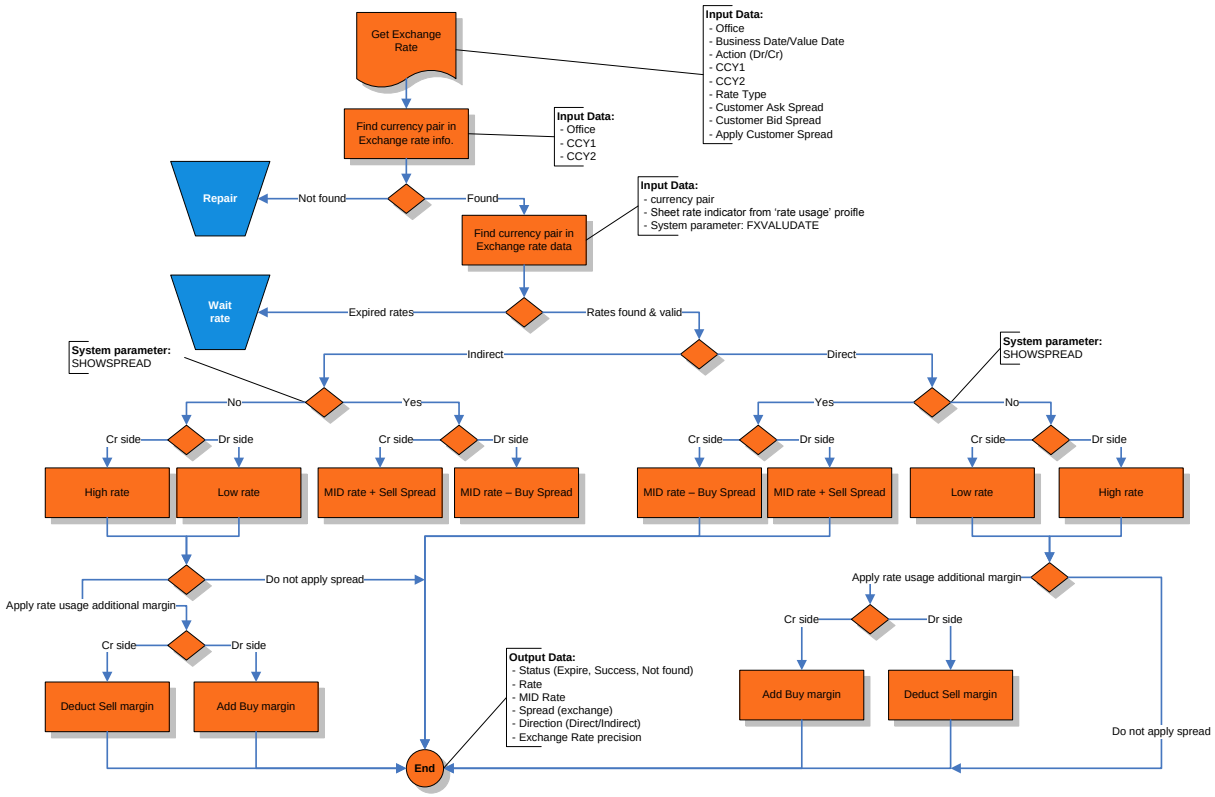
The mechanism handles situations where the exchange rate is obtained from inside GPP or from an external system. In addition, GPP supports currency conversions when multiple occurrences of forward contract rates and dealer rates exist.

1.2 Target Audience

This document describes the Currency Conversion workflow. It is designed for business analysts and system administrators who need to set up and configure this feature. It is also of value to anyone who wants to know more about how this feature is implemented.

2 Processing

2.1 Currency Conversion Workflow



2.2 Currency Conversion Details

2.2.1 High Level Workflow

Note: Currency conversion can be derived by the following logic:
- Dr side conversion if settlement currency is different from the Dr currency
- Cr side conversion if settlement currency is different from the Cr currency
- If all currencies are equal, there is no need for conversion.
- There must be either a Dr or Cr side conversion. Both Dr and Cr side conversions cannot be performed for the same payment.

1. If the mandatory input currency conversion side (D_CURRENCY_CONVERSION_TYPE) is:
   - Base: the 'Rate usage for base amount conversion' business rules are accessed.
   - Debit: the 'Rate usage for debit side conversion' business rules are accessed.
   - Credit: the 'Rate usage for credit side conversion' business rules are accessed.
2. If a business rule action is not found, an error is generated (40017) and the message status is set to Repair.
3. GPP finds the exchange rate. For more information, see Get Exchange Rate.
   a. If the exchange rate is found, GPP calculates the converted amount. For more information, see Calculate Converted Amount.
   b. If the exchange rate is not found, GPP finds the triangulation currency (setup by the Rate Usage profile).

- ❖ If the triangulation currency is equal to CCY1 or CCY2, then GPP generates an error and sets the message status to Repair.
- ❖ If the triangulation currency is different from CCY1 or CCY2, then GPP continues with the process.
  - If the rate usage 'Apply spread once when triangulating' indicator is not selected, then apply the customer spread twice.
  - If the rate usage 'Apply spread once when triangulating' indicator is selected, then assess the system parameter 'APPLYSPREADONCE' to determine which default spread to use ('Step 1' or 'Step 2').
  - Get the exchange rate (using the relevant step 1 or 2 default spread).

c. If the rate usage selected in the FX service requires using a historical field, the rate from EXCHRATE_BU is selected as follows:

- ❖ EXCHRATE_BU. AC_DATE_TIME <= D_SENDER_TIMESTAMP <= EXCHRATE_BU. VALID_DATE_TIME
- ❖ MAX (EXCHRATE_BU. VERSION_ID) → in case several exchange rates are valid for the SWIFT timestamp.
  1) If the currency pair is not found, the payment goes to Repair (standard GPP behavior).
  2) If a valid rate is not found, the payment goes to Wait Rate (standard GPP behavior).

d. GPP calculates the converted amount. For more information, see Calculate Converted Amount.

2.2.2 Manual Rates

Foreign Exchange (FX) Rates can be received from IB, Teller, or added manually by a user. These rates should be validated before being used for currency conversion. When an exchange rate is defined with a cost price as the limitation for the discount from the buy/sell rates, the Sell rate cannot be below the Cost Sell rate and the Buy rate cannot be above the Cost Buy rate.

Manual Rate flow:

1. User adds an FX rate in the Payment Message FX tab.
2. After applying the new FX rate, the User clicks Recalculate on the tab, in order for GPP to recalculate the currency conversion and perform the required validations.
3. GPP validates the manual rate against the cost rate.
   - If the rate is valid, the user submits the payment, and the status is changed to FXVERIFY.
   - If the rate is invalid, GPP generates a relevant error message, for example, Manual FX rate <Manual Rate> is not valid. The rate should be above the cost rate <Cost Rate>.

2.2.3 Get Exchange Rate

GPP gets the exchange rate as follows:

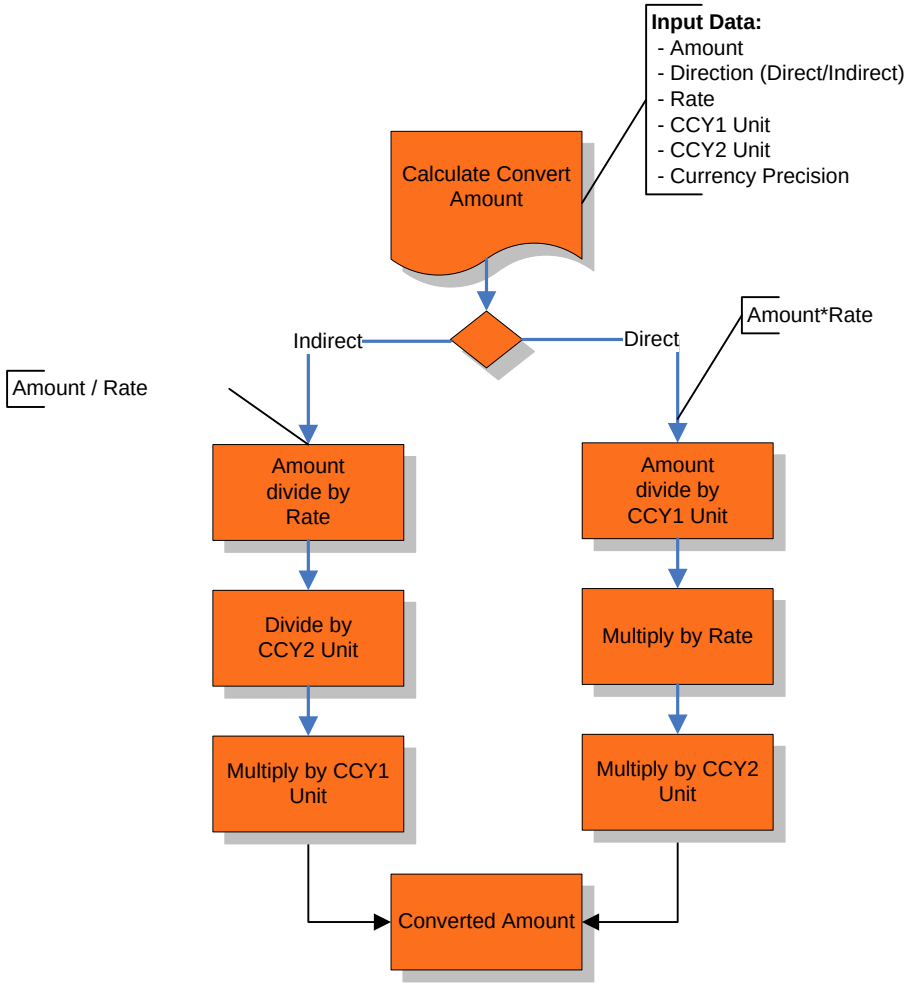
1. Based on the business rule action, assess the relevant Rate Usage profile.
2. If the Rate Usage profile indicates using an external exchange rate through an interface (P_FC_INFO_IND = 'R' for real time rate), call the Real-time FX engine to retrieve the rate.
3. If the Rate Usage profile indicates manual insertion of rates (P_FC_INFO_IND = 'M' for a forward contract or dealer):
   - The message goes to the Repair queue for the manual insertion of a rate (and an error is generated) if the payment amount is above the threshold defined in the Rate Usage profile.

4. If the Rate Usage profile specifies the use of a blind rate (P_FC_INFO_IND = 'B' for Blind rate), perform the conversion but do not perform the final mapping of the converted rates (because the rates are inserted by the branches at a later phase).
5. If the Rate Usage profile specifies the use of an internal exchange rate, use the sheet rate indicator to assess the Exchange Rate profile.
    a. Find the currency pair entry in the Exchange Rate Info profile (search by Office, Currency 1 and Currency 2). If not found, set the message status to Repair.
    b. Find the exchange rate in Exchange Rate Data profile (search by Currency Pair, Office, and Sheet Rate from the Rate Usage profile that was selected in the accessed Business Rule).
    c. If the rate is not found or has expired (based on system parameter FXVALUDATE), set the message status to Wait Rate.
    d. If rates are found, continue processing.
6. For direct conversion
    a. If the system parameter SHOWSPREAD is set to 'No':
        - For a debit side conversion, use the **High rate.**
        - For a credit side conversion, use the **Low rate.**
    b. If the system parameter SHOWSPREAD is set to 'Yes':
        - For a debit side conversion, use the **Mid rate** plus the **Sell spread.**
        - For a credit side conversion, use the **Mid rate** minus the **Buy spread.**
7. For indirect conversion:
    a. If the system parameter SHOWSPREAD is set to 'No':
        - For a debit side conversion, use the **Low rate.**
        - For a credit side conversion, use the **High rate.**
    b. If the system parameter SHOWSPREAD is set to 'Yes':
        - For a debit side conversion, use the **Mid rate** minus the **Buy spread.**
        - For a credit side conversion, use the **Mid rate** plus the **Sell spread.**
    c. Access the customer spread only if SHOWSPREAD is set to 'No'.

2.2.4 Calculate Converted Amount

1. For direct conversion: Multiply the amount (*) by the rate:
    - Divide the amount to convert by currency 1 units.
    - Multiply by the rate.
    - Multiply the result by currency 2 units.
2. For indirect conversion: Divide the amount (/) by the rate:
    - Divide the amount to convert by the rate.
    - Divide the result by currency 2 units.
    - Multiply the result by currency 1 units.

Workflow for calculating the converted amount:



2.2.5 Exchange Rates per Message

GPP can receive more than one conversion rate for a message. This occurs when forward contracts are applied to the message.

The following validations are checked when the MESSAGERATES table holds multiple FX entries for a message ID:

- The amount and rate fields are not empty.
- When specifying a forward contract, a forward contract number is specified.

3 Manual Handling (N/A)

4 System Configuration and Business Setup

This section describes the solution building blocks that are described and used by the processing flow description.

4.1 System Parameters

Name	Description
APPLYSPREADONCE	Determines the step to apply the customer spread when performing cross currency conversion. Relevant only when the Apply Spread Once checkbox in the Rate Usage profile is selected. Possible values: • STEP1 - CCY1 against Triangulation Currency (Default) • STEP2 - Triangulation Currency against CCY2 Refresh: Apply Changes
SHOWSPREAD	Determines whether the spreads will be applicable for the office. In addition determines whether the Sell rate and Buy rate will be calculated by using the Mid-Rate and Spread values. When set to Yes (Default), the Sell/Buy rate is calculated using the Mid-Rate. The user interface will show the Mid-Rate as well.
KEEP_HISTORY_RATE	Defines the number of days to keep the history rates in the active database before being removed. Used in the Clean Historical Rates task. Values 1-3

4.2 Profiles

These are the details of the required setup in GPP profiles for Currency Conversion.

Note: For a detailed description of all the fields in the profiles, see GPP Online Help.

4.2.1 Currency Info Profile

The Currency Info profile is used to set currency profile information.

This table describes the relevant fields in the Currency Info profile.

Field Name	Description
Ranking	A unique number given for each currency to specify its strength and weakness versus other currencies. The higher the number, the stronger the currency is considered to be. In a conversion between two currencies, the first currency in the currency pair is the stronger currency (i.e., the currency with the higher ranking). This currency ranking is used when no currency pair is defined in 'Exchange Rate' or where the conversion type is Real-time (R).
Euro	Select one of the following: • In: To indicate currencies that are in a Euro transition period. • Out: To indicate currencies that are not in a Euro transition period. • Pre: To indicate currencies that are within the EU but are not in a transition period.

4.2.2 Currencies Preferences Profile

The Currencies Preferences profile is used to manage business-specific data relating to currencies defined in the system and used by GPP.

GPP enables users to receive and transfer funds in a variety of currencies. However, all foreign currency transactions must be converted to the base currency to enable GPP to perform security checks, limits, and comparisons.

D+H supplies the initial list of currencies. Additional updates can be loaded automatically from the Quarterly BICPlusIBAN Directory or entered manually.

This table describes the fields in the Currencies Preferences profile:

Field Name	Description
Currency	The selected currency
Currency name	Automatically-populated based on the Currency selection
Decimal digits	Derived from the Currency Info Profile
Calendar name	Derived from the Currency Info Profile
Currency conversion limit	The maximum amount of this currency to be converted in a single payment. With a correct business rule setup (Rate Usage for debit side conversion or Rate Usage for credit side conversion), the message is sent to the Repair queue if this limit is exceeded. DECIMAL {0..14}
Refer to dealer	If selected, payments involving this currency are referred to a dealer for the applicable rate through the Refer to Dealer Rate Usage rule condition.
Display in 000s	If selected, displays currency values in 1000 currency units.
Display currency	If selected, includes the currency in the Currency drop-down list used throughout GPP. A user can type any existing currency in the Currency list box even if it does not appear in the list.
Draft currency	If selected, this currency can be used to create drafts and checks.
Soonest value date	Sets the soonest settlement time for the conversion of the base currency into the profile currency. Defines the difference in days between the day the deal is done and the day the deal is settled. Possible values: Standard Expedited
Default Correspondent	Specifies the Bank's default currency correspondent for the specified currency. It is possible to define more than one correspondent, and in this case, GPP selects the correspondent randomly.
Account at correspondent (our books)	Our Office account for the country correspondent
Asset account number	Number of the asset account in the correspondent's books. This value automatically appears when Our Office account number is entered in "Account at Correspondent (our books)".
Check Sender Credit Line	If selected, the Sender Credit Line is verified.
Default Cut-off Name	The name of the Treasury Cut-off Time profile that is used by default, if a Treasury Cut-off business rule is not found.
Batch suspense account	The Bucket account for the currency. Primarily used in mass payment processing flows for a client sub-batch where the total funds are debited from

Field Name	Description
	the client and credited to the relevant currency suspense account. Individual payments are later debited from this account.
MT210 matching tolerance amount	Specifies a tolerance amount between SWIFT MT 210 and payment messages, to be included in 210 matching AMOUNT{0..20}

4.2.3 Exchange Rate Info Profile

The Exchange Rate Info profile is a prerequisite for the definition of currency pairs and their relationship. An Exchange Rate Info profile defines a currency pair and the number of units of each currency in the pair. It also defines the number of decimal digits in the exchange rate to use when performing conversions.

This table describes the fields in the Exchange Rate Info profile:

Field Name	Description
Currency 1	A 3-character ISO code that represents the first currency in the pair
Units	The number of units of this currency used when calculating an exchange rate with the counter currency NUMBER {1..10}
Currency 2	A 3-character ISO code that represents the second currency in the pair
Units	The number of units of this currency used when calculating an exchange rate against the counter currency. NUMBER {1..10}
Decimal digits	The number of decimal digits displayed in the exchange rate NUMBER {1..1}
Soonest Value Date	The soonest settlement time for the conversion of the base currency into the profile currency. Defines the difference in days between the day the deal is done and the day the deal is settled. Possible values: Standard Expedited
Exchange Rate	Opens the Exchange Rate Data Profile for the currency pair selected in the 'Exchange Rate Info' profile.
Display currency	If selected, includes the currency in the Currency drop-down list used throughout GPP. A user can type any existing currency in the Currency list box.
Draft currency	If selected, this currency can be used to create drafts and checks.
Default cut-off Name	The name of the Treasury Cut-off Time profile that is used as default, if a Treasury cut-off business rule is not found

4.2.4 Exchange Rate Data Profile

The Exchange Rate Data profile is used to manage the exchange rate between supported currency pairs. GPP enables you to transfer funds in any currency for which a profile exists. When the debit and credit account currencies are different from the payment currency, conversions are made using the exchange rate for the currency pair (up to a pre-defined threshold).

In addition, all transactions are converted to the base currency for security checks, threshold limit checks, and other comparisons.

Exchange rates need to be updated regularly.

Note: The decimal separator key is determined by system parameter AS_DECISEP

The determination of the rate type to apply to a message is done by assessing Rate Usage rules and the Rate Usage profile.

This table describes the relevant fields in the Exchange Rate Data profile.

Field Name	Description
Rate type	The rate typeselected from the list of rates. Default: Standard Rates
Currency 1	A 3-digit ISO code for the first currency
Currency 2	A 3-digit ISO code for the second currency
Mid Rate	Equals the Sell rate minus the Sell spread. Also equals the Buy rate plus the Buy spread. This field is disabled and the Sell rate and Buy rate fields are enabled when the system parameter SHOWSPREAD is set to **NO**. Cannot be zero. DECIMAL {0..16}
Buy spread	Mid rate minus the Buy rate. Not available if the Sell rate and Buy rate fields are enabled. DECIMAL {0..16}
Sell spread	Sell rate minus the Mid rate. Not available if the Sell rate and Buy rate fields are enabled. DECIMAL {0..16}
Sell rate	The rate used to sell 1 unit of Currency 1 to buy Currency 2 When the system parameter SHOWSPREAD is set to **YES**, the Sell rate is calculated by adding the Sell spread to the Mid rate. DECIMAL {0..16}
Buy rate	The rate used to buy 1 unit of Currency 1 with Currency 2. When the system parameter SHOWSPREAD is set to **YES**, the Buy rate is calculated by subtracting the Buy spread from the Mid rate. DECIMAL {0..16}
Buy cost	The Cost price limitation for a discount from the Buy rate. The Buy rate cannot be above the Cost Buy rate. DECIMAL {0..16}
Sell cost	The Cost price limitation for a discount from the Sell rate. The Sell rate cannot be below the Cost Sell Rate. DECIMAL {0..16}
Bank sells (Currency 1) at (Units 1) for (Currency 2)	A summary statement of the Sell currency and Sell rate described above.
Bank buys (Currency 1) at (Units 1) for (Currency 2)	A summary statement of the Buy currency and Buy rate described above.
Valid until	The select date after which this exchange rate cannot be used. The exchange rate is Unlimited if a Fixed rate is selected.
Version	Version ID. Manages the version number for the exchange rate. The version number will be sent in posting. DECIMAL {0..16}

Field Name	Description
Exchange Rate Info	Opens the Exchange Rate Info Profile.

4.2.5 Rate Usages Profile

The Rate Usages profile is used to define the rate type and attributes applied to selected messages. For example, it defines the different spreads for different customers. This profile enables banks to set the rate type and spreads to be applied in specific situations.

Exchange rate attributes to be used in payment processing are defined in the Rate Usages Profile.

This table describes the fields in the Rate Usages profile.

Field Name	Description
Name	The name of the rate. The default name is the Standard Rate Profile. Default rules define where this default profile will be applied. TEXT {1..8}
Description	A free text description of the rate TEXT {1..30}
Rate type	Select a rate type Standard Rates is the default value.
Threshold for direct conversion	The threshold for direct conversion of payments against base currency. DECIMAL {0..20}
Cross currency conversion	
Triangulation currency	The currency through which cross-currency conversations are executed when no direct exchange rate exists. If no currency is entered into this field, the base currency is used as default. (This list is displayed from Profiles, Global, Currencies Info.) This field is only available when the Rate Type is not set to Standard Rates.
Apply spread once when triangulating	A cross-currency conversion is done in two steps, first from 'CCY1 to Triangulation Currency' then from 'Triangulation Currency to CCY2'. During conversions, if triangulation is necessary, GPP uses this check box in the Rate Usage profile as follows: • If selected: GPP further analyzes the APPLYSPREADONCE system parameter to determine the step to apply the customer spread (either step 1 or step 2). • If not selected: GPP applies the customer spread on both step 1 and step 2.
Threshold for Cross Conversion	The threshold for direct conversion of payments against the base currency DECIMAL {0..20}
Margins	
Buy	Buy points may be + or –, depending on the better than or worse than market rate to be applied (to 4 decimal places). DECIMAL {0..15}
Sell	Sell points may be + or –, depending on the better than or worse than market rate to be applied (to 4 decimal places). DECIMAL {0..15}

Field Name	Description
Additional Data	
Rate interface name	The selection shows all available defined interfaces for the office and global office that are of a Real-Time Rate (RTR) type.
Blind (on-shore) rate	Defines the need to strip off the rates because the rates are determined after the payment is executed. This check box can be selected only if the interface field is not defined. When selected, it defines the forward contract information indication attribute of “B” for Blind Rate.
Use historical rates	Allows the use of the exchange rate that was valid from the time the sender sent the message (according to the timestamp in the SWIFT header) until new rates are loaded.

4.3 Business Rules

4.3.1 Rate Usage for Base Amount Conversion

Description

To be able to convert a payment amount to its equivalent in the office’s base currency, an exchange rate must be picked. Exchange rates are stored in GPP per rate type (for example: Standard, Inter-bank, Customers).

The selection of the correct rate type is defined under GPP’s Rate Usage profile. The purpose of this rule is to define the correct Rate Usage profile for the conversion.

The idea behind it is to take a conservative approach and calculate the higher amount since this amount is used for the threshold. Check if the credit currency is the same as the base currency and use it, else if the debit currency is the same as the base currency then use it.

Rule Actions

A Rate Usage profile

Rule Attachment

Base Rate Usage rules are attached to the Office. Multiple rules may be attached. The first fitting rule is considered for base amount conversion.

Usage

Example

It is the bank’s requirement that for payments in which currency is either GBP or EURO, STANDARD rates be used. However, for payments in which neither of the currencies is GBP or EURO, USD rates must be used. Two Rate Usage profiles are set up:

- STANDARD: use STANDARD rates
- USD Rates: use USD rates

The following base rate rules are attached to the Local Bank:

- Rule 1: If Sttlm Curr (ency) In list (EUR, GBP) or Sttlm Curr (ency) In List (EUR, GBP) then use STANDARD.
- Rule 2: (no conditions) – use USD Rates

4.3.2 Rate Usage for Credit Side Conversion

Description

Whenever the instruction currency is different from the Cr currency, a proper conversion is required. To be able to do so, an exchange rate must be picked. Exchange rates are stored in GPP per rate type (for example: Standard, Inter-bank, Customers).

The decision of the correct rate type is defined under GPP's Rate Usage profile. The purpose of this rule is to define the correct Rate Usage profile for the conversion.

Rule Actions

A Rate Usage profile

Rule Attachment

Rate usage rules for credit side conversion are attached to a GPP Party. Multiple rules may be attached. Default rules are attached to the Local Bank (as defined in the Office profile).

Usage

The rules pick up a Rate Usage profile. The Rate Usage profile defines how to convert the payment amount into the Cr amount (either by providing a rate type for the exchange rate profile or by indicating that the conversion must be handled manually).

Examples

It is the bank's requirement that for payments in which currency is USD and payment amount is greater than 200000, 'STANDARD' rates should be used, otherwise 'USD SHEET RATES' should be used.

- STANDARD: use STANDARD rates
- USD Rates: use USD SHEET rates

The following base rate rules are attached to the Local Bank:

- Rule 1: If Sttlm Ccy= USD and Sttlm Amount >200000 use STANDARD.
- Rule 2: (no conditions) – use USD SHEET Rates

4.3.3 Rate Usage for Debit Side Conversion

Description

Whenever the instruction currency is different from the Dr currency, a proper conversion is required. To be able to do so, an exchange rate must be picked. Exchange rates are stored in GPP per rate type (for example: Standard, Inter-bank, Customers).

The decision of the correct rate type is defined under GPP's Rate Usage profile. The purpose of this rule is to define the correct Rate Usage profile for the conversion.

Rule Actions

A Rate Usage profile

Rule Attachment

Rate usage rules for debit side conversion are attached to a GPP Party. Multiple rules may be attached. Default rules are attached to the Local Bank (as defined in the Office profile).

Usage

The rules select a Rate Usage profile. The Rate Usage profile defines how to convert the payment amount into the Dr amount (either by providing a rate type for the exchange rate profile or by indicating that the conversion must be handled manually).

Examples

It is the bank's requirement that for payments in which currency is USD, 'STANDARD' rates should be used otherwise 'USD SHEET RATES' should be used.

- STANDARD: use STANDARD rates
- USD Rates: use USD SHEET rates

The following base rate rules are attached to the Local Bank:

- Rule 1: If Sttlm Ccy= USD use STANDARD.
- Rule 2: (no conditions) – use USD SHEET Rates

4.4 Statuses

4.4.1 Wait Rate

Name	Alias	Tree Location	Description	Applicable Actions
Wait Rate		Warehouse Queue Group	Messages that are waiting for an up-to-date exchange rate.	Submit Repair

4.4.2 FXVERIFY

Name	Alias	Tree Location	Description	Applicable Actions
FXVERIFY	FX Rate Verify	Manual Process	Messages that require verification after FX Rate was Changed Manually	Submit Repair

5 Message Data

5.1 Message Attributes

Field ID	Name	Description
P_DBT_AMT_STEP1	Dbt amt step1	Debit amount step1
P_CDT_AMT_STEP1	Cdt amt step1	Credit amount step1
P_CDT_RATE_STEP1	Cdt rate step1	Credit rate step1
P_CDT_RATE_STEP2	Cdt rate step	Credit rate step2
P_DBT_RATE_STEP1	Dbt rate step1	Debit rate step1
P_DBT_RATE_STEP2	Dbt rate step	Debit rate step2
P_CDT_MID_RATE	Cdt Mid rate	Credit Mid rate
P_CDT_RATE	Cdt rate	Credit rate
P_CDT_RATE_STEP1	Cdt rate step1	Credit rate step1
P_CDT_RATE_STEP2	Cdt rate step	Credit rate step2
P_CDT_RATE_USAGE_NM	Cdt rate usage nm	Credit rate usage name
P_DBT_MID_RATE	Dbt Mid rate	Debit Mid rate
P_DBT_RATE	Dbt rate	Debit rate
P_DBT_RATE_STEP1	Dbt rate step1	Debit rate step1
P_DBT_RATE_STEP2	Dbt rate step	Debit rate step2
P_DBT_RATE_USAGE_NM	Dbt rate usage nm	Debit rate usage name
P_RATE_REQ_STATUS	Rate request status	Rate request status
P_RATE_TYPE	Rate type	Rate type
X_XCHGRATEINF_CTRCTID	Xchgrate ctrct	Foreign exchange contract information
X_XCHGRATEINF_XCHGRATE	Xchgrate info	Foreign exchange rate
X_XCHG_RATE	Xchgrate	Exchange rate. The factor used for conversion of an amount from one currency into another (SWIFT tag 36).
P_BASE_RATE_USAGE_NM	Base rate usage nm	FX base rate usage name
OC_SENDER_TIMESTAMP	Sender timestamp	Timestamp sender has submitted the payment.
P_CDT_RATE_VER	Credit rate version	Version of exchange rate used for Credit side conversion
P_DBT_RATE_VER	Debit rate version	Version of exchange rate used for Debit side conversion
D_DISCOUNT_POINT	Discount point	Calculates the discount point comparing to cost rate

5.2 Audit & Errors

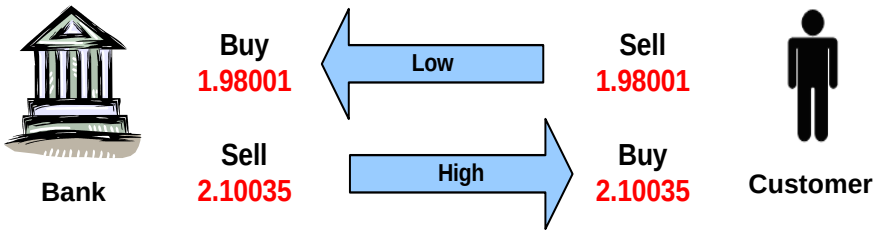
Code	Description	Notes
12009	Amount is over threshold and no rate was specified	Threshold exceeded in Rate Usage table. Payment moved to the REPAIR queue.

Code	Description	Notes
12010	The rate input [rate entered by the user] exceeds [the tolerance level] % of the sheet rate [The sheet rate name]	The payment rate entered by the user exceeds the tolerance level but was approved. (Informative message)
12027	Exchange rate date [Exchange rate effective date] is earlier than current [Business or Value] date [date]	The effective date of an exchange rate in the exchange rate table is earlier than the current local office business date. (Informative message)
40009	Triangulation currency [Triangulation currency] which was determined according to [Base currency or Rate usage profile] is the same as currency 1: [Currency 1] or currency 2: :[Currency 2], under office [Office]	The triangulation currency to be used for cross currency conversion is the same as currency 1 or currency 2.
40010	Message rate data includes an empty Amount attribute	An empty AMOUNT column was found during forward contract calculations.
40011	Message rate data includes a record with '0' for the FORWARD_CONTRACT attribute and an empty CONTRACT attribute	A forward contract line that is not a dealer rate or a residual rate includes an empty CONTRACT column
40012	Message rate data includes an empty Rate attribute	An empty RATE column was found during forward contract calculations.
40013	Total amount entered [Total message rates amount] for currency [Currency 1 in guilty record] exceeds the amount to convert [Amount to convert] [Currency 1 in guilty record]	The forward contract total amount exceeds the amount to convert.
40015	Forward contract: for MID [MID] and conversion type [Conversion type], found record(s) with currencies pairs which do not match the allowed combinations, where input data is: currency 1 = [Currency 1], currency 2 = [Currency 2], cross currency used = :[Cross currency that was used or not], triangulation currency = :[triangulation currency]	A record in a forward contract has an invalid currency pair, where valid pairs are determined by whether a cross currency was used in the original pair.
40016	Tries to perform forward contract For MID [MID], (new message = [Is new message]), and conversion type [Conversion type], but no forward contract data was found.	During forward contract processing, no forward contract data was found in the MID and conversion type. For a new message, data should arrive from the incoming XML. For an existing message it should exist in the MESSAGERATES table.
40017	No [The missing rate usage type: Base/Credit/Debit] rate usage is defined for [The guilty party label: office or customer code] [The guilty party value: office value of debit/credit customer code]	Rate usage is not defined for the office, the debit customer, or the credit customer
60071	Manual trade is required	
60073	The rate type used for BASE conversion cannot hold an external rate interface name [Rate usage interface name]	Manual intervention
60075	Illegal state; EXCHRATE_BU record exists without related EXCHRATE_CFG record	Manual intervention
60087	[invalid currency] is an invalid currency	Manual handling required.

Code	Description	Notes
12013	Manual FX rate |1 is not valid. Rate should be above cost rate |2	The manual rate is above cost rate.
12014	Manual FX rate < |1 > is not valid. Rate should be below cost rate < |2 >	The manual rate is below cost rate.
12011	Manual FX rate |1 is not valid and has been changed to cost rate |2	The rate from IB or Teller is invalid and was replaced by the cost rate.

Appendix A: Glossary

This is a glossary of terms used in this document.

Term	Description
Base Currency	The currency in which the bank maintains its accounts and the first currency quoted in a currency pair. It is typically the local currency.
Currency Pair	Currency pairs are based on the quotation and pricing structure of currencies traded in foreign exchange markets. The value of a currency is determined by its comparison to another currency. The first currency of a currency pair is the 'base currency.' The second is the 'quote currency.' The exchange rate for the currency pair indicates how much quote currency is needed to purchase one unit of the base currency.
CCY1, CCY2	CCY1 refers to the base currency. CCY2 refers to the quote currency.
Rate Usage Profile	A rule-driven profile that specifies the rate type and discount information that is used when performing currency conversions for a customer.
Exchange Rate Profile	A profile that specifies the Buy rate and Sell rate of a currency pair to be used for buy or sell requests of that currency.
Spread	The difference in price between the Low rate and the High rate.
Spread Up or Spread Down	The margin between the Low rate or High rate and the Mid rate. Spreads are defined in the exchange rate profile and are used to determine the High rate (sell request) and Low rate (buy request) based on the Mid rate. Spread Up = Sell Spread; Spread Down = Buy Spread. Spreads are represented in thousandths.
Low Rate and High Rate	For each currency pair there are two prices – a buying price and a selling price – and two parties – the bank offering these prices and the customer accepting (or rejecting) them. The prices are quoted from the bank's perspective. The bank buys at the Low rate and sells at the High rate. For example, a GBP – USD pair: Low rate: 1.9801, High rate: 2.0015.  The bank buys 1 USD at 1.9801 and sells 1 USD at 2.0015.
Mid Rate	The rate offered by the market maker
Spot Rate	The rate quoted in the Exchange Rate profile for immediate delivery of a foreign currency
High Rate and Low Rate Discount Points	These values are defined in the Rate Usage profile and are used to give the customer a discount on the rate that is otherwise used for buy or sell requests. Discount points are represented in thousandths.
Triangulation Currency (Cross Currency)	The currency through which cross-currency conversions are performed if no direct exchange rate exists.
Cross Rate	The exchange rate between any two currencies that use a cross currency (triangulation currency) to obtain a conversion rate. For example, in the US a GBP/JPY quote requires a cross rate, but in the UK or Japan it does not. The currency conversion service performs a two-step conversion to produce

Term	Description
	the required cross rate.
Apply Spread Once	This flag in the Rate Usage profile indicates whether a customer discount is to be applied to both steps of a cross currency conversion or only once to the step specified in system parameter APPLYSPREADONCE.