Processing Transactions in the WAY4 Acquiring Module

Contents

Introduction

This document describes features of processing transactions by the WAY4 acquiring module.

The document is intended for bank and processing centre employees who are responsible for WAY4 operation online.

When working with this document, it is recommended to use the following references from the WAY4 documentation series:

- "Installing and Configuring WAY4™ Transaction Switch Platform-Based solutions".
- "WAY4™ NetServer"
- "Acquiring Module User Manual"
- "POS Network Management"
- "ATM Controller"
- "Documents"
- "Interchange Routing"
- "Transaction Condition Classifiers".

The following notation is used in the document:

- Warnings about potentially hazardous situations or actions are marked with the  sign.
- Messages marked with the  sign contain information about important features, additional options, or the best use of certain system functions.

Chapter 1. Overview

The WAY4 acquiring module is responsible for processing and routing transaction messages received from different devices (ATMs, payment terminals, and others) and through e-commerce, Web banking and SMS banking, etc. channels to payment, bank, and billing systems (for example to pay for mobile phone services), as well as during host-to-host bank communication.

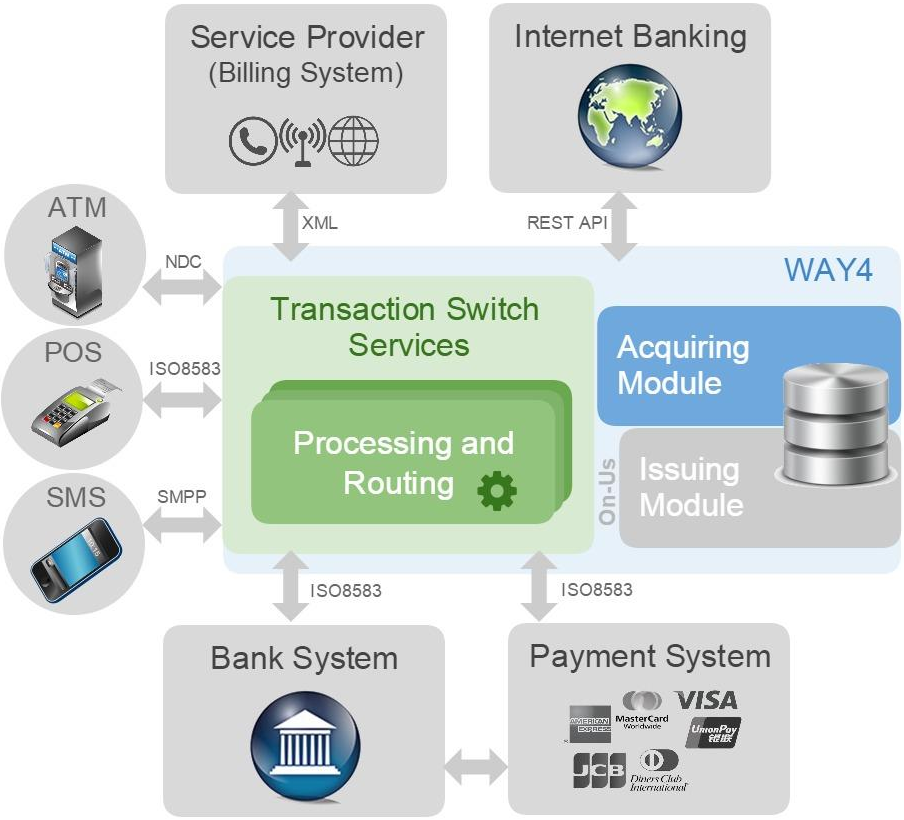

Fig. 1. Scheme of WAY4 interaction with transaction message sources and targets

To be able to perform various operations, information about their participants must have been registered in the WAY4 database (DB). This information includes data about clients, merchants, technical and virtual devices, addressees for routing incoming requests (WAY4 authorisation system, payment systems, billing systems), as well as parameters that determine the business logic for processing these operations. For more information about data that accompanies acquiring transactions, see the document "Acquiring Module User Manual ".

The results of processing transaction messages are recorded by the acquiring module as documents containing information that is required for financial entries, clearing, work with disputes, and monitoring transaction activity.

General information about the structure and possible content of documents is provided in the document "Documents".

This document describes specifics for processing transactions and generating the corresponding transaction documents by the WAY4 acquiring module and provides parameters that determine how these procedures are performed.

Chapter 2. Transaction processing

The procedure for processing a transaction in the acquiring module is determined by a number of conditions, such as: transaction message source and target types, communication protocol specifics, card specifics and card affiliation, restrictions that are set in WAY4, etc. Regardless of the results of transactions, their parameters are always recorded as documents in the WAY4 DB.

When processing non-financial transactions such as balance inquiries, mini-statement requests, etc., the acquiring module generates a preauthorization (PreAuth) document only. When processing transactions that result in fund activity and changes in account balances, a financial (Fin) document is created. The acquiring module aslso supports a number of transactions that are accompanied by generation of chains of linked preauthorization and financial documents. After a final cryptogram is received when processing EMV card transactions, the acquiring module generates a "PostAuth" document that is linked to the corresponding financial document.

Transaction processing procedure

Transaction messages arrive in WAY4 on data transmission channels (usually using an TCP/IP stack) through specialized adapters and are then input to processing and routing services (WAY4 software components that process transactions together with the WAY4 DB). When it gets a message, the corresponding service parses and formats it for analysis, checking and sending to the recipient.

Message processing is split into certain phases that are related to the service contacting the acquiring module and recording transaction info as documents in the DB. Phase order is as follows (using a financial transaction as an example):

- The message's content is parsed, and the transaction type is identified.
- The message (for example, received from an ATM) is converted to an internal format to worki with fields.
- The DB is contacted (PHASE_1).

  Based on data from the message, the following checks are made:

  - In the WAY4 DB information is registered about a device with this identifier (Terminal ID, for more information, see "Support of non-unique device identifiers").

- This device is configured in the acquiring module (typed by a set of parameters) and has a status indicating that it is in service.
- The device contract's status allows the transaction.

  A check is made that the contract status is "Ready" or "Not Ready", but in the latter case, only for a reason that is not related to a change in the following:

  - *Acnt Scheme* – Account Scheme
  - *Service* – Service Package
  - *Currency* – contract currency
  - *Liab Contract* – higher-ranking contract in a "Liability" hierarchy
  - *Product* – Product

  If any of these parameters has changed and the device contract has the "Not Ready" status, all attempts to perform transactions on this terminal will be rejected.

  To process transactions in WAY4, it is necessary for the device contract to have the "Ready" status regardless of a higher-ranking contract's state. If after the higher-ranking contract has been approved, the device contract remained in the "Not Ready" status, all attempts to perform transactions on the device will be rejected.
- A transaction was made on a device (transaction message was sent) after the device contract was opened and before it expired.
- WAY4 is not currently processing another transaction on this device.

  Virtual terminals with the tag STATELESS=Y; in the *Special Configuration* field of the "POS Types" form for configuring the terminal type are an exception.

  In WAY4, Stateless terminals are used to interpret transactions that are not made at physical devices, but, for example, through remote banking service (SMS Banking, Web Banking, etc.) or e-commerce channels.
- The transaction was made within the working time interval set in WAY4 for this device (for example, the *Working Time* value of the ATM setup form "ATM for …").
- For terminals that support Batch Upload, that the allowed interval set for this operation is not over.

The maximum interval for exporting financial cycle totals is determined by the value of the Batch Upl Max Days field in terminal type settings ("POS Types" form). If after a cycle has been opened, export was not performed during this period, the POS terminal will not be allowed to perform online operations (until the Batch Upload procedure has been performed).

- The card number is an allowed length and is correct according to the Luhn algorithm.

  The check is made for transactions with "manual" entry of the card number, for example when transferring funds to a card with a specific number.

- A card contract is registered in WAY4 for the card used in the transaction (the device and card can belong to different financial institutions (Interbranch routing is allowed), or a contract for routing (see the document "Interchange routing") to the corresponding payment system (search by BIN).

- Services that allow the current transaction are registered in device contract and card contract Service Packages or in routing contract Service Packages.

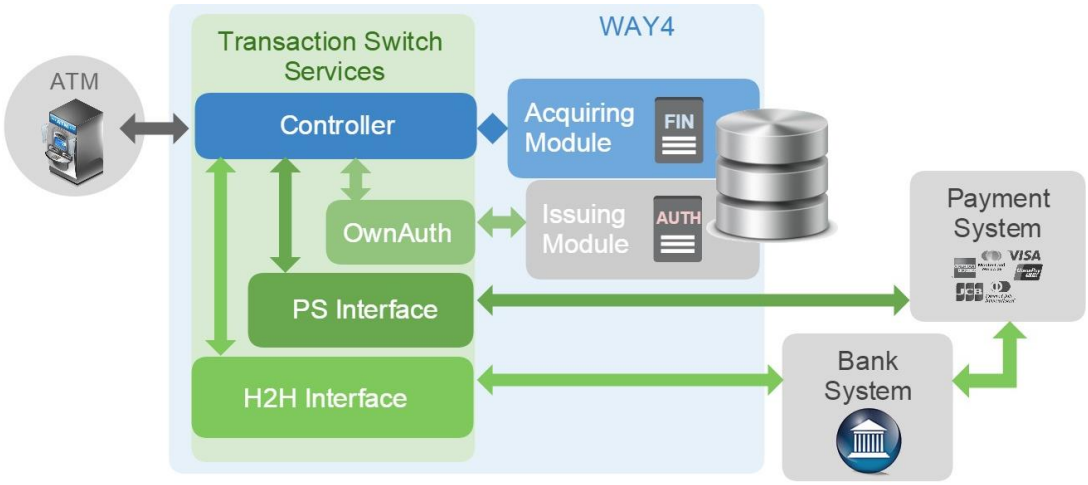

Fig. 2. Procedure for processing a transaction depending on card affiliation

During the checks, depending on the type of message that was received, a preauthorization or financial document (transaction message type *Is Authorization* = "PreAuth" or "Fin") is created in the WAY4 DB. This document is filled in with data from the message and with data that is required for the document to be processed in WAY4 (see "Procedure for generating acquiring documents"). If the checks are passed, the document will get the "Suspended" status.

- If the card that was used for the transaction is in the range of cards registered in the WAY4 issuing module, the message is sent to the WAY4 on-us authorization service.

  An authorization document with the "InActive" status is created in the WAY4 DB. The standard authorization procedure is performed, with the necessary checks, funds hold, and generation of an authorization code. If authorization is successful, the status of the corresponding document will change to "Posted".

- If the card that was used for the transaction was issued by a third-party bank, according to BIN range groups registered in WAY4 and their related data transmission channel identifiers, a rule is determined for routing the message to the appropriate recipient (for example, to the service that provides an interface for communicating with the payment system). The message is transmitted to the recipient for authorization of the transaction.

- If a response is received with the results of authorization, the DB is contacted (PHASE_2). The financial document created earlier is updated, and information is recorded about the authorization related to it (for example, the authorization code that was generated). If this phase is completed successfully, the preauthorization document gets the "Posted" status, and the financial document's status becomes "Waiting".

- After transaction processing is completed, a response message is generated which contains the resulting code that is sent to the source (device).

Main schemes for processing online messages

Depending on the types (MTID) of transaction messages that are received, WAY4 supports different schemes for their processing (using the example of processing a payment transaction through a terminal that is registered in the WAY4 acquiring module; "Dual Message" mode):

- "Financial Request" processing:
  - Based on the data from message 0200 – "Financial Request" received from a terminal, a financial document is created in WAY4.
  - If the transaction was made with a third-party bank's card, message 0100 – "Authorization Request" is generated for transmission to the payment system and further authorization.
  - Based on the response message 0110 – "Authorization Request Response" that is received, the results of authorization are recorded in the financial document that was created earlier, and the appropriate status is set.

- Message 0210 – "Financial Request Response" with the code indicating the transaction result is generated for the payment terminal.
- The financial document is processed, and data registered in it is exported in clearing information by standard WAY4 procedures.

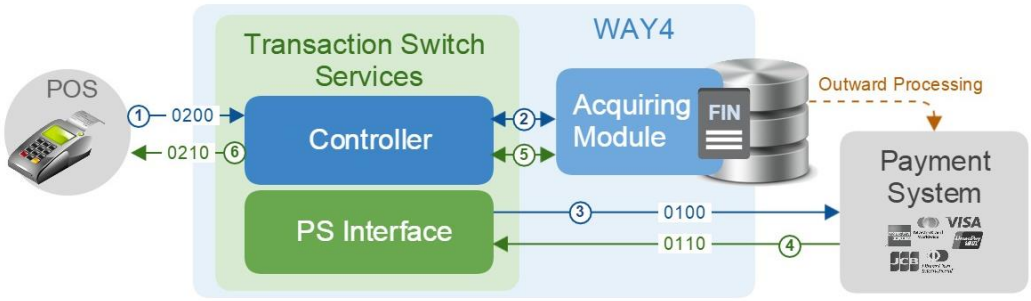

Fig. 3. "Financial Request" processing scheme

- Processing according to the scheme "Authorization Request" + "Financial Advice":
  - Based on data from message 0100 – "Authorization Request" received from a terminal, a preauthorization document (*Is Authorization* = "PreAuth") is created in WAY4.
  - If the transaction was made with a third-party bank's card, message 0100 is transmitted to the payment system and further authorization.
  - Based on the response message 0110 – "Authorization Request Response" that is received, the results of authorization are recorded in the preauthorization document that was created earlier.
  - Message 0110 with the code indicating the authorization result is sent to the payment terminal.
  - When the "Authorization Confirmation" operation that confirms the need to debit the amount indicated in the authorization is performed at the terminal, message 0220 – "Financial Advice" is transmitted to WAY4. Based on the data that is received, a search is made in the WAY4 DB for information about the authorization that was made earlier, financial amounts are matched, and a financial document with the "Waiting" status is created, related to the "PreAuth" document created earlier, whose status changes to "Posted".
  - A response to advice 0230 – "Financial Advice Response" with the code indicating the result of "Authorization Confirmation" is sent to the terminal.
  - The financial document is processed, and data in it is exported in clearing information by standard WAY4 procedures.

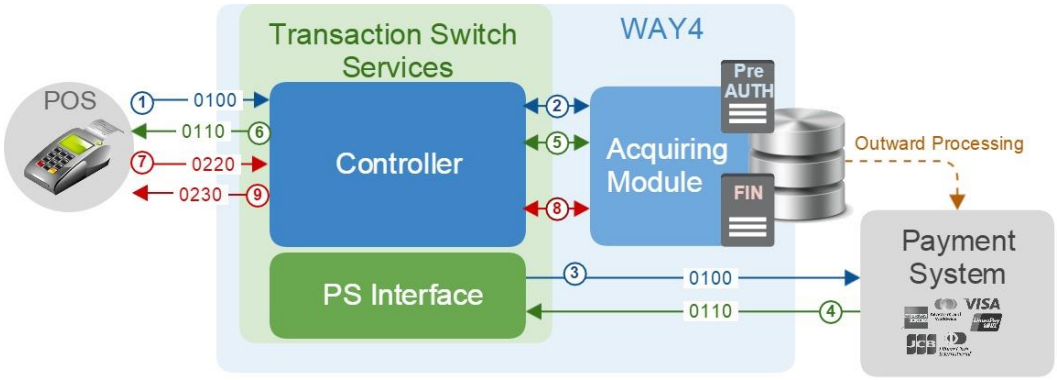

Fig. 4. "Authorization Request" + "Financial Advice" processing scheme

This scheme is often used to support a class of transactions related to deferred payment of services, when the final amount is generated according to the results of using these services. These transactions include, for example, card rental, hotel booking ("hotel transactions") or online purchases when the final amount to be debited is generated when the goods are shipped. In these cases, several preauthorizations and confirming financial transactions in a chain can be made. For more information about setting up these operations, see the document "POS Network Management".

- Processing according to the scheme "Financial Request"+"Final Advice".

  Processing according to this scheme is usually recommended for chip card transactions (according to the EMV scheme on the device). In this case, at the end of the transaction, the terminal transmits a final cryptogram that must be exported to the issuer in clearing information.

  The scheme is built on processing messages described in the two previous examples, but with the following specifics:

  - First, messages 0200/0210 are exchanged. According to the results of processing these messages, a financial document is created (like the aforementioned scheme for processing "Financial Request").
  - Then, messages 0220/0230 are exchanged (cryptogram received, registered in the DB and linked to the financial document, generation of a response to the device).

    According to the results of processing message 0220, a document is created with the category *Is Authorization* ="PostAuth". The cryptogram that was received is saved as additional data for the document (Full → Documents Input & Update → Doc - General Form → All Docs → [Addenda]). In the *Add Data* field of the financial document that was created earlier, the tag HAS_POSTAUTH=Y is set. This value indicates that on export of clearing information for the financial document, it is necessary to get the related PostAuth document.

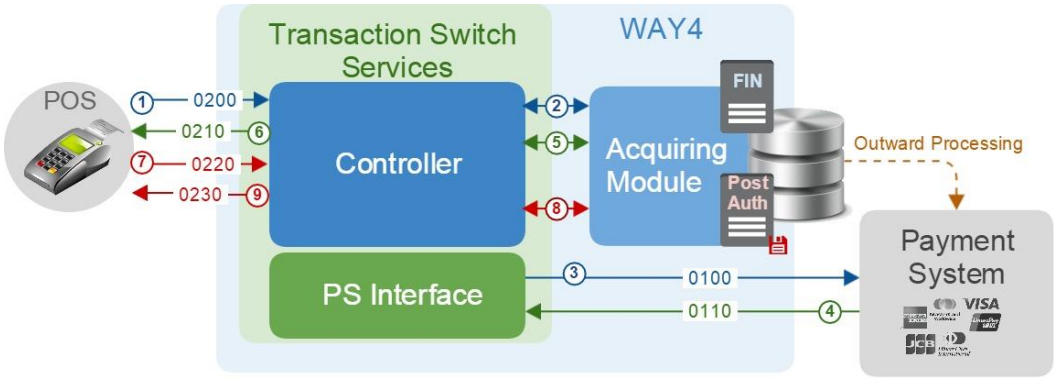

Fig. 5. "Financial Request" + "Financial Advice" processing scheme

Procedure for generating acquiring documents

Information for all types of transactions made with WAY4 acquiring module contracts is registered by creating documents that result from the following:

- Acceptance of online messages from a device network, including through internet and SMS banking channels.
- Acceptance of offline message from a device network when data are exported for financial cycle reconciliation.
- Import of files from bank systems, processing systems of other banks.
- Internal system processes; for example, resulting from Events, standing payment orders, usage limiters that cause fees to be charged, processing other documents, etc.
- Manual input of data.

This section describes specifics of generating documents (using the example of filling in "Full Info for All Docs" form fields, Full → Documents Input & Update → Doc - General Form → All Docs → [Full Info]) when processing online messages.

When an online message is accepted, data received from the message are registered in the document, as well as data received from the WAY4 DB as the result of interpreting the characteristics of the operation for its further processing and use in processes for interacting with recipients.

Sources and recipients of transaction information

A message's source contract number (*Source Contract #* field) is determined among registered contract devices according to the Terminal ID from the transaction message.

Contract search when non-unique Terminal IDs are used is described in the section "Support of non-unique device identifiers".

A document's *Source Member Id* field value (identifier of the bank that acquires the device) is set according to the value of the *Bank Code* field for the device's

financial institution (menu item "Full → Configuration Setup → Main Tables → Financial Institutions").

If non-unique terminal IDs are used (see "Support of non-unique device identifiers"), the value of the *Source Member Id* field is set according to data from the message. This value is used as one of the criteria in searching for a device contract. In turn, for the device contract, *Member Id* is set when approving the contract based on the acquirer's parameter table data ("Bank Acquiring Parameters" form, menu item "Full → Configuration Setup → Main Tables → Bank Acquiring Parameters").

A message's target contract number (*Target Contract #* field) when the device and card belong to the same bank is determined among registered card contracts according to the PAN from the message. If the transaction was made with a card issued by a third-party bank:

- According the number of the card in the BIN table ("BIN Table" form, menu item "Full → Configuration Setup → Main Tables → Bank Acquiring Parameters") the number of the corresponding BIN group is determined.
- For the BIN group, a routing rule is determined (routing contract (target contract) and channel (document's *Target Channel* field) for transmitting the message to the appropriate recipient).
- The *Target Member Id* field value is set according to the *Member* field of the "BIN Table" table.

For more information about the principles of using routing contracts, see the document "Interchange Routing".

When certain internal operations are performed (not related to transactions), specific documents of the "Additional Online Service" class (*Service class*=X) are generated, for example as a result of service operations with ATMs (taking out of service, changing operation parameters, etc.) . The *Source*|*Target Contract #* fields of these documents can contain similar values, for example ATM's Terminal ID according to which the corresponding service operation was performed (operation ID is specified in the document's OPID tag.)

Transaction classification attributes and parameters

The main attributes that classify a transaction message for its further processing are determined in the following order:

- The device type is determined, based on data registered in the WAY4 DB (for example, the *POS Type* field of the "POS for <device name>" form).

- In the dictionary of device types registered in WAY4 (for example "POS Types", menu item "Full → Configuration Setup → Merchant Device Setup → POS Types"), the protocol (*Protocol* field value) is determined for the corresponding device type.
- Based on the operation code (generated by the service that received and identified the operation type) and the protocol found earlier, a search is made for the corresponding operation in the dictionary of device operations registered in WAY4 (for example, "POS Operations", "Full → Configuration Setup → Merchant Device Setup → Device Dictionaries - Views → "POS Operations ").
- Based on the operation record's data, the document's *Service Class*, *Request Category*, *Transaction Type* fields are filled in.

  The *Is Authorization* field can be filled in with "Fin", "PreAuth" or "PostAuth" depending on the *Trans Type* and *Category* field of the operation's record.

The Service (for example, POS Controller) that received the transaction message generates a list of transaction attributes based on the values of specific fields in the message. The list that is generated is normalized using the handbook of possible transaction attributes (see the document "Transaction Condition Classifiers") and is recorded in the document's *Condition Details* field.

According to the list of attributes, conditions in which the card transaction was made are determined (for example, with PIN entry, data read from a magnetic stripe, chip data, etc.). The "Transaction Conditions" handbook is used to match an attribute (group of attributes) with the corresponding condition registered in WAY4. The condition's name (code) is recorded in the document's *Condition* field. Later, when processing the document, this field value is used as one of the conditions to search for a Service registered for this transaction type.

Processing authorization requests

The acquiring module can process the following types of transaction messages:

- PreAuthorized request – preauthorization request, when the final cost of goods/services is not determined. There may be a relatively lengthy period for performing a settlement (financial) transaction (the term for exporting clearing information is determined by payment system requirements, for example, within 30 days).
- Final Authorization – authorization request that assumes a financial operation will be made in a relatively short period (the term for exporting clearing information is determined by payment system requirements, for example, within 7 days).

A preauthorization request attribute is set by the transaction message's source (for example, by payment terminals or e-commerce channels). The absence of this attribute is interpreted by WAY4 as processing a regular authorization (Final Authorization).

In both cases, the results of processing requests are recorded in the WAY4 DB as "PreAuth" documents. In preauthorization documents (PreAuthorized request), the corresponding attribute is set as the tag PREAUTH=Y; in the *Add Info* field.

Processing a transaction chain

Depending on how a merchant operates, the acquiring module can be sent transaction messages that are grouped by the specific business logic of the transactions being made. The acquiring module uses the following mechanisms to identify transaction chains:

A transaction message from a merchant is analysed for a special code (PERS_NAME_REC) that indicates this message belongs to a transaction chain (Deal), registered in the merchant's accounting system. The identifier of the deal can be a receipt number, order number, reservation number, subscription number, etc.

Based on PERS_NAME_REC, information about the deal is registered in the WAY4 DB. A link to the corresponding deal is registered as the PERS_NAME_REC tag value in all documents that are generated in the transaction chain. Information about registered deals and about documents linked to them is available in the "Deal for All Docs" form that is opened with the [Deal] button from the "All Docs" form).

If an authorization message contains PERS_NAME_REC and information about the number of expected receipts (about the number of expected settlement transactions) and the "Partial shipments" feature is enabled for the terminal (see "Processing partial shipment transactions"), information about the corresponding deal is recorded in the WAY4 DB. A transaction chain is identified by the composite key "PAN + PERS_NAME_REC + Merchant ID".

If a transaction message contains PERS_NAME_REC, and a refund transaction is being made (see "Processing purchase refund transactions"), the chain of transactions made earlier is determined by the composite key "PERS_NAME_REC + Merchant ID".

If the transaction message does not contain PERS_NAME_REC but the transaction was made on a device with support of hotel transaction chains (for this terminal type, the *Hotel Operation Mode* field contains "Multiple Auth – Single Compl" or "Multiple Auth – Multiple Compl"), the chain is identified by the composite key "PAN + Merchant ID" (by the client card number and

merchant identifier). In this case, the value of the *Capture Period* field is considered (see the document "POS Network Management"). A deal is not registered for these messages.

Processing partial shipment transactions

The WAY4 acquiring module makes it possible to process transactions for purchasing goods through internet services that aggregate offers from different merchants. The client pays for a set of items from different suppliers in one transaction ("Authorization"), however, the client's account is debited ("Authorization Confirmation") when the item is shipped (delivered). In WAY4, a chain of several partial settlement transactions corresponding to the authorization is recorded ("Single Auth – Multiple Capture" mode).

A mandatory condition for processing these transaction chains is that the order number (PERS_NAME_REC). is present in transaction messages. An authorization message must also contain the number of expected "Authorization Confirmation" transactions. Support of this feature for the corresponding terminal type must be enabled in acquiring module settings.

This is an optional feature and requires a separate agreement with OpenWay.

Processing purchase refund transactions

The WAY4 acquiring module supports processing full or partial refund for a purchase. The refund can be made at any store in a merchant network, regardless of where the purchase was made. Several refund transactions can be made in a transaction chain (a client may return separate purchases at different times).

The main criteria to search a chain of purchase and refund transactions are Merchant ID and PERS_NAME_REC. It is mandatory for the latter to be transmitted to the acquiring module in the refund transaction message.

To correctly process a refund, the device registered in WAY4 must have access to the corresponding operation with the REFUND=Y; attribute (see "Purchase Return/Refund" operation parameters in the acquiring module's standard settings; menu item "Full → Configuration Setup → Merchant Device Setup → Device Dictionaries-Views → POS Operations").

When a transaction message for a refund is received, a search is made for the chain for transactions related to it. The amount of funds spent in the transaction chain minus refunds that have already been made is determined. If no chain is found or the calculated amount is less than that specified in the refund transaction message, the corresponding operation is declined.

The need to decline refund transactions in the aforementioned situations is determined by system settings: the global parameter DECL_PURCHRET_IF_ERR or tags in with the same name in Service Package or contract settings. By default ("Y" value), these transactions are declined.

When a refund transaction is processed, a financial document is created in which the REFUND tag (indicates a purchase refund) and PERS_NAME_REC tag (indicates belonging to a deal) are specified. If the transaction was not declined due to missing information about the deal or a refund amount exceeding the purchase amount, the DECL_PURCHRET tag is recorded in the document.

Processing MIT

Merchant Initiated Transactions (MIT) are transactions related to a previous transaction that was initiated by a bank client but made in their absence, without checking the cardholder.

To process these transactions (card-not-present) correctly, the sender of a transaction message to the WAY4 acquiring module must ensure the message includes data according to standard for supporting MIT.

The ability to process these transactions in the WAY4 acquiring module is optional functionality and requires an additional agreement with OpenWay.

The following transaction types are considered to be MIT.

Reauthorization

Reauthorization is an MIT when the allowed interval set by the payment system for the time between the original authorization and completion of the order or service is exceeded.

There are two main scenarios for reauthorization:

- Split or deferred shipping of goods that were ordered through e-commerce channels. If for some reason goods are shipped after the allowed time interval has expired, the merchant initiates a reauthorization request to ensure that the customer's account has the required amount.
- Long hotel stays, long car rental or cruises. Reauthorization is performed when the time interval allowed for extending the service expires.

The results of processing this type of transaction message are recorded in WAY4 as a document that contains the MRC=1903; tag in the *Add Info* field.

Resubmission

Resubmission is an MIT in cases when goods and services were provided to the cardholder, but an authorization request was rejected due to insufficient funds

for their payment. In this case, a resubmission is a collection of the unpaid debt from the cardholder.

This transaction type is only available to certain merchant categories and within a time interval (from the time the rejected authorization was made) set by the payment system.

The results of processing this type of transaction message are recorded in WAY4 as a document that contains the MRC=1901; tag in the *Add Info* field.

Delayed Charges

Delayed charge is an MIT when additional payment is required for services provided after they were initially paid for. This transaction type is typical for the hotel industry and vehicle rental.

The results of processing this type of transaction are recorded in WAY4 as a document that contains the MRC=1902; tag in the *Add Info* field.

Incremental Authorization

Incremental authorization is an MIT during the consumer's use of services if the amount of the original preauthorization is not sufficient to pay for them. Incremental authorization is not a replacement for original authorization and adds to the amount that was initially authorized. In WAY4, these transactions are recorded as a chain of documents linked with a unique identifier.

An authorization chain can be completed by a final settlement transaction ("Authorization Confirmation") or accompanied by several settlement transactions. According to the results of their processing, documents are created in WAY4 with data that are subsequently exported in clearing information. The amount of financial documents may differ from the amount of preauthorization documents created earlier, being either greater or less than the preauthorization amount.

New incremental authorizations will be rejected if clearing information was exported for the original transaction. In this case, a request for a new authorization must be made with the necessary reason code (for example, as "Reauthorization" or " Delayed Charges").

The corresponding modes for processing these transaction chains are determined by WAY4 acquiring module settings, see the document "POS Network Management".

This transaction type is typical for the hotel industry and vehicle rental.

The results of processing this type of transaction are recorded in WAY4 as a document that contains the MRC=1900; tag in the *Add Info* field.

No Show

No Show is an MIT when the customer wants to cancel services (for example, cancel a hotel reservation) within initially set rules and guarantees for the use of the service. The conditions and size of the charge is determined by the merchant's policy to which the customer consents.

The results of processing this type of transaction are recorded in WAY4 as a document that contains the MRC=1904; tag in the *Add Info* field.

Installment Payment

Installment payment is an MIT made in a series of similar transactions based on an agreement entered into earlier with the customer on conditions (schedule and amount) to pay for goods and services acquired earlier.

The results of processing this type of transaction are recorded in WAY4 as a document that contains the RPI=I; tag *Add Info* field. The document for the first transaction in the chain initiated by the client is marked with the FIR=Y; and RPI=FI; tags.

Recurring Payment

A recurring payment is a MIT made in a series of transactions with fixed time intervals (not exceeding those set by the payment system), that is related to acquiring goods or using services on a regular basis (renewing a subscription, paying for mobile phone services, internet access, etc.).

The results of processing this type of transaction are recorded in WAY4 as a document that contains the RPI=S; tag in the *Add Info* field. The document for the first transaction in the chain initiated by the client is marked with the FIR=Y; and RPI=FS; tags.

Processing reversals

The acquiring module supports processing messages about reversal of transactions that have already been made. A reversal can be made manually by a cashier or automatically by a terminal, if within a certain time period a response was not received to a request that was sent earlier.

Unlike a refund which is an independent transaction (that can be reversed or disputed in a dispute cycle), a reversal is a continuation of a previous transaction (must contain data that unequivocally identify this link).

When processing a reversal request, the acquiring module searches for the document that corresponds to the original transaction. The search is usually made for a match in RRN (Reference Retrieval Number) or STAN (System Trace Audit Number).

A reversal can be made for the entire amount of an original transaction or can be partial. Automatic reversal is only possible for the full amount that corresponds to the original transaction (with the exception of ATMs with note-by-note dispensing when the amount of the automatic reversal corresponds to the amount that was not dispensed due to device failure).

An automatic reversal transaction assumes reversal of the last transaction that was made at a device. The result of processing an automatic reversal is recorded in the WAY4 DB as a document with the AUTO=-; tag. The time period during which a technical reversal can be made is determined by system settings (see the description of the *AutoRepeat/Reversal Time* parameter in the document "POS Network Management").

Rules for processing messages about reversals in a dispute cycle (for example, after receiving a chargeback from the issuer), are determined by the global parameter DECLINE_REV_AFTER_CHBK (see the document "WAY4 Global Parameters").

Support of non-unique device identifiers

When several acquirers are included in single processing of card transactions, a situation arises in which the uniqueness of identifiers for acquired terminals is not guaranteed.

The acquiring module implements the ability to process transactions when transactions are made at terminals registered in WAY4 with the same identification codes (non-unique Terminal ID). In this case, the following parameters are used to identify a terminal:

- Terminal ID (TID) – device instance ID
- Merchant ID (MID) – merchant ID
- Acquirer Member ID (MBR) – code of the financial institution that acquires the terminal (it is assumed that MID and TID values are unique for each MBR).

Together with MBR code, a special processing ID can be used (PROCESSING_ID), that is set as a device contract parameter, in the *Add Info* field. This identifier does not unequivocally determine a financial institution and is used to limit the naming scope of TID and MID to guarantee the uniqueness of a TID and MID combination within one scope. Therefore, PROCESSING_ID makes it possible to use non-unique Terminal ID within the same financial institution.

Searching for a device contract

Rules for using the aforementioned parameters as key attributes when searching for the appropriate contract on the acquirer side are determined by

the settings of the service that communicates with the device. In the controller configuration, a matching mask is set that determines which of the key attributes MBR (or PROCESSING_ID), MID, TID must be used to search for a device contract.

For services that operate on the WAY4 Transaction Switch platform, a matching mask is set as the value of the deviceIdentificationScheme parameter in the special_processing_options section (in the configuration of the ISOH2HAdapter service) or in the specialProcessingOptions section (in the configuration of the POSController service). Possible values:

- BY_TERMINAL
- BY_MERCHANT
- BY_MERCHANT_AND_TERMINAL
- BY_ACQUIRER_AND_TERMINAL
- BY_ACQUIRER_AND_MERCHANT
- BY_ACQUIRER_AND_MERCHANT_AND_TERMINAL

By default, TID is used for searches.

Setting device parameters

For a device contract to be found according to this rule (see "Searching for a device contract"), values of the corresponding parameters must be set for the device. To do so, the MATCHMASK tag is used. This tag's value is set in the *Additional Parms* field of the "Full Info for Bank Acquiring Parameters" form ("Full → Configuration Setup → Main Tables → Bank Acquiring Parameters" → [Full Info]"). The tag's value is set as a three-bit mask where the value ("1"/"0") in each of the three positions indicates whether it is necessary to set the corresponding device parameter. The order of positions (from left to right) corresponds to the following order: MBR, MID, TID. For example, when the value MATCHMASK=011 is set and a device contract is approved ("Approve" is performed), MID and TID values will be recorded in the corresponding fields of the device's record. "0" will be set in the field determining the MBR, value. Further, a contract will be searched for according to the values of the MID and TID parameters.

Document processing

To correctly process a document that was generated earlier when processing a transaction with support of non-unique device IDs, conditions for determining the source contract must be defined. These rules are set in the parameters of the corresponding acquirer bank, in the *Additional Parms* field of the "Full Info for Bank Acquiring Parameters" form (menu item "Full → Configuration

Setup → Main Tables → Bank Acquiring Parameters" → [Full Info]"), using DEVICE_IDT_SCHEME tag values:

- BNK_MID_TID – a search is made according to a composite key
- MBR_MRCH_TERM – a search is made according to a composite key with support of PROCESSING_ID.

For documents that are generated for standing payment orders, parameters used to identify a contract are determined by the value of the global parameter ALLOW_DUPL_TERMINAL_ID (see the document "WAY4 Global Parameters").

Support of co-badge card transactions

When transactions are made using a co-badge card (joint card of two or more payment systems) through the payment applications of various payment systems, the same PAN can be used. In this case, it is not possible for the acquirer to correctly search for a routing contract by card BIN, including in conditions for unknown selection of a card application on the terminal side. In a number of cases, requests for a single PAN must also be routed depending on the methods used to read the card. For example, if the device fails to read a chip (Fallback) and the magnetic strip is then read, a request must be sent to a specific payment system.

For transactions to be processed correctly in these situations, the WAY4 acquiring module analyses the co-badge card's payment application ID (Application ID, AID) sent in EMV data for the request (tag 84 – "DF Name" and/or 4F – "ADF Name").

When processing the transaction message that was received, the acquiring mode records this AID in the document that is created, as the value of the EMV_AID tag (*Add Data* field).

To correctly search for a target contract in the WAY4 DB, the corresponding Interchange routing rules must have been set up ("Full → Configuration Setup → Routing → BIN Groups → [Routing]"). In the *Custom Rules* field of the "Routing for <group name>" form, specify the following string: "DOC_TAG=EMV_AID;DOC_TAG_VALUE=<AID>", where <AID> is the expected EMV_AID tag value that will be set according to the AID of the card application selected at the device.

To enable support of transactions with co-badge cards on the acquirer side, set the value of the parameter multiApplicationCardSupport="true" (appComponent element attribute) in the configuration of the AcqDB service (WAY4 Transaction Switch).

Accordingly, on the side of the terminal software and/or host-to-host connection, the identifier for the selected payment application must be included in EMV data (tags 84 and 4F) of the request sent to the WAY4 acquiring module.