Operation Manual

Balance Types

03.49.30

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This document describes the registration, setup and use of Way4 balance types, which enhance the way users access financial data. For example, balance types can be used to give users information on various types of transactions performed over a billing cycle, or to set up a minimum balance that can be used for retail transactions but cannot be cashed.

This document is intended for bank or processing centre employees responsible for Way4 setup and describes registration and setup of balance types.

While working with this document, it is recommended that users refer to the following reference material from OpenWay's documentation series:

- Way4 Products: Service Packages
- Way4 Products. Accounting Schemes
- Events
- Standing Payment Orders
- Customer Service User Manual
- Tariff Management Administrator Manual

The following notation is used in this document:

- Field labels in screen forms are shown in *italics*.
- Button labels used in screen forms are shown in square brackets, such as [Approve].
- Menu selection sequences are shown using arrows, such as Issuing → Contracts Input & Update.
- The names of directories and/or files that vary for each local instance of the program are shown in angular brackets, like <OWS_HOME>.

⚠ Warnings about potentially hazardous situations or actions.

ⓘ Information about important features, additional options or the best use of certain system functions.

1 Way4 Balance Types

Balance types are used in Way4 to enhance the way users access financial information.

Balance types allow users to obtain information about the balance of a specific account or group of accounts, transaction activity within an account or group of accounts over a billing cycle, or specific contract parameters (own funds, available limit, etc.) Balance types can also be used to calculate the sum total of transaction amounts.

Each balance type is a set of information containing the total balance of a selected group of accounts in a contract, or the total transaction amount for an account, group of accounts or group of transactions.

To work with a balance type, it must first be registered in the corresponding table and set up in an Accounting Scheme and/or Service Package.

For convenience, users can group balance types or create multilevel schemes by including balance types in other balance types.

For balance types with the BY_CURR tag, values of a balance type can be represented in different currencies, if the type is linked to accounts in different currencies or if transactions are performed in different currencies. Then a separate record will be displayed for each currency used by the accounts included in a balance type.

In Way4, it is possible to log the history of changes to balance type values for a period (billing cycle, day, month, year). At the end of the period, balance data are saved to history (to the acnt_balance_history table), and the balance is reset.

2 Registering and Configuring Balance Types

Balance types are grouped as follows:

- Hardcoded balance types – these balance types are registered in Way4 by users, but are hardcoded, which should be specified on registration. These balance types are calculated automatically in Way4. These balance types have a number of limitations:
  - Events should not be linked to hardcoded balances.
  - This balance type cannot be used in a balance hierarchy.
- Standard balance types – these balance types also have special codes that should be specified on registration. These balance types are used in standard configurations but are not calculated automatically and require additional setup by users – mapping an account template with this balance type or including other balance types in them. These balance types can have their own rules for calculation. These balance types are not mapped with the system tag USAGE_HARDCODED;.

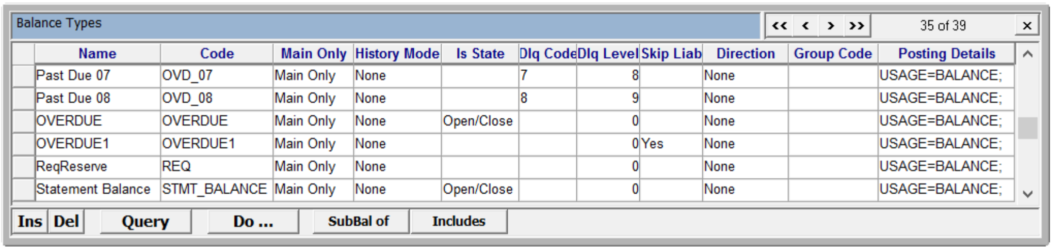
  Standard balance types are not subject to limitations for hardcoded balance types.

  Standard balance types include, for example, balance types with the codes DUE, PAST_DUE, TOTAL_DUE, OVL, STMT_BALANCE that are used for managing debt. Calculation of minimum payment, rules for reclassifying delinquency are based in these balance types (see the section "Reclassifying Delinquency" of the document "Way4 Advanced Tariff Management").
- Custom balance types – these balance types are fully configured by users.

2.1 Registering Balance Types

To register balance types, select the "Full →Configuration Setup →Accounting Setup →Balance Types" user menu item.

As a result, the "Balance Types" window (see Fig. 1) will be displayed.



Name	Code	Main Only	History Mode	Is State	Dlq Code	Dlq Level	Skip Liab	Direction	Group Code	Posting Details
Past Due 07	OVD_07	Main Only	None		7	8		None		USAGE=BALANCE;
Past Due 08	OVD_08	Main Only	None		8	9		None		USAGE=BALANCE;
OVERDUE	OVERDUE	Main Only	None	Open/Close		0		None		USAGE=BALANCE;
OVERDUE1	OVERDUE1	Main Only	None			0	Yes	None		USAGE=BALANCE;
ReqReserve	REQ	Main Only	None			0		None		USAGE=BALANCE;
Statement Balance	STMT_BALANCE	Main Only	None	Open/Close		0		None		USAGE=BALANCE;

Fig. 1. Form for registering balance types

This form contains the following fields:

- *Name* – balance type name
- *Code* – balance type code. This field is mandatory. The following codes are reserved in the system:

> Balance types with reserved codes have a number of characteristics. For example, Events should not be linked to balances with reserved codes (see the description of the *Is State* field). Such links may lead to incorrect system operation.

  - BALANCE – balance type reflecting the difference between a contract's balance (TOTAL_BALANCE) and blocked amounts (BLOCKED)
  - BLOCKED – balance type reflecting amounts blocked after authorisation
  - AVAILABLE – balance type reflecting a contract's amount available

  > This balance type cannot be used in a balance hierarchy (i.e. this balance type cannot be included in another, higher ranking, balance type, and it also cannot be used as a higher-ranking/main balance type).

  - OWN_BALANCE – balance type reflecting a contract's own balance; i.e. amounts posted to accounts with this contract's *Is Am Av* attribute, not including balances of liability subcontracts
  - OVL – balance type reflecting the difference between a contract's balance (TOTAL_BALANCE) and credit limit (FIN_LIMIT)
  - TOTAL_BALANCE – balance type reflecting amounts posted to accounts with the *Is Am Av* attribute for this contract, subcontracts in a "Main/Sub" hierarchy, and subcontracts linked with this contract in a "Full Liability" hierarchy.
  - CR_LIMIT – balance type reflecting a contract's credit limit and additional authorisation limit
  - ADD_LIMIT – balance type reflecting a contract's additional limit
  - FIN_LIMIT – balance type reflecting a contract's credit limit

> To be able to access a contract’s balance type with a code reserved in the system, register a balance type with one of the reserved values as a balance type code. Balance types with reserved codes are not influenced by any table field values except for values specified in fields *Name*, *Code* and *Is State*.

> ⓘ Also, the balance type code "PAYMENT" is reserved in the system. It is used in the Collections module.

- *Main only* – determines whether it is possible to use this balance type for other contracts in this hierarchy:
  - "Main Only" (default) – the balance type is not used for subcontracts.
  - "For All" – the balance type is used for subcontracts with the "Main/Sub" relation type.
  - "Top Level Only" – the balance type is used for the highest-ranking contract in the contract hierarchy, i.e. the value of this balance type will be specified for the highest-ranking contract in the contract tree.
  - "Global" – the balance type is used on the financial institution level.
  - "Effective Contract" – this value allows flexible redefinition of the contract for recording a balance using the EFF_CONTRACT tag in the *Posting Details* field. This value is not used for hardcoded balance types.
- *History Mode* – mode for saving balance type history. The field specifies the period for which history is saved. After the period set in the *History Mode* field expires, balance data are saved in history (in the acnt_balance_history table) and the balance is reset. History mode can be enabled for balance types that record turnover (balance types set in Services and balance types with the *Direction* field filled in, set in account templates). Possible values:
  - "None" – this value should be specified for balance types set up in Accounting Schemes and record account balances (these balance types have "None" in the *Direction* field). History is not saved for these balance types. This value can also be set for balance types in Service Packages for which turnover is accumulated without resetting (i.e. for which history does not need to be saved).
  - "Daily" – balance type accumulation for one day.
  - "Monthly" – balance type accumulation for one month.
  - "Yearly" – balance type accumulation for one year.
  - "Yearly (from date open)" – balance type accumulation for one year; the year is calculated from the contract opening date, i.e. the balance will be reset in one year from the contract opening date.
  - "Billing (Before closing)" – balance type accumulation for a billing cycle. The value of this balance type will be reset before closing the billing cycle.
  - "Billing (After closing)" – balance type accumulation for a billing cycle. The value of this balance type will be reset when closing the billing cycle.

> If the first transaction that changes a "Monthly", "Yearly", "Billing..." balance takes place on the last day of the first billing cycle, by default this transaction will go into the balance type history for the first billing cycle. To record this transaction in the next billing cycle, set the tag FIRST_ENTRY_MODE=TO_NEW_CYCLE; in the balance type.

The value of this field affects how data are shown in the "History", "Totals for...", "Counters" forms (see the section "Balance Type Values").

- *Is State* – determines whether an Event or classifier with the same code as the balance type code will be linked to this balance type.
  - For a link to an Event, the *Is State* field can take on the following values:
    - "Open/Close" – the Event will open when the balance type value becomes other than zero and close when the balance type value becomes zero

> An exception is the situation when a macrotransaction is posted leading to a certain Event being closed due to clearing of the account balance another Event opens in connection with the formation of balances on accounts or balances (an Event related to an account template and/or balance type). It is possible for these Events to not be linked to each other (for example, by an Event package). In this case, the Event only closes if the NOT_USED_IN_CHAIN tag is specified in the Event type. Otherwise, the Event will not close.

For example:

Balance type A is configured for account A

Balance type B is configured for account B

Event A1 is configured for balance type A

Event B1 is configured for balance type B

When funds are transferred from account A to account B, Event A1 doesn't close, since Event B opened.

For Event A1 to close when funds are transferred to account B, set the tag NOT_USED_IN_CHAIN for Event A1.

In the system, it is also possible to specify limiters influencing opening or closing Events that change balance type values. For more details on system setup, see the Tariff Management Administrator Manual.

> Note that resetting a balance type (see the description of the *History Mode* field) does not close Events.

- ♦ "All changes" – the Event will open every time the balance type value changes
- ♦ "None" (or blank field) – the Event does not open or close when the balance type value changes

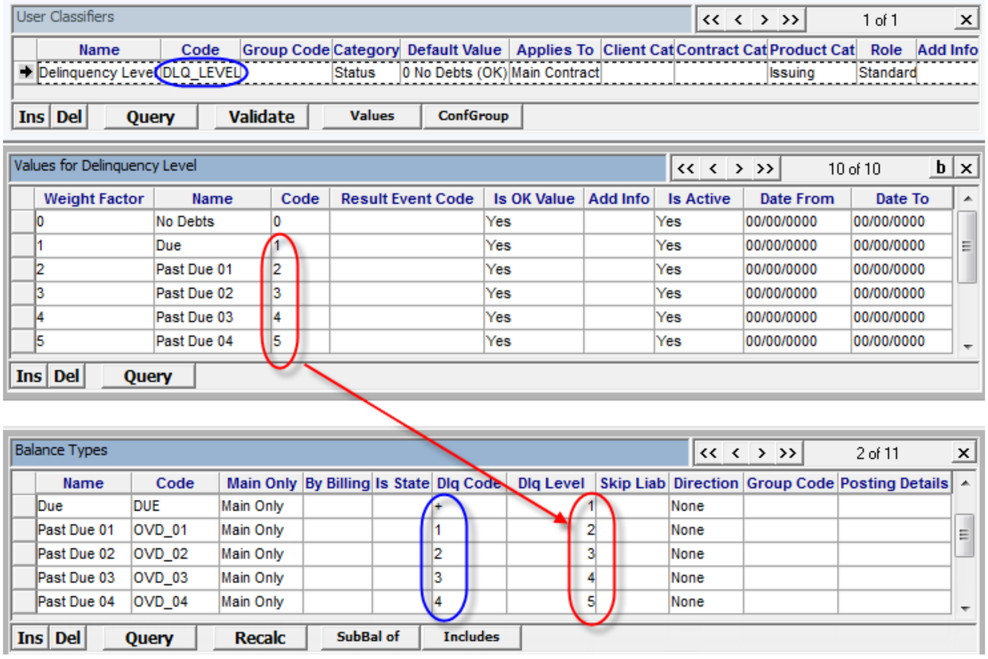
> ⓘ For a link with an Event, an Event type must be registered, specifying the corresponding code for the balance type as the code. Then for the Service Package in which this balance type is defined, set up the Event, specifying the required Event type in the *Event Type* field of the "Events for <Service Package name>" form (see the section "Configuring Events" of the document "Way4 Service Packages").

> ⚠ Events should not be linked to hardcoded balances types, i.e. "Open/Close" and "All changes" should not be specified in the *Is State* field for these balance types (see the description in the *Code* field for the list of hardcoded balance types). This link may cause the system to function incorrectly.

- ▪ For a link with a classifier, specify the "Classifier" value in the Is State field. For more information, see the section "Setup for Defining a Classifier according to a Balance Type Value".

- *Dlq Code* – this field filled in for balance types corresponding to values of the system classifier with the code "DLQ_LEVEL", if the history of delinquency must be logged in the DLQ_HIST tag. The field must be filled in as shown in Fig. 2 or Fig. 3, depending on the Dlq codes that are used, see below.

> ⓘ Both fields must be filled in to log history: *Dlq Code* and *Dlq Level*:

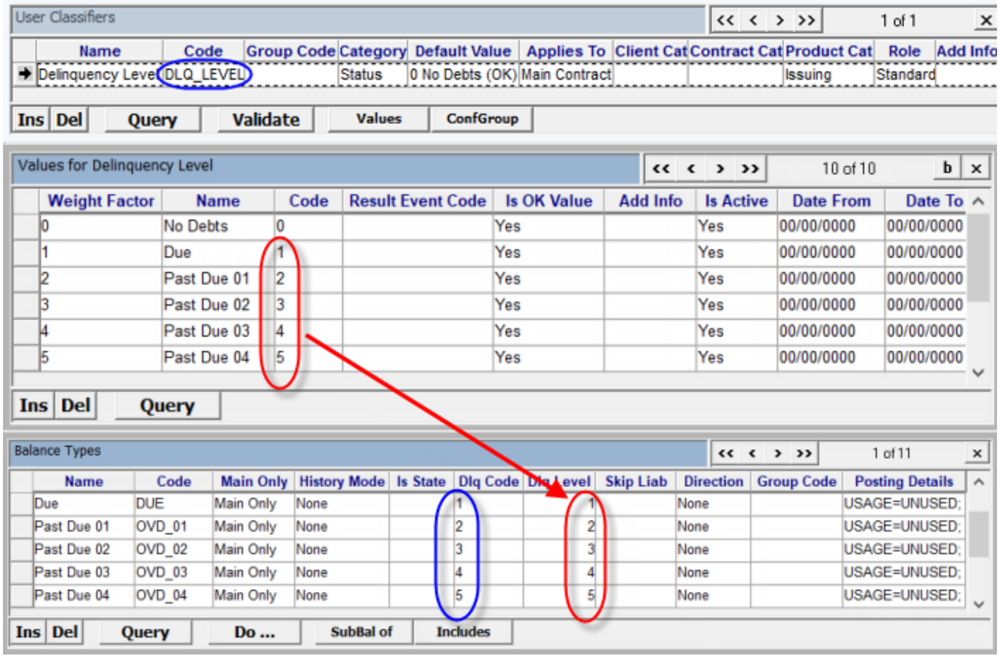

User Classifiers
<< < > >> 1 of 1 ×
Ins Del Query Validate Values ConfGroup
Values for Delinquency Level
<< < > >> 10 of 10 b ×
Ins Del Query
Balance Types
<< < > >> 2 of 11 ×
Ins Del Query Recalc SubBal of Includes

Name	Code	Group Code	Category	Default Value	Applies To	Client Cat	Contract Cat	Product Cat	Role	Add Info
Delinquency Leve	DLQ_LEVEL		Status	0 No Debts (OK)	Main Contract			Issuing	Standard	

Weight Factor	Name	Code	Result Event Code	Is OK Value	Add Info	Is Active	Date From	Date To
0	No Debts	0		Yes		Yes	00/00/0000	00/00/0000
1	Due	1		Yes		Yes	00/00/0000	00/00/0000
2	Past Due 01	2		Yes		Yes	00/00/0000	00/00/0000
3	Past Due 02	3		Yes		Yes	00/00/0000	00/00/0000
4	Past Due 03	4		Yes		Yes	00/00/0000	00/00/0000
5	Past Due 04	5		Yes		Yes	00/00/0000	00/00/0000

Name	Code	Main Only	By Billing	Is State	Dlq Code	Dlq Level	Skip Liab	Direction	Group Code	Posting Details
Due	DUE	Main Only			+	1		None		
Past Due 01	OVD_01	Main Only			1	2		None		
Past Due 02	OVD_02	Main Only			2	3		None		
Past Due 03	OVD_03	Main Only			3	4		None		
Past Due 04	OVD_04	Main Only			4	5		None		

Fig. 2. Configuring balance types corresponding to values of the system classifier with the "DLQ_LEVEL" code


User Classifiers
<< < > >> 1 of 1 ×
Ins Del Query Validate Values ConfGroup
Values for Delinquency Level
<< < > >> 10 of 10 b ×
Ins Del Query
Balance Types
<< < > >> 1 of 11 ×
Ins Del Query Do ... SubBal of Includes

Name	Code	Group Code	Category	Default Value	Applies To	Client Cat	Contract Cat	Product Cat	Role	Add Info
Delinquency Leve	DLQ_LEVEL		Status	0 No Debts (OK)	Main Contract			Issuing	Standard	

Weight Factor	Name	Code	Result Event Code	Is OK Value	Add Info	Is Active	Date From	Date To
0	No Debts	0		Yes		Yes	00/00/0000	00/00/0000
1	Due	1		Yes		Yes	00/00/0000	00/00/0000
2	Past Due 01	2		Yes		Yes	00/00/0000	00/00/0000
3	Past Due 02	3		Yes		Yes	00/00/0000	00/00/0000
4	Past Due 03	4		Yes		Yes	00/00/0000	00/00/0000
5	Past Due 04	5		Yes		Yes	00/00/0000	00/00/0000

Name	Code	Main Only	History Mode	Is State	Dlq Code	Dlq Level	Skip Liab	Direction	Group Code	Posting Details
Due	DUE	Main Only	None		1	1		None		USAGE=UNUSED;
Past Due 01	OVD_01	Main Only	None		2	2		None		USAGE=UNUSED;
Past Due 02	OVD_02	Main Only	None		3	3		None		USAGE=UNUSED;
Past Due 03	OVD_03	Main Only	None		4	4		None		USAGE=UNUSED;
Past Due 04	OVD_04	Main Only	None		5	5		None		USAGE=UNUSED;

Fig. 3. Configuring a "DLQ_LEVEL" system classifier (synchronised balance type codes, starting form version 03.48.30)

Starting from version 03.48.30, the values of the "Balance Type" form's *Dlq Code* and *Dlq Balance* fields (see Fig. 3) have been aligned for balance types linked with the values of a DLQ_LEVEL classifier, in particular:

- For a balance type that corresponds to the "Due" value of the DLQ_LEVEL classifier, the code in the *Dlq Code* field has been changed from "+" to "1".

- For a balance type that corresponds to the "Past Due 01" value of the DLQ_LEVEL classifier, the code in the *Dlq Code* field has been changed from "1" to "2" etc.

Starting from version 03.48.30, the Dlq code for the "No Debts" value of the DLQ_LEVEL classifier is determined using the global parameter NO_DUE_DLQ_CODE (see the section "NO_DUE_DLQ_CODE" of the document "Way4 Global Parameters"). By default, the global parameter's value is "0". The value can be redefined.

These changes do not affect existing configurations and will only be reflected in new installations of Way4 (when Way4 is first installed, starting from version 03.48.30).

The DLQ_HIST tag is automatically recalculated at the end of a billing cycle and is specified in the contract's ext_data field. The tag value has 24 places and shows a cardholder's brief credit history for a two-year period (24 months). Each character in this field corresponds to one billing cycle and may have one of the following values (depending on the value of the "Balance Types" form's *Dlq Code* field and the value of the NO_DUE_DLQ_CODE field (for new installations of Way4)):

- For old configurations:
  - "0" – monthly payment was made on time.
  - "1" – payment was delinquent by one month or less.
  - "2" – payment was delinquent by two months or less, etc.
  - "_" – the billing cycle hasn't started.
  - "E" – the cardholder has no debt in the current billing cycle or debt was paid before it became due.

  For example, if a tag contains the value "0120E___________________", this means that payment for the first month was made on time, in the second month, was delinquent by one month, then delinquent by two months, after which the amount of debt was paid and in the fifth month, their was no debt or it was paid before it was due.

- For new configurations:
  - "1" – monthly payment was made on time.
  - "2" – payment was delinquent by one month or less.
  - "3" – payment was delinquent by two months or less, etc.
  - "_" – the billing cycle hasn't started.
  - "0" – the cardholder has no debt in the current billing cycle or debt was paid before it became due.

Setup of DLQ_LEVEL classifiers is described in the section "Configuring the "DLQ_LEVEL" System Classifier" of the document "Way4 Client and Contract Classifiers".

- *Dlq Level* – this field is filled in when configuring balance types for delinquent debt. The value of the field is used when setting up the "DLQ_LEVEL" classifier (see Fig. 2 and the section "Configuring the "DLG_LEVEL" System Classifier" in the document "Way4 Client and Contract Classifiers").
- *Skip Liab* – specifies whether this balance type will be calculated for a higher-ranking Liability contract:
  - If the value is "Yes" (default), this balance type is not calculated.
  - If the value is "No" (or if the field is empty), this balance type is calculated in higher-ranking Liability contracts with the "Full Liability" and "Only Check Balance" liability categories.
  - If the value is "Reporting", the balance type is calculated in all higher-ranking Liability contracts, except contracts with the "Reporting" liability category.
- *Direction* – this field determines whether this balance type will accumulate account turnover or balances and specifies the direction of fund activity reflected by this balance type (the field is filled in for balance types set in account templates):
  - "Debit" – reflects transactions debiting accounts of the contract for which the balance type is set up
  - "Credit" – reflects transactions crediting accounts of the contract for which the balance type is set up
  - "None" – reflects all transactions. I.e. when this value is set, account balance is considered. The *History Mode* field should not be filled in for this balance type.
  - "Debit Entry" – reflects transactions debiting accounts of the contract for which the balance type is set up. The balance type value does not change if a transaction is reversed
  - "Credit Entry" – reflects transactions crediting accounts of the contract for which the balance type is set up. The balance type value does not change if a transaction is reversed.

> ⓘ If a value other than "None" is set in the *Direction* field, the *History Mode* field for this balance type must be filled in and the value must differ from "None" since this balance type is used to record account turnover.

- *Group Code* – group code used to group balance types to be displayed in forms (i.e. for filtering); a balance type may belong to several groups, in this case, tag values are separated by commas
- *Posting Details* – tags specifying general balance type parameters:
  - "ON_REQUEST_ONLY" – a balance type marked with this tag is not recalculated when posting a document (is only recalculated when a special function is called). This allows several different balance types to be configured without causing a decline in production. IMPORTANT! This balance type can only be used in accounting scheme configurations (set in account templates) and cannot be used in Service settings, when working with usage limiters, standing payment orders and Events.
  - "CONTRACT_FOR" – this tag works separately from the balance type Main Only field and does not influence the procedure of maintaining the balance. This tag specifies for which contract an Event will be opened that opens when this balance type changes):
    - "BILLING" – for the main higher-ranking contract in the "Liability" hierarchy
    - "LIABILITY" – for the higher ranking contract in the "Liability" hierarchy
    - "TOP" – for the main contract in the hierarchy
  - "USAGE" informational tag. The tag is filled in when validating balance types (for example, when executing the "Validate All Balances" command in the context menu of the [Do] button in the "Balance Types" form). Possible values for the tag:
    - "UNUSED" – this balance type is not used (i.e. is not set in Accounting Schemes or Service Packages).
    - "SERV_TURNOVER" – the balance type is used in Service Packages.
    - "ACC_TURNOVER" – the balance type is used in Accounting Schemes and has a *Direction* field value differing from "None" (i.e. accumulates account turnover).
    - "BALANCE" – the balance type is used in Accounting Schemes and has "None" in the *Direction* field (i.e. contains account balances).
    - "HARDCODED" – balance type with a reserved code and predefined handling.
    - "HAS_SUBS" – this balance type has subordinate balance types.
  - COUNTER_ONLY; tag – set in balance types for which information should be accrued about the number of transactions made in the period defined in the *History Mode* field in a balance type. Accrued data for the number

of transactions is shown in the "Counters" form (see the section "Information about COUNTER_ONLY Balance Type Values").

- SAVE_LATEST; this tag can be specified in any balance type with any setting of the *History Mode* field to save data for the last four transactions (fund activity) for an account (the transaction date and amount are saved). Data are saved in the acnt_log table. This information can be shown in the *Last Payment Amount* and *Last Payment Date* fields in Customer Service.

> The tag is automatically specified instead of the HISTORY_MODE=SRV; tag for balance types in Service Packages (with the "SERV_TURNOVER" value of the USAGE tag), for which history is not recorded. The tag is specified in upgrade to version 03.43.30 when automatically checking balance type settings.

- CYCLE – this tag can have the following values:
  - ♦ CYCLE=<contract parameter> – the code of a custom parameter (Contract Parameter) corresponding to a contract classifier (with "Classifier" in the *Mirror To* field) can be specified as the tag value. The number of cycles is set as the value of this contract parameter (<contract parameter code>=<number of cycles>).

    The tag makes it possible to total a balance type's historic values for a specified number of periods (the period type is determined by the *History Mode* field). For example, when the *History Mode* field value is "Daily" and the number of cycles is "3", the balance is saved daily in the history, and every three days the classifier value is updated on the basis of the balance amount accumulated for three days.

    The obtained value can be used to analyse the correspondence of specified ranges (ranges are set using tariffs with the Service Limit role) and the corresponding classifier.

    Contact the Way4 vendor for details.

    The tariff module is supplied according to a separate agreement with the Way4 vendor. The tag can be redefined in a contract or Product using the <balance type code>_CYCLE tag. A search will first be made for the tag in the contract, then in the Product and then in the balance type.

  - ♦ CYCLE=<number of cycles> – the number of cycles can be set directly as the value of the CYCLE tag. It is recommended to use a contract parameter code as the CYCLE tag value.

    The tag can only be set in a balance type with the *History Mode* field filled in. If *History Mode* is not filled in and the CYCLE tag is set, when checking the balance type (see the description of the "Validate All Balances" command), the error "Cycle length parm can be processed if history mode set" will be registered in the process log (Full → Process Log).

The "Recalc Balance for All Contracts" command in the context menu of the [Do] button in the "Balance Types" form is used to recalculate the values of this balance type for all contracts using it. Clicking the [Recalc] button opens a window with the message "Do you want to execute 'Recalc Balance For All Contracts' action for the current record?". Clicking [OK] starts the procedure to recalculate balance type values.

> ⓘ Note that if a large number of contracts use this balance type, the recalculation procedure will take significant time.

The "Validate All Balances" command in the context menu of the [Do] button in the "Balance Types" form is used to validate balance type settings. In particular, balance type usage is checked:

- The informational tag USAGE=<value>; is filled in (see the description of the "USAGE" tag).
- For balance types set in account templates and used to record balances in accounts, a check is made that the value of the *History Mode* field is "None".
- For account balance types used to record account turnover, a check is made that the *History Mode* field is filled in and has a value other than "None".
- A check is made that the balance type has only one use (the USAGE tag contains only one value). Otherwise, usage methods are specified as a list of values separated by commas in the USAGE tag, for example USAGE=SERV_TURNOVER,BALANCE; and an error or warning is generated in the process log (Full →Process Log →Process Log) (see records with the value "Validate balance types" in the *Process Name* field). For example:
  - The warning "Mixed usage of balance" is generated if one balance type is used to accumulate turnover in the Service Package and in the Accounting Scheme ("SERV_TURNOVER" and "ACC_TURNOVER" USAGE tag values).
  - The warning "Mix BALANCE and TURNOVER is invalid" is generated if one balance type is used to accumulate turnover and to record account balances ("TURNOVER" and "BALANCE" USAGE tag values).
  - If a balance type is not used (is set in neither Accounting Schemes nor in Service Packages), the warning "Balance not used" is generated.

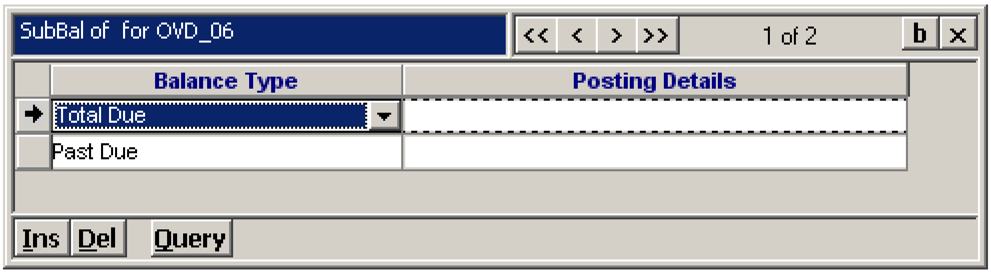
  - If a balance type with the ON_REQUEST_ONLY tag is used to accumulate turnover (the value of this balance type's USAGE tag is %TURNOVER), the error message "Lazy balance can not be statefull" is generated.
  - If a balance type with the ON_REQUEST_ONLY tag has an *Is State* value of "N", the error message "Lazy balance can not be statefull" is generated.
  - The error message "Counter only balance should be turnover based" is generated if the COUNTER_ONLY tag is set for a balance type that is not intended for accumulating turnover (balance types with the %TURNOVER value of the USAGE; tag are used to accumulate turnover), in addition a balance type that has the HAS_SUBS value of the USAGE; tag with subordinate balance types for recording turnover can be used for accumulating turnover).
- The *History Mode* field is checked:
  - If *History Mode* is not filled in for a balance type used to accumulate turnover and set in the Service (this balance type's USAGE tag value is %TURNOVER), the warning "History mode may be required" is output.
  - If *History Mode* is not filled in for a balance type with the CYCLE tag, the error message "Cycle length parm can be processed if history mode set" is output.
- The balance hierarchy is checked (see the description of the "SubBal of <...>" form in Fig. 4:
  - If the hierarchy has more than two levels, the error message "More than 2-level hierarchy"is generated.
  - If balance types with different purposes (with different USAGE tag values) are used in a balance type hierarchy, the "Mixed subordinated usage mode" warning is generated.
  - The compatibility of *History Mode* field values for balance types in the same hierarchy is checked. If the *History Mode* field value of the higher-ranking balance type does not match the subordinate balance type's *History Mode* field value, the error message <balance type name>: History mode can be contradicted with <balance type name> will be output.
  - If a subordinate balance is configured for a hardcoded balance type, the error "Subordinated unavailable for hardcoded balance" is generated.
  - For a balance type that does not need to be registered in the "Balance Type" form (for example AVAILABLE), the warning "Balance type doesn't need to be registered" is generated.

  - If a balance type with the ON_REQUEST_ONLY tag is used in the hierarchy, the error "Lazy balance can not used in balance hierarchy" is generated.
  - If a subordinate balance type for recording account balances (the USAGE tag value for this balance type is BALANCE) is set up for a balance type with the COUNTER_ONLY tag, the warning message "Counter-only balance type can not have Account-based sub-balance types" will be generated.

- The *Dlq Level* and *Dlq Code* fields are checked. The error message "Invalid delinquency configuration" is generated in the following cases:
  - If the *Dlq Code* field is not filled in, and the value of the *Dlq Level* field is greater than "0".
  - If the *Dlq Code* field is filled in (other than "0"), and "0" is specified in the *Dlq Level* field.

    In these cases, the DLQ_HIST tag value will be generated incorrectly, i.e. delinquency history will not be logged (see the description of the *Dlq Level* field).

The "Balance Types" window contains the [SubBal of] button used to open the "SubBal of <…>" form (see Fig. 4).


SubBal of for OVD_06

Balance Type	Posting Details
Total Due	
Past Due	

Fig. 4. Form for setting up a balance type hierarchy

This form, opened for the corresponding balance type, allows a balance type hierarchy to be set up by specifying that this balance type is included in another, upper-level balance type. This means that this balance type value is added when calculating the value of the upper-level balance:

- When configuring a subordinate balance type for a regular balance (without the AGGREGATE_ONLY tag), a two-level balance hierarchy is supported. The higher-ranking balance is updated when a transaction is made that changes the subordinate balance.
- When configuring a hierarchy of aggregate balance types (balances with the AGGREGATE_ONLY tag), several hierarchy levels can be configured, When transaction is made that changes a subordinate balance, the higher-ranking balance with the AGGREGATE_ONLY; tag doesn't change. An aggregate balance is calculated on demand, for example, when the balance

type is used in a payment order or fee. See the section "Aggregate balance types".

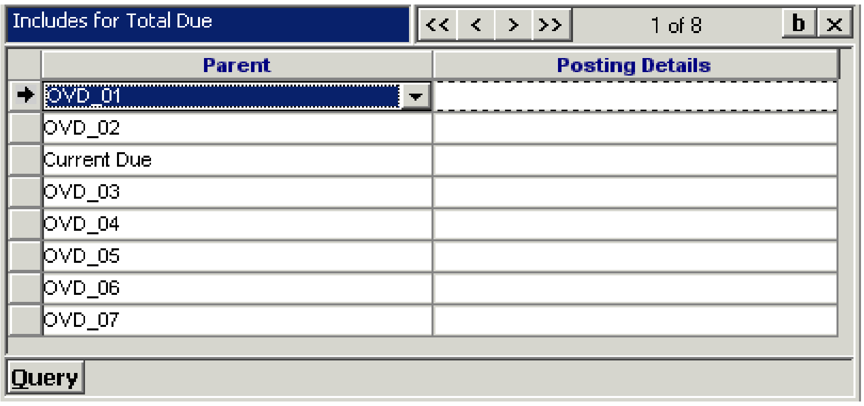
To include this balance type in an upper-level balance type, add a row in the table by clicking the [Ins] button and in the *Balance Type* field select from the list the name of the balance type that this balance type will be included in..

The *Posting Details* field of this form is used to specify additional parameters in tag form. The SUBTRACT; tag can be specified in this form. This tag makes it possible to subtract the value of the subordinate balance type from the value of the higher-ranking balance type. When building a balance type hierarchy, by default the values of the subordinate balance type are added when calculating the value of the higher-ranking balance type.

Balance types with codes reserved in the system should not be the highest up in the balance type hierarchy; that is, subordinate balance types should not be set for them. In addition, caution should be exercised in using these balance types as subordinate balance types.

The balance type with the reserved code AVAILABLE cannot be used in a balance hierarchy. I.e. this balance type cannot be used as a higher-ranking, balance type, nor can it be used as a subordinate balance type.

The "Balance Types" window (see figure Fig. 1) also contains the [Includes] button used to open the "Includes of <...>" form (see Fig. 5).



Parent	Posting Details
OVD_01	
OVD_02	
Current Due	
OVD_03	
OVD_04	
OVD_05	
OVD_06	
OVD_07	

Fig. 5. Form containing the list of balance types included in this balance type

This form contains a list of balance types included in this type through the "SubBal of <...>" form (see Fig. 4).

The *Posting Details* field in this form is reserved for future use.

2.2 Aggregate balance types

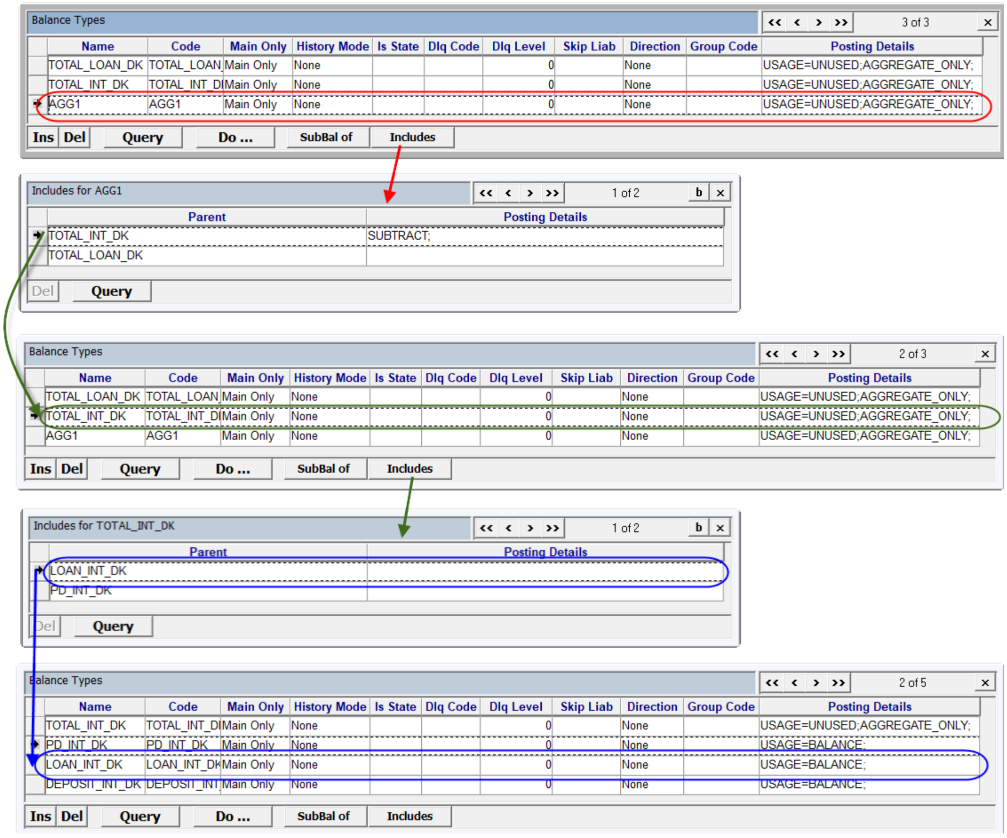
Aggregate balance types are balance types with the AGGREGATE_ONLY; tag in the *Posting Details* field of the "Balance Types" form (Full →Configuration Setup → Accounting Setup →Balance Types).

Aggregate balances are not updated when a transaction is made for a subordinate balance. An aggregate balance is calculated on demand, for example, when the balance type is used in a payment order (for example, in the *Balance Type*, *Tgt Balance Type* fields) or fee (for example, with the tag FEE_BASE=FROM_BALANCE;).

Without additional settings, a subordinate balance is added to the amount of the aggregate balance. When the SUBTRACT; tag is specified for the subordinate balance, the value of the subordinate balance is subtracted from the aggregate balance.

Specific features of setup:

- An aggregate balance type cannot be a hardcoded balance type.
- Several hierarchy levels can be configured for aggregate balances.
- An aggregate balance type can only be subordinate to another aggregate balance type.
- The *History Mode* and *Is State* fields are not filled in for an aggregate balance type.



Name	Code	Main Only	History Mode	Is State	Dlq Code	Dlq Level	Skip Liab	Direction	Group Code	Posting Details
TOTAL_LOAN_DK	TOTAL_LOAN	Main Only	None			0		None		USAGE=UNUSED;AGGREGATE_ONLY;
TOTAL_INT_DK	TOTAL_INT_DI	Main Only	None			0		None		USAGE=UNUSED;AGGREGATE_ONLY;
AGG1	AGG1	Main Only	None			0		None		USAGE=UNUSED;AGGREGATE_ONLY;

Parent	Posting Details
TOTAL_INT_DK	SUBTRACT;
TOTAL_LOAN_DK	

Name	Code	Main Only	History Mode	Is State	Dlq Code	Dlq Level	Skip Liab	Direction	Group Code	Posting Details
TOTAL_LOAN_DK	TOTAL_LOAN	Main Only	None			0		None		USAGE=UNUSED;AGGREGATE_ONLY;
TOTAL_INT_DK	TOTAL_INT_DI	Main Only	None			0		None		USAGE=UNUSED;AGGREGATE_ONLY;
AGG1	AGG1	Main Only	None			0		None		USAGE=UNUSED;AGGREGATE_ONLY;

Parent	Posting Details
LOAN_INT_DK	
PD_INT_DK	

Name	Code	Main Only	History Mode	Is State	Dlq Code	Dlq Level	Skip Liab	Direction	Group Code	Posting Details
TOTAL_INT_DK	TOTAL_INT_DI	Main Only	None			0		None		USAGE=UNUSED;AGGREGATE_ONLY;
PD_INT_DK	PD_INT_DK	Main Only	None			0		None		USAGE=BALANCE;
LOAN_INT_DK	LOAN_INT_DK	Main Only	None			0		None		USAGE=BALANCE;
DEPOSIT_INT_DK	DEPOSIT_INT	Main Only	None			0		None		USAGE=BALANCE;

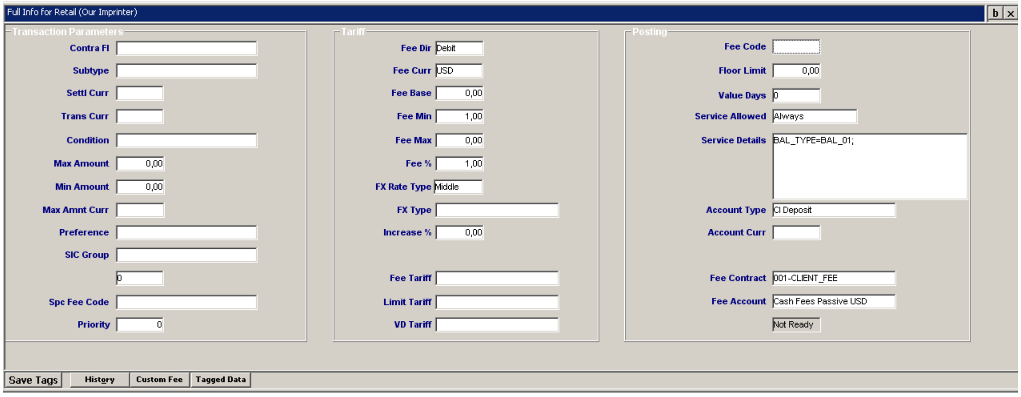
Fig. 6. Configuring a hierarchy for an aggregate balance type

2.3 Configuring Balance Types

Users set up balance types, i.e. determine what accounts or transactions will be considered during balance type value calculation, during setup of Service Packages and/or Accounting Schemes.

2.3.1 Configuring Balance Types in Service Packages

Balance types for specific transactions are set up in the "Full Info for <name of service>" form (see Fig. 7).



Full Info for Retail (Our Imprinter)

Transaction Parameters

Contra FI
Subtype
Settl Curr
Trans Curr
Condition
Max Amount 0,00
Min Amount 0,00
Max Amnt Curr
Preference
SIC Group
0
Spc Fee Code
Priority 0

Tariff

Fee Dir Debit
Fee Curr USD
Fee Base 0,00
Fee Min 1,00
Fee Max 0,00
Fee % 1,00
FX Rate Type Middle
FX Type
Increase % 0,00
Fee Tariff
Limit Tariff
VD Tariff

Posting

Fee Code
Floor Limit 0,00
Value Days 0
Service Allowed Always
Service Details BAL_TYPE=BAL_01;
Account Type CI Deposit
Account Curr
Fee Contract 001-CLIENT_FEE
Fee Account Cash Fees Passive USD
Not Ready

Fig. 7. Configuring a balance type for a service

The following tag may be specified in the *Service Details* field for balance type setup: "BAL_TYPE=<balance type code>;" – the value of this balance type will change when transactions are performed through this Service (transactions with the "Advice" and "Reversal" request categories), i.e. the amount of each transaction will be added to this balance type value

If transactions performed through a Service must be used by several balance types, their codes are separated in tag values by commas.

Generally, balance types for which history mode is enabled (with a *History Mode* parameter value other than "None") are used for Services. See figure Fig. 1 in the section "Registering Balance Types".

When approving a Service Package, the specified balance types are checked:

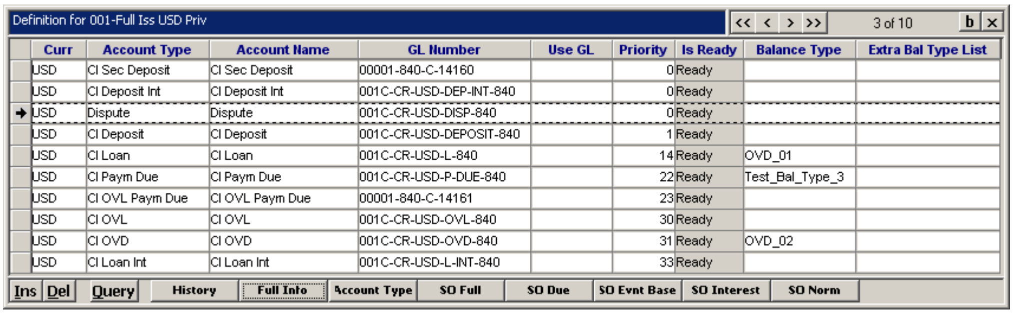
- Balance types with a *History Mode* parameter value other than "None" are used for Services.
- Balance types that are not hardcoded and not aggregating are used for Services.

2.3.2 Configuring Balance Types in Accounting Schemes

Balance types for Accounting Schemes calculating account balances and account turnover are set up in the account template window, opened by clicking the [Definition] button in the Accounting Scheme window.

In the "Definition for <...>" form (see Fig. 8), a balance type can be selected from a drop-down list in the Balance Type field for each template. This will mean that the balance of the account generated for this template will be considered during this balance type calculation if "None" is specified in the balance type's *Direction* field (see Fig. 18 in the section "Registering Balance Types"). If the *Direction* field is filled in with any other value, account turnover for the period will be considered when calculating the value of this balance type.

Balance types for which the *History Mode* parameter value is "None" should be used for account templates.



Definition for 001-Full Iss USD Priv

Curr	Account Type	Account Name	GL Number	Use GL	Priority	Is Ready	Balance Type	Extra Bal Type List
USD	CI Sec Deposit	CI Sec Deposit	00001-840-C-14160		0	Ready		
USD	CI Deposit Int	CI Deposit Int	001C-CR-USD-DEP-INT-840		0	Ready		
USD	Dispute	Dispute	001C-CR-USD-DISP-840		0	Ready		
USD	CI Deposit	CI Deposit	001C-CR-USD-DEPOSIT-840		1	Ready		
USD	CI Loan	CI Loan	001C-CR-USD-L-840		14	Ready	OVD_01	
USD	CI Paym Due	CI Paym Due	001C-CR-USD-P-DUE-840		22	Ready	Test_Bal_Type_3	
USD	CI OVL Paym Due	CI OVL Paym Due	00001-840-C-14161		23	Ready		
USD	CI OVL	CI OVL	001C-CR-USD-OVL-840		30	Ready		
USD	CI OVD	CI OVD	001C-CR-USD-OVD-840		31	Ready	OVD_02	
USD	CI Loan Int	CI Loan Int	001C-CR-USD-L-INT-840		33	Ready		

Fig. 8. Form for configuring balance types for an Accounting Scheme

If an account balance or turnover must be used by several balance types, the balance type codes separated by commas can be specified in the *Extra Bal Type List* field of the account template.

When approving an Account Scheme, the specified balance types are checked:

- The balance type's *Code* field is checked. If this field is not filled in, an error message will be displayed.
- The *History Mode* field of balance types set for the template in the *Balance Type* and *Extra Bal Type List* fields is checked.
- A check is made that the balance types in the *Balance Type* and *Extra Bal Type List* fields are not hardcoded.
- A check is made that the balance types in the *Balance Type* and *Extra Bal Type List* fields are not aggregating.

2.3.3 Recalculating Balance Type Values

Balance types are recalculated in the following cases:

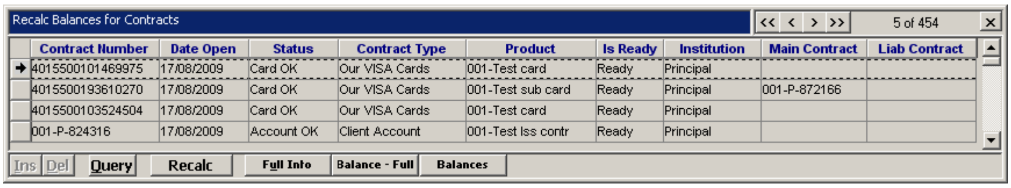
- After changes in balance type settings in Accounting Schemes, for example, after adding a new balance type, changing balance type settings.
- After changes in Accounting Schemes for a contract (changes in Accounting Schemes).

After changes to the settings of balance types, their values should be recalculated for each contract using this balance type. This can be done as follows:

- To recalculate a specific balance type for all contracts, click the [Do...] button in the "Balance Type" form (Full →Configuration Setup →Accounting Setup →Balance Types) and execute the context menu command "Recalc Balance for All Contracts".

- To recalculate balance types for a specific contract, select the "Full →DB Administrator Utilities →Special Contract Utilities →Recalc Balances for Contracts" user menu item.

  As a result, the "Recalc Balances for Contracts" grid form (see Fig. 9) will be displayed.


Recalc Balances for Contracts

	Contract Number	Date Open	Status	Contract Type	Product	Is Ready	Institution	Main Contract	Liab Contract
➔	4015500101469975	17/08/2009	Card OK	Our VISA Cards	001-Test card	Ready	Principal		
	4015500193610270	17/08/2009	Card OK	Our VISA Cards	001-Test sub card	Ready	Principal	001-P-872166	
	4015500103524504	17/08/2009	Card OK	Our VISA Cards	001-Test card	Ready	Principal		
	001-P-824316	17/08/2009	Account OK	Client Account	001-Test Iss contr	Ready	Principal		

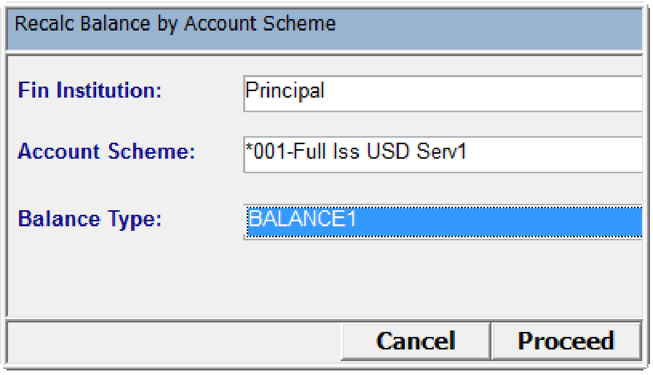
Fig. 9. Form for recalculating contract balances

To recalculate contract balance type values, move the cursor to the row corresponding to the desired contract and click the [Recalc] button. As a result, a context menu containing the following items will be displayed:

- "Recalc Hardcoded Balances" – recalculation of balance type values that have codes reserved in the system (for the list of reserved codes, see the section "Registering Balance Types").
- "Recalc Additional Balances" – recalculation of custom balance type values, i.e. balance types with codes differing from reserved codes.

As a result of this procedure, contract balance type values will be recalculated according to the changes made.

- To recalculate balance types for a specific Accounting Scheme, select the user menu item "Full → DB Administrator Utilities → Special Contract Utilities →Recalc Balance by Account Scheme". The "Recalc Balance by Account Scheme" form will open (see Fig. 10).


Recalc Balance by Account Scheme

Fin Institution: Principal

Account Scheme: *001-Full Iss USD Serv1

Balance Type: BALANCE1

Fig. 10. Form for recalculating contract balances

Fill in the following fields in the "Recalc Balance by Account Scheme" form:

- To filter Accounting Schemes for a financial institution, choose the appropriate institution in the *Fin Institution* field.
- *Account Scheme* – Accounting Scheme for which recalculation is required.
- *Balance Type* – recalculation can be performed for a certain balance type. To do so, fill in the the *Balance Type* field.

Note that after balance type configurations are changed, the procedure recalculating their values for a contract must be executed before the document processing procedure.

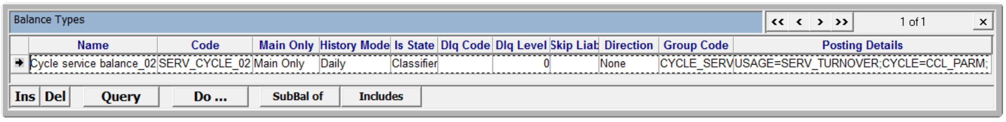
2.3.4 Setup for Defining a Classifier according to a Balance Type Value

A classifier value depends on the range in which this contract balance type value falls. Analysis is made on the basis of the saved balance type, for a specific number of periods. Value ranges are set using tariffs.

Setup is used for balance types set in a Service – i.e. for turnover balance types.

General setup scheme:

- Configure a balance type:
  - Fill in the *History Mode* field for the balance type.
  - Specify "Classifier" in the *Is State* field of the balance type.
  - The number of periods for which the balance will be analysed is set using the CYCLE tag in the balance type (or with the <balance type code>_CYCLE tag in the Product or contract). The tag makes it possible to total a balance type's historic values for the specified number of periods (the period type is defined by the *History Mode* field), for more information, see the section "Registering Balance Types".

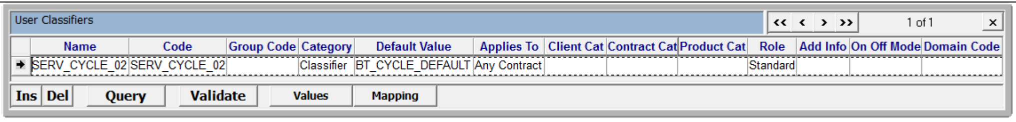


Balance Types

Name	Code	Main Only	History Mode	Is State	Dlq Code	Dlq Level	Skip Liab	Direction	Group Code	Posting Details
Cycle service balance_02	SERV_CYCLE_02	Main Only	Daily	Classifier		0		None	CYCLE_SERV	USAGE=SERV_TURNOVER;CYCLE=CCL_PARM;

Fig. 11. Setting up a balance type with the CYCLE tag

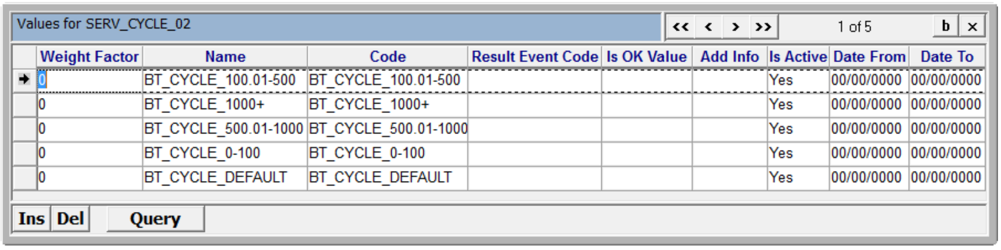
- Configure a classifier whose code matches that of the balance type (Full → Configuration Setup →Common Handbooks →User Classifiers), see Fig. 12. Specify "Standard" in the classifier's *Role* field.



Name	Code	Group Code	Category	Default Value	Applies To	Client Cat	Contract Cat	Product Cat	Role	Add Info	On Off Mode	Domain Code
SERV_CYCLE_02	SERV_CYCLE_02		Classifier	BT_CYCLE_DEFAULT	Any Contract				Standard			

Fig. 12. Configuring a classifier

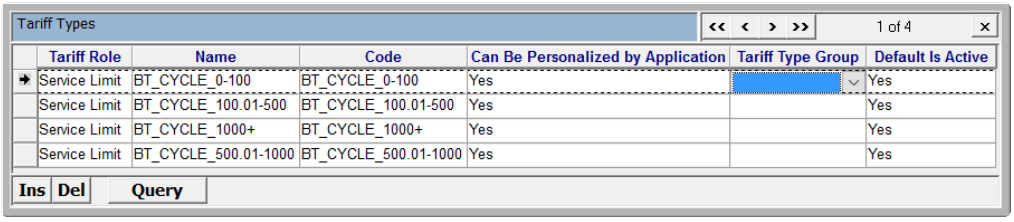
- Set possible values for the classifier, and define one of them as the default value, see Fig. 12, Fig. 13.



Weight Factor	Name	Code	Result Event Code	Is OK Value	Add Info	Is Active	Date From	Date To
0	BT_CYCLE_100.01-500	BT_CYCLE_100.01-500				Yes	00/00/0000	00/00/0000
0	BT_CYCLE_1000+	BT_CYCLE_1000+				Yes	00/00/0000	00/00/0000
0	BT_CYCLE_500.01-1000	BT_CYCLE_500.01-1000				Yes	00/00/0000	00/00/0000
0	BT_CYCLE_0-100	BT_CYCLE_0-100				Yes	00/00/0000	00/00/0000
0	BT_CYCLE_DEFAULT	BT_CYCLE_DEFAULT				Yes	00/00/0000	00/00/0000

Fig. 13. Configuring a classifier

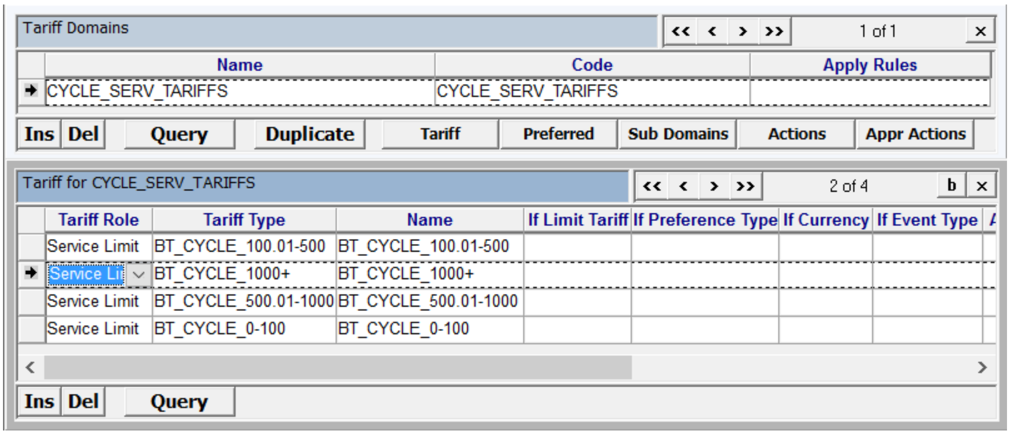
- Create tariff types with the "Service Limit" role that correspond to classifier value codes, see Fig. 14.



Tariff Role	Name	Code	Can Be Personalized by Application	Tariff Type Group	Default Is Active
Service Limit	BT_CYCLE_0-100	BT_CYCLE_0-100	Yes		Yes
Service Limit	BT_CYCLE_100.01-500	BT_CYCLE_100.01-500	Yes		Yes
Service Limit	BT_CYCLE_1000+	BT_CYCLE_1000+	Yes		Yes
Service Limit	BT_CYCLE_500.01-1000	BT_CYCLE_500.01-1000	Yes		Yes

Fig. 14. Configuring tariff types

- Configure tariffs with these types in a tariff domain for the contract/Product/institution ("Tariffs → Tariff Types & Tariff Domains → Tariff Domains" →[Tariff]).

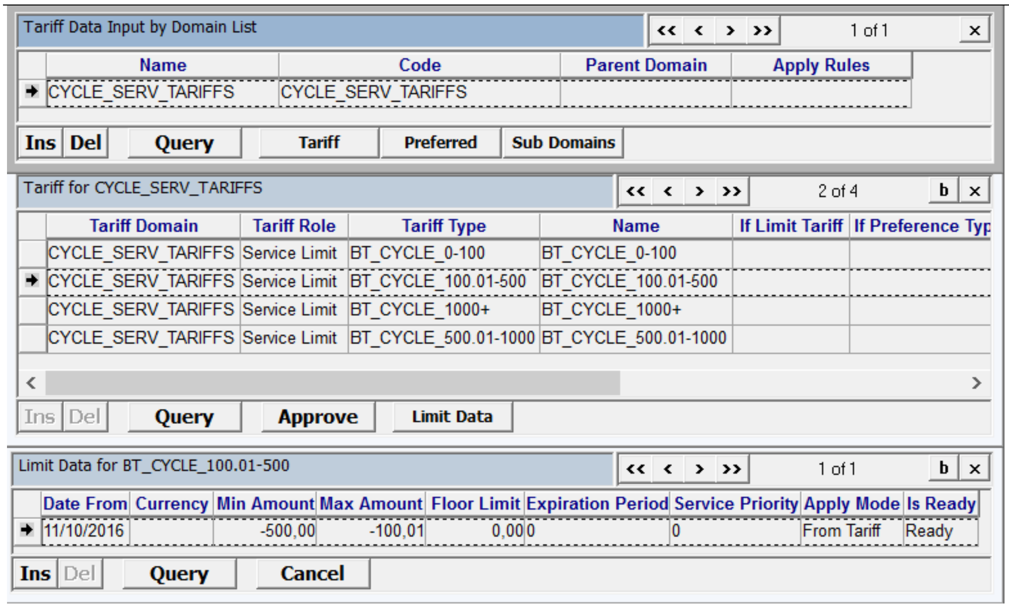

Tariff Domains
<< < > >>
1 of 1
Ins Del Query Duplicate Tariff Preferred Sub Domains Actions Appr Actions
Tariff for CYCLE_SERV_TARIFFS
<< < > >>
2 of 4
b
Ins Del Query

Name	Code	Apply Rules
CYCLE_SERV_TARIFFS	CYCLE_SERV_TARIFFS	

Tariff Role	Tariff Type	Name	If Limit Tariff	If Preference Type	If Currency	If Event Type
Service Limit	BT_CYCLE_100.01-500	BT_CYCLE_100.01-500				
Service Li	BT_CYCLE_1000+	BT_CYCLE_1000+				
Service Limit	BT_CYCLE_500.01-1000	BT_CYCLE_500.01-1000				
Service Limit	BT_CYCLE_0-100	BT_CYCLE_0-100				

Fig. 15. Configuring tariffs

- Specify value ranges using tariffs ("Tariffs →Tariff Data Input by Domain List" →[Tariff] →[Limit Data]).



Tariff Data Input by Domain List

1 of 1

Name	Code	Parent Domain	Apply Rules
CYCLE_SERV_TARIFFS	CYCLE_SERV_TARIFFS		

Tariff for CYCLE_SERV_TARIFFS

2 of 4

Tariff Domain	Tariff Role	Tariff Type	Name	If Limit Tariff	If Preference Typ
CYCLE_SERV_TARIFFS	Service Limit	BT_CYCLE_0-100	BT_CYCLE_0-100		
CYCLE_SERV_TARIFFS	Service Limit	BT_CYCLE_100.01-500	BT_CYCLE_100.01-500		
CYCLE_SERV_TARIFFS	Service Limit	BT_CYCLE_1000+	BT_CYCLE_1000+		
CYCLE_SERV_TARIFFS	Service Limit	BT_CYCLE_500.01-1000	BT_CYCLE_500.01-1000		

Limit Data for BT_CYCLE_100.01-500

1 of 1

Date From	Currency	Min Amount	Max Amount	Floor Limit	Expiration Period	Service Priority	Apply Mode	Is Ready
11/10/2016		-500,00	-100,01	0,00	0	0	From Tariff	Ready

Fig. 16. Configuring numeric values for tariffs

During daily opening/closing procedures, the following happens:

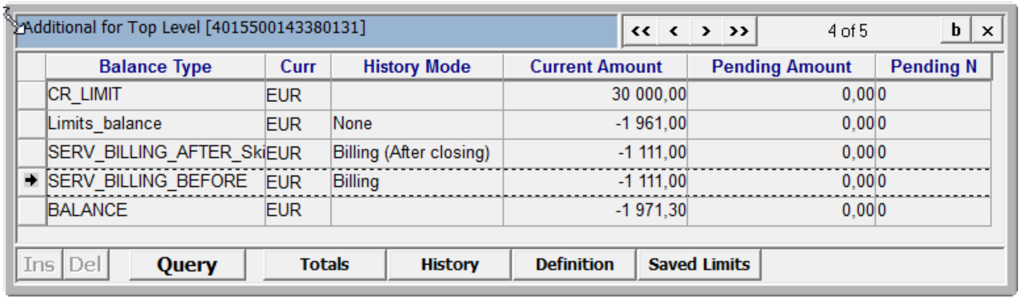
- Balance types with the *History Mode* field filled in are analysed. For balance types whose accrual period has ended, data are stored in acnt_balance_history and the balance type is reset.
- For balance types with the "Classifier" tag, historic values for the balance type are totaled according to the specified number of cycles (CYCLE tag).
- A search is made for a classifier with the code that matches the balance type code. Classifier values are analysed.
- A search is made for tariffs with the same codes as the classifier value codes (in order of priority – the higher the priority, the earlier the rule is checked).
- Value ranges are checked:
  - When a balance type amount falls in the range, the value of the classifier with the same code as the corresponding tariff type defining the range will be set.
  - If the balance type amount does not fall in any of the ranges, the classifier's default value is set in the contract.

3 Working with Balance Types

3.1 Balance Type Values

A contract's balance type values are accessed by clicking the [Additional] button in the "Balance for <...>" window of the corresponding contract.

As a result, the "Additional for <...>" form (see Fig. 17) will be displayed.



Additional for Top Level [4015500143380131]

Balance Type	Curr	History Mode	Current Amount	Pending Amount	Pending N
CR_LIMIT	EUR		30 000,00	0,00	0
Limits_balance	EUR	None	-1 961,00	0,00	0
SERV_BILLING_AFTER_Ski	EUR	Billing (After closing)	-1 111,00	0,00	0
SERV_BILLING_BEFORE	EUR	Billing	-1 111,00	0,00	0
BALANCE	EUR		-1 971,30	0,00	0

Fig. 17. Window containing a contract's balance type values

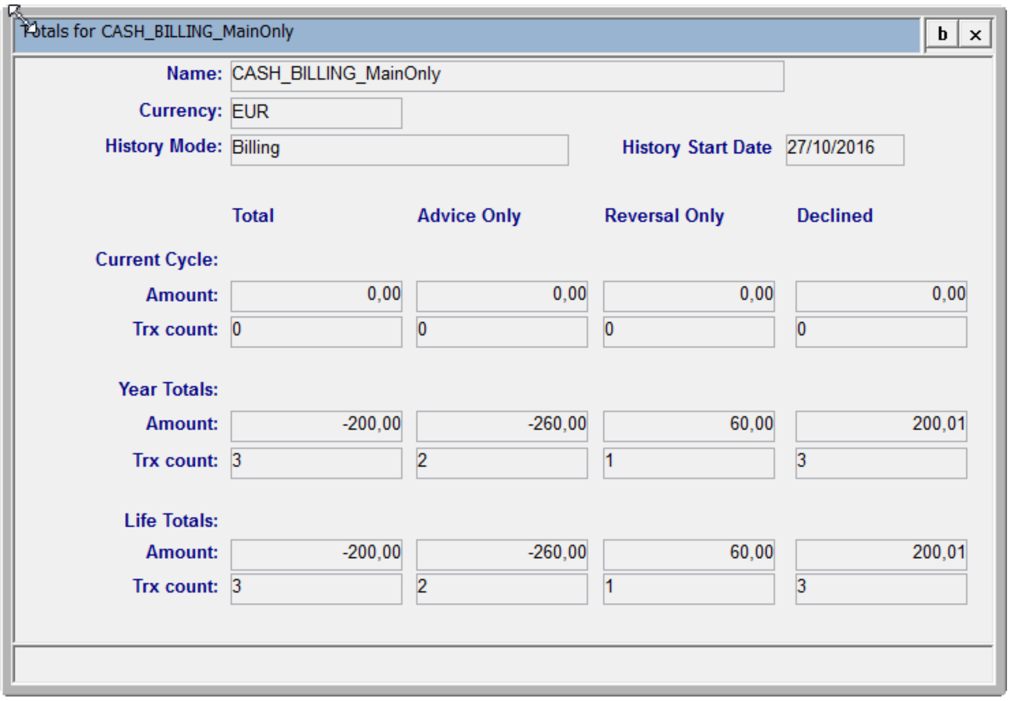
This form contains information on the contract's balance type values in the following fields:

- *Balance Name* – balance type name
- *Curr* – balance type currency
- *Current Amount* – balance type value
- *History Mode* – mode for saving balance type history (see the description of the History Mode field in the section "Registering Balance Types").
- *Pending Amount* – current amount of incomplete authorisations (authorisations for which funds are blocked in an account). In this field, information can only be shown for balance types that record turnover.
- *Pending N* – current number of incomplete authorisations (authorisations for which funds are blocked in an account). In this field, information can only be shown for balance types that record turnover.

Note that values of balance types with reserved codes are not displayed in the "Additional for <...>" form.

The [Totals] and [History] buttons in the "Additional for <...>" form (see Fig. 17) are shown for balance types with history mode enabled that are set in a Service (the *History Mode* field is filled in for these balance types and has a value other than "None", see) and for balance types used to record account turnover that are set in Accounting Schemes (for these balance types, the *History Mode* field is filled in with a value other than "None" and the *Direction* field is also filled in).

Clicking the [Totals] button opens a form with aggregated information for a balance type, see Fig. 18.



Totals for CASH_BILLING_MainOnly

Name: CASH_BILLING_MainOnly

Currency: EUR

History Mode: Billing

History Start Date 27/10/2016

	Total	Advice Only	Reversal Only	Declined
Current Cycle:				
Amount:	0,00	0,00	0,00	0,00
Trx count:	0	0	0	0
Year Totals:				
Amount:	-200,00	-260,00	60,00	200,01
Trx count:	3	2	1	3
Life Totals:				
Amount:	-200,00	-260,00	60,00	200,01
Trx count:	3	2	1	3

Fig. 18. Form with aggregated information for a balance type

The form contains the following fields:

- *Name* – balance type name.
- *Currency* – balance type currency.
- *Amount* – balance type value.
- *History Mode* – mode for saving balance type history. See the description of the *History Mode* field in the "Additional for <...>" form.
- There are three groups of fields with numeric values for balance types:
  - The "Current Value" field group shows balance type data for the current period (the period is determined by the value of the *History Mode* field).
  - The "Year Totals" field group shows balance type data for the current year (from the start of the calendar year to the present).

> For balance types with "Billing (After Closing)" and "Billing (Before closing)" in the *History Mode* field that are set in Service Packages, values in the "Year Totals" field group are reset at the start of a new calendar year even if the billing cycle does not correspond to the calendar month.

  - The "Life Totals" field shows balance type data for the entire time of the contract's existence (from the date the contract was created to the present).

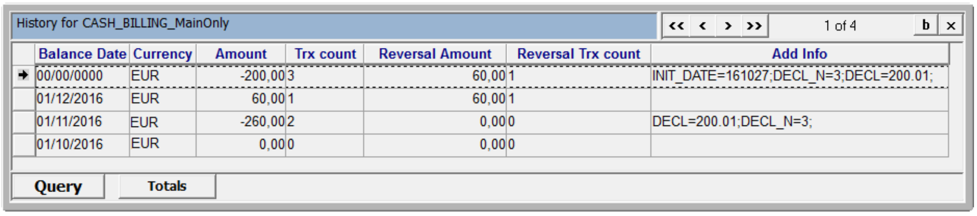
Fields in these groups:

- *Total Amount* – current amount of the balance.
- *Total Trx count* – total number of transactions.
- *Advice Only Amount* – transaction amount (transactions with the "Advice" request category).
- *Advice Only Trx count* – number of transactions (transactions with the "Advice" request category).
- *Reversal Only Amount* – reversal amount (transactions with the "Reversal" request category).
- *Reversal Only Trx count* – number of reversals (transaction with the "Reversal" request category).
- *Declined Amount* – amount of declined authorisations (only shown for balance types that record turnover).
- *Declined Trx count* – number of declined authorisations (only shown for balance types that record turnover).

> The tag makes it possible to redefine the Request Category for recording transactions made with this Service/Custom Fee (with the tag set) in balance types. For example, transactions with the "Advice" and "Adjustment" category made with a Service with the REQUEST_CATEGORY=R; tag are recorded in the corresponding balance types as reversals (as transactions with the "Reversal" category). The tag can be set in the transaction subtype.

Note that a transaction will be recorded with the specified category for all related balances affected by the entry for this service, including balances in account templates.

Clicking the [History] button in the "Additional for..." form opens a form containing data for saved periods – i.e. depending on the value of the *History Mode* parameter in the "Additional for <...> form, records are shown for a day/month/billing cycle/year.



	Balance Date	Currency	Amount	Trx count	Reversal Amount	Reversal Trx count	Add Info
➔	00/00/0000	EUR	-200,00	3	60,00	1	INIT_DATE=161027;DECL_N=3;DECL=200.01;
	01/12/2016	EUR	60,00	1	60,00	1	
	01/11/2016	EUR	-260,00	2	0,00	0	DECL=200.01;DECL_N=3;
	01/10/2016	EUR	0,00	0	0,00	0	

Fig. 19. Balance type history

The form contains the following fields:

- *Balance Date* – date on which balance type data were saved.

- *Currency* – currency in which the balance type is calculated.
- *Amount* – balance type value.
- *Trx count* – total number of transactions made for this balance type (transactions with the "Advice" and "Reversal" categories).
- *Reversal Amount* – reversal amount (transactions with the "Reversal" request category).
- *Reversal Trx count* – number of reversals (transactions with the "Reversal" request category).
- *Add Info* – used to show tagged parameters. For example, data for declined (see the fields *Declined Amount*, *Declined Trx Count*) are shown in the "History..." form as the tags DECL;DECL_N in the *Add Info* field. Data for the minimum/maximum balance are shown as the tags MAX=<balance value>;, MAX_DATE=<date>, MIN=<balance value>;, MIN_DATE=<date>; in the *Add Info* field.

In a reversal, backdated payments, adjustment of transactions using Reversal Management module tools balances are changed for the period in which the original transaction was posted. For example, 10.02 a reversal was posted for a transaction posted on 20.01 (i.e. in a past billing cycle). When the value of the *History Mode* field is "Monthly" or "Billing", the adjustment will be recorded and shown in the closed cycle. The *Reversals Entry N* field for the current cycle will not change.

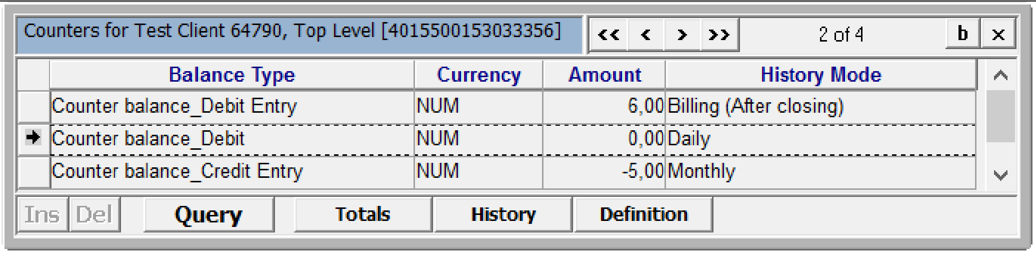
The [Definition] button of the "Additional for <...>" form (see Fig. 17) is used to view data for balance type settings. Clicking this button opens a form with the same fields as in the "Balance Types form (see Fig. 1 in the section "Registering Balance Types").

3.2 Information about COUNTER_ONLY Balance Type Values

Information about the values of balance types with the COUNTER_ONLY tag can be obtained by clicking the [Counters] button in the "Balance for <...>" form for the required contract, see Fig. 20.

The [Counters] button is shown if a contract has balance types for which the COUNTER_ONLY; tag is specified in the *Posting Details* field.

These balance types are set in Services and must have history mode enabled (the *History Mode* field must be filled in with a value other than "None", see Fig. 1 in the section "Registering Balance Types".



Counters for Test Client 64790, Top Level [4015500153033356]

	Balance Type	Currency	Amount	History Mode
	Counter balance_Debit Entry	NUM	6,00	Billing (After closing)
➔	Counter balance_Debit	NUM	0,00	Daily
	Counter balance_Credit Entry	NUM	-5,00	Monthly

Fig. 20. "Counters" form

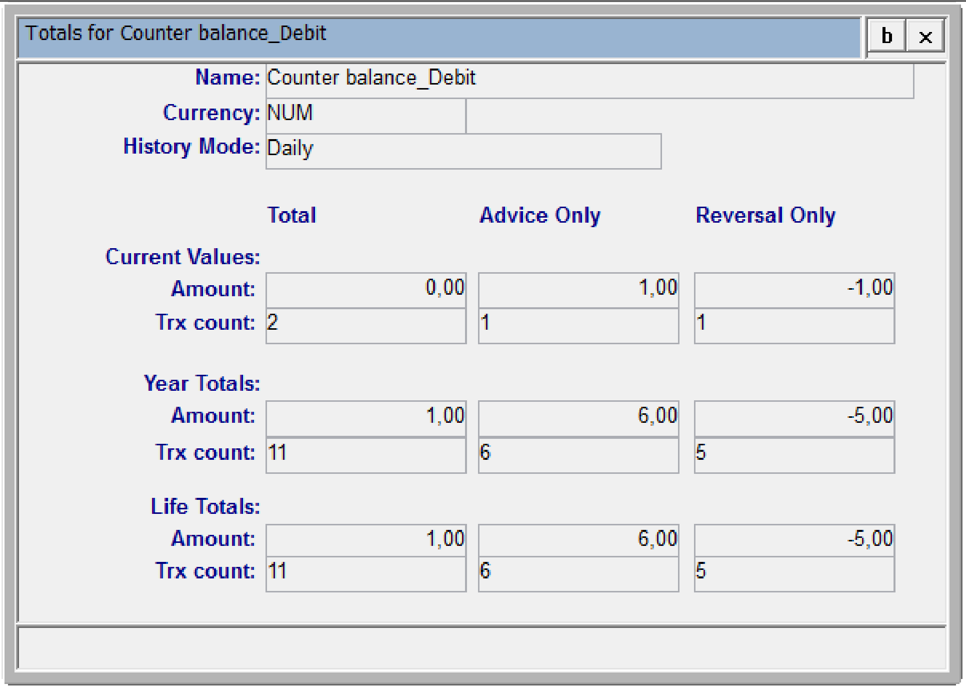
The form contains data for balance types for which the number of transactions is recorded.

The "Counters" form contains the following fields:

- *Balance Type* – information in this field is shown in the format Counter balance <balance type's *Direction* field value>. The value of the *Direction* field determines which transactions will be recorded (for more information, see the description of the *Direction* field in the section "Registering Balance Types").
- *Currency* – the "NUM" value means that the *Amount* field shows the number of transactions.
- *Amount* – total number of transactions determined by the balance type's *Direction* field for a period, minus reversals (for more information, see the description of "Totals" form fields, see Fig. 21).
- *History Mode* – period for which the number of transactions is recorded (see the description of the *History Mode* field in the section "Registering Balance Types").

The [Totals] and [History] buttons in the "Counters" form (see Fig. 20) are shown for balance types with the COUNTER_ONLY; tag that have history mode enabled (for these balance types the *History Mode* field is filled in with a value other than "None", see Fig. 1 in the section "Registering Balance Types".

Clicking the [Totals] button opens a form with aggregated information for the balance type, see Fig. 21.



Totals for Counter balance_Debit

Name: Counter balance_Debit
Currency: NUM
History Mode: Daily

	Total	Advice Only	Reversal Only
Current Values:			
Amount:	0,00	1,00	-1,00
Trx count:	2	1	1
Year Totals:			
Amount:	1,00	6,00	-5,00
Trx count:	11	6	5
Life Totals:			
Amount:	1,00	6,00	-5,00
Trx count:	11	6	5

Fig. 21. Form with aggregated information for a balance type with the COUNTER_ONLY; tag

The form contains the following fields:

- *Name* – name of the balance type in the format "Counter balance <balance type's *Direction* field value>.

  Transactions in a balance type are recorded with consideration of the *Direction* field value (for more information, see the description of the *Direction* field in the section "Registering Balance Types"). For example, for the "Counter balance Debit" balance type, transactions debiting the account are considered.

- *Currency* – the "NUM" value means that information for the number of transactions is shown in this form.
- *History Mode* – period for which the number of transactions is recorded. See the description of the *History Mode* field in the section "Registering Balance Types".
- There are three groups of fields with numeric values for balance types:
  - The "Current Value" field group shows balance type data for the current period (the period is determined by the value of the *History Mode* field).
  - The "Year Totals" field group shows balance type data for the current year (from the start of the calendar year to the present).
  - The "Life Totals" field shows balance type data for the entire time of the contract's existence (from the date the contract was created to the present).

- There are two ways of counting the number of transactions in the form's fields:
  - In *Amount* fields, the number of transactions is shown with a "+" sign (transactions with the "Advice" category) or "-" sign (transactions with the "Reversal" category). This field group is used to count the number of transactions not including reversals:
    - In *Advice Only Amount* fields (number of transactions with the "Advice" category), the number of transactions is shown with a "+" sign.
    - In *Reversal Only Amount* fields (number of reversed transactions – with the "Reversal" category) the number of transactions is shown with a "-" sign.
    - *Total Amount* fields show the total number of transactions not including reversals (a negative value may be shown in this field). The number of *Advice OnlyAmount* and *Reversal Only Amount* (with a "-" sign) transactions is totalled in this field. This filed may contain a negative value.

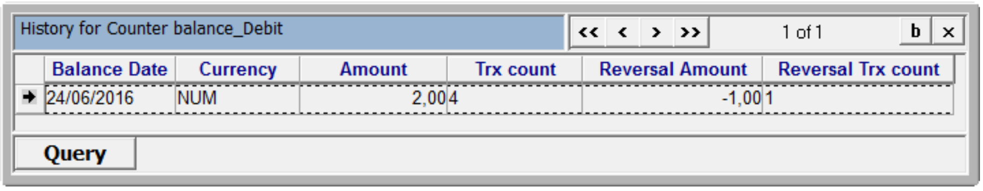
    Example.

    If "1" is specified in the *Advice Only Amount* field and "-1" is specified in the *Reversal Only Amount* field, "0" will be shown in the *Total Amount* field.

    If "1" is specified in the *Advice Only Amount* field and "-3" is specified in the *Reversal Only Amount* field, "-2" will be shown in the *Total Amount* field.
  - In *Trx count* fields, the number of transactions is shown with a "+" sign for both "Advice" and "Reversal" transactions. This field group is used to count the total number of transactions that changed the contract balance.
    - *Total Trx count*– total number of transactions that changed the contract balance. The number of *Advice Only Trx count* (number of transactions with the "Advice" category) and *Reversal Only Trx count* (transactions with the "Reversal" category) transactions is totalled in this field. Shown with a "+" sign.
    - *Advice Only Trx count* – number of transactions with the "Advice" category. Shown with a "+" sign.
    - *Reversal Only Trx count*– number of reversed transactions (transactions with the "Reversal" category). Shown with a "+" sign.

Note that when posting an adjustment, a reversal macrotransaction and "Advice" macrotransaction are created.

Clicking the [History] button in the "Counters" form opens a form with data for saved periods – i.e. depending on the value of the *History Mode* parameter, records are shown for a day/month/billing cycle/year, see Fig. 22.



History for Counter balance_Debit

Balance Date	Currency	Amount	Trx count	Reversal Amount	Reversal Trx count
24/06/2016	NUM	2,00	4	-1,00	1

Fig. 22. History for a balance type with the COUNTER_ONLY marker

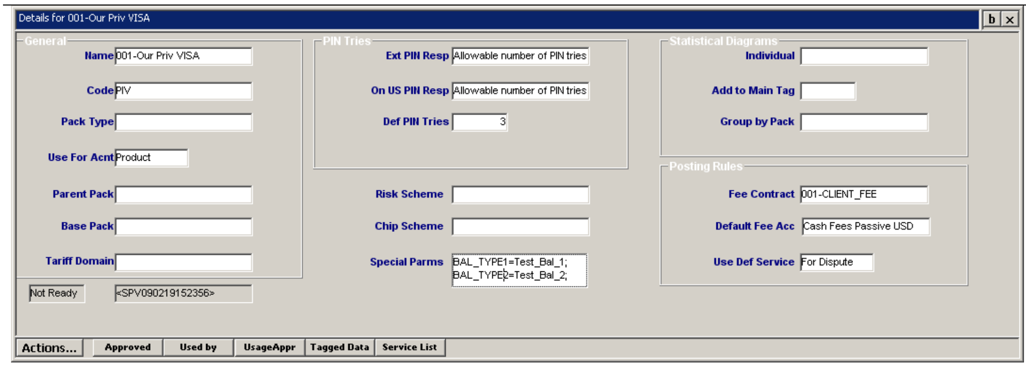
The form contains the following fields:

- *Balance Date* – date on which balance type data were saved.
- *Currency* – currency in which the balance type is calculated.
- *Amount* – total number of transactions without reversals (a negative value may be shown in this field).
- *Trx Count* – total number of transactions that changed the contract balance (total number of "Advice" and "Reversal" transactions).
- *Reversal Amount* – number of reversed transactions (with the "Reversal" category). The number of transactions is shown with a "-" sign.
- *Reversal Trx N* – number of reversals (transactions with the "Reversal category). Shown with a "+" sign.

The [Definition] button in the "Counters" form (see Fig. 20) is used to view data for balance type settings. Clicking this button opens a form with fields that are the same as those in the "Balance Types" form (see Fig. 1 in the section "Registering Balance Types").

3.3 Using Balance Types for Statement Generation

To use balance types during statement generation, set up a Service Package. For this, click the [Details] button in the grid form containing Service Packages. As a result, the "Details for <…>" form (see Fig. 23) will be displayed.



Details for 001-Our Priv VISA

General

Name 001-Our Priv VISA

Code PIV

Pack Type

Use For Acnt Product

Parent Pack

Base Pack

Tariff Domain

Not Ready <SPV090219152356>

PIN Tries

Ext PIN Resp Allowable number of PIN tries

On US PIN Resp Allowable number of PIN tries

Def PIN Tries 3

Risk Scheme

Chip Scheme

Special Parms BAL_TYPE1=Test_Bal_1;
BAL_TYPE2=Test_Bal_2;

Statistical Diagrams

Individual

Add to Main Tag

Group by Pack

Posting Rules

Fee Contract 001-CLIENT_FEE

Default Fee Acc Cash Fees Passive USD

Use Def Service For Dispute

Fig. 23. Form containing additional information on a Service Package

Balance types whose values must be included in a response to a transaction request can be specified in the *Special Parms* field through tags "BAL_TYPE_1= <balance type code>;", ..., " BAL_TYPE_6= <balance type code>;".

This information on balance type values can be used, for instance, to generate contract statements.

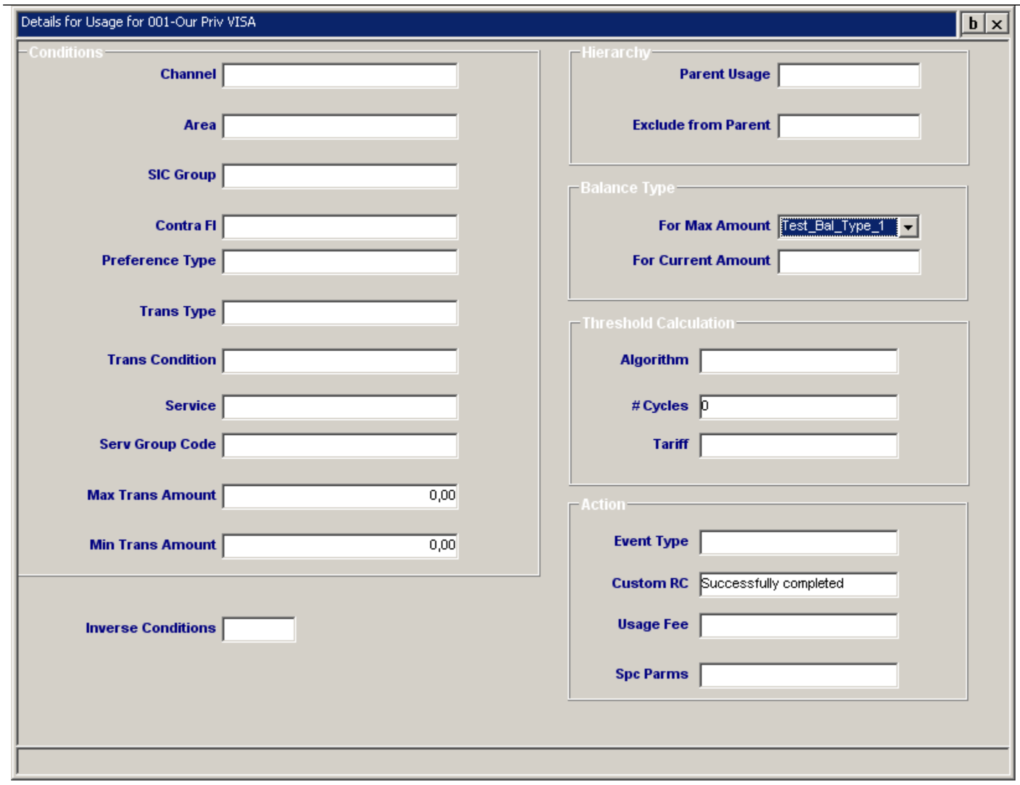
Note that no more than six balance type values can be sent in a transaction response. This is due to restrictions imposed by the ISO 8583 standard, which describes transaction message formats and transfer.

3.4 Using Balance Types While Working with Usage Limiters

Use of balance types while working with usage limiters enhances the way users configure transaction limitations.

To use balance types to work with usage limiters (for details, see document "Usage Limiters"), click the [Details] button in the form "Usage for <name of Service Package>" or "Pers.Usage for <name of contract>".

As a result, the "Details for <...>" form (see Fig. 24) will be displayed.



Details for Usage for 001-Our Priv VISA

Conditions

Channel:

Area:

SIC Group:

Contra FI:

Preference Type:

Trans Type:

Trans Condition:

Service:

Serv Group Code:

Max Trans Amount: 0,00

Min Trans Amount: 0,00

Inverse Conditions:

Hierarchy

Parent Usage:

Exclude from Parent:

Balance Type

For Max Amount: Test_Bal_Type_1

For Current Amount:

Threshold Calculation

Algorithm:

Cycles: 0

Tariff:

Action

Event Type:

Custom RC: Successfully completed

Usage Fee:

Spc Parms:

Fig. 24. Form for entering additional parameters of usage limiters

The *Balance Type* group contains the following fields, determining rules for working with balance types:

- *For Max Amount* – drop-down list of registered balance types (see "Registering Balance Types"); the value of the balance type specified in the field will be used as the maximum allowed total transaction amount (*Max Amnt*) and to determine the available amount when checking a limitation specified in field *Max Pcnt* of a limiter.
- *For Current Amount* – drop-down list of registered balance types (see "Registering Balance Types"); the value of the balance type specified in the field will be used instead of the current value of the total transaction amount counter, that is, it will be added to the current transaction amount when checking a limitation by total transaction amount over a period.

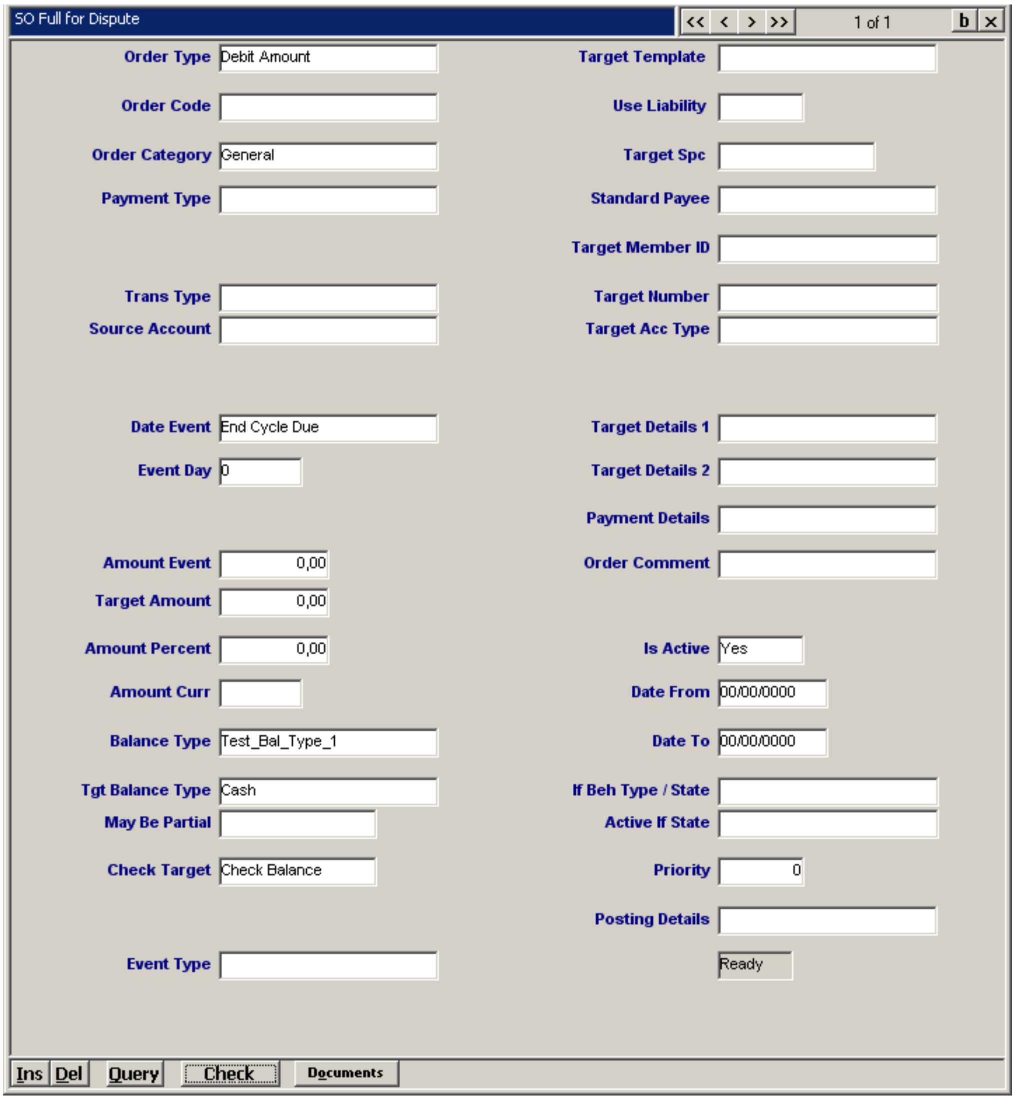
See similar examples of use of balance types when working with usage limiters in items 3 and 4 of section "Examples of Balance Type Use".

3.5 Using Balance Types While Working with Standing Payment Orders

Use of balance types while working with standing payment orders enhances the way users configure transaction limitations.

To use balance types while configuring a standing payment order, select an account template in the "Definition for <name of Accounting Scheme>" form (see section "Full Information about Accounting Scheme Templates" in the Way4 Accounting Scheme Administrator Manual) and click the [SO Full] button.

As a result, the "SO Full for <name of account>" form (see Fig. 25) will be displayed. In the form, click the [Ins] button to add a new standing payment order.



Order Type	Debit Amount	Target Template	
Order Code		Use Liability	
Order Category	General	Target Spc	
Payment Type		Standard Payee	
		Target Member ID	
Trans Type		Target Number	
Source Account		Target Acc Type	
Date Event	End Cycle Due	Target Details 1	
Event Day	0	Target Details 2	
		Payment Details	
Amount Event	0,00	Order Comment	
Target Amount	0,00		
Amount Percent	0,00	Is Active	Yes
Amount Curr		Date From	00/00/0000
Balance Type	Test_Bal_Type_1	Date To	00/00/0000
Tgt Balance Type	Cash	If Beh Type / State	
May Be Partial		Active If State	
Check Target	Check Balance	Priority	0
		Posting Details	
Event Type			Ready

Fig. 25. Form for configuring a standing payment order

The "SO Full for <name of account>" form contains the following fields, which can be filled in using balance types:

- *Balance Type* – drop-down list of registered balance types (see "Registering Balance Types"). The value of the balance type specified in the field will be used to calculate the standing payment order amount instead of the balance of the account.
- *Tgt Balance Type* – drop-down list of registered balance types (see "Registering Balance Types"), used to check whether it is possible to generate a document when it is necessary to control the sum total of available amounts in a group of accounts with this balance type. The field is used as follows: If the *Check Target* field of the "SO Full for <name of

account>" form contains value "Check Available" or "Check Balance" and the *Tgt Balance Type* field contains a balance type, a document will only be generated if the calculated document amount does not exceed this balance type value (for details on standing payment order setup, see section "Configuring Standing Payment Orders" in the Standing Payment Orders Administrator Manual).

Using balance types, it is possible to set up charge of a monthly fee that equals the specified percent of the loan amount used over this month. See similar examples in item 1 of section "Examples of Balance Type Use".

4 Examples of Balance Type Use

1. It is necessary to set up a fee that equals 10 percent of a loan amount and is charged to an account at the end of a billing cycle.

   The following configurations can be used to perform this task:

   - Register balance type "Fee_1".
   - Select balance type Fee_1 in field *Balance Type* of account templates "Cl Loan", "Cl Paym Due" and "Cl OVD" of an Accounting Scheme.
   - In the "Cl Fee" account template, set up a general standing payment order with the following parameters:
     - ♦ In the *Order Type* field, specify "Credit Amount".
     - ♦ In the *Order Category* field, specify "General".
     - ♦ In the *Date Event* field, specify "End Cycle Due".
     - ♦ In the *Balance Type* field, select balance type "Fee_1".
     - ♦ In the *Amount Percent* field, specify "10" if the ORDER_PCNT_RULE global parameter (see section "ORDER_PCNT_RULE" in the Way4 Global Parameters Administrator Manual) is set to "I"; if the default parameter value is used, *Amount Percent* must contain "90".
     - ♦ In the *Check Target* field, specify "Advice".
     - ♦ Specify the bank account to which fees charged to clients will be transferred as a payee.

   After this setup, the value of balance type "Fee_1" will be calculated as the sum total of balances of accounts "Cl Loan", "Cl Paym Due", and "Cl OVD". At the end of a billing cycle, the standing payment order will be activated, and the fee amount equal to 10% of the loan amount (i.e. 10% of the value of balance type "Fee_1") will be transferred from the client account "Cl Fee" to the bank's revenue account.

2. When a client falls past due, it is necessary to charge a fee that equals 10 percent of the overdue amount. If another loan type (loan interest, technical overdraft) falls past due, the fee is not charged again.

   The following configurations can be used to perform this task:

   - Register balance type "Bal_for_Fee" and specify value "Fee_1" in the *Code* field and value "Open/Close" in the *Is State* field.
   - Register a new Event type for issuing contracts, specifying the value corresponding to the balance type code, i.e. "Fee_1", in the *Code* field and

one of the fee types registered in the system in advance, e.g. "Test Fee Type", in the *Fee Type* field.

- Select balance type "Bal_for_Fee" in the *Balance Type* field of overdue loan account templates (for example, "OVD1", "OVD2", and "OVD3") in the Accounting Scheme.
- In the Service Package, set up a miscellaneous service with value "Test Fee Type" in the *Fee Type* field and value "10" in the *%* field.

After this setup, the Event with code "Fee_1" will open in the system if an overdue credit loan appears, i.e. if the balance of any of accounts "OVD1", "OVD2", or "OVD3" becomes other than zero. When this Event opens, a fee equal to 10% of the overdue amount (i.e. 10% of the "Bal_for_Fee" balance type value) will be charged to the client.

3. It is necessary to set up a minimum balance that can be used for retail transactions, but cannot be cashed. The minimum balance amount is 10% of the client's own funds.

   The following configurations can be used to perform this task:

   - Register a balance type "Bal_type_1" with the reserved value "TOTAL_BALANCE" in the *Code* field.
   - In the form for entering and editing limiters "Usage for <name of Service Package>", add two limiters with value "90" in the *Max Pcnt* field.
   - Set up the added usage limiters by filling in the "Details for <...>" form: for the first limiter, select "ATM" in the *Trans Type* field, for the second one, "Cash"; in the *For Max Amount* field, specify value "Bal_type_1" for both limiters.

   After this setup, the value of balance type "Bal_type_1" with the reserved code "TOTAL_BALANCE" will reflect the contract balance value. Two limiters are now set up in the system for cash withdrawal in ATMs and POS terminals, which means that clients cannot cash more than 90% of their own funds. There is no limiter for using clients' own funds for retail transactions.

4. It is necessary to set up a limiter for the maximum amount in a contract's special card account. The maximum amount in the special card account is USD1000; therefore, if the current balance is USD900, USD100 can be credited to the account, but USD101 cannot.

   The following configurations can be used to perform this task:

   - Register balance type "Fee_for_Max".
   - In an Accounting Scheme, select balance type "Bal_for_Max" in the *Balance Type* field of the account template "Cl Deposit".

- In the form for entering and editing limiters "Usage for <name of Service Package>", add a limiter with value "Credit" in the *Usage Type* field, value "1000" in the *Max Amnt* field, and value "USD" in the *Amnt Curr* field.
- Set up the added usage limiter by filling in the "Details for <...>" form and selecting value "Bal_for_Max" in the *For Current Amount* field.
- After this setup, the value of the "Bal_for_Max" balance type will reflect the status of the special card account, i.e. "Cl Deposit". A usage limiter is now set up in the system that will forbid a transaction if the balance type value plus the transaction amount exceeds USD1000.