FINASTRA

Global PAYplus

Liquidity and Risk Management

Business Guide

Product Version: 4.5
Catalog ID: GPP4.5-00-B28-02-201511

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Version Control

Version	Date	Summary of Changes
1.0		Document Created
2.0	November 2015	Updated for D+H Rebranding
3.0	August 2018	Document rebranded to Finastra template

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1 Overview

1.1 Introduction

Global PAYplus Liquidity & Risk Management (LRM) monitors and controls overall liquidity positions in real time, ensuring efficient control and management of multi-currency liquidity assets across the bank's accounts and RTGS channels.

This document describes:

- Various aspects of position keeping and position monitoring, and related features available in LRM
- Payment throttling workflow
- Processing of the various types of anticipated funds based on MT210
- Statement messages processing and reconciliation

1.2 Target Audience

This guide is intended for business analysts and liquidity managers who need to know about setting up, configuring and utilizing the LRM feature. It is also of value to anyone who wants to know more about how this feature is implemented.

2 Processing

2.1 Position Keeping and Monitoring

Position keeping is the mechanism that enables GPP to calculate at every point in time the current position of an account. Account position is classified by a set of variables (position figures and balances). In order to fulfill their responsibilities, and make liquidity decisions, a liquidity manager needs to have visibility to the current and projected position in all the bank accounts under their supervision.

The account position should be accurate, on-time and consolidated to capture all movement on the accounts. Position keeping and monitoring module of LRM provides these capabilities.

Details of all the aspects related to position keeping and position monitoring are provided, including:

- Position keeping service
- Position figure selection rules
- Get account position service
- Account balance capturing
- Setting up Account groups
- Position account explorer
- Intraday Position page
- NOSTRO Ladder page
- Position alerts

2.1.1 Position Keeping Service

Position keeping service is the service that assigns each message to the relevant position figure(s) on the position account for the relevant position date. The position figure is a numerical value which may represent a number or amount.

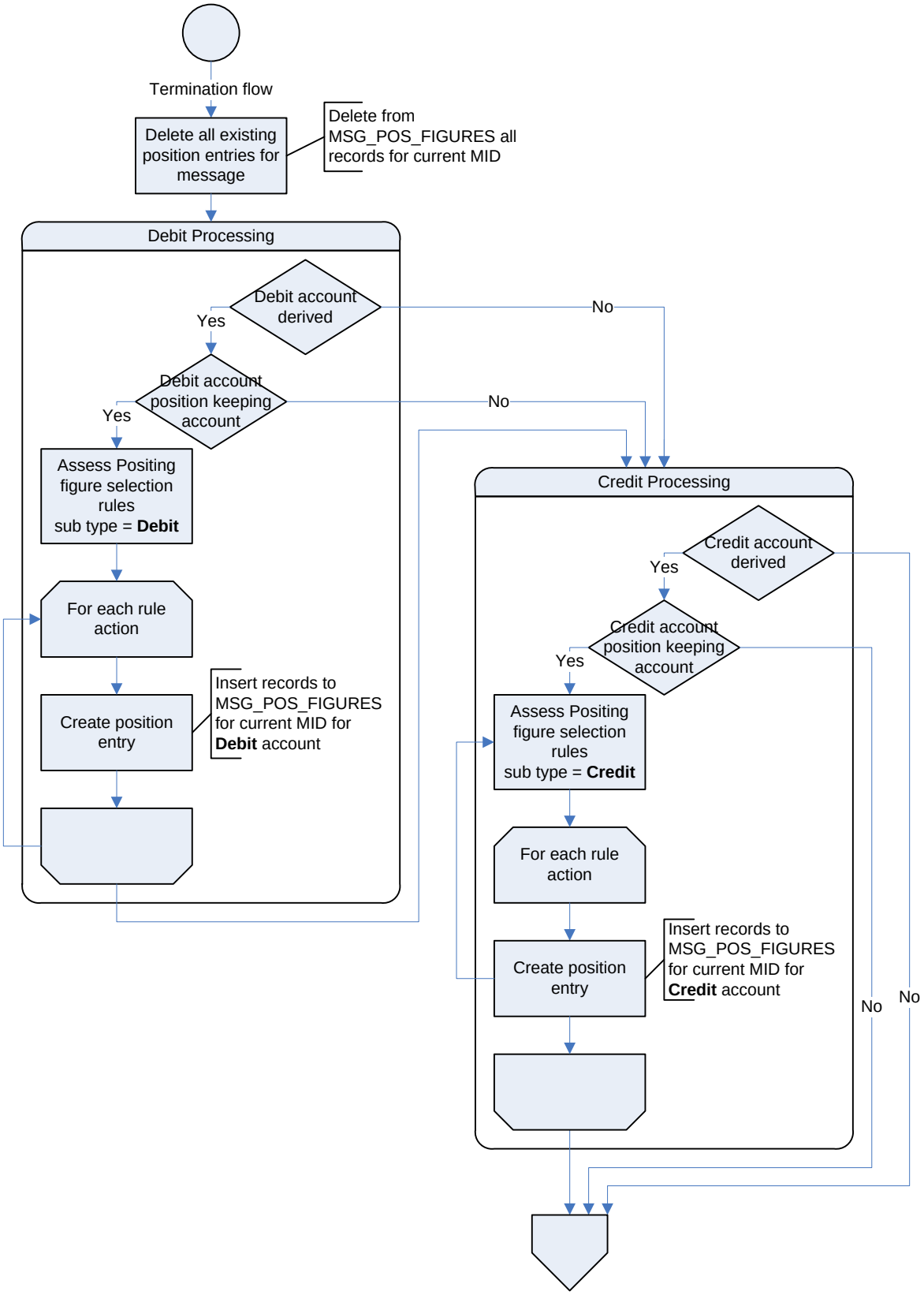
The amount is the aggregated value of the items, whereas the number is the quantity, for example 10 incoming messages. The position balances are calculated from a group of position figures.

The service utilizes the position figure selection rules to assign the position figures the message should include in its current state.

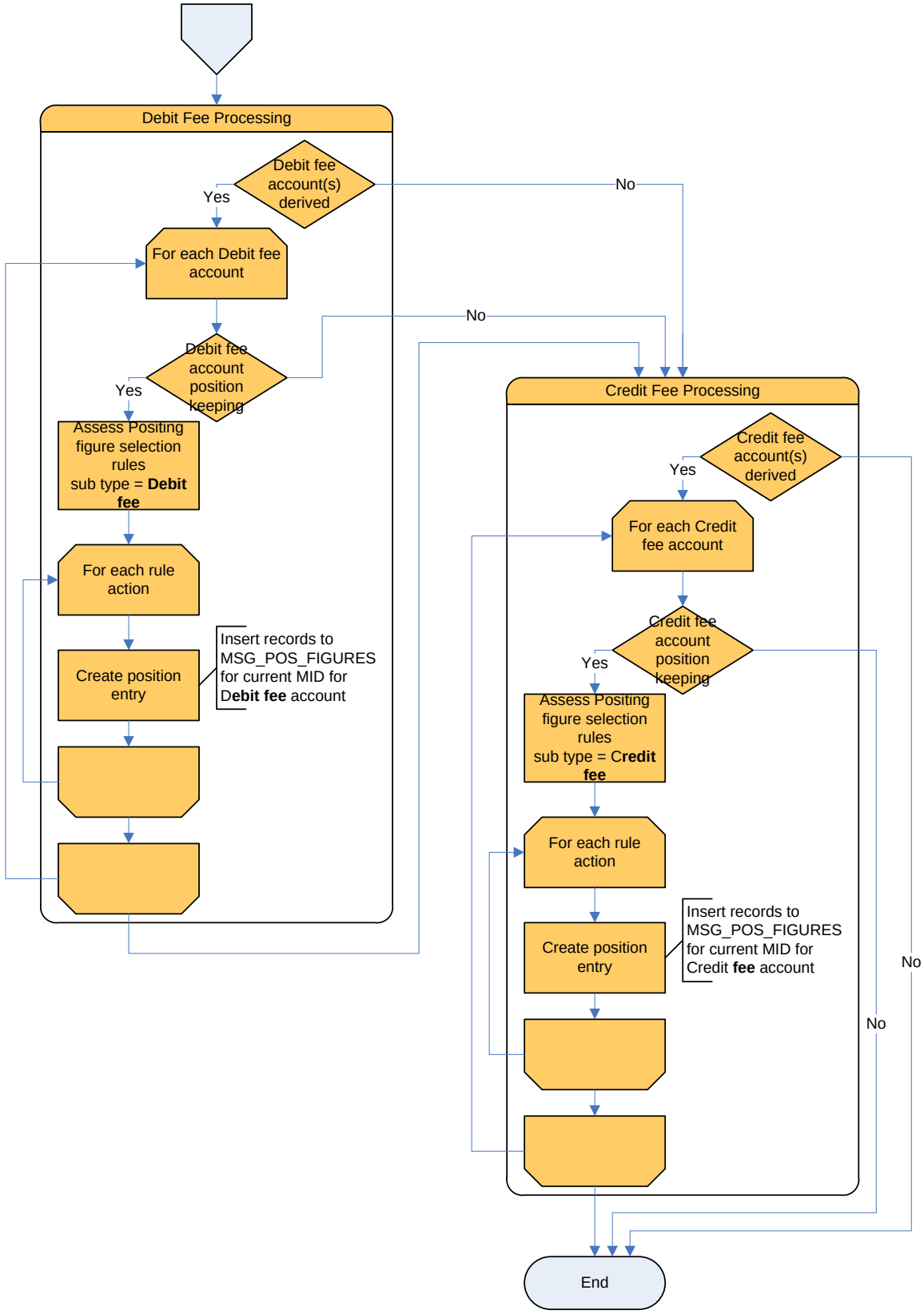
The service is initiated every time the message reaches the manual handling waiting or final status, which requires the message to be stored. Usually this is performed as one of the steps of the graceful termination flow and manual handling flow.

- The service performs debit side position keeping if the debit account was derived and it is a position keeping account (as indicated by ACCOUNTS.POSITION_ACCUM_IND flag). If the debit account is not a position keeping account, the service skips the debit side processing.
- The service performs credit side position keeping if the credit account was derived and it is a position keeping account. If the credit account is not a position keeping account, the service skips the credit side processing.

2.1.1.1 Position Keeping Flow – Debit & Credit Accounts



2.1.1.2 Position Keeping Flow – Debit & Credit Fees



2.1.1.3 Debit Side Position keeping

Position keeping for debit side is applicable only after the debit account is derived. If the debit account was not derived, there is no account position that the transaction should be applied to.

When activating the service on the debit side the following logical fields are used:

Service Parameter	Logical Field	Comments
MID	P_MID	
Office	P_DBT_ACCT_OFFICE	
Account	P_DBT_ACCT_NB	Account UID is concatenation of Office, account number and account currency
Currency	P_DBT_ACCT_CCY	
Asset flag	F_DBT_ACCT_ASSET	
Amount	P_DBT_AMT	If P_DBT_AMT is not available use X_STTLM_AMT
Value date	P_DBT_VD	If P_DBT_VD is not available use X_STTLM_DT_1B
Cycle	P_DBT_ACCT_CYCLE	When relevant, if the account is a multi-cycle account

- The debit side position keeping includes assessing the position figure selection rule with the sub type as Debit
- The rule assessment returns a collection of rule actions (Position figures) of the rules that were caught. It is possible that the collection is empty (when none of the rules or a STOP action rule is caught)
- Previous records for the current MID will be deleted from MSG_POS_FIGURES
- Based on the rule actions of the caught rules, records are created in MSG_POS_FIGURES table. Insert the following values in the table:

Column in Table	Value
MID	MID
OFFICE	P_DBT_ACCT_OFFICE
ACCOUNT ID	Concatenation of Account Office (P_DBT_ACCT_OFFICE) Currency (P_DBT_ACCT_CCY) and Number (P_DBT_ACCT_NB)
CRD_DBT_FLAG	D - If the account is NOT an asset account (F_DBT_ACCT_ASSET = False) C - If the account is an asset account (F_DBT_ACCT_ASSET = True)
POS_FIG_TYPE	Current action
AMOUNT	P_DBT_AMT (if P_DBT_AMT is not available use X_STTLM_AMT)
CURRENCY	P_DBT_ACCT_CCY
DATE	P_DBT_VD (if P_DBT_VD is not available use X_STTLM_DT_1B)
UID_POS_CYCLE	P_DBT_ACCT_CYCLE

2.1.1.4 Credit Side Position Keeping

Position keeping for credit side is applicable only after credit account is derived. If the credit account was not derived there is no account position the transaction should be applied to.

When activating the service on the credit side the following logical fields are used:

Service Parameter	Logical Field	Comments
MID	P_MID	
Office	P_CDT_ACCT_OFFICE	
Account	P_CDT_ACCT_NB	Account UID is concatenation of Office, account number and account currency
Currency	P_CDT_ACCT_CCY	
Asset flag	F_CDT_ACCT_ASSET	
Amount	P_CDT_AMT	If P_DBT_AMT is not available use X_STTLM_AMT
Value date	P_CDT_VD	if P_DBT_VD is not available use X_STTLM_DT_1B
Cycle	P_CDT_ACCT_CYCLE	When applicable, if the account is a multi-cycle account

- The credit side position keeping includes assessing the position figure selection rule with sub type as Credit.
- The rule assessment will return a collection of rule actions (Position figures) of the rules that were caught. It is possible that the collection is empty (when none of the rules or a STOP action rule is caught)
- Previous records for the current MID will be deleted from MSG_POS_FIGURES
- Based on the rule actions of the caught rules records are created in MSG_POS_FIGURES table. Insert the following values in the table:

Column in Table	Value
MID	MID
OFFICE	P_CDT_ACCT_OFFICE
ACCOUNT ID	Concatenation of Account Office (P_CDT_ACCT_OFFICE) Currency (P_CDT_ACCT_CCY) and Number (P_CDT_ACCT_NB)
CRD_DBT_FLAG	C - If the account is NOT an asset account (F_CDT_ACCT_ASSET = False) D - If the account is an asset account (F_CDT_ACCT_ASSET = True)
POS_FIG_TYPE	Current action
AMOUNT	P_CDT_AMT (if P_CDT_AMT is not available use X_STTLM_AMT)
CURRENCY	P_CDT_ACCT_CCY
DATE	P_CDT_VD (if P_CDT_VD is not available use X_STTLM_DT_1B)
UID_POS_CYCLE	P_CDT_ACCT_CYCLE

2.1.1.5 Debit Fee Position Keeping

Position keeping for debit fee is applicable only after fees are calculated and debit fee account is derived.

When activating the service on the debit fee side the following logical fields are used:

Service Parameter	Logical field	Comments
MID	P_MID	
Office	P_DBT_FEE_ACCT_OFFICE	
Account	P_DBT_FEE_ACCT_NB	Account UID is concatenation of Office, account number and account currency
Currency	P_DBT_FEE_ACCT_CCY	
Asset flag	False	Fee account should not be an asset account.
Amount	D_DBT_FEE_ACCT_AMT	
Value date	P_DBT_VD	If P_DBT_VD is not available use X_STTLM_DT_1B
Cycle		Not applicable, fee account should not be a multi-cycle account.

For book payments it is possible that fees are applied on both sides of the transactions, hence it is possible that two (multiple) debit fee accounts are identified. In this case the debit fee position keeping is applied for each of the debit fee accounts.

- The debit fee position keeping includes assessing the position figure selection rule with sub type as Debit Fee.
- The rule assessment returns a collection of rule actions (Position figures) of the rules that were caught. It is possible that the collection is empty (when none of the rules or a STOP action rule is caught)
- Previous records for the current MID are deleted from MSG_POS_FIGURES
- Based on the rule actions of the caught rules, records are created in MSG_POS_FIGURES table. Insert the following values in the table:

Column in Table	Value
MID	MID
OFFICE	P_DBT_FEE_ACCT_OFFICE
ACCOUNT ID	Concatenation of Account Office (P_DBT_FEE_ACCT_OFFICE) Currency (P_DBT_FEE_ACCT_CCY) and Number (P_DBT_FEE_ACCT_NB)
CRD_DBT_FLAG	D
POS_FIG_TYPE	Current action
AMOUNT	D_DBT_FEE_ACCT_AMT
CURRENCY	P_DBT_FEE_ACCT_CCY
DATE	P_DBT_VD (if P_DBT_VD is not available use X_STTLM_DT_1B)
UID_POS_CYCLE	Null

2.1.1.6 Credit Side Fees

Similarly to Debit side fees, Credit side fee are applied only after fees are calculated and the credit fee account is derived.

It is possible that several debit fee accounts are derived for a transaction. In this case the position keeping service is performed for all relevant debit fee accounts.

When activating the service on the credit side fee the following logical fields are used:

Service Parameter	Logical field	Comments
MID	P_MID	
Office	P_CDT_FEE_ACCT_OFFICE	
Account	P_CDT_FEE_ACCT_NB	Account UID is concatenation of Office, Account Number and Account Currency
Currency	P_CDT_FEE_ACCT_CCY	
Asset flag	False	Fee account should not be an asset account
Amount	D_CDT_FEE_ACCT_AMT	
Value date	P_CDT_VD	if P_CDT_VD is not available use X_STTLM_DT_1B
Cycle		Not applicable, fee account should not be a multi-cycle account

- Insert the following values in the table:

Column in Table	Value
MID	MID
OFFICE	P_CDT_FEE_ACCT_OFFICE
ACCOUNT ID	Concatenation of Account Office (P_CDT_FEE_ACCT_OFFICE) Currency (P_CDT_FEE_ACCT_CCY) and Number (P_CDT_FEE_ACCT_NB)
CRD_DBT_FLAG	D (because the credit fee account should not be an asset account)
POS_FIG_TYPE	Current rule Action
AMOUNT	D_CDT_FEE_ACCT_AMT (if D_CDT_FEE_ACCT_AMT is not available skip Credit side fees)
CURRENCY	P_CDT_FEE_ACCT_CCY
DATE	P_CDT_VD
UID_POS_CYCLE	Null

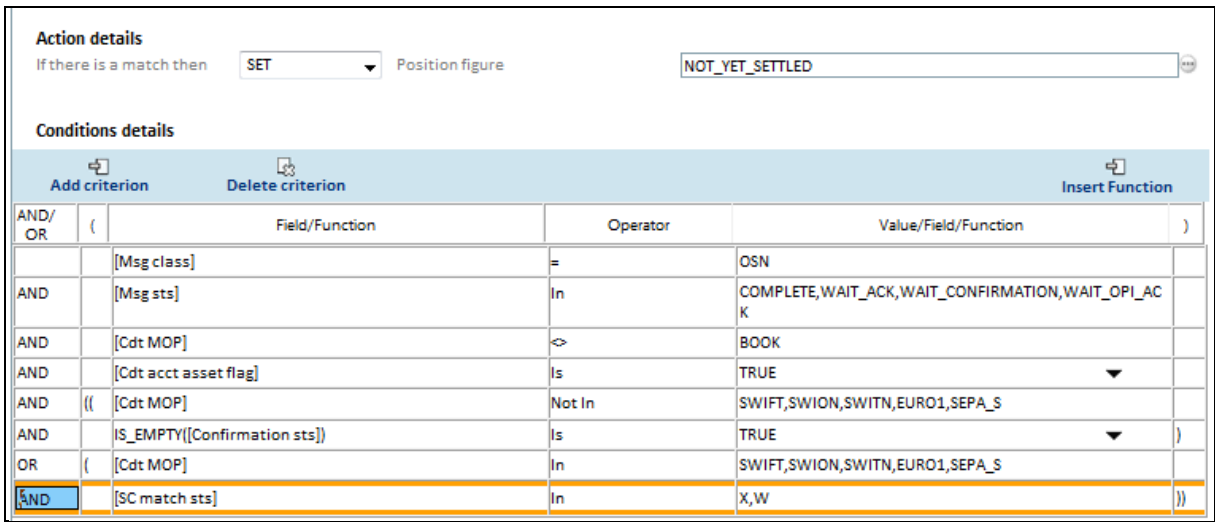
Note: Credit side fees are debiting the fee account of the credit account; they are not crediting the fee account. Fee amounts are crediting the P&L accounts. However, GPP currently does not perform position keeping for P&L accounts.

2.1.2 Position Figure Selection Rule

The benefits of using Position figure selection rule is the ability to relatively easily add and amend rules to enable:

- Adjusting the position keeping service to the position keeping policy of the bank. For example: Optimistic vs. pessimistic settlement policy on outbound and inbound traffic
- Applying different position keeping policy for different account types. For example: Debiting VOSTRO after posting vs. Debiting NOSTRO on receipt of inbound traffic
- Easy introduction of new position figures

This is an example when the Rule Type Name is Position figure selection and the Sub type is CR:



AND/ OR	(	Field/Function	Operator	Value/Field/Function	)
		[Msg class]	=	OSN	
AND		[Msg sts]	In	COMPLETE,WAIT_ACK,WAIT_CONFIRMATION,WAIT_OPI_ACK	
AND		[Cdt MOP]	<>	BOOK	
AND		[Cdt acct asset flag]	Is	TRUE	
AND	((	[Cdt MOP]	Not In	SWIFT,SWION,SWITN,EURO1,SEPA_S	
AND		IS_EMPTY([Confirmation sts])	Is	TRUE	)
OR	(	[Cdt MOP]	In	SWIFT,SWION,SWITN,EURO1,SEPA_S	
AND		[SC match sts]	In	X,W	))

2.1.2.1 Rule Sub Type

The Position figure selection rule has these sub types:

- Debit: For rules that are applied on the debit account of the transaction
- Credit: For rules that are applied on the credit account of the transaction

These sub types are currently not available:

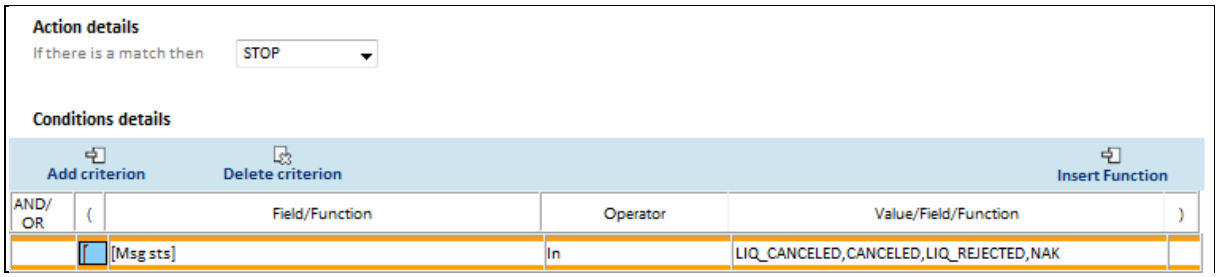
- Debit Fee: For rules that are applied on the debit fee account of the transaction
- Credit Fee: For rules that are applied on the credit fee account of the transaction

2.1.2.2 Rule Action (Base Position Figure)

The rule actions are the set of possible base (lowest level) position figures that can be assigned to a message. The possible values are maintained in the FIELD_VALUES table when the FIELD_TYPE is POSITION_FIGURES.

In addition to the Base Position Figure there is a special STOP action that prevents additional rules (down in the attachments order) to be assessed. The primary use of this action is to prevent a transaction from being included in the account position, for example, transaction in Canceled or Duplicate status.

This is an example when the Rule Type Name is Position figure selection, the Sub type is CR and the Action is STOP:



Adding a new position figure requires adding the value to this table using a Fundtech DB Script, and adding the new position figure to the code of the getAccountPosition service.

2.1.2.3 Business Case Example: Asset account rules Vs. VOSTRO account rules

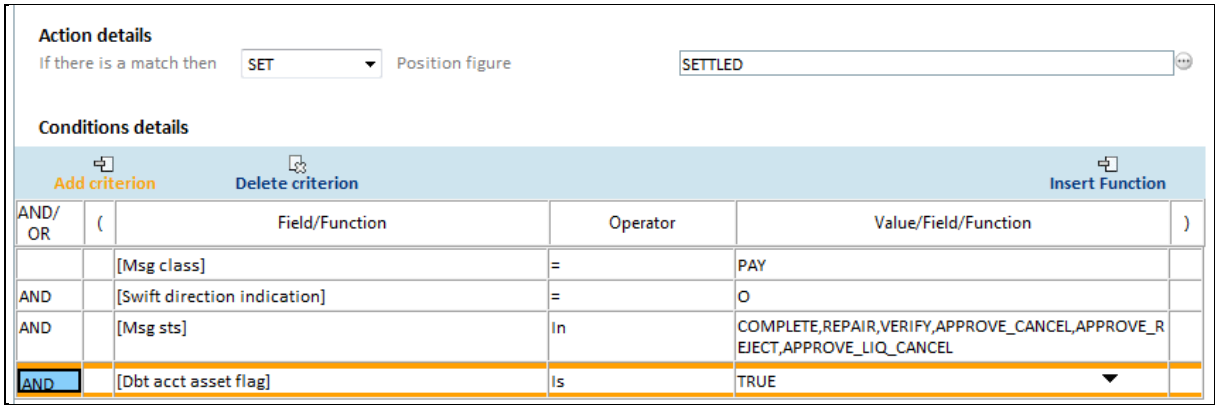
This business case example shows how a bank's policy regarding position keeping can be implemented using the position figure selection rules.

In most cases the bank has different position policies for payments on asset accounts and for payments on non-asset (VOSTRO) accounts. As a result a separate set of position figure selection rules are required for asset accounts and non-asset accounts, primarily for inbound traffic.

2.1.2.3.1 Asset Accounts Rules

In general incoming payments debiting an asset account coming from a clearing system of NOSTRO correspondent are considered as settled when received; except for incoming direct payments or payments that fail the party limits check.

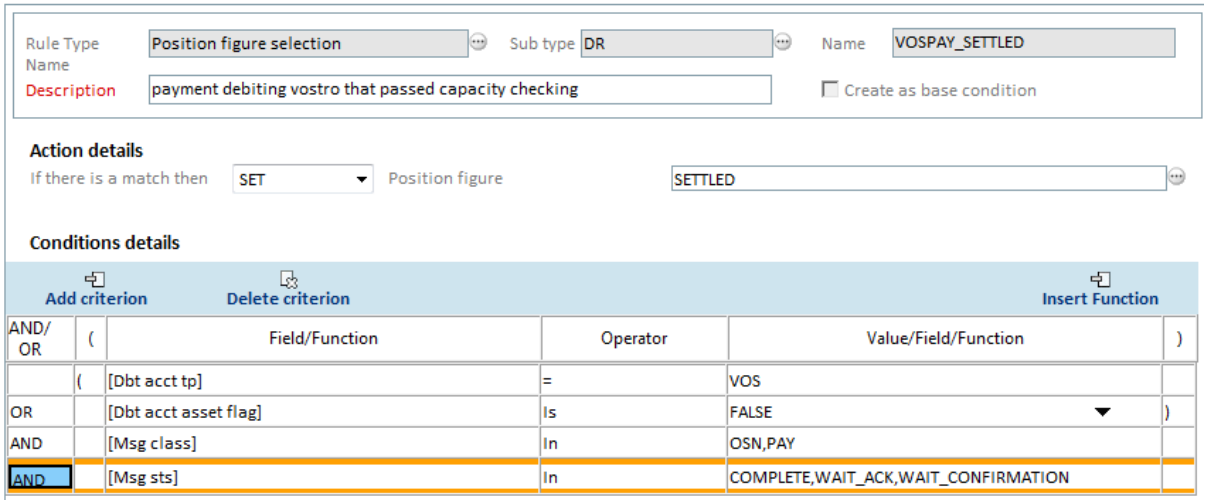
This is an example when the Rule Type Name is Position figure selection, for an inbound payment on an asset account:

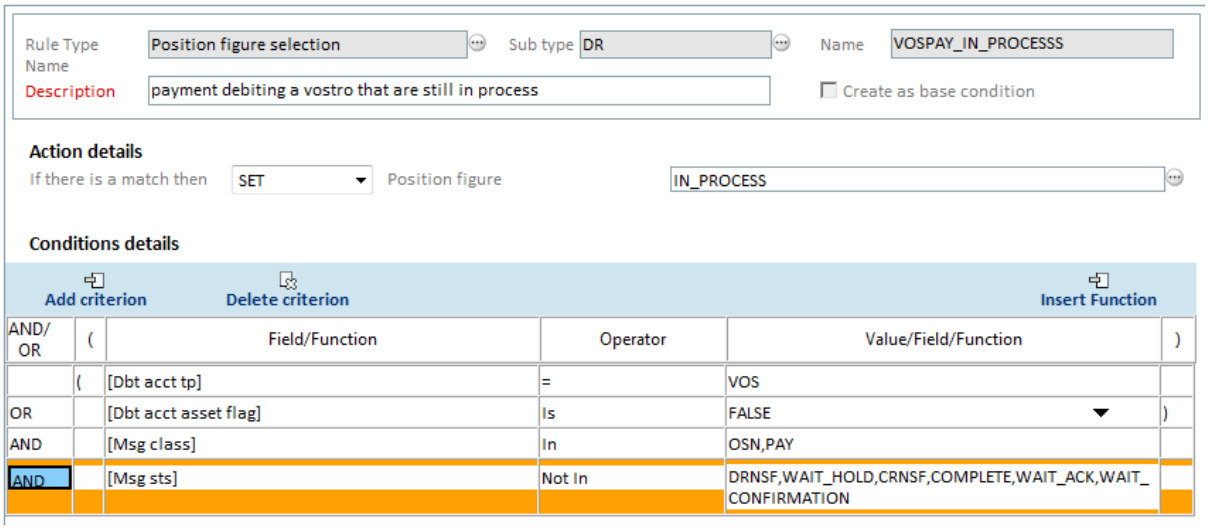


2.1.2.3.2 VOSTRO Accounts Rules

In most cases incoming payments debiting a non-asset account (VOSTRO) coming from a VOSTRO account holder, are considered as settled only after being successfully processed including balance check and posting.

These are examples of position figure selection rules for inbound payments on a VOSTRO account.





2.1.3 Get Account Position Service

The Get Account Position service:

- Aggregates and calculates the position figures and balances for a requested account or account group) and value date(s).
- Retrieves position information needed for display (for example, Account Profile - balances tab, intraday position, NOSTRO ladder, FI Exposure), transaction processing (primarily available funds, for capacity checking), and for position alerts.
- Provides current values for all base position figures, calculated position figures and additional account liquidity related attributes.
- Provides the position details for multiple accounts and multiple dates in a single request.
- Provides the following attributes for base position figure (isCalculated is false):

- Credit amount
- Debit amount
- Total amount
- Volume In
- Volume out

- Only provides a total amount for calculated position figures (isCalculated is true) and other liquidity details.

Note: The service is also available as a web service, enabling external systems to query on account position.

2.1.3.1 Base Position Figures

This table details the currently supported base position figures.

Label	Internal Name	Description[1]
Settled[2]	SETTLED	• Outbound credit transfer transactions usually after receiving a confirmation from the clearing house, or settlement confirmation from the NOSTRO correspondent. Usually in Complete status • Outbound credit transfer transaction on VOSTRO account are usually considered settled after posting • Inbound credit transfer transaction on asset accounts are usually considered settled on reception • Inbound credit transfer transaction on VOSTRO accounts are usually considered settled after posting
Settled DD[3]	SETTLED_DD	• Outbound collections usually after posting and submission to the clearing house • Inbound collection usually after posting.
Unverified unsolicited	UNVERIFIED_UNSOLICETED	• Settlement notice (MT910) and settlement confirmation (MT900) received from correspondent (or generated from account statement) that does not match to payment transaction or pre-advice. • In Unsolicited Credit and Unsolicited Debit status.
Ledger unmatched	LEDGER_UNMATCHED	• Ledger confirmation (MT900, MT910 received from account system) that does not match to a settlement notice or settlement confirmation received from correspondent. • In Ledger Unmatched status
Previously	PREVIOUSLY_FUNDED	• Transactions or settlement notices/settlement

[1] The generic default description of the position figure may vary from bank to bank according to the bank's policy.

[2] Settled figure usually refers to Credit transfer transactions only.

[3] According to position monitoring solution, settled (settled and Settled DD) is the only position figure for which there is a separation between CT and DD transactions.

Label	Internal Name	Description[1]
funded		confirmations that were matched to an anticipated fund (pre-advice) when there is a variance in the value date, in a way that the pre-advice value date is earlier than the transaction value date. • As a result the Anticipated Fund (AF) was already funded by the liquidity manager on its value date, removing the need to fund the transaction on its value date.
Party Limit	LIQUIDITY_LIMIT	Inbound and outbound transactions change to Wait limit status due to a breach of a party limit
Release Band	LIQUIDITY_BAND	Outbound transaction changes to Bands status due to a closed liquidity band.
Capacity	LIQUIDITY_CAPACITY	Inbound and outbound transaction failed capacity check and directed to Credit NSF, Debit NSF or Wait hold status due to insufficient funds in the credit asset account, debit non-asset account or a payment hold imposed on one of the transaction accounts.
In Process	IN_PROCESS	Transaction that is currently in one of the intermediary status before posting and submitting to clearing or correspondent.
Awaiting cover / Settlement	AWAITING_COVER	Inbound Direct payment for which a cover was not yet received.
Not yet settled	NOT_YET_SETTLED	Outbound transaction submitted to clearing or correspondent for which a settlement confirmation was not yet received.
Pre advice	PRE_ADVICE	Pre-advice transaction that are not matched to payment transaction or settlement notice or settlement confirmation in Wait Match status.
Adjustment	ADJUSTMENT	Manual adjustment
Earmark	EARMARK	Earmark anticipated funds that are not matched to payment transaction or matched to payment transaction prior to the payment passing the capacity check. When the Value date is greater than or equal to position date Earmarks for future value dates are included.
Reservation	RESERVATION	Manual reservation. When the Value date is greater than or equal to position date Reservations for future value dates are included.
Additional On Hold	ADDL_ONHOLD	Not in use

2.1.3.2 Calculated Position Figures

The following table details the currently supported calculated position figures. They are calculated based on the position account attributes and base position figures.

Default Label	Internal Name	Description
Calculated Balance	CALCULATED_BALANCE	OPENING_BALANCE + SETTLED + SETTLED_DD
Liquidity Desk	LIQUIDITY_DESK	LIQUIDITY_LIMIT + LIQUIDITY_BAND + LIQUIDITY_CAP
Verified Settled	VERIFIED_SETTLED	SETTLED + SETTELED_DD – UNVERIFIED_UNSOLICETED
Outstanding for Today	OUTSTANDING_TODAY	IN_PROCESS + AWAITING_COVER + NOT_YET_SETTLED + ANTICIPATED_FUND + LIQUIDITY_DESK
Funding Balance	FUNDING_BALANCE	OPENING_LEDGER_BALANCE + VERIFIED_SETTLED + OUTSTANDING_TODAY + LEDGER_UNMATCHED – PREVIOUSLY_FUNDED
Anticipated Funds	ANTICIPATED_FUNDS	PRE_ADVICE + ADJUSTMENT
Available Max	AVAILABLE_MAX	OPENING_BALANCE + SETTLED + SETTLED_DD + NOT_YET_SETTLED + MAX_CAP + ADDL_ONHOLD
Available Max threshold	AVAILABLE_MAX_THRESH	OPENING_BALANCE + SETTLED + SETTLED_DD + NOT_YET_SETTLED + MAX_CAP THRESHOLD
Available High	AVAILABLE_HIGH	OPENING_BALANCE + SETTLED + SETTELD_DD + NOT_YET_SETTLED + RESERVATION + EARMARK + ADJ_HIGH_CAP – ADDL_ONHOLD
Available Operating	AVAILABLE_OPR	OPENING_BALANCE + SETTLED + SETTLED_DD + NOT_YET_SETTLED + RESERVATION + EARMARK + ADJ_OPR_CAP – ADDL_ONHOLD
Projected Balance	PROJECTED_BALANCE	OPENING_BALANCE + SETTLED + SETTLED_DD IN_PROCESS + AWAITING_COVER + NOT_YET_SETTLED + LIQUIDITY_LIMIT + LIQUIDITY_BAND + LIQUIDITY_CAP + PRE_ADVICE + ADJUSTMENT
Past Unmatched	PAST_UNMATCHED	PAST_PRE_ADVICE + PAST_NOT_YET_SETTLED + PAST_AWAITING_COVER + PAST_LEDGER_UNMATCHED + PAST_UNVERIFIED_UNSOLICETED
Past Unmatched Ledger	PAST_LEDGER	PAST_PRE_ADVICE + PAST_NOT_YET_SETTLED + PAST_AWAITING_COVER + PAST_LEDGER_UNMATCHED
Past	PAST_STATEMENT	PAST_UNVERIFIED_UNSOLICETED

Default Label	Internal Name	Description
Unmatched Statement		

2.1.3.3 Balances and Additional Position Parameters

The following table details the additional position variables used in the position calculation.

Balances Name	Internal Name	Source
Opening balance	OPENING_BALANCE	ACCOUNT_DAILY_BALANCES.OPENING_BAL
Last Actual Balance	INTRADAY_ACTUAL_BALANCE	ACCOUNT_DAILY_BALANCES.INTRADAY_ACTL_BAL ACCOUNT_DAILY_BALANCES.INTRADAY_ACTL_BAL_TIMESTAMP
Closing available balance	CLOSING_AVAILABLE_BALANCE	ACCOUNT_DAILY_BALANCES.CLOSING_AVAILABLE_BAL
Closing booked balance	CLOSING_BOOKED_BALANCE	ACCOUNT_DAILY_BALANCES.CLOSING_BOOKED_BAL
Ledger opening balance	OPENING_LEDGER_BALANCE	ACCOUNT_DAILY_BALANCES.LEDGER_OPENING_BAL
Collateral	COLLATERAL	ACCOUNTS.SOD_COLLAT
Cash Reserve	CASH_RESERVE	ACCOUNTS.CASH_RES
Max Cap	MAX_CAP	ACCOUNTS.MAX_CAP
Max Cap Threshold	MAX_CAP THRESHOLD	ACCOUNTS.MAX_CAP_THRESHOLD_AMT
High Cap	HIGH_CAP	ACCOUNTS.DEFAULT_HIGH_CAP ACCOUNT_CAPS.HIGH_CAP
Operating Cap	OPR_CAP	ACCOUNTS.DEFAULT_OPERATING_CAP ACCOUNT_CAPS.OPERATING_CAP

For additional information on balances, see Balance Capturing.

2.1.4 Balance Capturing

Balances are either calculated by the getAccountPosition service, or captured from an account statement and used by the getAccountPosition service as parameters for calculation.

If an account statement is not available, the balances can be populated manually in the Account Profile, Balances tab.

2.1.4.1 Capturing Balances from Statement Messages

These balances are captured from account statements provided by the Correspondent bank:

- **[Last] Actual intraday balance:** Captured intraday from an interim balance report (MT941) received from a correspondent (NOSTRO service provider).
  - If Available Balance (Field 64, optional) is in the statement, the balance is populated with this value.
  - If Available balance is not in the statement, Booked balance (Field 62, mandatory) is populated with this value.
  - In addition to the balance the following corresponding fields are updated in the ACCOUNT_DAILY_BALANACES table:
    - › Intraday statement message type
    - › Intraday statement number
    - › Intraday statement timestamp
- **Ledger opening balance:** Captured at start of day from an interim balance report (MT941) received from the internal accounting or host system.
  - Balance value is populated with the Opening balance (Field 60, optional) value. If the account is an asset account (hence the balance report is for the mirror account), the sign of the value is switched from Credit to Debit or Debit to Credit.
  - In addition to the balance, the following corresponding fields are updated in the ACCOUNT_DAILY_BALANACES table:
    - › Ledger statement message type
    - › Ledger statement number
    - › Ledger statement timestamp
- **Closing balance:** Captured at end of day from the final account statement (MT940, MT950). The statement is received from a correspondent (NOSTRO service provider), or clearing system for asset account or received from the internal accounting or host system for non-asset (VOSTRO) account.
  - Closing booked balance is populated with the closing booked balance (62F) value
  - Closing available balance is populated with the closing available balance (Field 64) value
  - In addition to the balance the following corresponding fields are updated in the ACCOUNT_DAILY_BALANACES table:
    - › Closing balance statement message type
    - › Closing balance statement number
    - › Closing balance statement timestamp

Notes:

As final account statement may span over multiple pages (messages) the balances are captured from the last page of the statement (indicated by existence of Field 62F, as opposed to Field 62M on the interim pages of the statement).

SWIFT terminology is used for statement and fields, but LRM can equally process the corresponding ISO format statement messages (camt.052, camt.053) and capture the balances.

2.1.4.2 Populating Opening Balance Task

This task is using balances captured from the statement to set the opening balance for the next business date. For more information on Populating the Opening Balance Task, see Opening Balance Task.

2.1.5 Setting Up Position Keeping Account Structure

For details on how to setup the Position Keeping Account Structure, see Position Keeping Account Structure.

2.1.6 Liquidity Tab

For a description of the fields on the Liquidity Tab, see GPP Online Help.

2.1.6.1 Intraday Position

The primary liquidity page contains the account or group of accounts detailed position. The page is refreshed automatically at a configurable rate (defined by the REFRESHPOS system parameter). As the information on the page is based on actual transactions and messages, it contains information as up to date as possible.

- The page structure (which sections/panels are visible) depends on the position type of the account, and the date displayed.
  - Ledger section and Unmatched past transactions are displayed only for NOS position type (NOSTRO accounts) while for other position types (VOSTRO and settlement accounts) they are not displayed.
  - Capacity section is displayed only for current date, and not displayed for past and future dates.
- During implementation Fundtech can configure the page according to bank specific requirements, including:
  - Remove and add entire sections or specific position figures (rows) from the page.
  - Set these parameters for the page:
    - ROLL_BUSS_DATE_BACK: Number of previous days to include in business date dropdown field (default is 2)
    - BUSS_DATE_VALUES: Number of total days to include in business date dropdown field (default is 7)
    - PAST_UNMACHED_DAYS: Number of previous days to include in the calculation of the past unmatched section (default is 1)
    - INCLUDE_CCY_SOONEST_IN_DEFAULT_DATE_CALC: Indication whether to take into account the account currency soonest field (indicating same day value, next day value or SPOT currency) when calculating the default day for display.

The Intraday position page is an interactive display, allowing the user to perform the following:

- Navigate to the account or account group profile
- Select the business date to display; browse to the past, and/or to the future

- Select the scale of the values displayed, using the View dropdown. The following options are available:
  - Full Amounts
  - Thousands
  - Ten thousands
  - Millions
- Select the currency in which the information is displayed:
  - Account currency displays all amounts in the account currency
  - Base currency converts all figures on screen into the base currency. The conversion is based on the mid -rate of the standard sheet rate
- Expand and collapse sections/panels. When collapsed the panel displays the primary figure included in the section, usually a balance
- Add to favorite in My liquidity Items list, the Intraday position page for the selected account or group of accounts
- Export an Excel file containing the displayed information, in order to store snapshots and perform additional analysis

2.1.6.2 NOSTRO Ladder

The NOSTRO ladder page provides the liquidity manager the ability to monitor the position for several days in advance.

- **Account Scope:** The NOSTRO ladder can be displayed for a specific account or for a group of accounts. The group of account may include accounts in the same currency or accounts in various currencies. In this case the account group position will be displayed in the base currency.
- **Dates Ladder:** The Dates Ladder includes only business days. It includes the current funding date (depending on the currency classification to same day value, next day value and SPOT), and next five business days.
- **Rolling Balance:** Forward day position information is based on a rolling calculated balance, i.e. the calculated balance of one day is the opening balance of the next business day.
- **Account Group Totals:** When displaying for a groups of account, the total for the group is shown in the first section, followed by a section for each of the accounts included in the group.
- Values color scheme and drill down
  - Red color indicates negative value
  - Blue color indicates positive value with drill down capability
  - Black color indicates positive value with no drill down capability
  - Drill down to the list of transactions

The NOSTRO ladder is an interactive display, allowing the user to perform the following:

- Navigate to the account or account group profile
- Select the position information to display, in the Show field. These options are available:
  - Calculated values
  - Projected values
  - Ledger values
  - Ledger & calculated balance

- Select the scale of the values displayed, in the View field. These options are available:
  - Full Amounts
  - Thousands
  - Ten thousands
  - Millions
- Select the currency in which the information is displayed:
  - Account currency displays all amounts in the account currency
  - Base currency converts all figures on page into the base currency. The conversion is based on the mid-rate of the standard sheet rate
- Add to favorite, My liquidity Items list, the NOSTRO ladder page for the selected account or group of accounts
- Export an Excel file containing the displayed information, in order to store snapshots and perform additional analysis
- Expand/collapse each section. When collapsed the primary information is displayed on the collapsed section
- Collapse all/Expand all. Collapses or expands all the sections in one click

2.1.7 Position Alerts

In addition to the ability to monitor account position using the intraday position screen, LRM provides the liquidity manager the ability to setup alerts on account position figures.

The alert is raised when the value of the position figure for the selected account reaches a pre-defined threshold.

2.1.7.1 Position Alerts Setup

Position alerts are defined in the Alerts profile.

To setup a Position Alert in the Alerts profile:

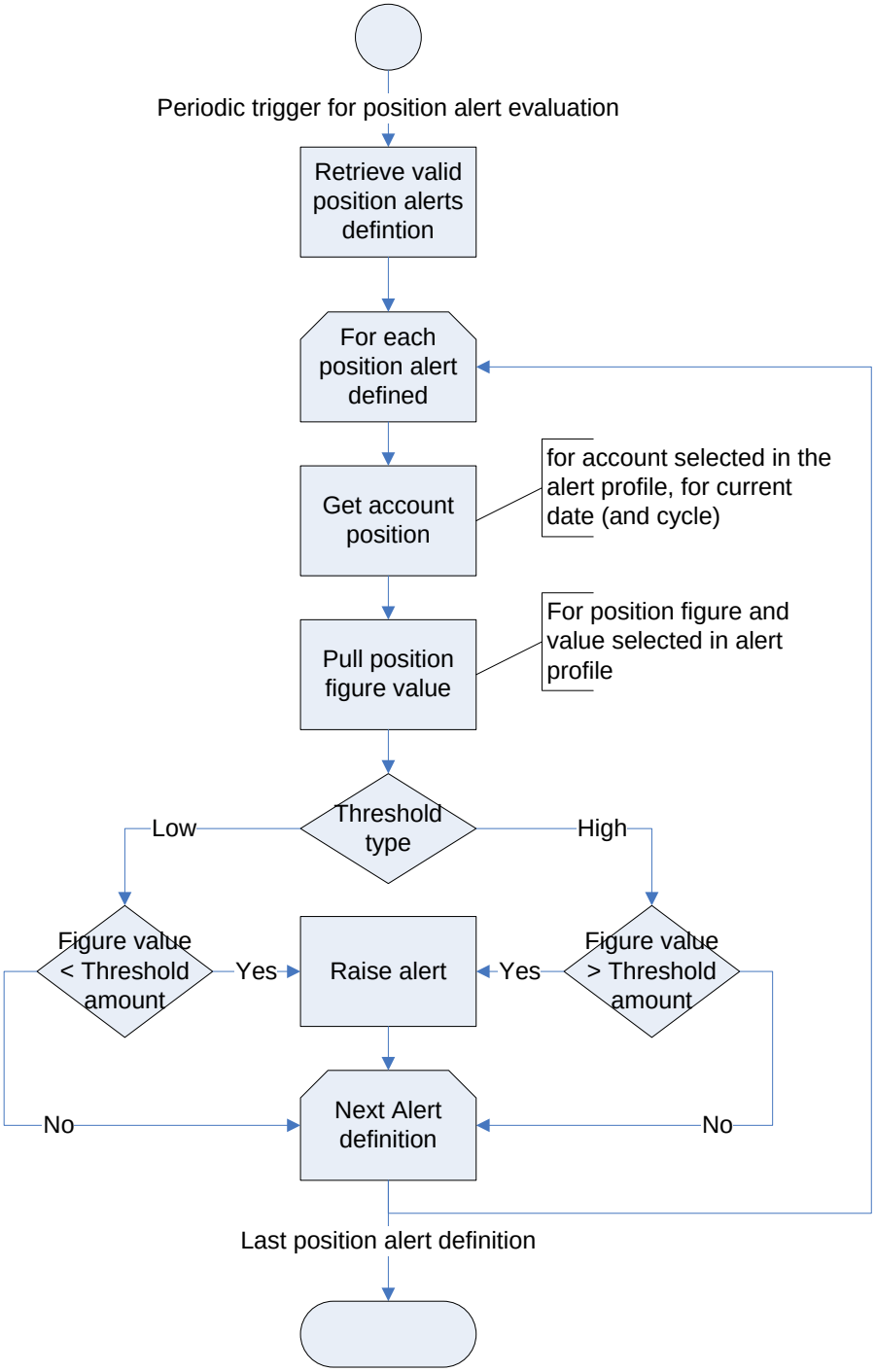
1. In the Type field, enter Account position.
2. Define the Account Number (should be a position keeping account) for which the alert will be raised
3. Select a Position figure. This is a base position figure or calculated position figure for which the alert will be raised. For a list of available position figures, see Base Position Figures and Calculated Position Figures.
4. Define the Threshold amount. This is the amount that is compared to the position figure value to decide whether an alert should be raised or not. The threshold should be defined in the account's currency.
5. Define the Delivery of the alert by selecting the relevant fields; for example, display Alerts in Alert Bar for Users, Send Alerts to Notification interface.

When setting up a position alert, if the Account, position figure and at least one of the threshold fields are not defined, an error message is generated.

Note: Currently there is no capability to set a position alert for a group of accounts.

2.1.7.2 Alert Assessment Flow

This is the position alert processing flow:



Description of flow:

1. Periodically at a frequency defined on the event definition the pre-defined position alerts profiles are evaluated.

2. The event handler:
   - Retrieves all valid (active for current date) alerts with type as Account position AND Account (ALERTS.ACCOUNT_UID) is a position keeping account
   - Clears the alert instances from the previous alert processing event
3. For each retrieved alert, the handler:
   - Gets the account position (using getAccountPosition) for ACCOUNT_UID using the current (latest) date and cycle (if applicable):
     › Either the last date and cycle for which there is a record in ACCOUNT_DAILY_BALANCES table, or the current MOP data and cycle if the account is a MOP settlement account
     › Uses the account currency parameter of the get account position service

     Note: If there are multiple position alerts for the same account, the account position is retrieved only once and serves for the assessment of all alerts of the account.
   - Pulls the value (POS_FIGURE_VALUE) of the alert figure (ALERTS.POS_FIGURE) from the get account position service response:
     › For basic position figure the value is: Total Amount = Credit amount – Debit amount
     › For calculated position figure the value is provided by the service as Total Amount
4. The threshold type is validated.
   - An alert is raised, when:
     › A low threshold is defined (LOW_THRESHOLD_AMT is not null) and the position figure value is less than or equal to the Low threshold amount.
     › A high threshold is defined (HIGH_THRESHOLD_AMT is not null) and the position figure value is greater than or equal to the high threshold amount.
   - An alert instance is created with the relevant details, including:
     › Alert notification text
     › Retrieved delivery options and parameters

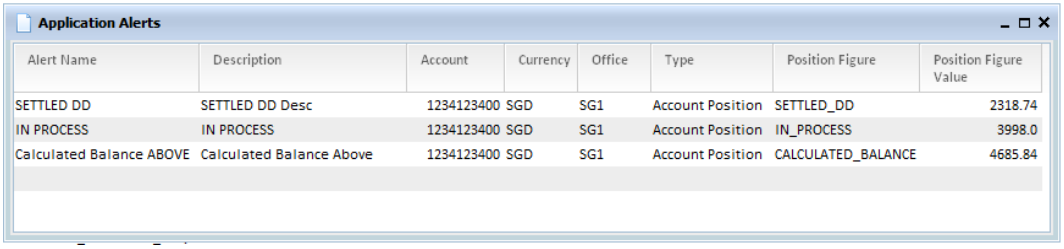
2.1.7.3 Alert Delivery

The alert can be delivered to the liquidity manager in the user interface, or to a notification interface that enables a messaging application to send an immediate notification to the user. This allows the liquidity manager to be notified also when not logged in to the system.

The alert delivery process:

- Following the assessment of alerts the alert delivery process delivers them to the relevant (pre-defined) delivery mechanism
- For each of the raised alerts:
  - If in the Alert profile, the Alert bar (ALERTS.DELIVER_ALERT_BAR) delivery option is selected, with an indication on the alert instance, the alert bar retrieves the relevant alerts based on this indication when a request is initiated by the user interface. Alerts are shown on the GPP user interface as follows:
    › 

    Indicates there are raised alerts (not just for position alerts)
    › Clicking on the alert bar generates an Application Alerts page, which shows the list of current alerts:



› Clicking on a position alert on the current alerts list navigates to the intraday position screen of the relevant account.

- If in the Alert profile, the Interface (ALERTS.DELIVER_INTERFACE) delivery option is selected; a notification message is generated and dropped to the notification interface. This example shows the structure of the Position alert interface notification.

Scheme (XSD):

```
<?xml version="1.0" encoding="UTF-8"?>
<xs:schema xmlns:xs="http://www.w3.org/2001/XMLSchema" elementFormDefault="qualified">
    <xs:element name="AlertsNotification">
        <xs:complexType>
            <xs:sequence>
                <xs:element name="AlertMetadata">
                    <xs:complexType>
                        <xs:sequence>
                            <xs:element name="Name" type="xs:string"/>
                            <xs:element name="Type" type="xs:string"/>
                            <xs:element name="GPPOfficeID" type="xs:string"/>
                        </xs:sequence>
                    </xs:complexType>
                </xs:element>
                <xs:element name="AlertParameters">
                    <xs:complexType>
                        <xs:sequence>
                            <xs:element name="DateTime" type="xs:dateTime"/>
                            <xs:element name="Description" type="xs:string"/>
                        </xs:sequence>
                    </xs:complexType>
                </xs:element>
            </xs:sequence>
        </xs:complexType>
    </xs:element>
</xs:schema>
```

Example:

```
<AlertsNotification xmlns:xsi="http://www.w3.org/2001/XMLSchema-instance">
    <AlertMetadata>
        <Name>G3 Debit Cap Threshold Exceeded</Name>
        <Type>Position Alert</Type>
        <GPPOfficeID>SG1</GPPOfficeID>
    </AlertMetadata>
    <AlertParameters>
        <DateTime>2012-07-25T16:05:00</DateTime>
        <Description>Alert was raise at 16:05 as the value of Available Scheme Cap for G3 holding account 3333 is at
198,000 which is below the threshold amount of 200,000</Description>
    </AlertParameters>
</AlertsNotification>
```

2.2 Liquidity Throttling

Throttling is one of the main features of the liquidity & risk management application. It provides the liquidity manager several tools and mechanisms to withhold transactions from being released to the various schemes and consume the bank's liquidity.

The throttling tools allow the liquidity manager to implement a liquidity control and exposure control policies. The various tools address the various aspects of the transactions, business relationship, schemes and funds availability

These Throttling steps are applied to outbound transactions at the end of the payment flow:

- Party limits
- Release bands
- transaction hold
- Capacity check

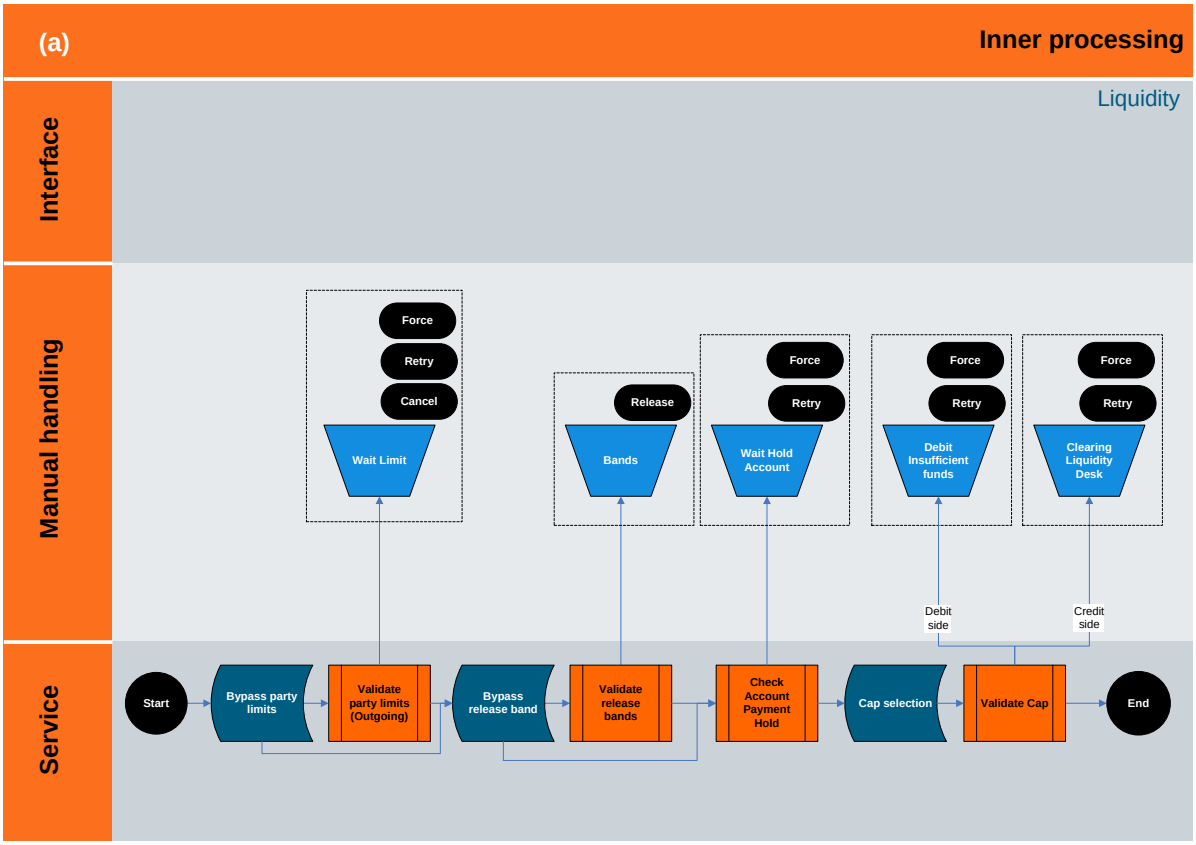
Note: The Party limit step is applied to inbound transactions at an earlier stage of the payment flow. Currently the other throttling steps are not used in inbound transactions.

Each of these steps includes:

- Setup (profiles and rules) and activation of each of these features
- The method in which each of the features operate
- The manual intervention options available in each of these features

2.2.1 Throttling Flow

The throttling flow is the liquidity validation part of the message flow. It is initiated close to the end of the message flow, just before the outbound transaction is formatted and transmitted to the selected scheme via the interface.



2.2.2 Party Limits

Party limits enables the liquidity manager to instruct the system to accumulate the value of transactions in which a business party (usually a financial institution) is involved, and prevents additional transactions with that party from being released when the accumulated value reaches a predefined limit value.

2.2.2.1 Business Setup

2.2.2.1.1 Party Limits Profile

The Party Limits profile is used to set all the parameters of the party limit. For more information, see GPP Online Help

2.2.2.1.2 Party Limits Related Rules

There rules that are used in the party limits feature:

- Bypass party limit: For more information, see Bypass Party Limit (rule type 192)
- Party limit message filter: For more information, see Party Limit Message Filter (rule type 189)
- Group of party definition: For more information, see Group of Parties' Definition (rule type 190)
- Party limit bypass validation: For more information, see Party Limit Bypass Validation

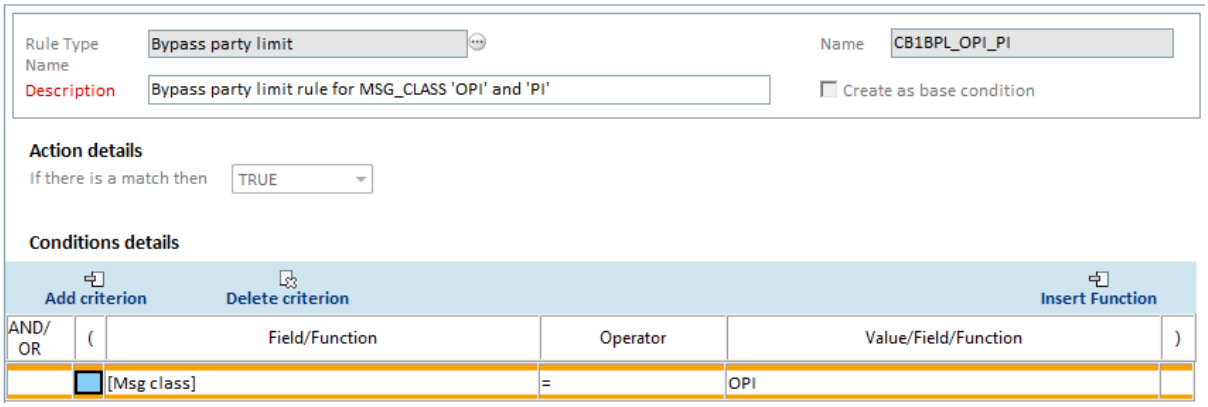
The first rule type is evaluated just before the party limits step, and this step is either performed or skipped based on the evaluation results. The rest of these rules are referenced from the party limits profile.

2.2.2.1.3 Bypass Party Limit (rule type 192)

This business rule is used for exempting a transaction from being subjected to party limit checking. Bypass party limit rules are executed immediately before the Party limits evaluation is invoked. If a transaction meets the criteria of a Bypass party limits rule, the Party limits evaluation step is not executed.

This rule can be used in these example business cases:

- Transactions (such as direct messages) that do not represent the transfer of funds.
- Interoffice and book transactions. Most financial institutions do not impose party limit on offices and branches of the same bank.



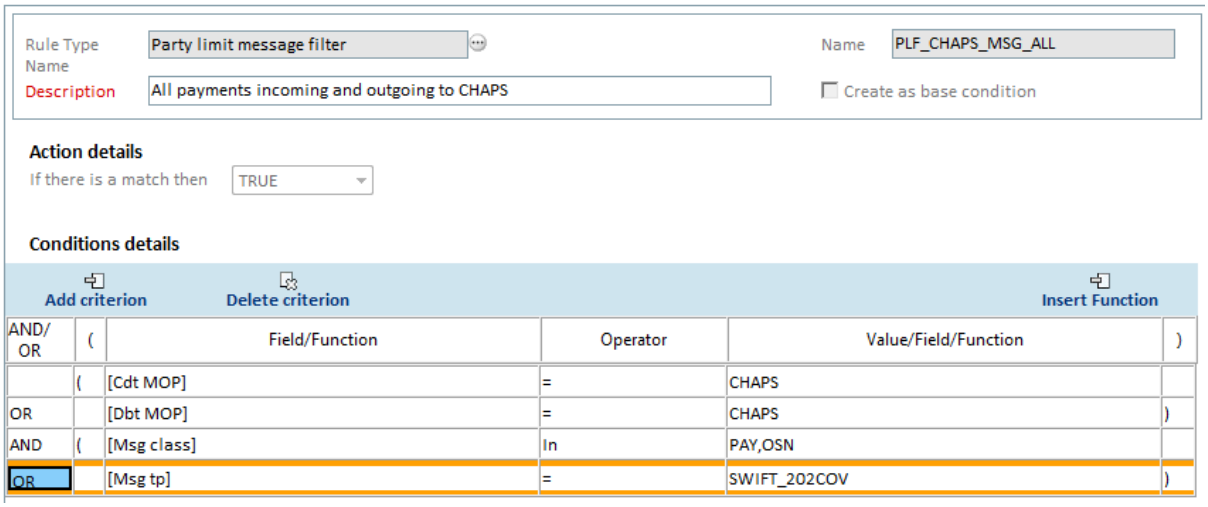
Note: This rule should not be confused with the Party limit bypass validation rule that is used for when the transaction should be included in the accumulation of the limit, but should not be withheld when the limit is breached.

2.2.2.1.4 Party Limit Message Filter (rule type 189)

This is a business rule for filtering party limits applicable for a specific transaction. This rule should be defined under the same office of the limit profile. It is not required to attach this rule, as it is referenced from the limit profile, and specifically evaluated for that limit. Only if rule conditions are met, then the Party limit is applied for the transaction.

Examples:

- When defining a bilateral or multilateral debit limit for a specific RTGS (for example, FED, CHAPS) it is recommended to setup a party limits message filter conditioning on the credit MOP.
- It may be used to exclude specific a type of transactions (for example, CLS transactions) from the limits, effectively bypassing the party limits check for these transactions.



2.2.2.1.5 Group of Parties' Definition (rule type 190)

This is a business rule for defining a group of parties. The group can then be used to filter the Party limits that should be applied to transactions. The groups of parties are also used as a navigation option in the Liquidity tab, Party Explorer tree.

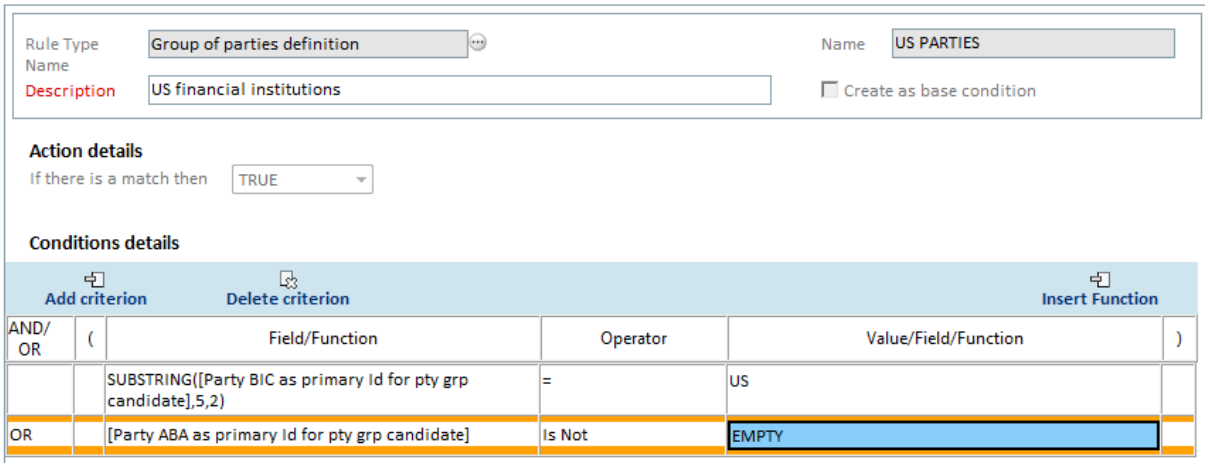
The party can serve as one of the roles within a transaction. Once a Party limit is evaluated for the transaction, the relevant party within the transaction for that role is validated against the Group of parties definition rule defined for this Party limit. This validation is performed for each of the roles defined within the Party limit.

This rule is using these proprietary logical fields:

- Party BIC as primary Id for pty grp candidate (D_PTY_GRP_CANDIDATE_BIC): To condition on the party BIC. This field should be used for parties whose primary identifier is a BIC (parties that have a BIC).
- Party ABA as primary Id for pty grp candidate (D_PTY_GRP_CANDIDATE_ABA): To condition on the party ABA. This field should be used for parties whose primary identifier is an ABA (parties that do not have a BIC, but have an ABA).
- Party code as primary Id for pty grp candidate (D_PTY_GRP_CANDIDATE_CUST_CD): To condition on the party id (internal GPP customer code). This field should be used for parties whose primary identifier is the internal GPP customer code (parties that do not have a BIC or an ABA).

These fields are located in the Miscellaneous branch of the message attributes tree.

Note: This rule type is also used in the party explorer within the Liquidity tab. Therefore each party group defined for limit processing is also visible in the Party Explorer.

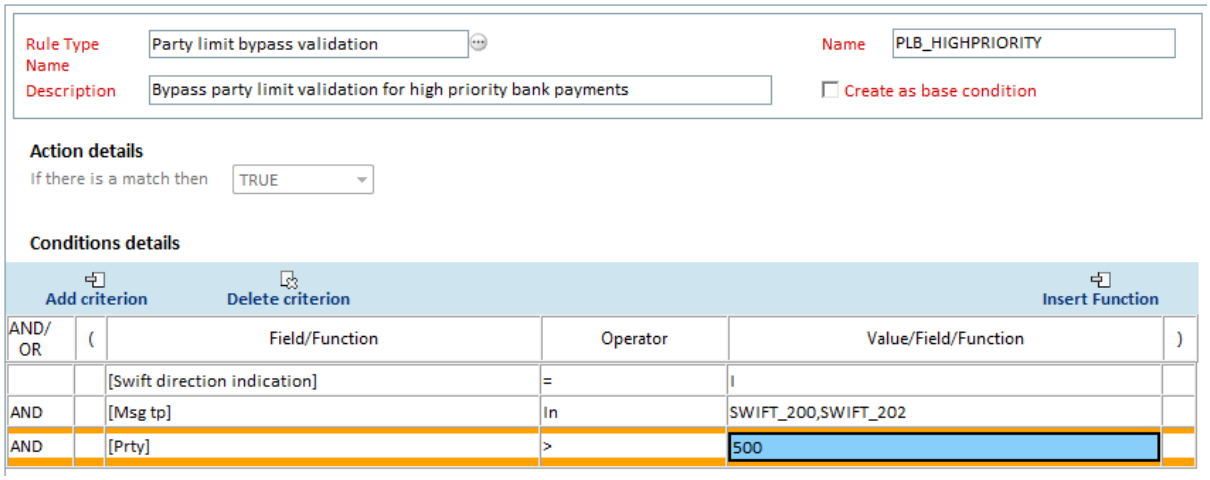


2.2.2.1.6 Party Limit Bypass Validation

This is a Rule for specifying the conditions, under which the transaction amount is added to the accumulated value of the limit that applies for the specific transaction, but the limit amount is not validated. Therefore the transaction is not stopped by the limit check, even if it causes the accumulated amount to breach the limit.

This rule can be used in these scenarios:

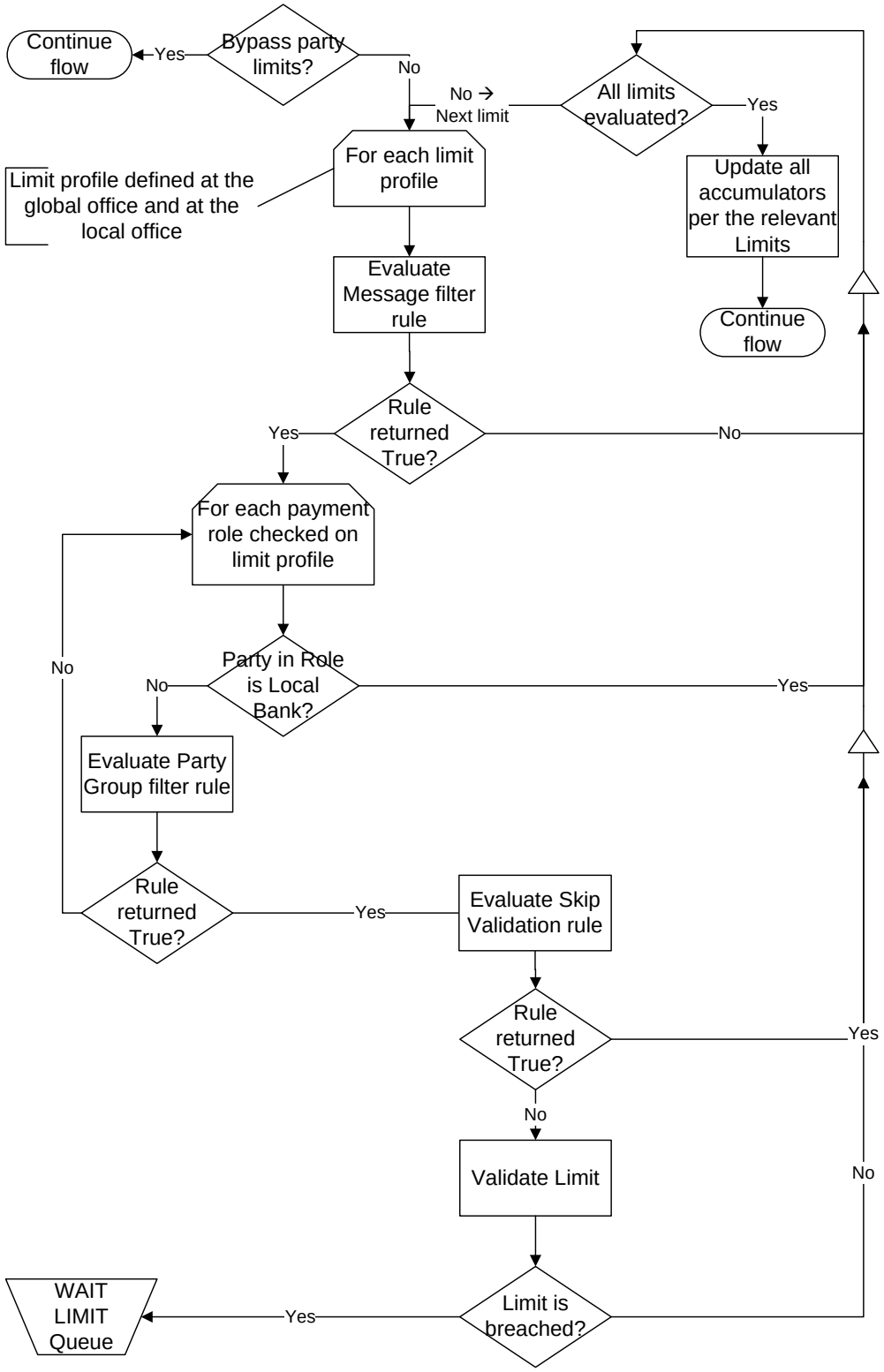
- High priority transactions that should not be stopped (for example, CLS transactions). In this scenario some of the transactions will be checked and some will bypass the validation based on the rule condition.
- Limits that are used only for exposure tracking but not for throttling. In this scenario the rule condition will be empty, to be applied for all transactions associated with the limit.
- Transactions below a threshold amount should be included in the credit limit accumulation but should not be stopped.



2.2.2.2 Party Limit Process

The Party Limit process includes these major steps:

- Gathering applicable limits: Checking which limits apply to the transaction
- Limit check: Validating that the transaction does not cause any of the applicable limit accumulators to breach the limit value
- Limit accumulation: Adding the transaction value to the relevant limit accumulators



2.2.2.2.1 Getting Applicable Limits

Every party limit profile that is setup at the local office and the global office is evaluated against the current transaction.

1. The limit type is examined against the direction of the transaction. ‘In’ limits are not evaluated for Outgoing transactions (if the Outgoing is actually an Onward that originally was an Incoming

transaction, the ‘In’ limits have been evaluated for it, in the step for evaluating Incoming transactions), and ‘Out’ limits are not evaluated for Incoming transactions (at least not in the step evaluating Incoming transactions. If a transaction becomes Onward it will be evaluated against ‘Out’ limits in the step evaluating Outgoing transactions).

- If the transaction is not in the relevant direction for current limit profile the process continues with the next limit, if such next limit exists.

2. The party limit transaction filter associated with the limit is assessed against the current transaction attributes.
   - If the transaction does not comply with the message filter the process continues with the next limit, if such next limit exists.
3. The party group definition rule is assessed for every party in the transaction, that can be identified (i.e., is quoted using a valid, existing ID), and that serves within the transaction in a role matching to a role checked in the limit profile (for example, Counterparty, Sender, Receiver, Debtor, Creditor, Debtor Agent, Creditor Agent).

   Note: the transaction parties that can be identified are identified and enriched prior to the limits check by the party enrichment service.

   - If a party serving in a specific role does not belong to the party group the process continues with the next party in the next role, if a next role exists.
   - If all parties per all the checked roles do not belong to the party group the process continues with the next limit, if a next limit exists
4. The limit bypass validation rule is assessed
   - If the rule returns False, the limit validation is not bypassed; party limit validation is performed according to this limit (see Party Limit Validation).
   - If the limit is breached, the transaction is moved to the Wait Limit Queue and the evaluation process ends.
   - If the rule returns True, the limit validation is bypassed. The limit is marked for Party limit accumulation (see Party Limit Validation), which takes place after all applicable limits are evaluated and the ones requiring validation were validated. The process continues with the next limit (even if accumulation for this limit may cause the limit to be breached).
   - If limit amount was not breached in this step (either accumulated but limit was not breached, or validation was bypassed), the process continues with the next limit, if a next limit exists.

2.2.2.2.2 Party Limit Validation

It is performed as part of the loop, per each limit evaluated, that requires validation.

- It retrieves limit applicable accumulators, according to the limit Identifier, party scope, date scope and role scope.
  - Party scope
    - › If the limit Party scope is Whole group of parties, it retrieves the accumulator by the group identifier
    - › If the limit Party scope is Each individual party, it retrieves the accumulator by the party identifier
  - Date scope
    - › If the limit Date scope is No date (ongoing), it retrieves the accumulator without a date (Date = null)
    - › If the limit Date scope is Per date (daily), it retrieves the accumulator with the transaction value date
  - Role scope

› If only one role is checked to be validated for in this limit profile, it retrieves the accumulator for this specific role.

› If more than one role is checked to be validated for in this limit profile, it retrieves the accumulator without a role.

- For each retrieved accumulator, the system computes the accumulation of the transaction's base amount and the current value of the accumulator. This computation is for validation purposes only at this stage and is not yet saved into the accumulators themselves. The method in which the value is accumulated into the accumulator depends on type of the limit (In, Out and the two Net types), the Direction of the transaction, and if the relevant party is in the credit chain (receiving) or the debit chain (paying). for example, for a Net (In-Out) (which is the most common type to be defined):
  - For a receiving party, the accumulator is incremented by the transaction amount. i.e., exposure is increased
  - For a paying party, the accumulator is decremented by the transaction amount. i.e., exposure is decreased
- If the computed accumulated value exceeds the limit value, the limit check has failed, and the transaction is moved to Wait Limit Queue.

2.2.2.2.3 Party Limit Accumulation

After all the applicable limits were evaluated, and the ones requiring validation were validated, and only if none of these validations resulted in a failure (a limit was breached), the amount of the transaction is accumulated into the applicable limit accumulators.

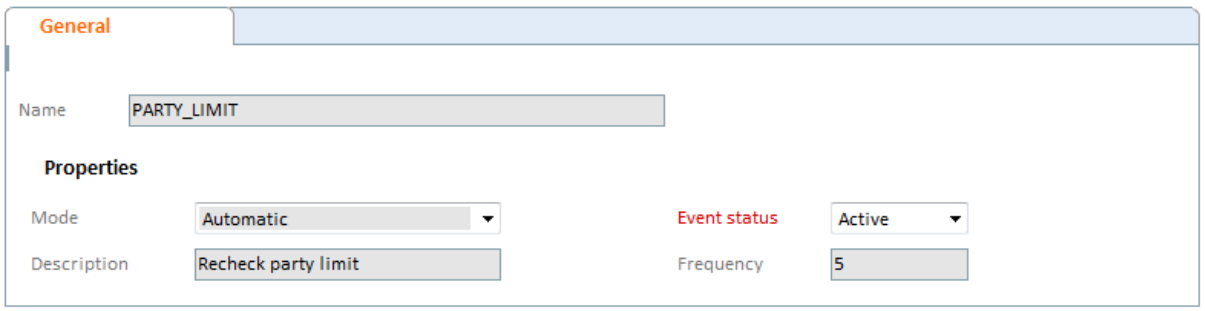
This is performed for accumulators associated with applicable limits that required validation and for applicable limits that do not require validation (bypass validation).

2.2.2.3 Recheck Party Limits

Periodically the application initiates a recheck of the transactions in the Wait Limit Queue, and releases them in a pre-defined release order (based on priority and time in which they entered the system).

The recheck of party limits is triggered by the PARTY_LIMIT event, whose frequency is specified in the Event management profile (EVENT_DEFINITION table).

Recheck Party Limit event:



2.2.2.4 Limit Manual Handling

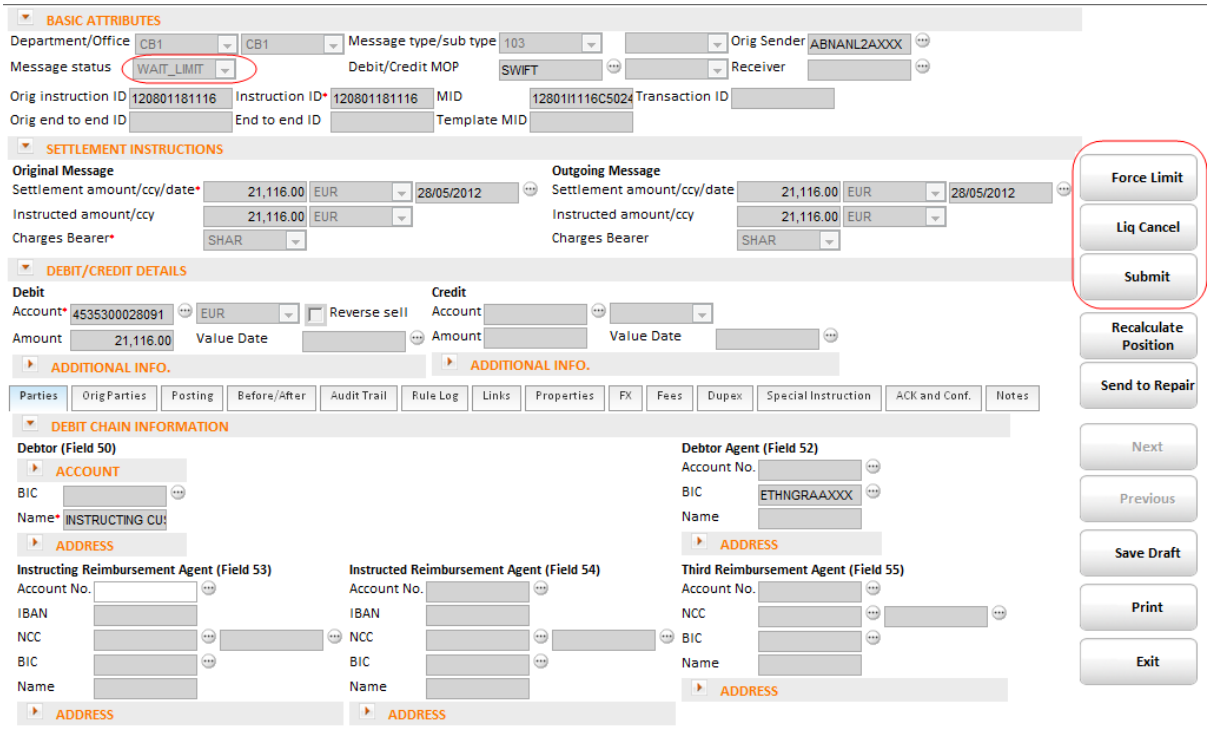
When failing the limit check the transaction moved to Wait Limit Queue. This queue is one of the manual process queues.

2.2.2.4.1 Wait Limit Queue

When a transaction is in the Wait Limit Queue, an authorized user has the ability to perform these actions reflecting on the party limits functionality:

- Force limit: Overriding the result of the party limit check, and sending the transaction to continue the flow. A Force Limit action sets the Force Limit (MU_PARTY_LIMIT_FORCE_STS) user monitor logical field to F, indicating to the flow not to perform a limit check on this transaction again.
- Liq Cancel: Canceling the transaction due to liquidity reasons. Send the transaction to Liq Approve cancel queue where it waits for a user to approve the cancellation. It is possible to setup rules that bypass the need for approval, in which case the transaction is sent immediately to the Canceled queue.
- Submit: Sends the transaction back to the flow, to recheck all limits applicable for it (prior to the next periodic party limits recheck.

Example of a transaction in Wait Limit Queue:



2.2.3 Bands

The Bands functionality, which is based on the transaction amount, prevents outgoing transactions from being released. This means, that all transactions that match the criteria of an active (closed) band are stopped.

Bands can be manually deactivated (and reactivated) during the day. For example, early in the day, a band can be deactivated, allowing the release of low-value transactions only. Then later in the day as incoming transactions are received, other bands can be deactivated allowing the release of higher valued transactions.

Stopped transactions are moved to the Bands Queue for subsequent automatic release (when the band is deactivated) or for manual follow-up.

LRM lets the liquidity manager stop or release outgoing transactions according to the transaction amount. The liquidity manager can define several ranges of amounts. Each range can be either activated or deactivated. Prior to the release of an outgoing transaction, LRM associates a relevant band to the transaction.

If the associated band is activated, the transaction is held in the Bands Queue. Once an activated band is deactivated, the transactions that were associated with this band and held in the Bands queue are released.

2.2.3.1 Bands Profile

Setting up the bands for an account is performed using the Bands profile. The band profile is accessible (for an authorized user) from the Liquidity menu on the Business Setup tab, and from the specific Account Profile using the Bands navigation button.

Note: For details on the Bands profile, see the GPP Online Help

2.2.3.2 Bands Management

2.2.3.2.1 Ongoing Band Control

Activating and de-activating bands on an account is performed on the Bands page, which is accessible (for an authorized user) from the Intraday Position page.

Following the activation of a band, a Recheck Bands event is triggered for the relevant account. Transactions that were previously held due to this activated band are released in order to continue processing according to a pre-defined release order.

2.2.3.2.2 Release all Bands Task

The Release all Bands task is available as one of the start of day activities task for Bands reset.

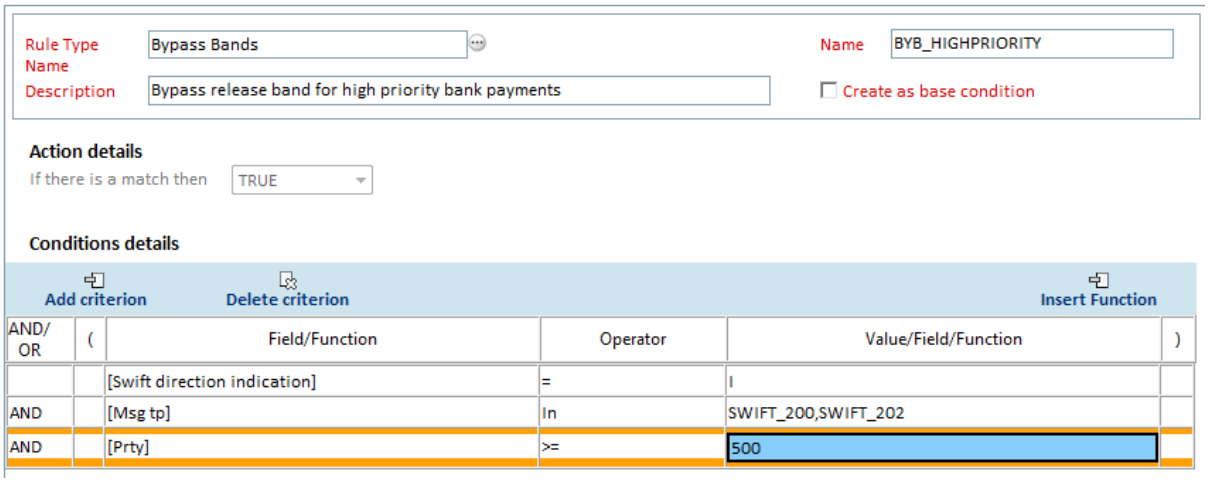
This task performs these actions:

- All Bands are made active (Release field is selected).
- Initiates a Recheck Bands event to recheck and release transactions that are in the Bands Queue.

An authorized user can invoke this task from the user interface under the Operations tab.

2.2.3.3 Bypassing Bands Rule

LRM enables the liquidity manager to define flexible Bypass Bands rules. Transactions that correspond to one of the Bypass Bands rules are not subjected to a band check and are not held in the Bands Queue.



2.2.3.4 Bands Checks

When an outgoing transaction is being processed, GPP performs these checks to see if the transaction should be stopped due to Bands.

If all of the following are true, the transaction is moved to the Bands Queue:

- Bands profile exists for credit account of transaction
- Transaction amount is between the From Amount and To Amount of the band
- The Band is not active (closed)
- The outgoing transaction does not meet the conditions of a Bypass Bands rule

Note: When transaction amount is above the max band (no bands available for transaction), then the band is considered as active (open).

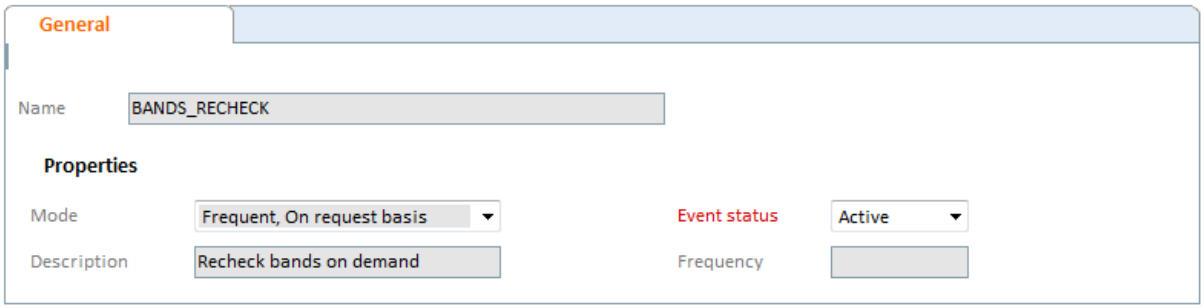
2.2.3.5 Recheck Bands Event

When required, GPP initiates a recheck of the bands of all the transactions in the Bands Queue.

The recheck of a band is triggered by a BANDS_RECHECK event which is raised when a user releases a band that was previously closed.

Event parameter:

- Account - the event is triggered for the account for which a band was released.



2.2.3.6 Bands Manual Handling

Transactions which failed Bands are held in the Bands Queue. The Bands queue is one of the manual process queues.

2.2.3.6.1 Bands Queue

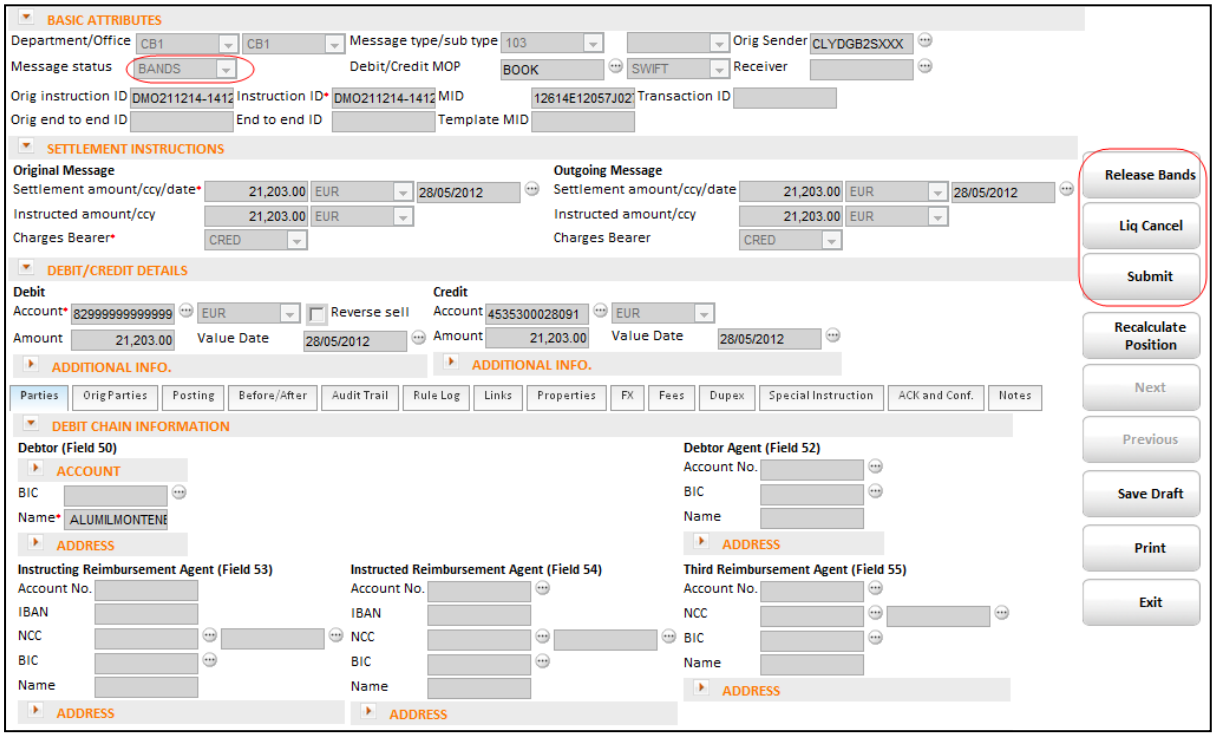
When a transaction is in the Bands queue, an authorized user has the ability to perform these actions reflecting on the bands functionality:

- Release bands: Overriding the result of the bands check, sending the transaction to continue the flow. If a transaction with Bands status was forced manually from the Bands queue using the release bands button or group action, then the transaction(s) are moved out of the queue and continue along its normal workflow, even if the band associated with the transaction(s) is still closed (Release checkbox is not selected). The Release bands action sets the Override Band (MU_BANDS_OVERRIDE_IND) user monitor field to O, indicating to the flow not to perform a bands check on this transaction again. A payment which was forced out from Bands queue is never checked again for Bands. This means that if a payment is moved to the Repair Queue due to some reason or Schedule Queue after being forced out from the Bands queue, then it will not be checked for bands again.

Note: There is no end of day event which resets the Override Band monitor, and therefore, once this monitor is set, then it bypasses the bands check.

- Liq Cancel: Canceling the transaction due to a liquidity reason. Moves the transaction to Liq Approve Cancel Queue where it waits for a user to approve the cancellation. It is possible to setup a rule that bypasses the need for approval, in which case the transaction is sent immediately to the Liq Cancelled queue.
- Submit: Sends the transaction back to the flow, to recheck the bands (prior to the triggered band recheck; it is possible that the band recheck event is disabled).

Example of a Transaction in a Bands Queue:



2.2.4 Capacity Check

The primary goal of capacity checking is to ensure that there are enough funds (including extended credit lines) in the accounts to ensure settlement of the transaction.

The capacity check provides the liquidity manager:

- A tool to withhold the release of lower priority transactions and use the limited liquidity available for the more important transactions first.
- The ability to withhold transitions internally before release, instead of having transactions being rejected by the clearing system, which in some cases may incur a penalty.

2.2.4.1 Caps Setup

Caps (overdraft limits) are set for each account. These caps can be set up in GPP in the Accounts profile, Caps tab:

- Three tiers of default (overnight) overdraft limits:
  - Max cap
  - High Cap: Must be lower than the max cap
  - Operating Cap: Must be lower than the high cap
- Intraday caps (operating and high cap only) which can vary by time of day. Usually the intraday overdraft limits are higher than the default overdraft limit, and represent extended intraday credit lines.
- User can define a Max cap threshold; either by a percent of the Max cap or by amount (must be lower than the max cap). This field can be used for setting position alerts, notifying the user when Max cap is almost fully utilized.

2.2.4.2 Hold Account Transactions

An authorized user (usually Liquidity Manager) can stop instantly all outbound traffic for a specific account. This is done by activating the Hold transactions action from the Account's Intraday Position page. Confirmation for the hold transaction is required with a reason why it was performed.

A transaction hold on an account automatically withholds all outbound traffic on the account, and directs the relevant transactions to the Wait Hold Account queue.

When a transaction is in the Wait Hold queue an authorized user may cancel the transaction, or force it out of the queue.

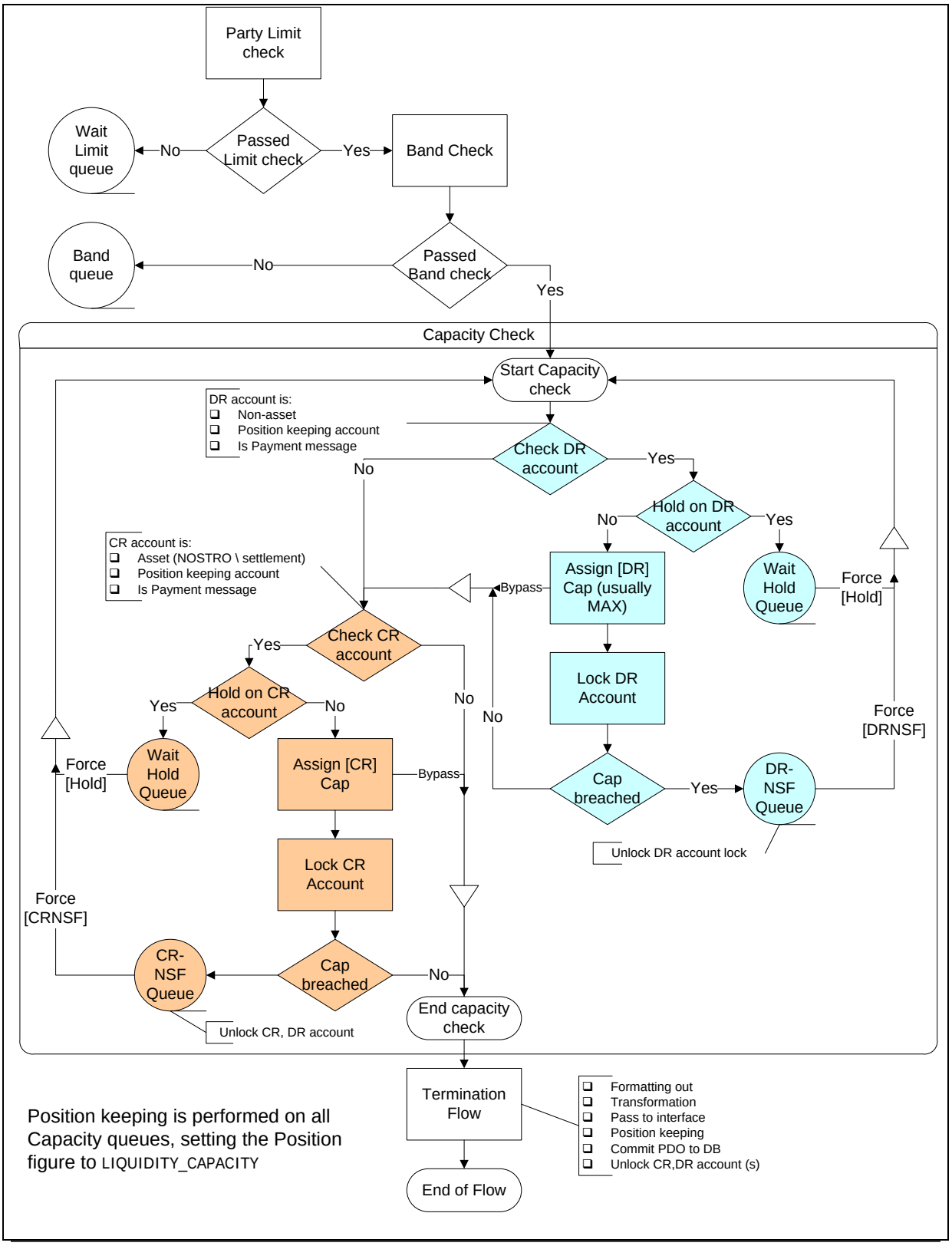
An authorized user can release the transaction hold on the account, by deactivating the Hold transactions action in the Account's Intraday Position page. The user is required to confirm the release and provide a reason for the release.

Once a hold is released, GPP automatically resubmits the transactions in the Wait Hold Queue back to the flow to recheck the capacity.

Note: When a Hold is applied to an account a Stop sign icon is displayed next to the account name in the account explorer.

2.2.4.3 Capacity Check Process

This is the flow of the capacity check.



Note: Account locking and releasing is required to prevent a scenario in which multiple transactions perform capacity checks on the same account at the same time.

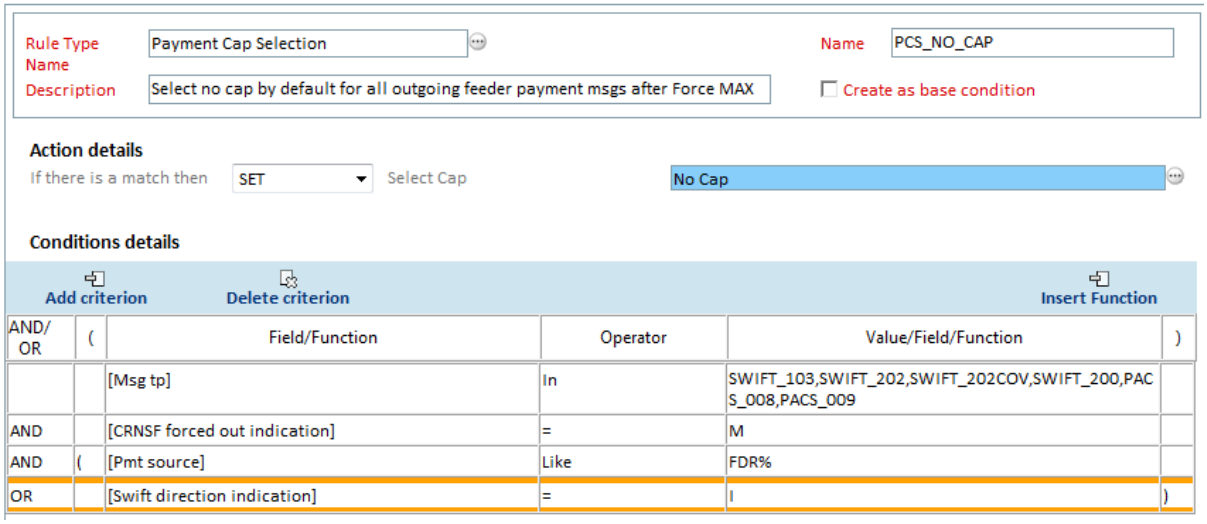
2.2.4.3.1 Invoking Payment Cap Selection Rule

The Payment cap selection rule assigns a Cap to a transaction. The cap (Rule action) may be one of the following:

- Operating
- High
- Max
- No cap (bypass)

This action controls which available funds figure is used when checking the capacity.

The rule has a sub type associated with it: Credit for capacity check on Credit account, and Debit for capacity check on the debit account.



- The Payment Cap selection rules are evaluated on two types of events:
  - When the task Capacity Recheck is periodically invoked (see Capacity Recheck)
  - When an authorized user has clicked Force CRNSF on a transaction that was previously stopped and is waiting in the Clearing Liquidity Desk (CRNSF) queue.
- To prevent the selection of a different cap than previously selected on the periodic recheck task invocation, a cap selection rule should include a condition on the CRNSF forced out indication logical field. This field can have the following values:
  - X – initial value
  - O – forced by Force Operating
  - H – forced by Force High
  - M – forced by Force Max

  The field value is X unless a user clicked the Force CRNSF button. It remains with a different value until it is reset back – if it is stopped again as a result of the Caps rules' evaluation.
- For the Force action to function as required, as the different Caps are hierarchical, these conditions must be defined:

- Cap selection rule assigning High as the cap should contain a condition that the operating cap was forced; [CRNSF forced out indication] = O
- Cap selection rule assigning Max as the cap should contain a condition that the High cap was forced; [CRNSF forced out indication] = H
- Cap selection rule assigning No cap as the cap should contain a condition that the Max cap was forced; [CRNSF forced out indication] = M

- There might be other business scenarios in which a specific cap should be selected, For example:
  - CLS or funding transactions should be assigned Max cap or No cap by default and not require a force action.
  - High priority transactions should be assigned High cap by default without going to Operating cap first.

2.2.4.3.2 Retrieving Available Funds

Based on the result of the Payment cap selection rule, the relevant available fund figure is retrieved.

The figure is retrieved by activating the Get Account Position service using these parameters:

- The account number with account office and account currency
- Value date
- Available funds figure assigned by Cap selection rule
- Currency: Transaction's currency if it is the same as the account's currency, otherwise the base currency is used. The Get Account Position service converts the available funds from the account currency to the base currency.

Based on this cap the capacity check is performed using a corresponding calculated position figure:

- Available Max = OPENING_BALANCE + SETTLED + NOT_YET_SETTLED + MAX_CAP
- Available High = OPENING_BALANCE + SETTLED + NOT_YET_SETTLED + RESERVATION + EARMARK + ADJ_HIGH_CAP
- Available Operating = OPENING_BALANCE + SETTLED + NOT_YET_SETTLED + RESERVATION + EARMARK + ADJ_OPR_CAP

Calculation remarks:

- If the opening balance is not populated, the available funds calculation yields null values, and transactions will fail the capacity check, if assigned to any of the caps. An audit trail record is generated with the relevant details.
- As cap values represent the overdraft limit, they increase the available funds.
- Reservation and Earmarks value are negative values, therefore reduces the available funds.

2.2.4.3.3 Cap Breach Check

The retrieved account capacity (Available figure) is compared against the transaction's amount, as per the currency used. Either the transaction's amount (when transaction's currency equals the account's currency), or the transaction's calculated base amount (when the transaction's currency is not the same as the account's currency).

If the available funds figure is greater than or equal to the transaction's amount, the transaction continues with the flow.

Otherwise, the transaction is moved to the Clearing Liquidity Desk (CRNSF) queue (or Debit insufficient funds – DRNSF queue for debit side capacity check). The transaction remains in this queue until it is released by either:

- A periodic capacity recheck event, which depends on enough liquidity build-up to fulfill the transaction's amount. For more information, see Capacity Recheck.
  It is also possible that the value of the cap changed from the time the capacity check was performed; either due to a predefined time sensitive cap, or a user manually updated the cap value on the Account profile.
- Manual user intervention, based on the user's access level, can force the transaction out of this queue. For more information, see Cap Manual Handling.
- Manual user intervention, based on the user's access level, can request retrying capacity check for the transaction. For more information, see Cap Manual Handling.

Note: When a transaction is sent to the CRNSF (or DRNSF) queue, its monitor indicating that the transaction was forced out of the CRNSF (or DRNSF) queue is reset to its initial value as X.

2.2.4.3.4 Capacity Check for Earmarked Transaction

A transaction is identified as earmarked after it is matched to a previously received pre-advice (AF type is Earmark) message.

For a transaction identified as earmarked, the capacity check of the transaction is not compared against the transaction's amount; as it ensures that the account capacity, as returned by the service call, is either greater than or equal to 0.

The reason for this is that during processing of the pre-advice, the funds were already reserved for the amount mentioned in the pre-advice and the reservation is reassured after the transaction was matched to the pre-advice.

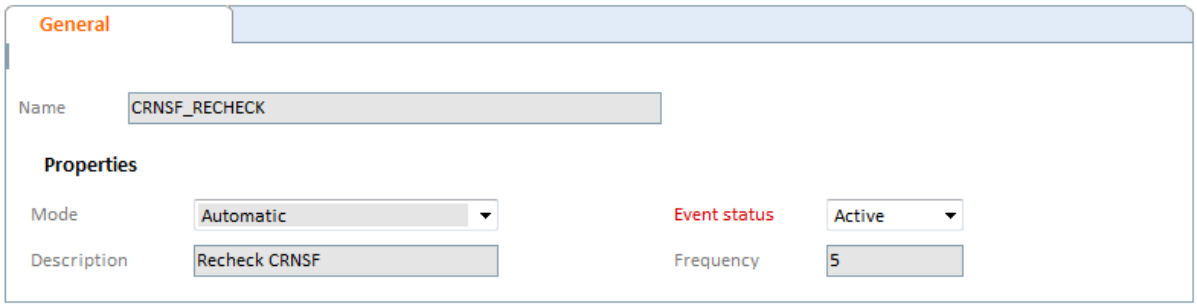
The only exception for this behavior is when the cap selected for the transaction is the Max cap. The service call that returns relevant account current capacity ignores reservations for earmarks. Therefore, when the capacity is set to Max, the account capacity is compared against the transaction's amount.

2.2.4.4 Capacity Recheck

The processing of inbound transactions may change the capacity of an account; in addition overdraft limits may change during the day. Therefore, the fact that a transaction failed capacity check does not prevent it from passing the capacity check successfully within several minutes.

Periodically the application initiates a recheck of the transactions currently in the CRNSF (or DRNSF) queue and releases them.

The recheck of capacity is triggered by the CRNSF_RECHECK (or DRNSF_RECHECK) event. The frequency is specified in the Event Management profile (EVENT_DEFINITION table).



Note: Rechecking the capacity submits the transaction to perform a capacity recheck (and hold check) for the debit account and credit account (when applicable) regardless if it has previously passed the capacity checking of either one.

2.2.4.5 Cap Manual Handling

2.2.4.5.1 Manual Handling Queues

These message queues are for capacity checking:

- Clearing Liquidity Desk (CRNSF): For transactions that failed capacity checking on the credit account (asset account)
- Debit insufficient Funds (DRNSF): For transactions that failed capacity checking on the debit account (non-asset account)
- Wait hold account: For transactions that failed hold check on either accounts

2.2.4.5.2 Manual Actions

When a transaction is in one of the capacity manual queues, a user may move the transaction out of the queue, by either overriding the capacity constraints, submitting the transaction for recheck or cancelling the transaction.

- **Force CRNSF:** Override the result of the capacity check and try to send the transaction to continue the flow. Force CRNSF populates the CRNSF force monitor field (MU_CRNSF_FORCE_IND) with a value based on the current cap assigned to the transaction, and submits the transaction back to capacity checking.
- **Force DRNSF:** Override the result of the capacity check and try to send the transaction to continue the flow. Force DRNSF populates the DRNSF force monitor field (MU_DRNSF_FORCE_IND) with a value based on the current cap assigned to the transaction, and submits the transaction back to capacity checking.
- **Liq Cancel:** Cancel the transaction due to a liquidity reason. GPP sends the transaction to the Liq Approve cancel queue where it waits for a user to approve the cancellation. It is possible to setup a rule that will bypass the need for approval, in which case the transaction is sent immediately to the Canceled queue.
- **Retry:** Sends the transaction back to the flow, to recheck the capacity (prior to the triggered or next scheduled capacity recheck).

These actions can be activated as group actions from the queue list, or as single message actions from the message page (buttons).

Liquidity Cancel and Approve Liquidity Cancel actions can be replaced by Liquidity Reject and Approve Liquidity Reject actions, if a rejection transaction needs to be sent to the source system.

2.3 Anticipated Funds

Anticipated funds (AF) is a mechanism that provides the liquidity manager with the ability to gain visibility on expected transactions and take into account expected liquidity events when making the funding decisions. In addition, it lets the liquidity manager allocate and reserve funds for planned transactions.

Anticipated funds are based on the MT210 message. MT210 is classified by SWIFT as a notice to receive. However, GPP provide the ability to use MT210 as notice to pay (AF RVR or reverse MT210).

GPP identifies four classifications of anticipated funds:

1. Pre-advices
2. Earmarks
3. Manual adjustments
4. Reservation

2.3.1 Manual Creation of Anticipated Funds

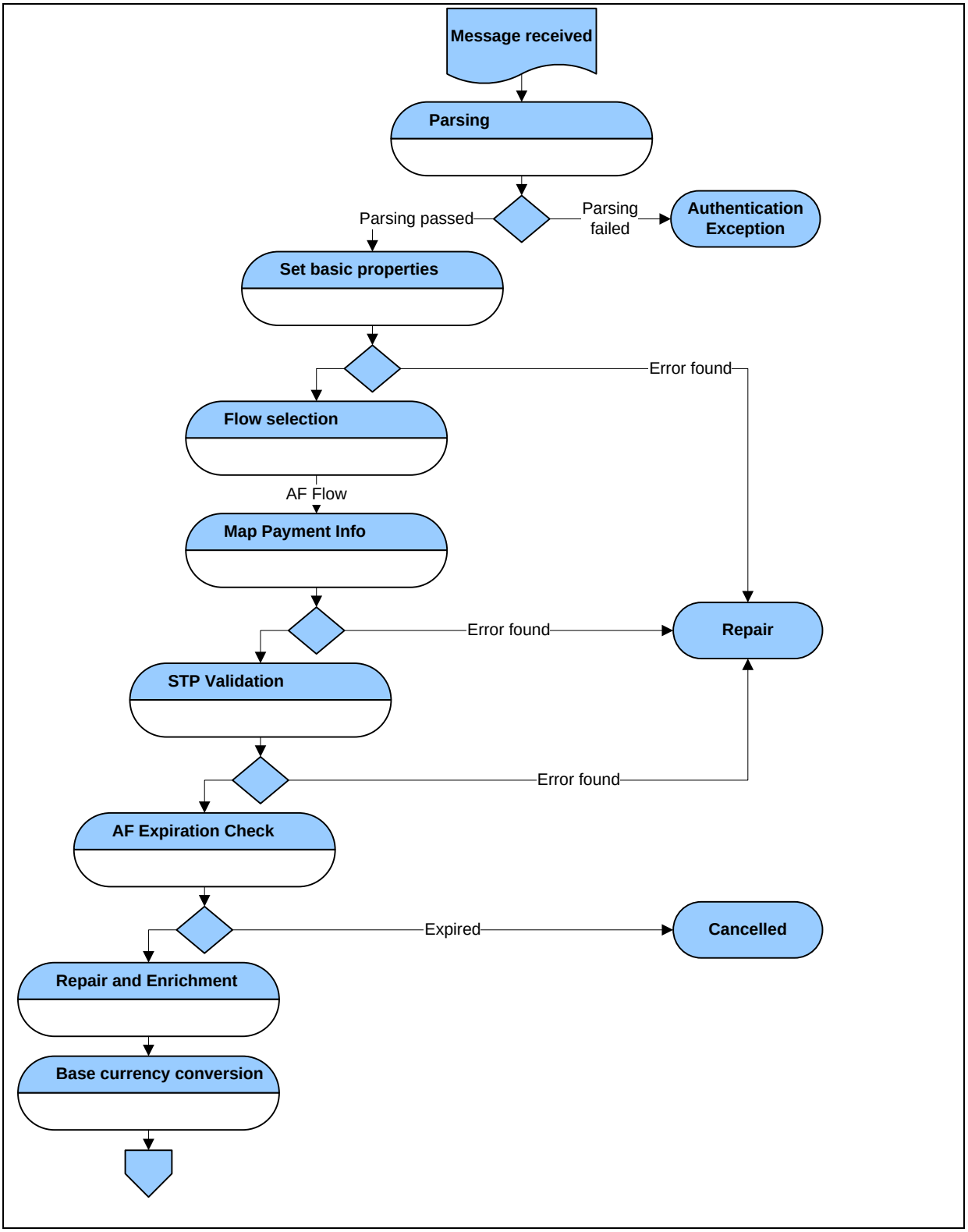
Anticipated funds messages can be created manually in GPP, by selecting Create Payment, Anticipated Funds. If an anticipated fund template has been created, an anticipated funds message can be created manually from the Create payment from template menu.

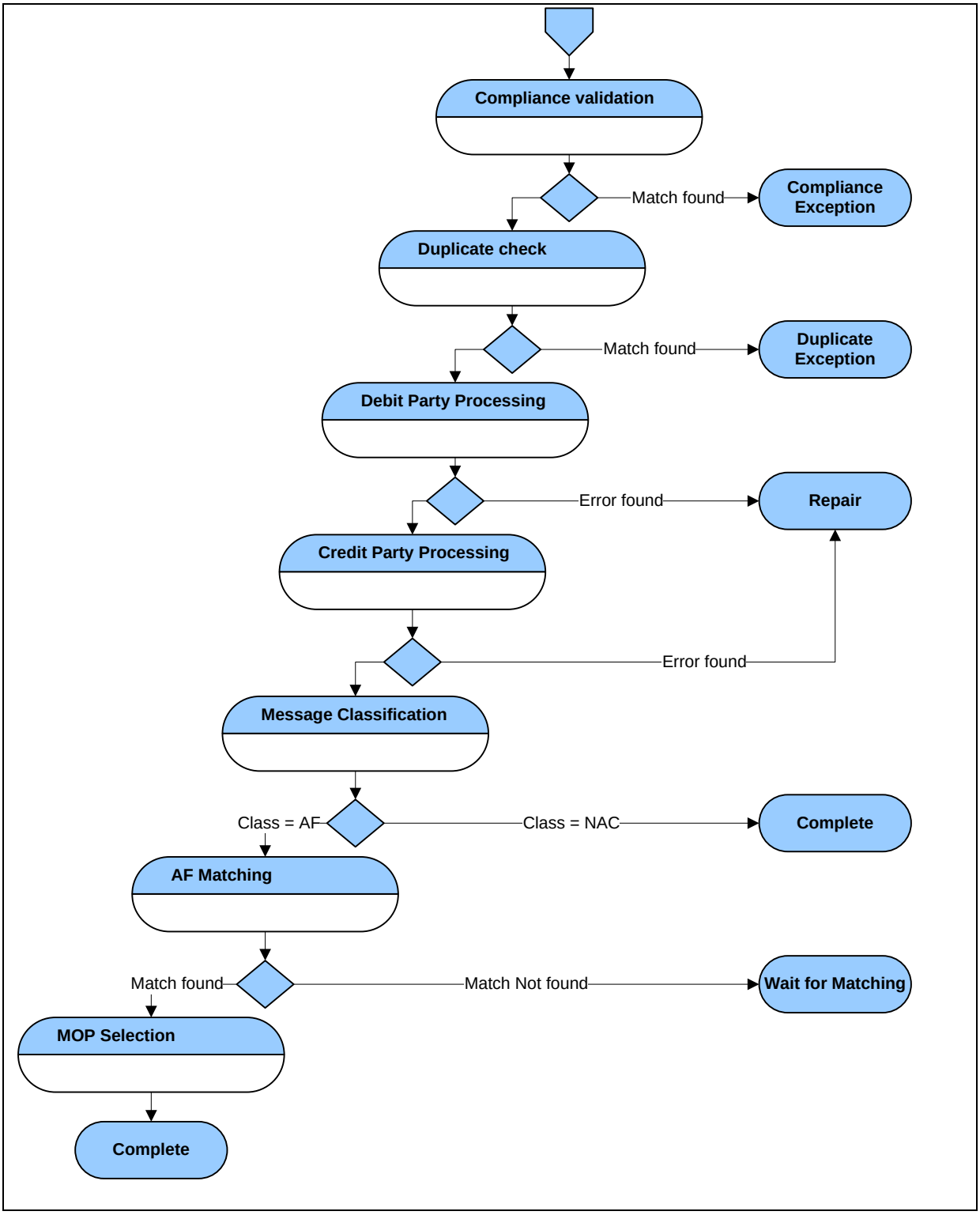
When the Anticipated funds message page opens, the user populates the relevant details and clicks submit. The AF message specific fields are updated as follows:

- **Message type:** It is defaulted with MT210.
- **Sub Type:** Possible values are RVR (for reverse) or empty (default)
  - When RVR is selected:
    - › Account Number field is mandatory
    - › Debit Account field is optional
  - When the field is left empty:
    - › Account Number field is optional
    - › Debit Account field is mandatory
- **AF Type:** Possible values are Pre-advice, Earmark, Adjustment or Reservation
  - When creating an Earmark or a Pre-advice, it is important to populate the Related reference field with a relevant value to allow the AF to match automatically to the transaction message.
- **AF Expire time:** to force the AF to expire intraday, populate the field with the expiration time, the format should be HH:MM (24 hours)

2.3.2 Anticipated Funds Flow

These are the various steps of the Anticipated Funds flow:





2.3.2.1 Parsing

The payment parsing includes the required mapping from the payment as received in the GPP message field's attributes. It is hard coded and has no user interference. When parsing fails, the message is moved to the Authentication Exception (AUTHEX) queue, where the user can view the message and only cancel it.

2.3.2.2 Flow Selection

Anticipated Funds messages are directed to a dedicated Anticipated Funds processing flow, which is similar to the high value payment flow.

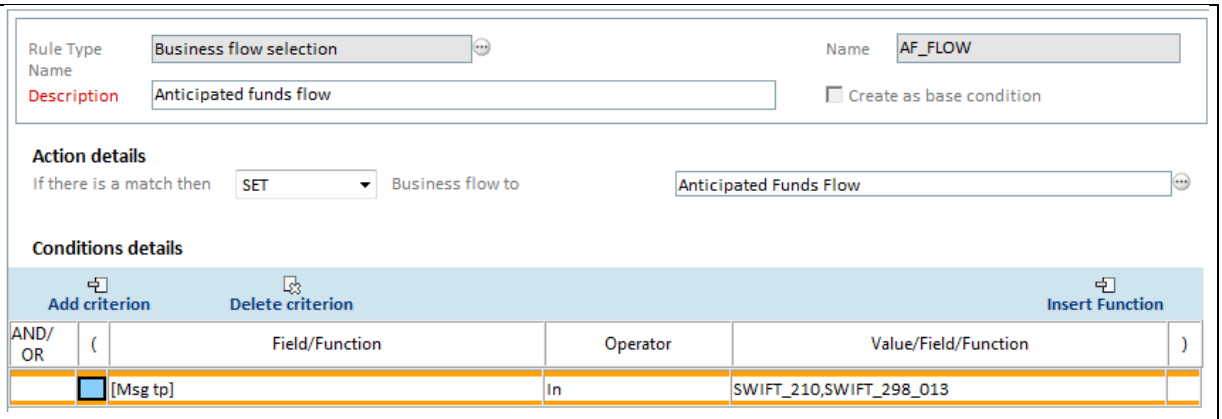


Figure 1 - AF Flow Selection rule

2.3.2.3 Reverse AF Identification

An AF (MT210) is identified as a reverse 210 (sub type RVR) when the account number specified in field 25 contains a suffix of –DR.

Note: For CHAPS pre-advice (MT298/013) the criteria for a reverse AF is the existence of N prefix in field 32.

2.3.2.4 AF Expiration Check

When processing an AF, the flow checks the expiration as follows:

- If an AF Expiration time is defined, the flow checks if the expiration time has passed.
  - If the expiration time has passed, the message is automatically cancelled
  - If the expiration time has not passed, an event is scheduled for the AF to expire. It is possible that the expiration time is changed before the scheduled event.
- If an expiration time is not defined an event is scheduled to expire it at 23:59 of the AF value date.

2.3.2.5 Duplicate Checking

AF duplicate checking is using the same duplicate checking mechanism, utilizing Criteria, Index, and algorithm as high value payments.

2.3.2.6 Debit Party

2.3.2.6.1 Debit Account Derivation for Regular Pre-advice (MT210)

For a regular MT210 the debit account is derived based on the content of field 56, it is expected that this account is an asset account; that is either:

- Account identified by the account ID provided in field 56
- Account associated with the BIC mentioned in field 56
- Default NOSTRO account for the currency when field 56 is empty or GPP cannot derive the account from F56

For a reverse MT210 the debit account is not applicable

The following details the various account derivation scenarios:

- **Manually created or updated pre-advice:** If Account already exists, (either as a result of manipulation or user interface changes)
  - If the account is an asset account and is in instruction currency then this is the debit account number.
  - The message fails the account derivation and moves to repair if is either:
    - › Not found
    - › Found but it is not an asset account
    - › Found but it is not in instruction currency
- **Pre-advice from Clearing system:** If the message arrived with FIN copy service in tag 103 (X_CLR_SYS_ID is not empty), then the debit account is the settlement account associated with the MOP associated with the FIN Copy.
  - If the account is found and is an asset account and in instruction currency then this is the debit account number.
  - The message fails account derivation and moves to Repair if is either:
    - › Not found
    - › Found and it is not an asset account
    - › Found and it is not in instruction currency
- **Pre-advice with account number in** Field 56: If the message is received with the account number quoted in field 56, GPP searches for it in the account table (according to ACC_NO).
    - › If the message source is an internal system, the account number is matched against the internal account number
    - › If the message source is from outside, the account number will be matched against the external account number (EAN).
  - If the account is found and is an asset account and is in instruction currency then this is the debit account number.
  - If the account is either Not found, Found and it is not an asset account or Found and it is not in instruction currency, GPP checks whether the customer is flagged for STP account derivation.
    - › If it is not flagged, GPP invokes the Debit account enrichment rule
    - › If it is flagged, GPP attempts to derive an account from the customer
- **Pre-advice without account number in** Field 56**:** If the message is received without an account number in field 56 but with another identifier (for example, BIC, NCC), GPP searches in the account table (according to ACC_NO) for all accounts in instruction currency belonging to the customer.
  - If one account is found:
    - › If it is an asset account, then that is the debit account.
    - › If the account found is not an asset account, then no valid account was found, and the process continues to the Debit account enrichment rule
  - If more than one account is found in the instruction currency, GPP selects the preferred one:
    - › If an account is not found, the process continues with the Debit account enrichment rule

- If more than one account is flagged; then none of the accounts are valid and the process continues with the Debit account enrichment rule
- If one account is found and it is an asset account, then this is the debit account
- If one is found and it is not an asset account, the process continues to the next step

- **Pre advice without field 56:** If the account cannot be derived from the information provided in field 56, or if the message arrives without field 56, then the service derives the debit account from the default NOSTRO account (CURRENCY_BU.DEFAULTNOSTROACC) for the instruction currency. For information on the Default Correspondent area in the Currency profile, see GPP Online Help.

2.3.2.7 Credit Party

In a regular MT210, field 25 is reserved for the credit account (Customer account) of the transaction that matches to this AF.

MT210 received from an internal system has the internal account number populated.

When the MT210 has been received from an external source (SWIFT), the account identifier is the external account number (EAN).

2.3.2.7.1 Credit Account Derivation

For a reverse MT210, the Credit account is derived from the account number provided in field 25 (after removing the -DR suffix that indicates that it is a Reverse MT210.

The credit account derivation logic is as follows:

- If the sender of the Reverse MT210 is NOT the local bank:
  - The account number quoted in Field 25 is matched against the external account number on the account profile. It is possible that the account number quoted in field 25 is an IBAN; in this case the IBAN will be deconstructed first to capture the account number component of the IBAN.
  - If there is no match to the account number, GPP invokes the Credit account enrichment rule.
  - If there is still no account, or the derived account is not in the instruction currency or is not an asset account, the message fails account derivation and moves to Repair.
- If the sender of the Reverse MT210 is the local office (i.e. it is an internal pre-advice, which is the more likely case for Reverse MT210):
  - The account number quoted in Field 25 is matched against [internal] account number on account profile.
  - If there is no match to the account number, GPP invokes the Credit account enrichment rule.
  - If there is still no account, or the derived account is not in the instruction currency or is not an asset account, the message fails account derivation and moves to Repair.

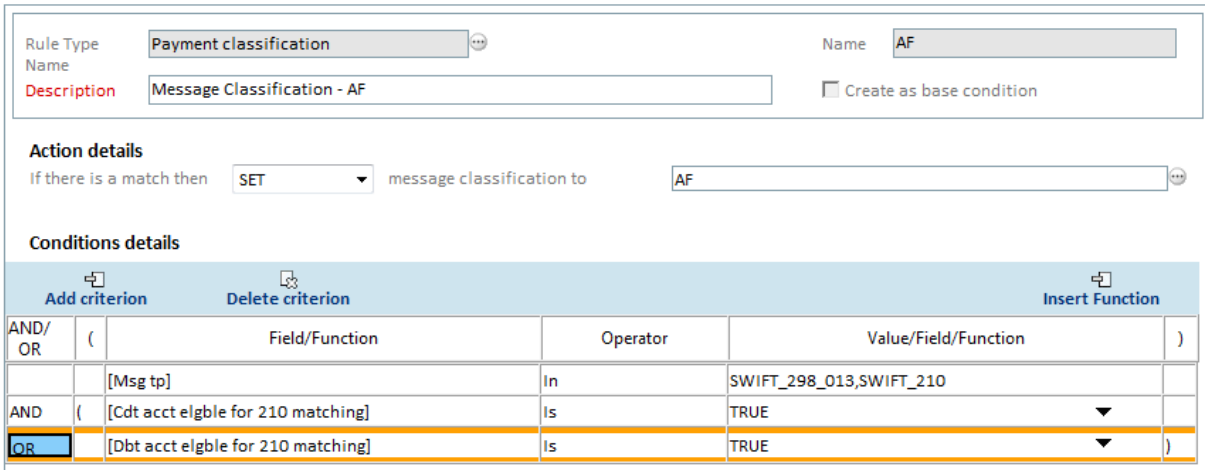
Note: For a reverse MT210 the debit account is not applicable

2.3.2.8 Message Classification

A pre-advice received and processed on an account, which is not flagged for 210 matching and has not been classified as AF, does not go through the matching process.

A user can also activate a Not AF or Cancel button on the AF message. If activated, the message is reclassified as NAC instead of AF, and does not go through the matching process.

Examples of AF payment Classification Rules:



Rule Type Name: Payment classification
Name: AF
Description: Message Classification - AF
Create as base condition

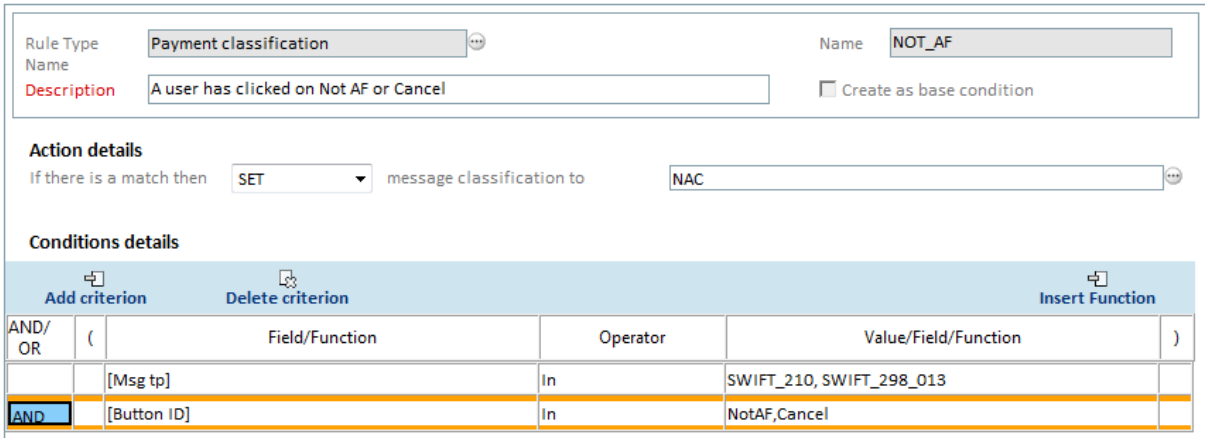
Action details

If there is a match then SET message classification to AF

Conditions details

Add criterion | Delete criterion | Insert Function

AND/ OR	(	Field/Function	Operator	Value/Field/Function	)
		[Msg tp]	In	SWIFT_298_013,SWIFT_210	
AND	(	[Cdt acct elgble for 210 matching]	Is	TRUE	
OR		[Dbt acct elgble for 210 matching]	Is	TRUE	)



Rule Type Name: Payment classification
Name: NOT_AF
Description: A user has clicked on Not AF or Cancel
Create as base condition

Action details

If there is a match then SET message classification to NAC

Conditions details

Add criterion | Delete criterion | Insert Function

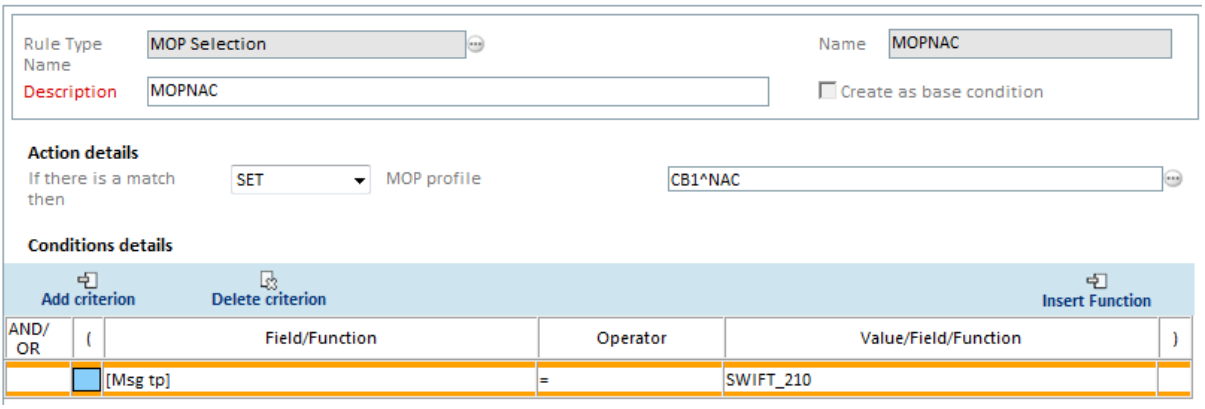
AND/ OR	(	Field/Function	Operator	Value/Field/Function	)
		[Msg tp]	In	SWIFT_210, SWIFT_298_013	
AND		[Button ID]	In	NotAF,Cancel	

Note: SWIFT298_013 is a CHAPS proprietary pre-advice message, classified and processed (generally speaking) the same way as an MT210. Usually CHAPS pre-advices are not expected to be matched to payments but to CHAPS proprietary settlement messages (MT298/011, MT298/012).

2.3.2.9 MOP Selection and Value Date Calculation

A received AF (unlike MT210 generated as advices which have SWIFT MOP assigned) is assigned to NAC (non accounting) MOP and is not transmitted out of GPP.

Example of AF MOP Selection Rule:



Value date calculation: Unlike payment transactions which may move to the Schedule queue, AF with future value date should always be processed on the day it is received. Therefore, the processing date is set as the current office business date.

2.3.3 AF Matching

GPP supports three way matching between AF (pre-advices and earmarks), payment transactions and settlement messages (MT900/MT910; SC/SN). To support this matching these relationship types are defined:

- Payment^AF & AF^Payment: Represents a link between a payment transaction (for example, PI, PAY) and anticipated fund
- SN^AF & AF^SN: Represents a link between a settlement notice (MT910) and anticipated fund (MT210)
- SC^AF & AF^SC: Representing a link between a settlement notice (MT900) and a reverse anticipated fund (MT210RVR)

It is expected that an anticipated fund is received and processed prior to the receipt and processing of the payment or settlement message. As a result the matching attempt in the AF flow is not expected to be successful. Therefore, the anticipated fund is in Wait Match status and AF Match status is W.

2.3.3.1 AF Matching Eligibility

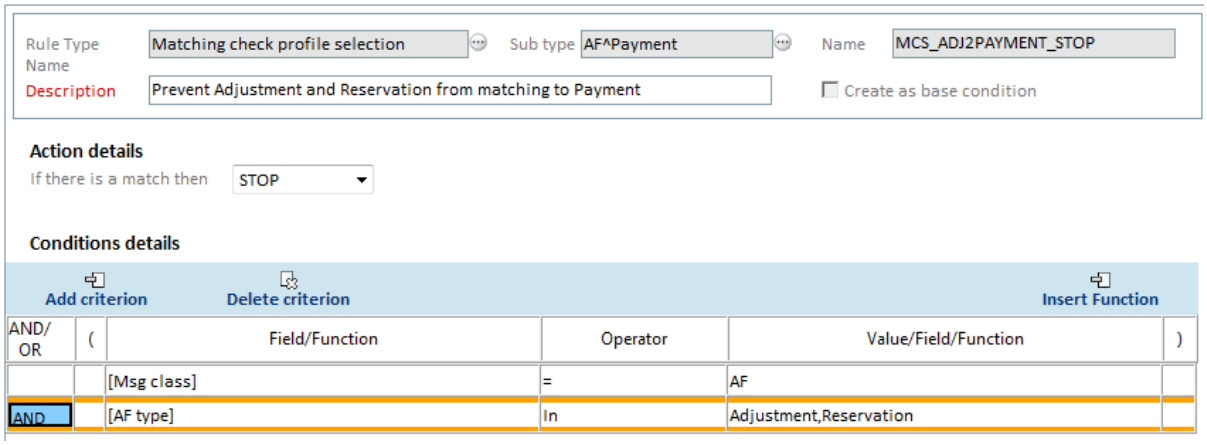
Anticipated funds are assigned for matching only if the 210 matching is allowed on the account (210 Matching flag in Accounts profile is selected). The 210 matching on the account is also captured in these reference logical fields:

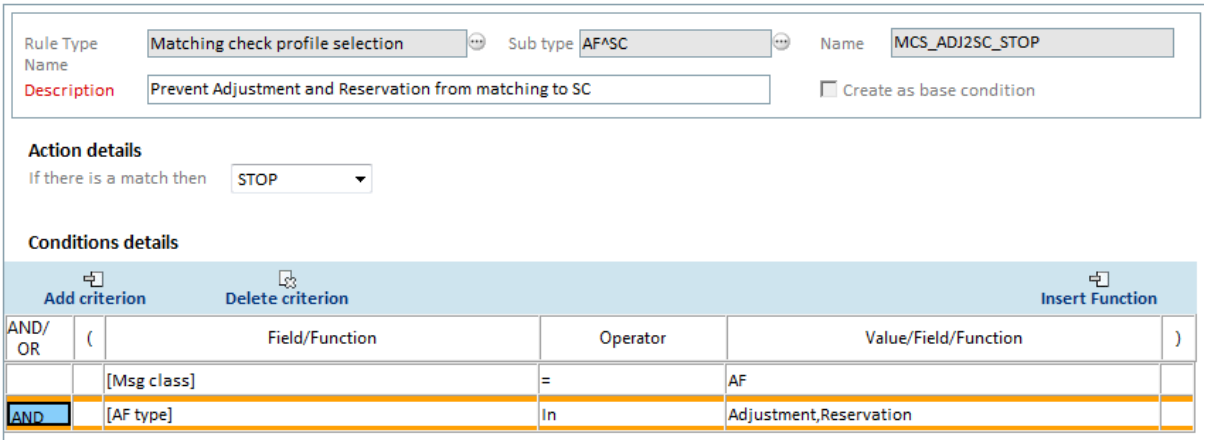
- Cdt acct elgble for 210 matching (F_CDT_ACCT_210_ELIGIBLE)
- Dbt acct elgble for 210 matching (F_DBT_ACCT_210_ELIGIBLE)

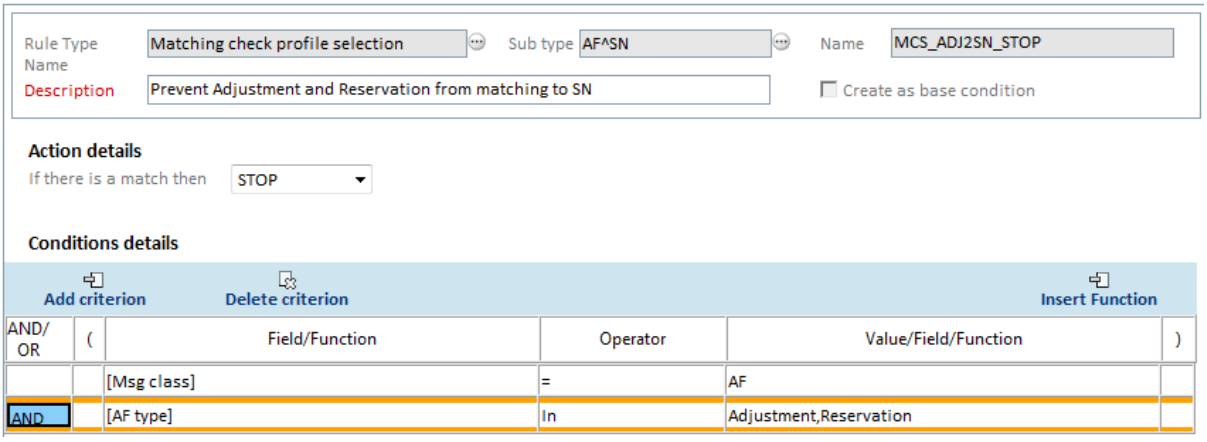
Unmatched AF is kept and available for matching for a limited time only. This time period is controlled by the 210_PI_ARCHKEEP system parameter. Once the time period specified by the parameter has passed from the AF date, it is moved out of the active queue (even if it is not matched yet).

Manual adjustments and Reservations are not candidates for matching (automatic or manual) to payment or settlement messages. This is enforced by assigning an N matching status to them using a Stop action on Matching check selection rules for these AF types.

Adjustment matching check selection rules:


Rule Type
Matching check profile selection
Sub type
AF^Payment
Name
MCS_ADJ2PAYMENT_STOP
Name
Description
Prevent Adjustment and Reservation from matching to Payment
Create as base condition
Action details
If there is a match then
STOP
Conditions details
Add criterion
Delete criterion
Insert Function
AND/ OR
(
Field/Function
Operator
Value/Field/Function
)
[Msg class]
=
AF
AND
[AF type]
In
Adjustment,Reservation


Rule Type
Matching check profile selection
Sub type
AF^SC
Name
MCS_ADJ2SC_STOP
Name
Description
Prevent Adjustment and Reservation from matching to SC
Create as base condition
Action details
If there is a match then
STOP
Conditions details
Add criterion
Delete criterion
Insert Function
AND/ OR
(
Field/Function
Operator
Value/Field/Function
)
[Msg class]
=
AF
AND
[AF type]
In
Adjustment,Reservation

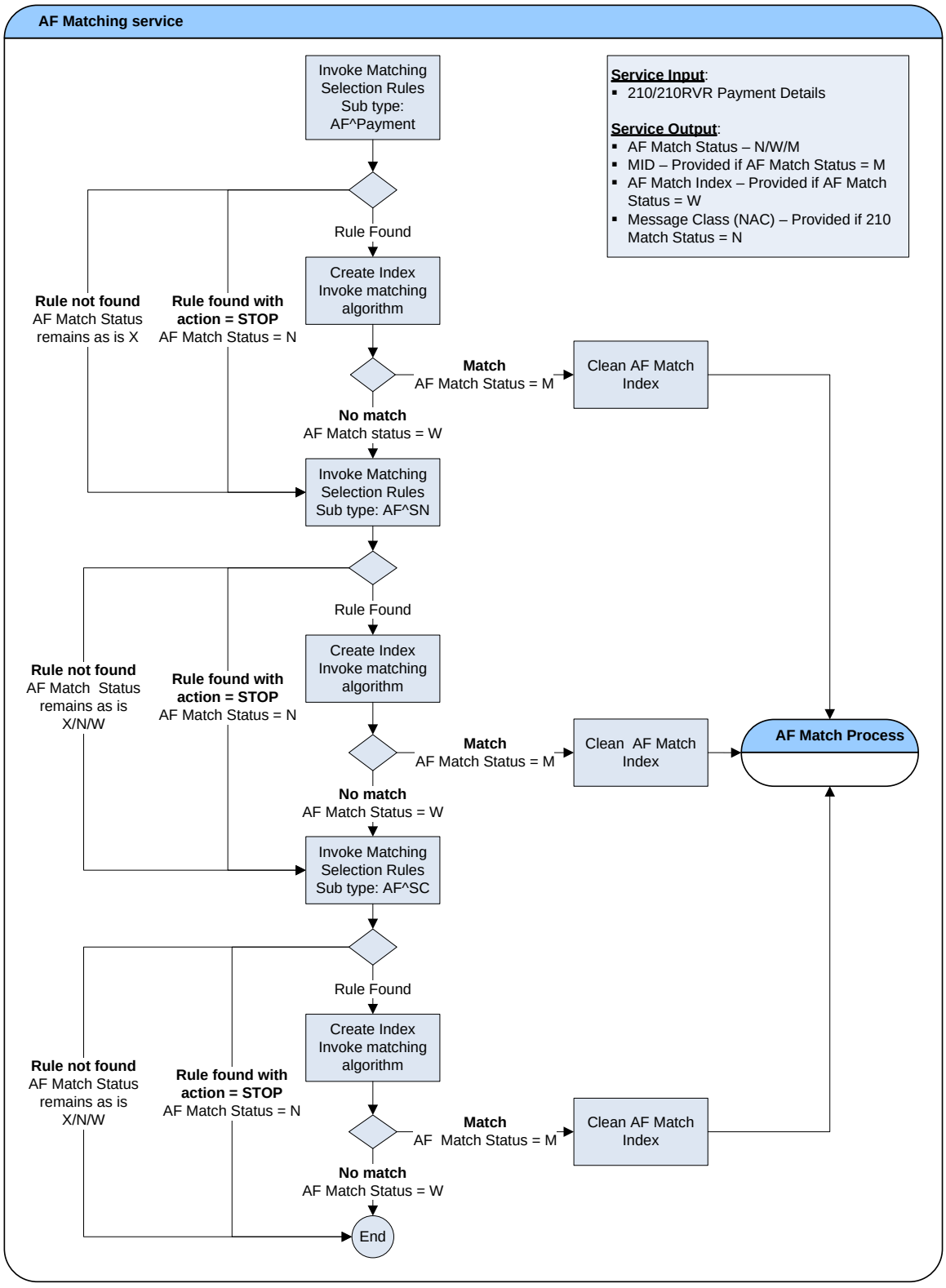

Rule Type
Matching check profile selection
Sub type
AF^SN
Name
MCS_ADJ2SN_STOP
Name
Description
Prevent Adjustment and Reservation from matching to SN
Create as base condition
Action details
If there is a match then
STOP
Conditions details
Add criterion
Delete criterion
Insert Function
AND/ OR
(
Field/Function
Operator
Value/Field/Function
)
[Msg class]
=
AF
AND
[AF type]
In
Adjustment,Reservation

2.3.3.2 Automatic Matching in AF Flow

AF Matching in the AF flow is attempting to find a match from one of these relationship types:

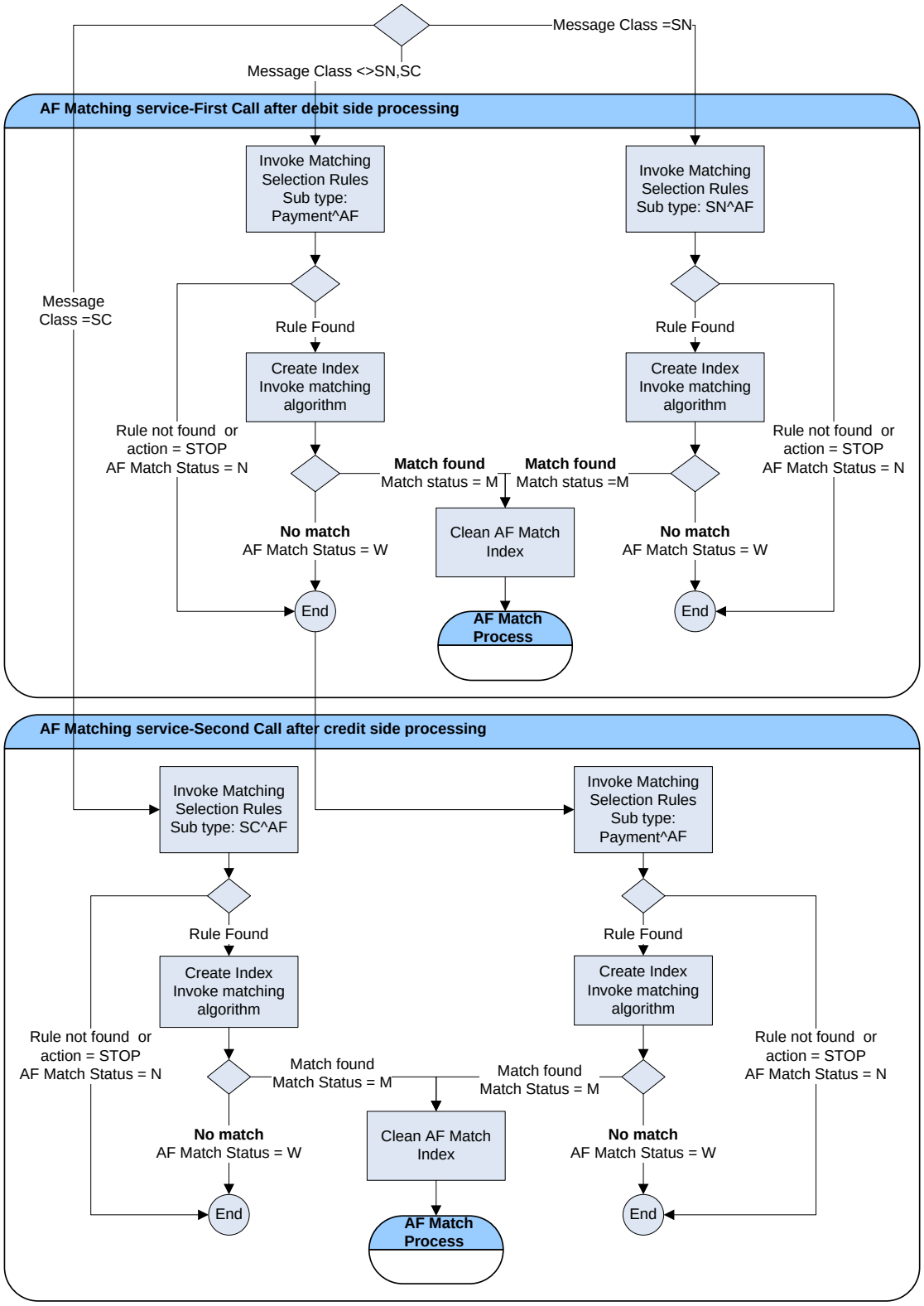
- First: AF to Payment (AF^Payment)
- Second: AF to SN (AF^SN); not applicable for Reverse AF
- Third: AF to SC (AF^SC); applicable only for Reverse AF

During one of the matching attempts, if a Stop action is selected, the AF match status is set to N indicating that this AF should not be considered as a candidate for matching.


AF Matching service
Invoke Matching Selection Rules Sub type: AF^Payment
Service Input:
210/210RVR Payment Details
Service Output:
AF Match Status – N/W/M
MID – Provided if AF Match Status = M
AF Match Index – Provided if AF Match Status = W
Message Class (NAC) – Provided if 210 Match Status = N
Rule Found
Create Index Invoke matching algorithm
Rule not found AF Match Status remains as is X
Rule found with action = STOP AF Match Status = N
Match AF Match Status = M
Clean AF Match Index
No match AF Match status = W
Invoke Matching Selection Rules Sub type: AF^SN
Rule Found
Create Index Invoke matching algorithm
Rule not found AF Match Status remains as is X/N/W
Rule found with action = STOP AF Match Status = N
Match AF Match Status = M
Clean AF Match Index
AF Match Process
No match AF Match Status = W
Invoke Matching Selection Rules Sub type: AF^SC
Rule Found
Create Index Invoke matching algorithm
Rule not found AF Match Status remains as is X/N/W
Rule found with action = STOP AF Match Status = N
Match AF Match Status = M
Clean AF Match Index
No match AF Match Status = W
End

2.3.3.3 Automatic Matching in High Value Flow

Two attempts to find a matching AF is performed on payment messages in the high value flow, one after debit side processing, and a second attempt after credit side processing.



2.3.3.4 AF Manual Matching

Manual matching of AF to other messages (Payment, SC, or SN) is performed using the manual matching facility of GPP.

Manual matching is initiated using the Show matching action in Waiting for Match (WAIT_MATCH) queue.

In the AF Manual Waiting for Match page, a user can select which matching type to perform by selecting it in the Showing field.

A user can perform manual matching using the manual matching facility. A user can match:

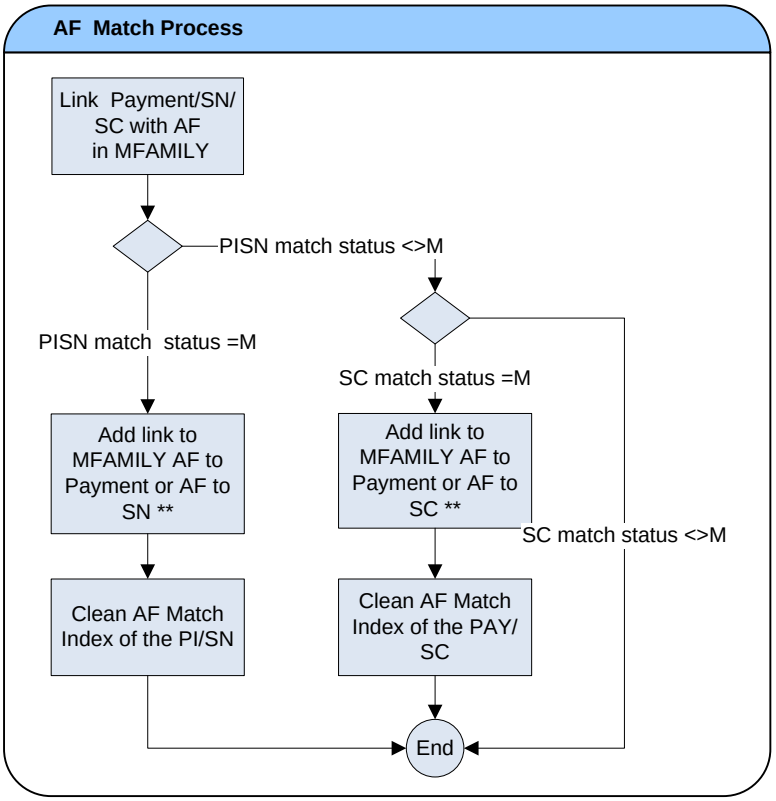
- AF (MT210) to incoming Payment (PAY or PI message class) or to settlement notice (SN – MT910)
- AF RVR (Reverse MT210) to outgoing payment or to settlement confirmation (SC – MT900)

After manual matching the message continues the flow as after automatic matching:

- A link to the matched message is added, AF match status is set to M, and AF Match index is cleared
- Three way matching - If in the message the AF is matched to already have a link (payment to SN, payment to SC) an additional link between the AF and the additional message is created.
- AF Message status is set to COMPLETE
- AF is removed from the account position

2.3.3.5 AF Matching Update

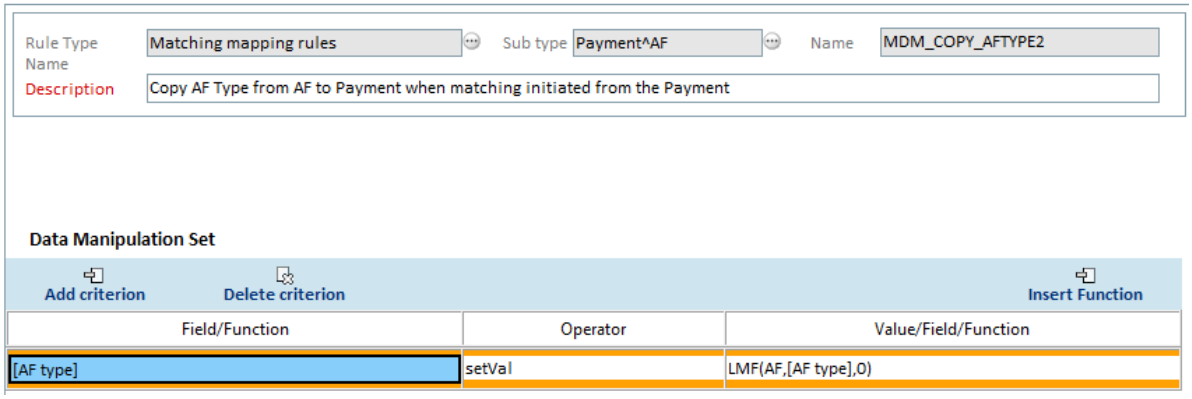
Post matching actions:

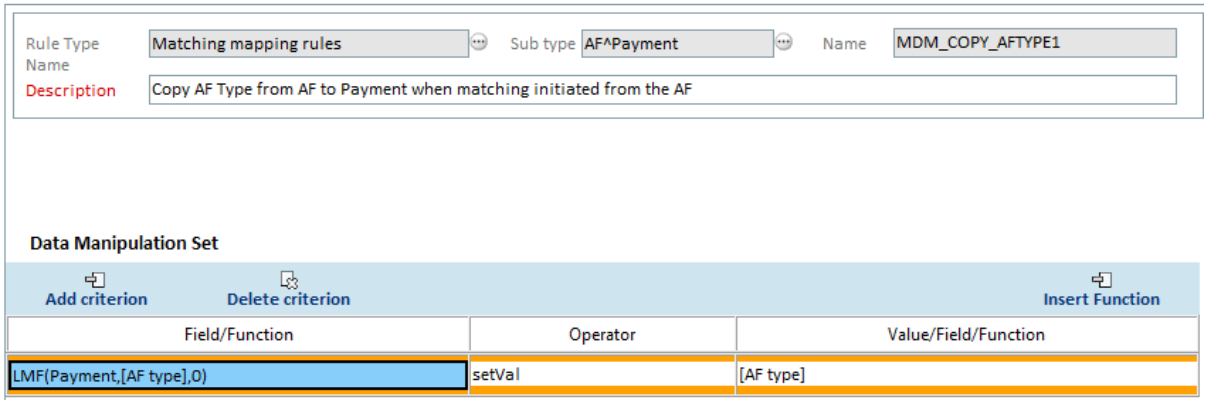


When there is successful matching (automatic or manual) the following actions are performed:

- **AF link:** Link between the AF and the message (Payment, SC or SN) is added in M-Family table
- **Three way link:** When the message was already matched to another message (Payment to SN - PISN match status = M; or Payment to SC – SC match status = M) and an additional link has been added between the AF and the SC/SN/Payment to create a three way link.
- **Matching Index clearing:** Relevant matching indices are cleared to prevent additional matching, including when relevant:
  - AF match index
  - PISN match index
  - SC match index
  - LC match index (for unmatched SC and SN only)
- **Mapping AF type:** Following a match of an AF to a payment, the AF type field is copied from the AF to the Payment. This will keep the earmark for the payment until it passes the capacity check

AF matching mapping rules:





2.3.4 Pre-advice Expiration

When processing a pre-advice (AF) for which the field P_AF_EXPIRE_TIME is not null, populate the release index with a relevant value.

On creation and periodically the system checks the AF messages for expired messages:

- Checks that the AF Expiration time (combined with the value date (settlement date), has not passed (comparing to the Office current date & time).

Notes:

For Earmarks and Pre-advices, if the message status is Not in {COMPLETE or CANCELED}, the expiration is applied. For Adjustments and Reservation, if the message status is not CANCELED, the expiration is applied.

- If the AF expiration time did not pass, raise an event for performing AF Expiration with these parameters:
  - Event time = AF expiration time (combined with AF value date, adjusted to office time zone)
  - MID = AF MID
- If the AF expiration time has passed:
  - AF Message status is set to CANCELED. Approve Cancel status should not be applied in this scenario even if there is such setup.
  - AF matching Index (P_AF_MATCH_INDEX) is cleared
  - AF Match status (MF_AF_MATCH_STS) is set to N (preventing it from automatically matching)
  - A record/entry is added to the audit trail with this information: AF cancelled as Expiration time has passed
  - AF Message is sent to the termination flow (including position keeping rule)
  - AF message is removed from the account position

- AF Expiration task/event execution. At the time of the event the AF expiration task should be activated.
  - For Earmarks and Pre-advices: If message status is Not in {COMPLETE or CANCELED} the expiration should be applied
  - For Adjustments and Reservation: if message status is not CANCELED, the expiration should be applied
  - Applying Expiration:
    - Set the AF message status to CANCELED
    - Clear the AF matching Index (P_AF_MATCH_INDEX)
    - Set AF Match status (MF_AF_MATCH_STS) to N
    - This record is added to the audit trail: AF cancelled as Expiration time has passed
    - Send the AF Message to the termination flow (including position keeping rule)

  Note: AF EXPIRE_TIME can be set with data manipulation rule, such as repair and enrichment.

2.3.5 Earmarking

The Liquidity Manager needs the ability to take into account in capacity calculation and in projected (and funding) balance calculation, anticipated transactions that are not captured by genuine pre-advices messages or transaction messages that were not received yet.

- Earmarking allocates funds to a specific payment transaction. The allocation is removed after the payment transaction is received, matched to the pre-advice and completed the capacity check successfully.
- Earmarking can be applied to a pre-advice received from outside (or manually created pre-advices), by updating an existing pre-advice and setting the earmark indication. This can be

accomplished manually or automatically using data manipulation (Repair and Enrichment) rule by updating the AF type field from Pre-advice to Earmark.

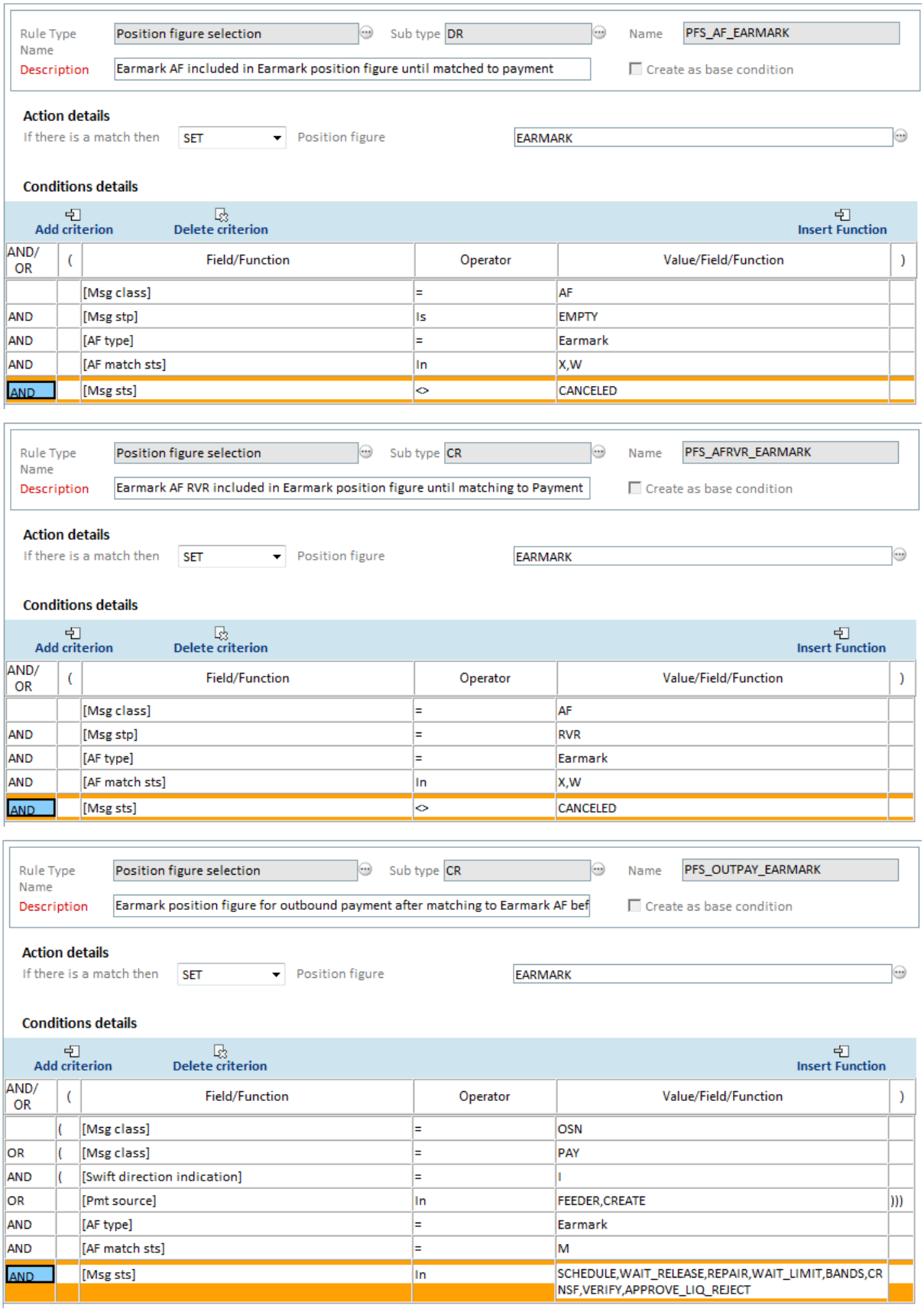
Note: Currently the assignment of a pre-advice as an earmark is not supported by SWIFT or ISO. It may be possible to define a proprietary specific method to identify received pre-advice messages as earmarks.

2.3.5.1 Earmark Position Keeping

Earmarks are included in the Earmarks position figure, until the matched payment passes the capacity check.

Message Type	Message Class	Payment sub type	Swift Direction	AF Type	AF Match Status	Matched Payment Status	Base Position Figure	CR/ DR
MT210	AF	RVR		E	X,W		Pre-advice	CR
MT210	AF	RVR		E	X,W		Earmark	CR
MT210	AF	RVR		E	M		None	CR
MT103, MT 202, MT202COV	PAY, OSN		I or Source = 'FEEDER'	E	M	REPAIR SCHEDULE WAIT_RELEASE WAIT_LIMIT WAIT_BAND WAIT_CAPCITY APPROVE_LIQ_REJECT	Earmark	CR
MT103, MT 202, MT202COV	PAY, OSN		I or Source = 'FEEDER'	E	M	WAIT_ACK WAIT_CONFIRMATION COMPELTE CANCELED	none	CR

Earmark position figure selection rules:



Rule Type Name: Position figure selection | Sub type: DR | Name: PFS_AF_EARMARK
Description: Earmark AF included in Earmark position figure until matched to payment | Create as base condition

Action details

If there is a match then: SET | Position figure: EARMARK

Conditions details

Add criterion | Delete criterion | Insert Function

AND/ OR	(	Field/Function	Operator	Value/Field/Function	)
		[Msg class]	=	AF	
AND		[Msg stp]	Is	EMPTY	
AND		[AF type]	=	Earmark	
AND		[AF match sts]	In	X,W	
AND		[Msg sts]	<>	CANCELED	

Rule Type Name: Position figure selection | Sub type: CR | Name: PFS_AFRVR_EARMARK
Description: Earmark AF RVR included in Earmark position figure until matching to Payment | Create as base condition

Action details

If there is a match then: SET | Position figure: EARMARK

Conditions details

Add criterion | Delete criterion | Insert Function

AND/ OR	(	Field/Function	Operator	Value/Field/Function	)
		[Msg class]	=	AF	
AND		[Msg stp]	=	RVR	
AND		[AF type]	=	Earmark	
AND		[AF match sts]	In	X,W	
AND		[Msg sts]	<>	CANCELED	

Rule Type Name: Position figure selection | Sub type: CR | Name: PFS_OUTPAY_EARMARK
Description: Earmark position figure for outbound payment after matching to Earmark AF bef | Create as base condition

Action details

If there is a match then: SET | Position figure: EARMARK

Conditions details

Add criterion | Delete criterion | Insert Function

AND/ OR	(	Field/Function	Operator	Value/Field/Function	)
	(	[Msg class]	=	OSN	
OR	(	[Msg class]	=	PAY	
AND	(	[Swift direction indication]	=	I	
OR		[Pmt source]	In	FEEDER,CREATE	)))
AND		[AF type]	=	Earmark	
AND		[AF match sts]	=	M	
AND		[Msg sts]	In	SCHEDULE,WAIT_RELEASE,REPAIR,WAIT_LIMIT,BANDS,CRNSF,VERIFY,APPROVE_LIQ_REJECT	

2.3.6 Reservation

Reservation is for the generic allocation of funds, preventing transactions from utilizing the funds, but not allocated for a specific transaction.

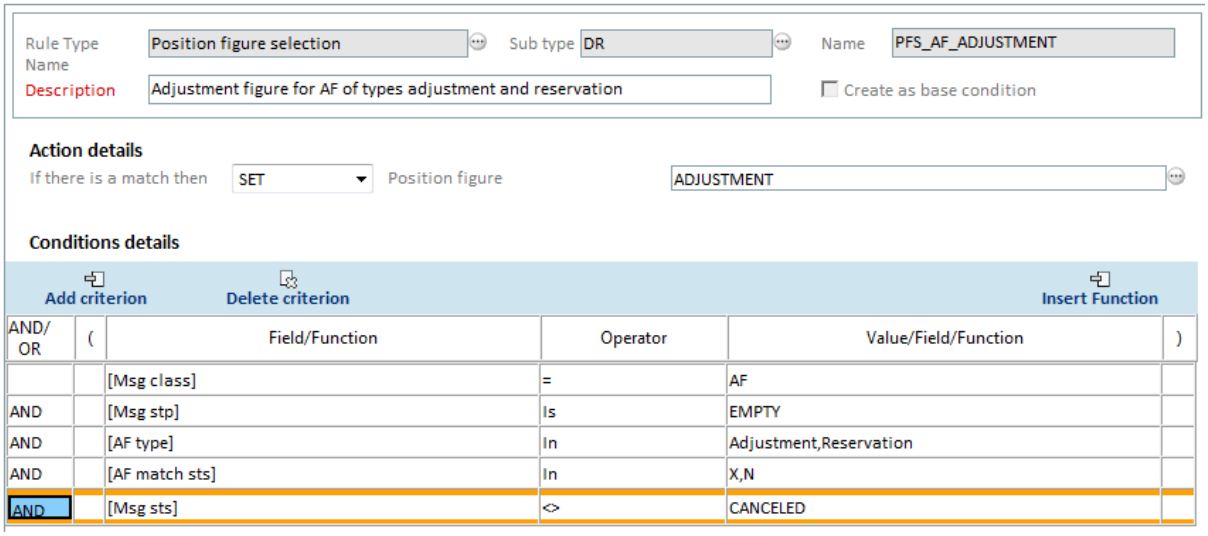
- The reservation is created manually and removed manually
- It is possible to set an expiration time (AF Expiry field) on the reservation, after which the reservation is removed.
- Reservations are included in the 'manual adjustment' position figure

Note: SWIFT (MT210) and ISO format (CAMT.057) do not provide the ability to specify pre-advices as Adjustment or Reservation. In the future, GPP may be required to receive and create adjustments and reservation through a propriety interface.

2.3.6.1 Manual Adjustment Position Keeping

Message Type	Message Class	Message Sub type	Status	AF Type	AF Match Status	Base Position Figure	CR/ DR	Comment
MT210	AF		<> CANCELED	A, R	X,N	Adjustment	DR	
MT210	AF		<> CANCELED	R	X,N	Reservation	DR	
MT210	AF	RVR	<> CANCELED	A,R	X,N	Adjustment	CR	
MT210	AF	RVR	<> CANCELED	R	X,N	Reservation	CR	
MT210	AF		CANCELED	A, R	X,N	None	DR	Manually canceled or expired
MT210	AF	RVR	CANCELED	A,R	X,N	None	CR	Manually canceled or expired

Adjustment position figure selection rules:

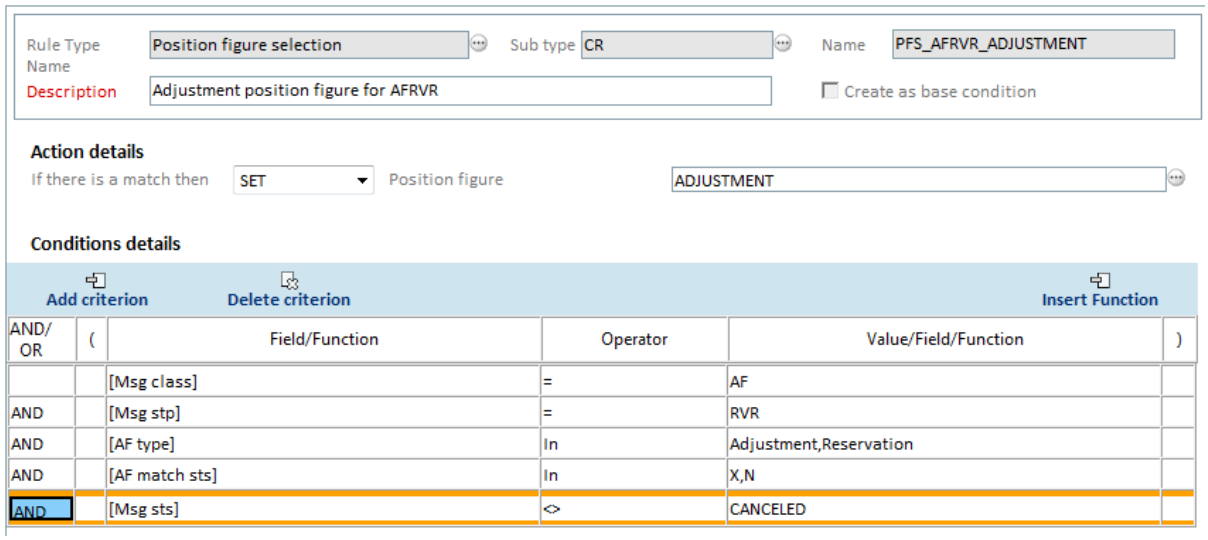


Rule Type Name: Position figure selection | Sub type: DR | Name: PFS_AF_ADJUSTMENT
Description: Adjustment figure for AF of types adjustment and reservation | Create as base condition

Action details
If there is a match then: SET | Position figure: ADJUSTMENT

Conditions details
Add criterion | Delete criterion | Insert Function

AND/ OR	(	Field/Function	Operator	Value/Field/Function	)
		[Msg class]	=	AF	
AND		[Msg stp]	Is	EMPTY	
AND		[AF type]	In	Adjustment,Reservation	
AND		[AF match sts]	In	X,N	
AND		[Msg sts]	<>	CANCELED	



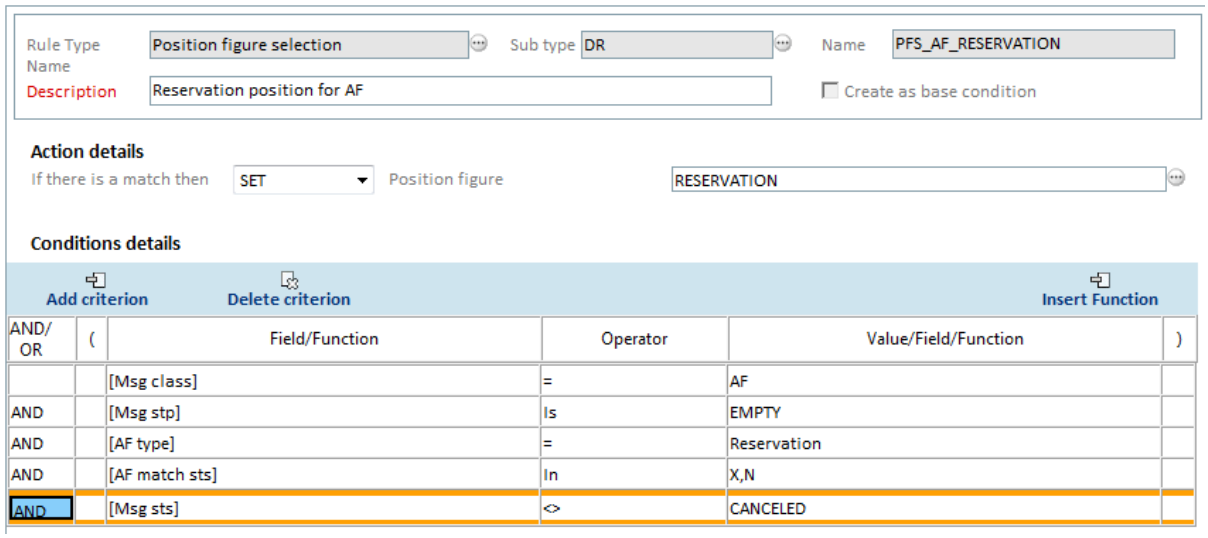
Rule Type Name: Position figure selection | Sub type: CR | Name: PFS_AFRVR_ADJUSTMENT
Description: Adjustment position figure for AFRVR | Create as base condition

Action details
If there is a match then: SET | Position figure: ADJUSTMENT

Conditions details
Add criterion | Delete criterion | Insert Function

AND/ OR	(	Field/Function	Operator	Value/Field/Function	)
		[Msg class]	=	AF	
AND		[Msg stp]	=	RVR	
AND		[AF type]	In	Adjustment,Reservation	
AND		[AF match sts]	In	X,N	
AND		[Msg sts]	<>	CANCELED	

Reservation position figure selection rules:

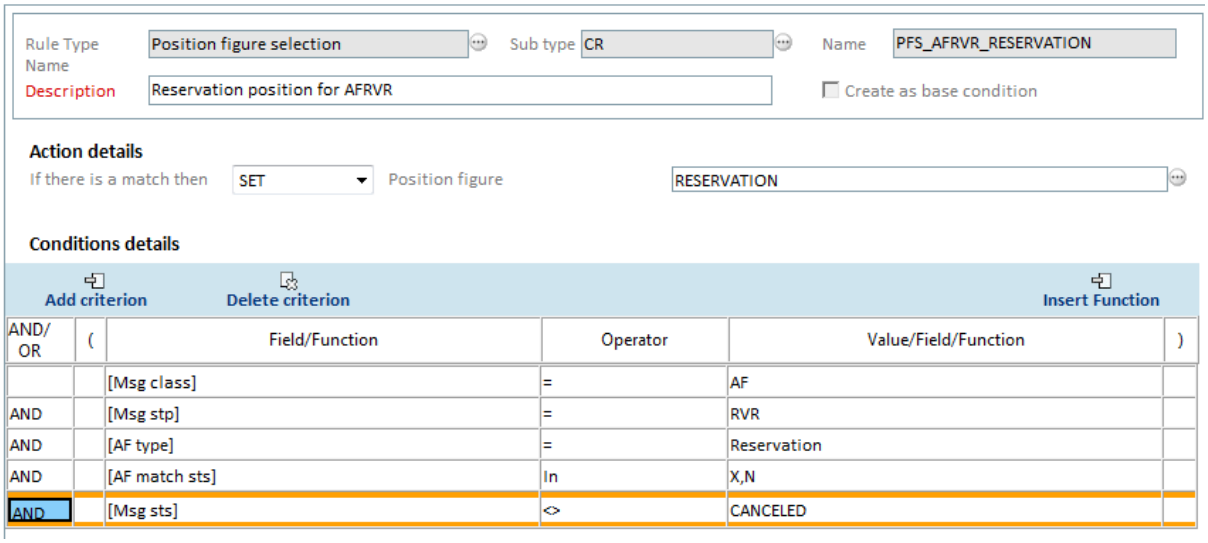


Rule Type Name: Position figure selection | Sub type: DR | Name: PFS_AF_RESERVATION
Description: Reservation position for AF | Create as base condition

Action details
If there is a match then: SET | Position figure: RESERVATION

Conditions details
Add criterion | Delete criterion | Insert Function

AND/ OR	(	Field/Function	Operator	Value/Field/Function	)
		[Msg class]	=	AF	
AND		[Msg stp]	Is	EMPTY	
AND		[AF type]	=	Reservation	
AND		[AF match sts]	In	X,N	
AND		[Msg sts]	<>	CANCELED	



2.3.7 Pre-advice Position Keeping

Pre-advices are included in the Pre-advice position figure, until they are matched to a payment or settlement notice (SN) or settlement confirmation (SC).

This table summarizes the way anticipated funds are applied to the various base position figures.

Message Type	Message Class	Payment sub type	Swift Direction	AF Type	AF Match Status	Base Position Figure	CR/ DR	Comment
MT210	AF	RVR		P	X,W	Pre-advice	CR	Not including CANCELED
MT210	AF	RVR		P	*	None	CR	CANCELED
MT210	AF	RVR		P	M	None	CR	Removed from position after matching
MT210	None	RVR		P	*	None	CR	Fell to REPAIR before classification and matching
MT210	NAC	RVR		P	*	None	CR	
MT210	AF			P	X,W	Pre-advice	DR	Not including CANCELED
MT210	AF			P	*	None	DR	CANCELED
MT210	AF			P	M	None	DR	Removed from position after matching

Message Type	Message Class	Payment sub type	Swift Direction	AF Type	AF Match Status	Base Position Figure	CR/ DR	Comment
MT210	None			P	*	None	DR	Fell to REPAIR before classification and matching
MT210	NAC			P	*	None	DR	

2.3.8 AF Manual Handling

While a matched AF is moved to the Complete queue, an unmatched AF is moved to the Wait Match queue.

When in Wait Match queue the user can perform the following actions on an AF:

- **Manual matching:** For more information, see AF Manual Matching.
- **Cancel:** The message status is set to CANCELED. The message is no longer be eligible for matching; AF Match status is set to N and AF Match index is cleared. The message is removed from the account position.
- **Not AF:** The message class changes to NAC. The message is no longer eligible for matching; AF Match status is set to N and AF Match index is cleared. The message is removed from the account position.

2.4 Statement Reconciliation

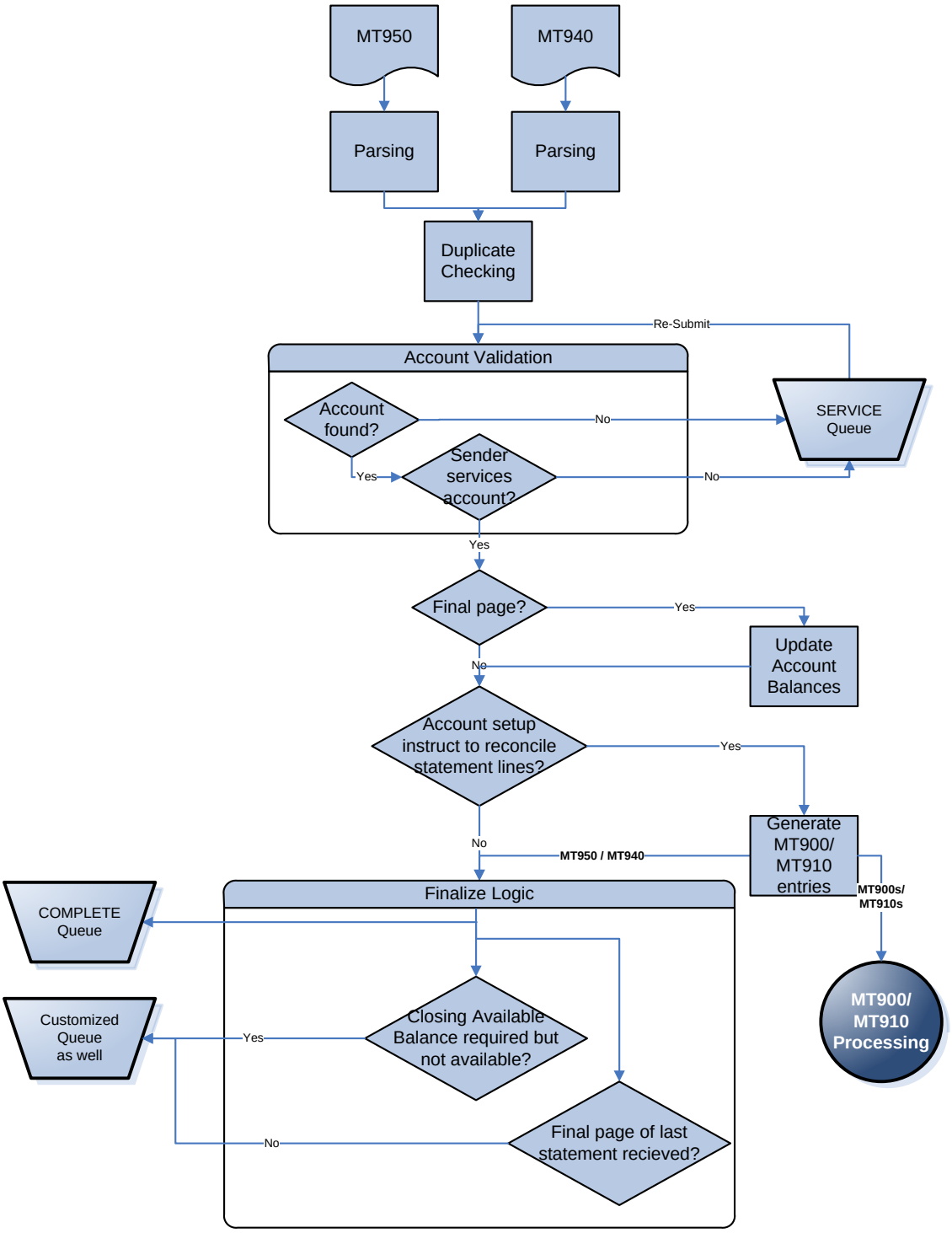
In order to enhance the quality of the position information presented to the liquidity manager in the intraday position, LRM is processing account statement and reconcile statement lines both intraday (interim transaction report) and at end of day (the final account statement).

Statement lines from the statement message are extracted and pseudo MT900 (SC) and MT910 (SN) are generated. These pseudo settlement notices and confirmations are matched against payment transactions to confirm settlement, or against pre-advices to confirm them. Settlement notices and confirmation that remain unmatched are matched against ledger confirmation (MT900 and MT910) received from the ledger (accounting) systems that represent manual entries on the accounts. Settlement notices and confirmation that remain unmatched are tagged as unsolicited transactions and directed to Manual handling. A user can either manual match them or confirm them. Unsolicited transactions are included in the account position.

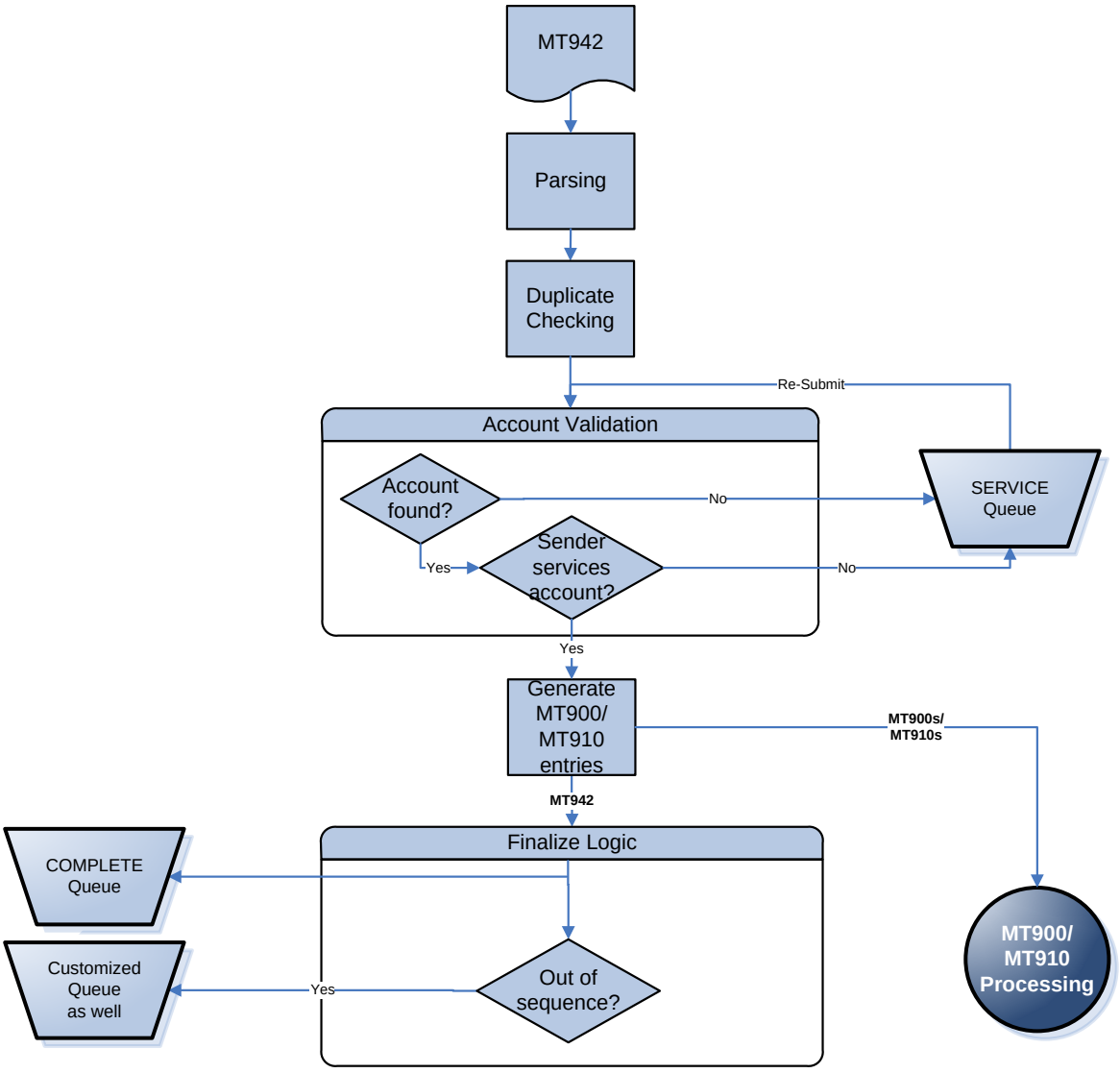
As part of the processing of accounts, the statement balance information is captured. For information on the process see Capturing Balances from Statement Messages.

2.4.1 Statement Message Processing Flow

This is the processing flow of an End of day account statement (MT940, MT950).



This is the processing flow of an interim transaction report (MT942).



2.4.2 MT900 and MT910 Generation from Statement Lines

An internal MT900 or MT910 is generated for the following instances of lines in Field 61:

- A line received in an MT942 that is not provided as expected (as opposed to booked) (Statement entry status (X_STMT_ENTRY_STS<>PNDG) and for accounts that are set up to instruct reconciliation from a statement (Reconcile statement lines checkbox is selected in the Accounts profile, Balances tab).
  Notes:
  Lines that are provided as expected (ED or EC in the Debit/Credit Mark) are ignored as they are not final.
  For NOSTRO accounts, the Reconcile statement lines checkbox should be selected and for VOSTRO and clearing systems accounts (e.g. CHAPS and TARGET2) the Reconcile statement lines checkbox should not be selected.

- All lines in an MT950/MT940 for accounts that were set up to instruct reconciliation from a statement (Reconcile statement lines are selected in the Accounts profile).

Mapping instructions:

1. In the MT950, MT940 or MT942:
   - If the Debit/Credit value is D or RC (Statement entry cred debt indicator (X_STMT_ENTRY_CD_IND) is DBIT), an MT900 is created.
   - If the Debit/Credit value is C or RD (Statement entry cred debt indicator (X_STMT_ENTRY_CD_IND) is 'CRDT'), an MT910 is created.

   The table details the parsing of the Statement line (tag 61) to logical fields. The Statement line (tag 61) is a new line before the last subfield and has the structure 6!n[4!n]2a[1!a]15d1!a3!c16x[//16x][34x], which is defined by the following values:

M/O	Sub-field	Field Name	Format	Notes	Logical Field
M	1	Value Date	6!n	The value date reported for this statement line (YYMMDD)	Statement entry value date (X_STMT_ENTRY_VAL_DT)
O	2	Entry Date	4!n	The entry date reported for this statement line (MMDD)	Statement entry booking date (X_STMT_ENTRY_BOOKING_DT) When transforming to ISO20022 full date format, add calculated year*
M	3	Debit/Credit Value	2a	Possible values in MT950: • C - Credit • D - Debit • RC - Reversal of credit (debit entry) • RD - Reversal of debit (credit entry) Possible values in MT942: • C - Credit • D SCD56 - Debit • RC - Reversal of credit (debit entry) • RD - Reversal of debit (credit entry) • EC - Expected credit • ED - Expected debit	• If C, EC or RD: map CRDT to Statement entry cred debt indicator (X_STMT_ENTRY_CD_IND) and if RD also map true to Statement entry reversal indicator (X_STMT_ENTRY_REVERSAL_IND) • If D, ED or RC: map DBIT to Statement entry cred debt indicator (X_STMT_ENTRY_CD_IND) and if RC also map True to Statement entry reversal indicator (X_STMT_ENTRY_REVERSAL_IND)
O	4	Funds Code	1!a	Third character of the currency code (if required)	Ignore (as per the SWIFT Translation Rules when converting from MT950 to camt.053)
M	5	Amount	15d	The amount reported for this statement line	Statement entry amount (X_STMT_ENTRY_AMT) and For an MT950 / MT940 - use

M/O	Sub-field	Field Name	Format	Notes	Logical Field
					Currency from field 60a to map into Statement entry currency (X_STMT_ENTRY_CCY) For an MT942 - use Currency from field 34F to map into Statement entry currency (X_STMT_ENTRY_CCY)
M	6	Transaction Type Identification Code	1!a3!c	Possible values: • S3!n - For transactions originated in SWIFT messages, where the last 3 characters will hold the message type of the transaction • N3!c - For transactions not originated in SWIFT messages • F3!c - For transactions being first advised by the statement The values of 3!c in the last two bullet points can be taken from a pre-defined list of code words listed in Appendix B	Statement entry transaction code (X_STMT_ENTRY_TX_CD)
M	7	Reference for the Account Owner	16x	The reference allowing the account owner to identify the instruction which caused this debit or credit - Field 20 or Field 21 of the original instruction. When such a reference is not available, NONREF is sent	Statement entry transaction reference id (X_STMT_ENTRY_DTLS_ENDTOEND_ID)
O	8	Account Servicing Institution's Reference	16x	The reference generated by the Account Servicing Institution[4]	Statement entry account service reference (X_STMT_ENTRY_ACCT_SVCR_REF)
O	9	Supplementary Details	34x	Additional information such as alternative information for a case NONREF appears in sub-field 7 (no available reference to	Statement entry transaction additional info (X_STMT_ENTRY_DTLS_TX_INF)

[4] In a case of a credit line for a credit payment issued by the Account Servicing Institution, this reference is also used in sub-field 7. Therefore, it can be omitted from sub-field 8.

M/O	Sub-field	Field Name	Format	Notes	Logical Field
				provide)	

* Year calculation for Booking Date: Use current year, but adjust (to previous year) if the result date (with the month and day parts) is a future date. The Booking Date cannot be future date. It can be earlier than current date in a matter of a few days. Therefore, in cases when on the border days between one year to another – year may the previous one. (Example: Current Date 1.1.2011, we received 1231 in Entry Date - Booking Date can be 31.12.2010.)

2. Additional direct mapping:

   - If MT950/MT9405 or (MT942 with Credit/Debit Mark of C, D, RC or RD):
     Map BOOK to Statement entry status (X_STMT_ENTRY_STS)
   - If MT942 with Credit/Debit Mark of EC or ED):
     Map PNDG[6] to Statement entry status (X_STMT_ENTRY_STS)

   This table details the mapping instructions into the MT900/MT910 related GPP logical fields from the MT950/MT940/MT942.

Field in the MT900/MT910 entry	Field in the MT950 / MT940 / MT942 entry
Instructing agent (X_INSTG_AGT) The Sender (Block 2) if the MT900 / MT910 entry was received as Incoming	Taken from sender of MT950/MT940/MT942 Sender (X_INSTG_AGT)
Instructed agent (X_INSTD_AGT) The Receiver (Block 2) if the MT900 / MT910 entry was received as Incoming	Taken from receiver of MT950/MT940/MT942 Receiver (X_INSTD_AGT)
Instruction ID (X_INSTR_ID) The Transaction Reference Number (tag 20) if the MT900 / MT910 entry was received as Incoming	Taken from subfield 8 (Account Servicing Institution's Reference) of the current instance of line 61 in original MT950/MT940/MT942 Statement entry account service reference (X_STMT_ENTRY_ACCT_SVCR_REF)
End To End Id (X_END_TO_END_ID) The Related Reference (tag 21) if the MT900 / MT910 entry was received as Incoming	Taken from subfield 7 (Reference of the Account Owner) of the current instance of line 61 in original MT950/MT940/MT942 Statement entry transaction reference id (X_STMT_ENTRY_DTLS_ENDTOEND_ID)
Account Identification (X_NTF_ACCT_ID) The Account Identification (tag 25) if the MT900 / MT910 entry was received as Incoming	Taken from field 25 (Account Identification) in original MT950/MT940/MT942 Statement account identification (X_STMT_ACCT_ID)
Value Date (X_STTLM_DT_1B) The Value Date (Date in tag 32A) if the	Taken from ssubfield 1 (Value Date) of the current instance of line 61 in original

[5] All transactions reported in MT950 are considered Booked, as opposed to the option in camt.053 to report the transaction as Information of Pending.

[6] Transactions reported in MT942 as Expected credit or Expected debit are considered Pending.

Field in the MT900/MT910 entry	Field in the MT950 / MT940 / MT942 entry
MT900 / MT910 entry was received as Incoming	MT950/MT940/MT942 Statement entry value date (X_STMT_ENTRY_VAL_DT)
Settlement amount (X_STTLM_AMT) The Amount (Amount in tag 32A) if the MT900 / MT910 entry was received as Incoming	Taken from subfield 5 (Amount) of the current instance of line 61 in original MT950/MT940/MT942 Statement entry amount (X_STMT_ENTRY_AMT)
Currency (X_STTLM_CCY) The Currency (Currency in tag 32A) if the MT900 / MT910 entry was received as Incoming	Taken from the currency attribute in original MT950/MT940/MT942) according to the logic defined in the Parsing section. Statement entry currency (X_STMT_ENTRY_CCY)
Additional Transaction Information (X_ADDT_NTF_INF)	Taken from subfield 9 (Supplementary Details) of the current instance of line 61 in original MT950/MT940/MT942 Statement entry transaction additional info (X_STMT_ENTRY_DTLS_TX_INF)
Report Entry Additional Information (X_RPT_ENTRY_ADDTL_INF_9X0*) This attribute will never be received in an Incoming MT900 / MT910 entry, and is populated for this internal one since it was reported in the MT942 / MT940 and to refrain from loss of provided information	Taken from repetitive field 86 - from the current instance as line 61 in original MT942/MT940 Report Entry Additional Information (X_RPT_ENTRY_ADDTL_INF*)7
Booking date (X_NTF_BOOKING_DT*) This attribute will never be received in an Incoming MT900 / MT910 entry, and is populated for this internal one since it was reported in the MT950 / MT940 / MT942 and to refrain from loss of provided information	Taken from subfield 2 (Entry Date) of the current instance of line 61 in original MT950/MT940/MT942 Statement entry booking date (X_STMT_ENTRY_BOOKING_DT)
Notification transaction code (X_NTF_TX_CD*) This attribute will never be received in an Incoming MT900/MT910 entry, and is populated for this internal one since it was reported in the MT950 / MT940 / MT942 and to refrain from loss of provided information	Taken from subfield 6 (Transaction Type Identification Code) of the current instance of line 61 in original MT950/MT940/MT942 Statement entry transaction code (X_STMT_ENTRY_TX_CD)

*New logical fields

3. Additional direct mapping: For each MT900/MT910 that is created, a reference to the original MT950/MT940/MT942 (the specific statement and page) is kept to allow tracking of which notice/confirmation was received from which statement/report.

[7] Available only in a transaction reported in an MT942 or MT940 and not available in an MT950

2.4.3 Settlement Notice and Settlement Confirmation Processing

2.4.3.1 Account Derivation

GPP retrieves the relevant account for which the settlement notice is applicable.

- For **MT900** (confirmation of Debit): This table describes the criteria upon which GPP determines the debit and credit accounts involved.

Sender	Receiver	Dr Account	Cr Account
Local Bank	Local Bank		The account mentioned in field 25
Other Bank	Local Bank		Account in field 25 will be matched against the external account number (ACCOUNTS.ACC_ALIAS)

Note: It is possible that the local bank has multiple accounts with the same servicing institutions. Therefore, there may be multiple account records for which the servicing institution is the same.

- For **MT910** (confirmation of Credit): This table describes the criteria upon which GPP determines the debit and credit accounts involved.

Sender	Receiver	Dr Account	Cr Account
Local Bank	Local Bank	The account mentioned in field 25	
Other Bank	Local Bank	Account in field 25 will be matched against the external account number (ACCOUNTS.ACC_ALIAS)	

- **IBAN:** If the account number specified in field 25 is an IBAN, it is validated and deconstructed to capture the account number prior to looking up the account number (internal or external account number).
- **Validations:** If the sender is not the local bank, the derived account must be serviced by the Sender (ACCOUNTS.ACC_SERVICING_INSTITUTION = SENDER).

2.4.3.2 Duplicate Checking

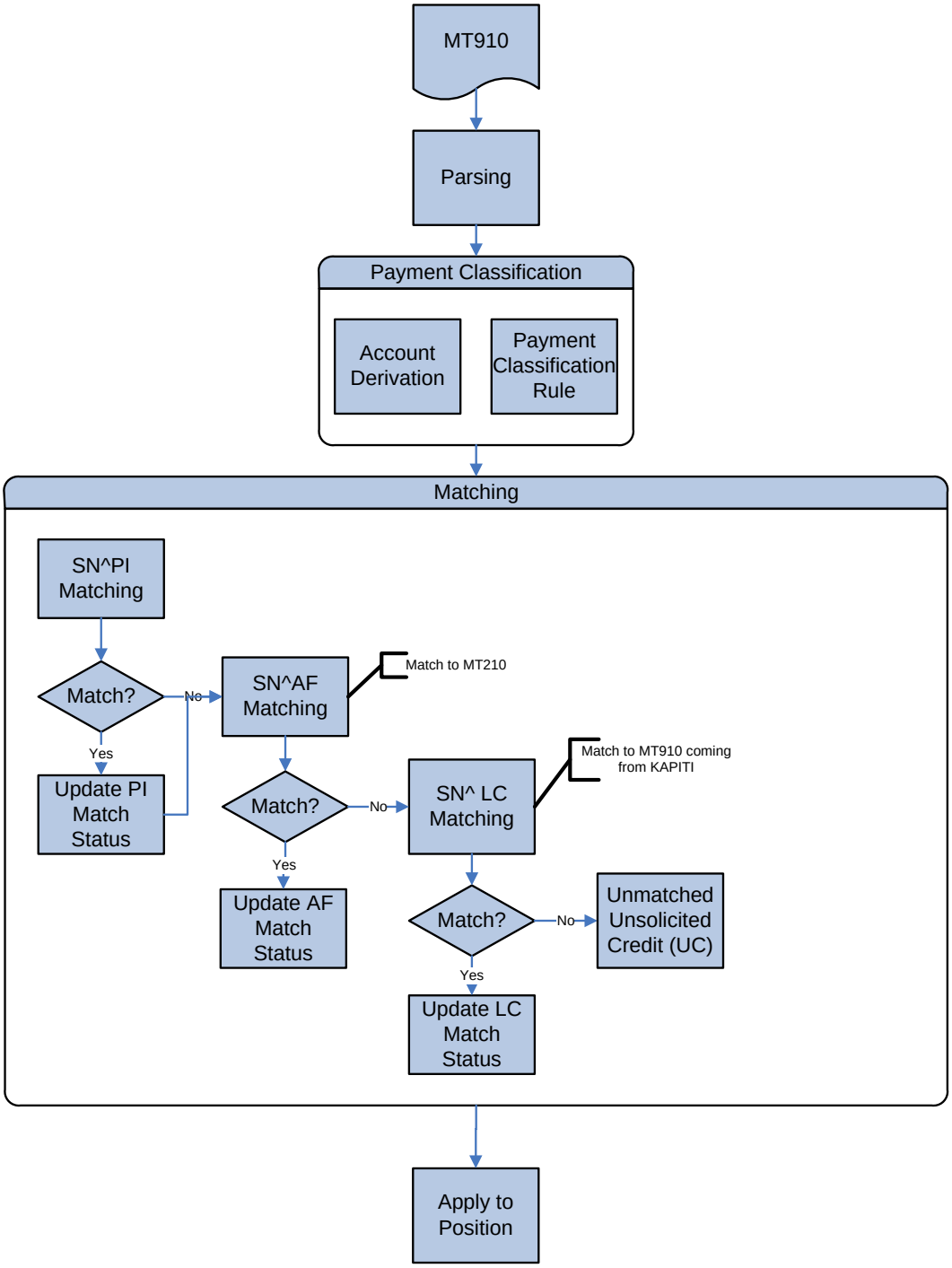
The NOSTRO account servicing institution may provide MT900 and MT910. If MT942 is provided, LRM generates MT900 and MT910 from the MT942 intraday, and also generates MT900 and MT910 from MT940/MT950 at the end of day.

As a result it is possible that LRM may have up to three MT900/MT910 representing the same movement on the account.

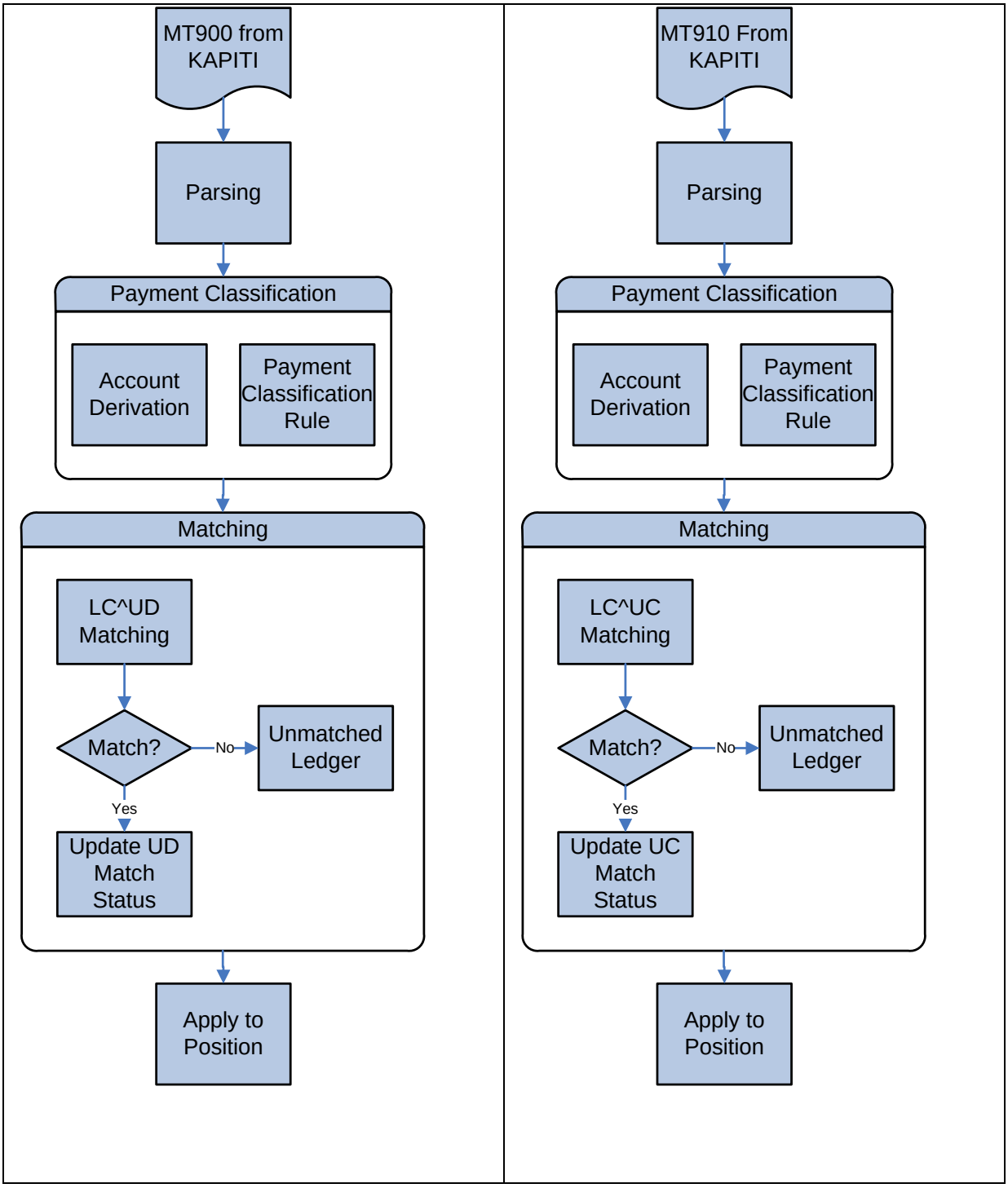
To prevent double and triple counting of the same movement on the position page, LRM applies a duplicate checking algorithm to identify the excess MT900/MT910 and automatically cancel the duplicates if they were generated from account statement messages (original message type is MT942, MT940 or MT950).

2.4.3.3 Matching

This flow details the matching flow for settlement notification and confirmation coming from the NOSTRO service provider.



This flow details the matching flow for Leger confirmation (MT900, MT910 coming from the Ledger System).



2.4.3.4 MT900 (SC) and MT910 (SN) Position Keeping

This table summarizes the way settlement notices are applied to the various base position figures. For additional information on manual matching, see the specific matching scenarios in Manual Handling:

Message Type	Message Class	Status	Sender	Matched to	Base Position Figure	CR/ DR	Comment
MT900	SC	Repair	All		In process	DR	
MT900	SC	unmatched	NOSTRO		settled	DR	Unsolicited debit pending confirmation from ledger
MT900	SC	unmatched	NOSTRO		Unverified	DR	Unsolicited debit pending confirmation from ledger
MT900	SC	Matched	NOSTRO	MT900 from KAPITI (LC)	Settled & verified settled	DR	
MT900	SC	Matched	NOSTRO	Pre-advice (MT210DR) (AF)	Settled & Verified Settled	DR	
MT900	SC	Matched	NOSTRO	Outbound payment (PAY, OSN – Outgoing Cover)	See footnote [8]	DR	
MT900	LC	Unmatched	LEDGER		Unmatched Ledger	DR	E&O to what appears on Kapiti
MT900	LC	Matched	LEDGER	MT900 from NOSTRO (UD)	See footnote [9]		E&O to what appears on Kapiti The matched settlement notice is included in the Settled
MT900	LC	Confirmed	LEDGER		-	DR	Once confirmed a ledger

[8] To prevent duplicate counting of settled transaction, only one of the following is included in the settled figure: outbound payment after being matched to a settlement confirmation or the settlement confirmation itself. In this case the payment is included in the position and the settlement confirmation is removed from the position once matched to an outbound payment.

[9] To prevent duplicate counting of settled (and verified settled) transaction only one of the following is included in the settled figure: settlement notice/confirmation matched to ledger confirmation or the ledger confirmation. In this case the settlement notice/confirmation is included in the settled figure and the ledger confirmation is removed from the position.

Message Type	Message Class	Status	Sender	Matched to	Base Position Figure	CR/ DR	Comment
							confirmation is removed from Ledger Unmatched
MT900	SC/UD	Confirmed	*		Settled & Verified Settled	DR	Once confirmed an unsolicited debit is removed from Unverified
MT900	SC/UD	Cancelled	*		-		Once canceled an unsolicited debit will be removed from verified and from settled
MT910	SN	Repair	*		In process	CR	
MT910	SN	unmatched	NOSTRO		Settled	CR	Unsolicited credit pending confirmation from ledger
MT910	SN	unmatched	NOSTRO		Unverified	CR	Unsolicited credit pending confirmation from ledger
MT910	SN	Matched	NOSTRO	MT910 from KAPITI (LSN)	Settled	CR	
MT910	SN	Matched	NOSTRO	Pre-advice (MT210) (AF)	Settled	CR	
MT910	SN	Matched	NOSTRO	Inbound Payment (PI)	Settled	CR	
MT910	LC	unmatched	LEDGER		Unmatched Ledger	CR	
MT910	LC	Matched	LEDGER	MT910 from NOSTRO (UC)	See footnote 9		The matched settlement notice is included in the Settled
MT910	LC	Confirmed	LEDGER		-	CR	Once confirmed a

Message Type	Message Class	Status	Sender	Matched to	Base Position Figure	CR/ DR	Comment
							ledger confirmation is removed from Ledger Unmatched
MT910	SN/UC	Confirmed			Settled	CR	Once confirmed an unsolicited credit is removed from Unverified
MT910	SN/UC	Cancelled	*		-	CR	Once cancelled an unsolicited credit is removed from Unverified and Settled

Unverified Unmatched Settlement must be included in both Settled and Unverified position figure, in order to represent correctly the calculated balance (which includes settled), and to be able to exclude it from the funding balance/Tracked NPE (which includes Settled and Unverified is deducted from it, via Verified Settled status). Otherwise, calculated balance will not reflect an accurate number.

2.4.4 Manual Handling

Settlement notice (confirmation) that failed to match to any of the above mentioned transactions (incoming payment, outgoing payment, per-advice, ledger confirmation) are directed to unsolicited transaction manual queue(s); one for Unsolicited Credits (for SN – MT910) and one for Unsolicited Debits (for SC - MT900).

- While in these queues the value of these transactions is included in the Unverified position figure.
- While in these queue the user may perform the following options for handling the messages:
  - **Manual match:** The user can match the unsolicited transaction manual to one of the following:
    - › Incoming payment (awaiting cover/settlement)
    - › Outgoing payment (not yet settled)
    - › Pre-advice (unmatched)
    - › Ledger Confirmation (unmatched)

    Following a positive match:
    - › The [match] status of the settlement notice and the matched transaction message is updated
    - › A link between them (with the relevant relationship type) is created
    - › The account position is updated accordingly

    - The settlement notice no longer appears on the unsolicited queue
- **Confirm:** The user has the option to manually Confirm (instead of waiting for a ledger confirmation) the settlement notice. Following a confirmation:
    - The status of the settlement notice is set to Confirmed; Match status set to N (No match is required)
    - The settlement notice amount is removed from the Unverified position figure. It remains in the Settled figure
    - The settlement notice no longer appears on the unmatched unsolicited queue
- **Cancel:** The user has the option to cancel the settlement notice. Following a cancelation (after cancellation approval when applicable):
    - The status of the settlement notice is set to Canceled
    - The settlement notice amount is removed from the account position; deducted from the Settled figure and from the Unverified figure
    - The settlement notice no longer appears on the unmatched unsolicited queue

3 Manual Handling

LRM provides various manual handling features.

- For manual handling related to Party limit, see Party Limits
- For manual handling related to Bands, see Bands
- For manual handling related to Capacity check, see Capacity Check
- For manual handling related to Anticipated funds, see Anticipated Funds
- For manual handling related to Statement reconciliation, see Statement Reconciliation

4 System Configuration and Business Setup

4.1 System Parameters

This is a list of systems parameters which are specific for LRM:

- REFRESHPOS: Indicates the time interval in which the intraday position page is refreshed automatically.
- MAX_AMT4CONFRM_UNSOLIC: Indicates the threshold amount below which unsolicited transaction are automatically confirmed.
- ENRICH_MSG_PARTIES: Determines whether to enrich the Msg_Parties table with GPP internal Cust_Codes for each of the parties that are quoted in the message. These are used to facilitate reports, mainly GLM exposure queries and limit processing.
    - If Yes, enrichment is performed
    - If No, enrichment is not performed
- MAX_ACC_IN_GROUP: Specifies the maximum number of accounts that can be associated within a group of accounts.

4.2 Profiles

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

- Party Limit – see Party Limits Profile

- Band – see Bands Profile
- Account – General, Balances and Caps tabs
- Account Group – see Setup Account Groups Profile

Note: Only the specific fields required to be setup for LRM are described. For a description of all the fields in the Profiles, see GPP Online Help.

4.3 Business Rules

These rules are required for LRM:

- Bypass Bands: Enables bypassing the bands check for transactions. For more information, see Bypassing Bands Rule.
- Bypass party limit: Enables bypassing the party limit check for transactions. For more information see Party Limits Related Rules
- Group of parties' definition: Defines the grouping criteria for parties. The party grouping can be defined in the party limit definition. The grouping criteria can be based on the party BIC, ABA or party code. For more information see Group of Parties' Definition (rule type 190)
- Liquidity Priority Selection: Assigns a two digit liquidity priority to a transaction. Liquidity priority can be used to populate the banking priority tag (SWIFT tag 113) on a message sent to a clearing system
- Party limit bypass validation: Specifies which messages are accumulated against a party limit but not validated against the accumulated limit amount. For more information see Party Limit Bypass Validation.
- Party limit message filter: Specifies which messages are applicable to a specific party limit profile. For more information see Party Limit Message Filter (rule type 189).
- Payment Cap Selection: Assigns a cap (Max, High, Operating, or None – bypass) as part of the liquidity capacity check. For more information see Invoking Payment Cap Selection Rule.

4.4 System Rules

These rules are required for LRM:

- Position Figure Selection Rule: Assigns a transaction to account position figure. For more information, see Position Figure Selection Rule.

4.5 Tasks

These tasks are required for the LRM functionality:

- Opening Balance: Required in the Position Keeping and Monitoring. For more information, see Opening Balance Task.

4.5.1 Opening Balance Task

This task is required in the Position Keeping and Monitoring for the Opening Balance Setting. For more information, see Balance Capturing.

The Opening Balance Task:

- Activated at start of day or start of cycle (for multi cycle accounts only). It creates new records in ACCOUNT_DAILY_BALANCES table (if one is not already exist) and populates the opening balance fields in this table.

- Creates new records, if required, for all the position keeping accounts in a specific office (provided as a task parameter), or for a specific account (provided as a task parameter) for the current business date.
- Populates the opening balance value according to an attribute of the account (ACCOUNTS.OPEN_BAL_SRC). This attribute can have these values:
  - **Calculated balance (rolling balance):** The opening balance contains the last calculated balance of the previous value date of the account.
  - **Closing booked balance:** The opening balance contains the closing booked balance of the pervious value date captured from the account statement. In addition to the balance, the corresponding statement message type, statement number, and statement timestamp fields are also populated.
  - **Closing available balance:** The opening balance contains the closing available balance of the pervious value date captured from the account statement. In addition to the balance, the corresponding statement message type, statement number, and statement timestamp fields are also populated.
  - **Set as Zero:** The opening balance is set as zero regardless of the balance of the account in the previous data or cycle.

  Note: If a record already exist in ACCOUNT_DAILY_BALANCES table for the account and for the same value date (and cycle), the task only updates the opening balance column.
- For closing balance options, if an account statement was not yet received for the previous business date at Start of business day (for example, a Chinese bank holding a NOSTRO account as a US bank), the opening balance is populated with the calculated balance by default. Once the statement is received and the closing balance is captured, it is possible to execute the task again and populate the balance with the closing balance from the statement.

4.6 Position Keeping Account Structure

The position keeping account structure is required for the position keeping and monitoring. For more information, see Position Keeping and Monitoring.

4.6.1 Setup Account as Position Keeping Account

The Position keeping service is only applied to accounts that are identified as position keeping accounts. These are accounts that the liquidity manager is interested in monitoring. Usually these are the bank's asset accounts. However, it is also possible to identify VOSTRO accounts and non-financial customer's (corporate) account for position keeping.

To set an account as a position keeping account, in the Accounts Profile:

- In the Position keeping account field, select the checkbox.
- In the Position Type field, select the relevant position type from the list of values; NOS for NOSTRO account, STL for Settlement account, VOS for VOSTRO account, CUS for Corporate customer account (currently not available in all projects).

4.6.2 Setup Account Groups Profile

The position keeping accounts can be grouped into account groups. Account groups are not limited by the accounts that can be assigned to them, including:

- **Cross currencies:** The accounts associated with the same account group may have the same currency or different currencies.
- **Cross offices:** The accounts may belong to the same office or to multiple offices (as long as the group is setup in the global office).

- **Many-to-many relationship:** The same account can be associated with multiple account groups.

Note: The accounts for a group are selected by the user from a list. The group is not dynamically set by criteria; i.e. when a new position keeping account is added, it is not automatically associated with relevant group(s) even if one is available.

An account group setup at a local office may only include accounts setup in the same local office.

An account group setup at the global office may include accounts setup in multiple local offices.

As LRM is capable of displaying an aggregated position, the liquidity manager can use the account group to monitor the position for various scenarios:

- **Global NOSTRO position in a specific currency:** All the correspondent asset accounts of a specific currency, for a specific office or globally
- **Clearing position in a currency:** All clearing accounts of a specific currency (Net clearing, Immediate clearing, RTGS)
- **Net position in a currency:** All NOSTRO, Clearing and VOSTRO accounts of a specific currency for an office or globally
- **VOSTRO position:** All the VOSTRO accounts
- **Correspondent position:** All the asset accounts (in multiple currencies) at a specific correspondent

4.6.3 Account Explorer

The account explorer displays the position accounts according to the default system account grouping and according to the custom account grouping as defined by the customer using the account group profile.

The account explorer is the tool for selecting accounts and account group for defining the position scope for the liquidity screens (Intraday position and NOSTRO ladder).

4.6.3.1 System Account Groups

The system account groups' structure is based on the following hierarchy:

- **Office:** Corresponds to the office the account is setup in. (This level is displayed only if the user has selected multiple offices in the Office selection'
- **Account position type:** NOSTRO, VOSTRO, Settlement
- **Account currency:** By default the accounts of the same type are grouped by the currency, with the following grouping (except for settlement accounts):
  - Base currency accounts
  - USD accounts
  - EUR accounts
  - Other currency accounts

Notes:
There are no currency leafs for settlement accounts.

During implementation it is possible to change the account grouping according to bank specific requirements. Such as changing or adding branches for different currencies.

4.6.3.2 Custom Account Groups

The custom account group's structure is based on the user defined grouping, with the following hierarchy:

- **Office:** Corresponds to the office the group is setup in.
- **Account group:** Sorted by group name in ascending order

4.7 Permission and Access Level

The following access levels are applicable to liquidity and risk management features:

- Profiles and liquidity pages:
  - Account groups
  - Accounts Profile, Balances Tab
  - Account payment hold
  - Bands
  - Bands pop up page
  - Party limits
  - Liquidity tab
    - Intraday position
    - Limit position
    - NOSTRO Ladder
    - Party Exposure

- Message types:
  - SWIFT_210
  - SWIFT_210RVR
  - SWIFT_900
  - SWIFT_910
  - SWIFT_940
  - SWIFT_941
  - SWIFT_942
  - SWIFT_950
- Message Queues (Statuses) and actions:
  - Wait Limit
    - › Force [limit]
    - › Liq Cancel
  - Bands
    - › Release bands (also as a group action)
    - › Liq Cancel
  - Clearing Liquidity Desk (CRNSF)
    - › Force CRNSF
    - › Liq Cancel
  - Debit Insufficient Funds (DRNSF)
    - › Force DRNSF
    - › Liq Cancel
  - Wait Hold Account
  - Wait Match
    - › Not AF
    - › [Manual] MAtch
  - Approve Liq Cancel
    - › Approve Liq Cancel
    - › Decline Liq Cancel
  - Liquidity Cancelled (Final)
  - Unsolicited Debits
    - › Confirm (Also as a group action)
    - › [Manual] Match
  - Unsolicited Credits
    - › Confirm (Also as a group action)
    - › [Manual] Match

- Unmatched ledger
  - › Confirm (Also as a group action)
  - › [Manual] Match
- Confirmed (Final)

Note: Each manual matching type has a specific access level defined.

- Task:
  - Populate opening balance
- Party Explorer

Appendix A: Glossary

Term	Description
LRM	Liquidity and Risk Management
AF	Anticipated Funds