



## Installation and Configuration Manual

# POS Network Management

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A payment terminal (Point-of-Sale, POS) is a hardware-software device used for making transactions with bankcards.

The POS controller is a Way4 NetServer software component (channel).

The POS controller is responsible for interaction of the POS network with the processing center. This interaction includes receiving and processing messages from POS terminals, searching for and registering necessary information in the Way4 database, sending POS terminals response messages for operation results, etc.

This document is intended for Way4 system administrators (bank and processing center employees) responsible for configuring the POS network.

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

- "Acquiring Module. User Manual"
- "Terminal Key Management"
- "WAY4™ NetServer"
- "Terminal Device Attribute Setup"
- "Importing and Exporting Advanced Applications R2 (XML Format)"
- "Configuring Dynamic Key Change on POS Terminals in WAY4™" (provided according to an additional agreement with OpenWay)
- "POS Management Server. Administrator Manual"
- "Scheduler Manual"
- "Standing Payment Orders"

The following notation is used in the document:

- Screen form field labels are shown in italics.
- Screen form button labels are shown in square brackets; for example [Approve].
- Sequences for selecting user menu items are shown using arrows as follows: "Acquiring → Acquiring Contracts → Client".
- Sequences for selecting system menu items are shown using arrows as follows: "Database => Change password".
- Key combinations in DB Manager are shown in angular brackets, for example <Ctrl>+<F3>.
- Variables that differ for each local instance, for example, directory and file names, as well as file paths, are shown in angular brackets; for example, <OWS\_HOME>.



Warnings about potentially hazardous situations or actions.



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

# 1 POS Controller Dictionaries

Dictionaries are important sources of information used in Way4 operation. Dictionaries are tables stored in the database and that contain information of one type, for example, the POS types dictionary, POS messages dictionary, etc.

Two types of dictionary are used in the system:

- Custom – dictionaries whose content may be modified by the user.
- Fixed – dictionaries whose content can only be modified by OpenWay; in some cases, dictionary data can be modified by authorised specialists of the bank or processing center, under the supervision of OpenWay vendor representatives.

## 1.1 Custom POS Dictionaries

A list of Way4 database custom dictionaries used by the POS controller is shown below.

### 1.1.1 POS Types dictionary

All types of POS terminals interacting with Way4 must be registered in a special POS Types dictionary.

A POS type is selected from a list during device configuration (see the section "[Information about Devices](#)" of the document "Acquiring Module").

To access the POS Types dictionary, select the user menu item "Full → Configuration Setup → Merchant Device Setup → POS Types".

The "POS Types" form will open.

POS Types														
Code	Name	Brand	Model	Protocol	Term Period (d)	Hotel Operation Mode	Incr Adj	Batch Upd	Upl Max	Conciliat	ulation	g Cou	Mac Type	e S Transaction Attributes
WINCOR_XM	Wincor XM	WINCOR		Wincor XM	30	Single Auth - Single Comp	No	No	0		0	No		
TRANZ34	Tranz 340	INTEL		VISA-II	30	Single Auth - Single Comp	No	No	0		0	No		
TRANZ33	Tranz 330	INTEL		VISA-II	30	Single Auth - Single Comp	No	No	0		0	No		
TEST	TEST	TEST		Openway	30	Single Auth - Single Comp	No	No	0		0	No		
SCS	SCS ATM	SCS		ISO8583 B	0	Single Auth - Single Comp	No	No	0		0	No	Binary	
QPT	QR Paymer			ECommerce	0	Single Auth - Single Comp	No	No	0		0	No		STATELESS=Y;
PC_V	PC-POS, V	INTEL		VISA-II	30	Single Auth - Single Comp	No	No	0		0	No		
PC_H	PC-POS, M	INTEL		ISO8583 H	30	Single Auth - Single Comp	No	No	0		0	No	Hexadecim	
PC_B	PC-POS, M	INTEL		ISO8583 B	30	Single Auth - Single Comp	No	No	0		0	No	Binary	
PC	PC-POS	INTEL		ISO8583	30	Single Auth - Single Comp	No	No	0		0	No		POS,TERM_TRACK,TERM
OMNI420	OMNI 420, VeriFone			VISA-II	30	Single Auth - Single Comp	No	No	0		0	No		
OMNI395	OMNI 395, VeriFone			VISA-II	30	Single Auth - Single Comp	No	No	0	Automatic	0	No		
OMNI_S	OMNI, Self	VeriFone		ISO8583	30	Single Auth - Single Comp	No	No	0		0	No		CAT.1;
OMNI_Q	OMNI, Qua	VeriFone		ISO8583	30	Single Auth - Single Comp	No	No	0		0	No		VPC.11;

Table of POS types registered in the system

This table contains the following fields:

- **Code** – terminal type code used when loading acquiring module applications (see the document "Importing and Exporting Advanced Applications R2 (XML Format)").

- *Name* – POS type name in the system.
- *Brand* – POS manufacturer brand name: Bull, Datacard, Hypercom, Intel, Nurit, Olivetti, SCS, VeriFone, etc.
- *Model* – POS model.
- *Protocol* – protocol name (see "[POS Protocols dictionary](#)").
- *Capture Period (days)* – period (in calendar days) following the date of a preauthorization ("Pre-Auth") during which its confirmation ("Authorization Confirmation") or reversal ("Pre-Auth Reversal") is expected. When this period expires, processing of operations related to "Pre-Auth" will be completed with the error "Capture period expired". The "0" value means the period is not limited.
- *All Ops* – the "Yes" value in this field allows all operations compatible with this terminal type to be enabled for this POS type (according to the settings in the form "Operations for <POS terminal name>", see the section "[Configuring Executable Operations](#)"). It is not recommended to set the "No" value in this field.



When the "No" value is set in the *All Ops* field, a custom list of operations will be used for the terminal. This functionality is obsolete and remains for backward compatibility.



It is recommended to limit the list of allowed operations for a POS terminal in the device's Service Package (see the document "Way4 Service Packages").

- *Hotel Operation Mode* – hotel operation mode (class of operations related to deferred payment for services when the final amount is generated according to the results of using these services; for example: car rental, hotel room booking, etc., with the ability to prolong the term of using the service):
  - "Single Auth – Single Compl" – preauthorization ("Pre-Auth") is made, after which the "Authorization Confirmation" operation is executed, corresponding to authorization (the amount of the financial operation may differ from the amount of preauthorization; either increased or decreased).
  - "Multiple Auth – Single Compl" – several preauthorization operations are executed sequentially (for example, when a guest extends his or her hotel stay) after which the final operation "Authorization Confirmation" is executed, generating a financial document (the amount of the financial document may be smaller or larger than the amount of preauthorization documents created earlier).
  - "Multiple Auth – Multiple Compl" – mode in which several preauthorization operations "Pre-Auth" and several "Authorization Confirmation" operations are executed sequentially. The procedure for processing operations is determined by the sequence of client and hotel personnel actions. For example, the hotel may make intermediate "Authorization Confirmation" operations, debiting funds from the client account for additional services after a certain number of days following the first or subsequent authorizations. The amount

of generated financial documents may differ from the amount blocked on the card for authorizations belonging to this chain.



Support of processing operations in "Multiple Auth – Multiple Compl" mode is optional functionality and is provided according to a separate agreement with OpenWay representatives.



Way4 supports the ability to process several chains of hotel operations made with the same card if settlement operations ("Authorization Confirmation") were made in an order differing from that of preauthorizations. For example, a client, using the same card within a certain time interval reserves several hotel rooms, uses services related to them and pays for them at different points in time. In this case, authorization and settlement operations are linked by a booking number that must be transmitted by the hotel's POS terminal.

For the corresponding terminal type, limits can be set on the permissible difference between the amounts of preauthorization and the final financial operation. If the amount of the financial operation does not meet these conditions, this operation will be declined. Limits are set in the "Conditions for <POS terminal name>" form (opened by clicking the [Conditions] button).



The absence of limits assumes that the amount of a financial operation must correspond exactly to the amount of the preauthorization operation(s). This condition is significant for "Single Auth – Single Compl" or "Multiple Auth – Single Compl" scenarios. For "Multiple Auth – Multiple Compl" mode, it is mandatory to specify a limit for the permissible difference in operation amounts. Otherwise, it is not guaranteed this mode will operate correctly.



"Multiple Auth – Multiple Compl" mode is not intended for processing e-commerce operations in which a client makes one payment (one preauthorization) for purchases through a merchant aggregator's interface but the goods are shipped separately (several settlement operations). Support of such operations ("Single Auth – Multiple Compl") is optional functionality and is provided according to an additional agreement with OpenWay. There is no guarantee the system will operate correctly if "Multiple Auth – Multiple Compl" is used to support partial shipments.

- *Incr Adj* – the "Yes" value in this field allows an adjustment document increasing the transaction amount to be created (for the "Hypercom" protocol).
- *Batch Upd* – the "Yes" value in this field enables the mode to maintain this type of POS terminal's financial cycles in Way4 (generation of operation counters, reconciliation and export of totals (Batch Upload)).

- **Reconciliation** – reconciliation mode (for more information, see the section "[Reconciliation](#)"). This parameter regulates processing of possible discrepancies between data generated online and data received on upload through the POS Management Server ("Batch Upload" operation):
  - "Automatic" – adjustment documents for automatic processing are generated (*Posting Status* = "Waiting"). Documents are generated on the condition that the transaction information received on upload is correct.
  - "Manual All" (default) – adjustment documents are generated that must be processed manually (*Posting Status* = "Under Workflow");
  - "Manual Reversal" – adjustment documents are generated; only reversal documents must be manually processed.

For more information on the principles of generating reconciliation documents, see the table.

Discrepancy	Reconciliation operation type	Automatic	Manual Reversal	Manual All
The operation is present in the upload (according to Batch Upload data), but is missing according to online data	All	A document with the "Waiting" status is created	A document with the "Waiting" status is created	A document with the "Under Workflow" status is created
The operation is missing in the upload (according to Batch Upload data), but is present according to online data	Direct transaction	A reversal document with the "Waiting" status is created	A reversal document with the "Under Workflow" status is created	A reversal document with the "Under Workflow" status is created
	Reversal	The status of a reversal document is changed to "Rejected"	The status of a reversal document is changed to "Under Workflow"	The status of a reversal document is changed to "Under Workflow"



If an online operation registered in the database is missing in upload and "Automatic" mode is set, a reversal document is only created for a document in the "Posting" status. If a document was in the "Waiting" status, a reversal document is not created and depending on the value of the global parameter `SOFT_BATCH_UPLOAD`:

- "N" (default) – the document goes to the "Rejected" status.
- "Y" – the document goes to the "Suspended" status.

- **Totals Calculation Scheme** – mode for calculating totals. Possible values: "0" or "1" (Mode 1), "2" (Mode 2) (see "[Totals Calculation Modes](#)"). The default value is "0". The recommended value is "2".



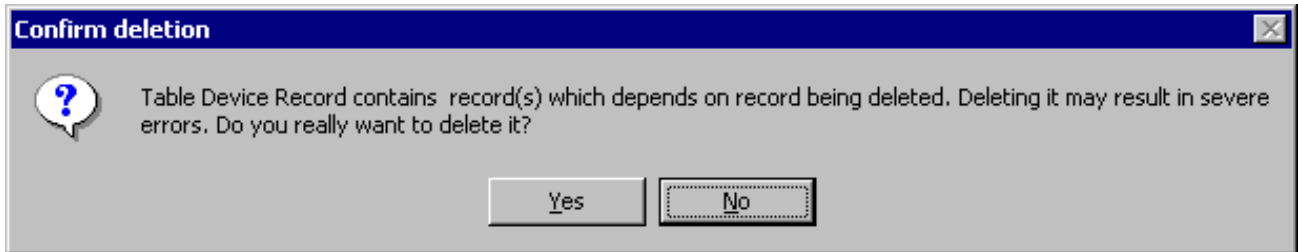


Note that POS terminal software must support the selected scheme.

- *Batch Upl Max Days* – maximum number of days with respect to the date of opening a cycle during which batch upload must be executed for this cycle. If upload was not executed within the set period, the POS terminal will be prohibited from further making online operations (until Batch Upload is executed). The "0" value means the period is not limited.
- *Strong Counters* – mode for checking POS counters:
  - "No" – amounts of internal POS counter values are compared with the amounts of counters in the database.
  - "Yes" – total financial amounts of internal POS counters are compared with the amounts of the corresponding counters in the database; the number of operations recorded by the corresponding counters is also compared.
- *Mac Type* – MAC (Message Authentication Code) calculation mode:
  - "Binary"
  - "Hexadecimal"
- *Key Hierarchy* – key hierarchy, see the document "Configuring Dynamic Key Change on POS Terminals in WAY4™" (optional feature, provided according to an additional agreement with OpenWay).
- *Key Idt Scheme* – key identification scheme, see the document "Configuring Dynamic Key Change on POS Terminals in WAY4™" (optional feature, provided according to an additional agreement with OpenWay).
- *Transaction Attributes* – additional parameters of a transaction.
- *Special Configuration* – list of tags affecting the processing of data received from POS (the ";" character is used as a delimiter). A list of some tags is provided in the document "Acquiring Module. Terminal Device Attribute Setup".  
The tag values specified in this field can be redefined depending on the transaction conditions in the "Overrides for <device type>" form that opens using the [Overrides] button (see the description for the [figure](#)).
- *AutoRepeat/Reversal Time* – the period of time (in minutes) during which a request from a terminal to execute an operation is interpreted as an AutoRepeat, AutoReversal or AutoAdvice message, on the condition that:
  - The message contains an indicator of the corresponding automatic operation (AutoRepeat/AutoReversal/AutoAdvice).
  - The operation's STAN matches the corresponding number of the earlier operation.
  - The operation's amount matches the amount of the earlier operation.
 If the parameter's value is "0":
  - For terminal types with Batch Upload capability (*Batch Upl* = "Yes"), the period is not limited.
  - For terminal types with *Batch Upl* = "No" – 1440 minutes (24 hours).
- *Repeat Time (min)* – this field is not used. It is shown for backward compatibility.

In this form, click the [Ins] button to add a record to this table; click [Del] to delete a record.

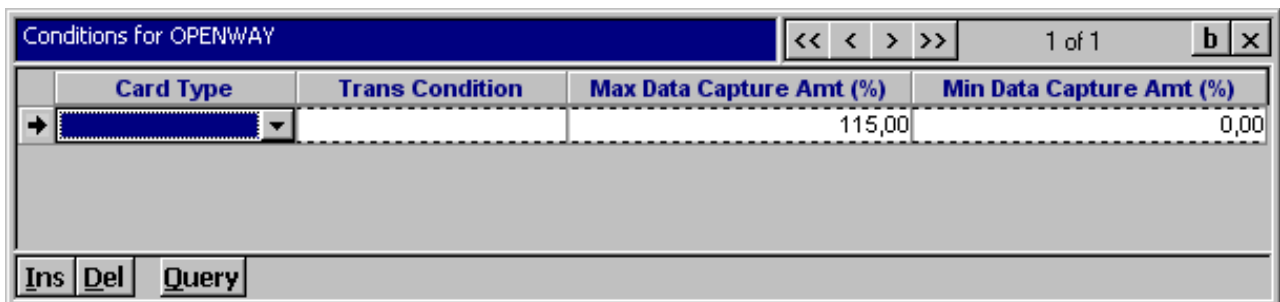
If an attempt is made to delete a "POS Types" table record that corresponds to a POS type for which a device contract is registered in the system (see the section "[Information about Device Contracts](#)" of the document "Acquiring Module"), the following warning message will be displayed:



*Warning that an attempt has been made to delete a record to which device contracts refer*

To confirm deletion, click [Yes]; to cancel deletion, click [No].

The [Conditions] button opens the "Conditions for <POS terminal name>" form containing a list of conditions for setting the permissible difference between the amounts of "Authorization Confirmation" and "Pre-Auth" operations.


 A form titled "Conditions for OPENWAY". It has a table with 4 columns: "Card Type", "Trans Condition", "Max Data Capture Amt (%)", and "Min Data Capture Amt (%)". The "Card Type" column has a dropdown menu. The "Max Data Capture Amt (%)" column shows the value "115,00". The "Min Data Capture Amt (%)" column shows the value "0,00". At the bottom of the form are three buttons: "Ins", "Del", and "Query".

*List of operation conditions*

This table contains the following fields:

- *Card Type* – card contract type ("Full → Configuration Setup → Contract Types → Card Contract Types").
- *Trans Condition* – transaction condition; the "Transaction Conditions" dictionary contains a list of all conditions registered in the system.
- *Max Data Capture Amnt (%)* – maximum difference (as a percentage) in the value of an "Authorization Confirmation" operation from a "Pre-Auth" operation.
- *Min Data Capture Amnt (%)* – minimum difference (as a percentage) in the value of an "Authorization Confirmation" operation from a "Pre-Auth" operation.

In this form, click the [Ins] button to add a record to this table; click [Del] to delete a record.

The [Dflt Oper] button opens the "Dflt Oper for <POS terminal name>" form (see [figure](#)), containing a list of operations that will be applied by default to the terminal.



This setting is relevant if the *All Ops* field of the "POS Types" form (see [figure](#)) contains a value other than "Yes" (see "[Configuring Executable Operations](#)").

Dflt Oper for OMNI, MAC BIN	
Operation Type	Default Status
Balance Inq Fallback PBT	Active
<input type="button" value="Ins"/> <input type="button" value="Del"/> <input type="button" value="Query"/>	

### List of default operations

This table contains the following fields:

- *Operation Type* – operation type. The "POS Operations" system dictionary contains a list of all POS operations.
- *Default Status* – operation status. The field may have the "Active", "Inactive" or "Closed" status.

In this form, click the [Ins] button to add a record to this table; click [Del] to delete a record.

The [Overrides] button opens the "Overrides for <device type>" form that is used to redefine the tag values set in the *Special Configuration* field for the corresponding terminal type depending on transaction conditions.

Overrides for BULL Alto, MAC HEX			
Parameter Type	Transaction Condition	Parameter Value	Description
OVER1	POS Card Read	DEV=1000120008H011324;	
<input type="button" value="Ins"/> <input type="button" value="Del"/> <input type="button" value="Query"/>			

### Redefining the parameters for a terminal type

The form contains the following fields:

- *Parameter Type* – drop-down list to select a parameter type registered in the system. New parameter types can be registered in the "Device Configurator Item Type" form (the user menu item "Full → Configuration Setup → Merchant Device Setup → Device Configurator Item Type").

Device Configurator Item Type		
Item Type Code	Item Type Name	Item Type Category
DEV_TYPE_OVERRIDE	OVER1	Device Type Parameter
<input type="button" value="Ins"/> <input type="button" value="Del"/> <input type="button" value="Query"/>		

### Registering a configuration parameter type

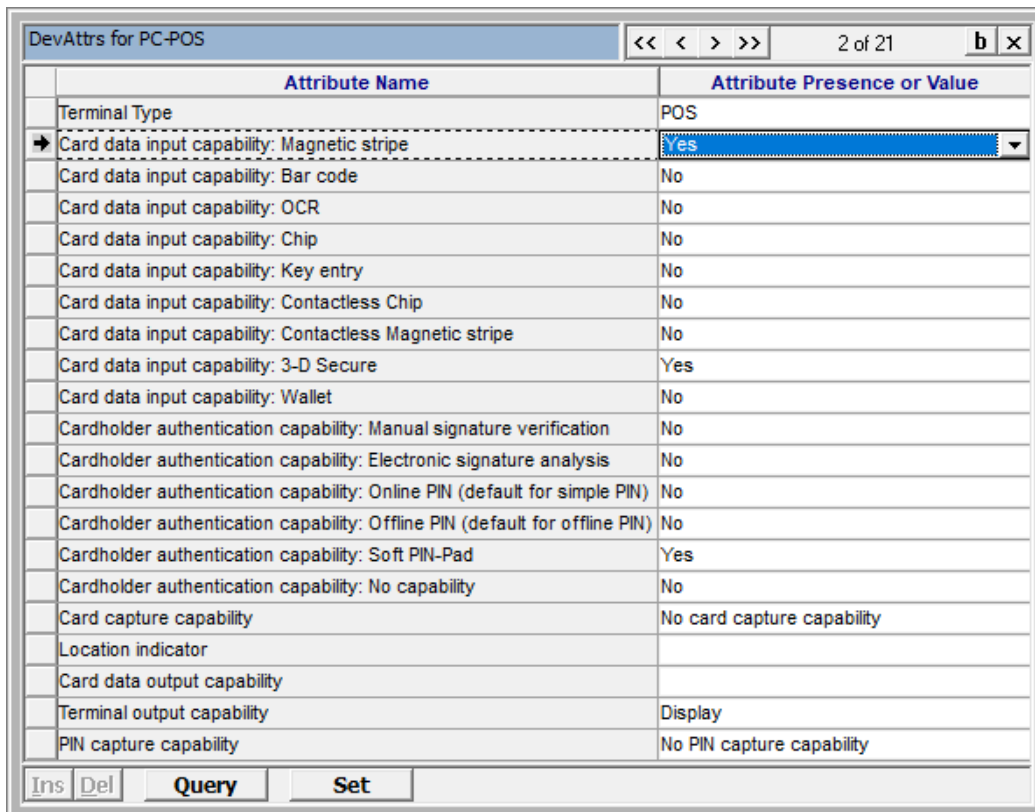
Parameter types to redefine tags in the *Special Configuration* field must be registered with the DEV\_TYPE\_OVERRIDE code.

- *Transaction Condition* – drop-down list to select a transaction condition registered in the "Transaction Conditions" system dictionary.
- *Parameter Value* – parameter value of the specified type that will be used in the appropriate transaction conditions; the example in the [figure](#) shows that when a transaction is made with a card on the devices of the corresponding type, the DEV tag's value will be redefined.

- *Description* – arbitrary description.

The [Ins] and [Del] button in the "Overrides for <device type>" form are used to add and delete records.

The [DevAttrs] button in the "POS Types" form makes it possible to set a list of device attributes that will be recorded in documents for transactions at this type of terminal (which can then be included in clearing information that is exported). The list is created on the basis of values selected in the "DevAttrs for <terminal type>" form:



Attribute Name	Attribute Presence or Value
Terminal Type	POS
Card data input capability: Magnetic stripe	Yes
Card data input capability: Bar code	No
Card data input capability: OCR	No
Card data input capability: Chip	No
Card data input capability: Key entry	No
Card data input capability: Contactless Chip	No
Card data input capability: Contactless Magnetic stripe	No
Card data input capability: 3-D Secure	Yes
Card data input capability: Wallet	No
Cardholder authentication capability: Manual signature verification	No
Cardholder authentication capability: Electronic signature analysis	No
Cardholder authentication capability: Online PIN (default for simple PIN)	No
Cardholder authentication capability: Offline PIN (default for offline PIN)	No
Cardholder authentication capability: Soft PIN-Pad	Yes
Cardholder authentication capability: No capability	No
Card capture capability	No card capture capability
Location indicator	
Card data output capability	
Terminal output capability	Display
PIN capture capability	No PIN capture capability

To confirm the list of selected values, click [Set]. The list of codes for the corresponding attributes will be shown in the *Transaction Attributes* field of the "POS Types" form.

## 1.2 Fixed Dictionaries

### 1.2.1 POS Protocols dictionary

POS protocols regulate message formats and rules for information exchange between POS terminals and the processing center.

POS Protocols			<< < > >>	1 of 17	X
	Name	Code	Is Adjusting Totals		
	SO8583 BIN MAC - Opt Batch	B=2:O			
	SO8583 HEX MAC - Opt	HEX:O			
	SO8583 BIN MAC - Opt	BIN:O			
	Openway Native	openway	No		
	Openway-Hypercom	openway-hypercom	No		
Ins Del Query					

Protocol types for information exchange between POS terminals and the processing center

The protocol dictionary table contains the following fields:

- *Name* – protocol name.
- *Code* – protocol code, unique within the system.
- *Is Adjusting Totals* – specifies the mode for recording reversals and adjustments in counters generated in a cycle. Possible values:
  - "Yes" – reversals and adjustments are recorded in the same counters as the original operations, decreasing the number of operations recorded by the counter and the total financial amount..
  - "No" – reversals (including adjustments) will be recorded in counters separate from those for the corresponding original operations.



Note that it is not permitted to change the values in the fields of this form.



For terminals using an OpenWay protocol, the "Openway Native" protocol must be used. In other cases, it is recommended to contact OpenWay Support for additional consultation.

## 1.2.2 POS Operations dictionary

Each POS terminal contract in the system is assigned a set of operations and a set of hardware components (see "[POS Hardware Types dictionary](#)"), required to execute these operations.

POS Operations							<< < > >>	117 of 501	X
Protocol	Transaction Class	Code	Name	Trans Type	Request Cat	Automatic T			
Openway Native	Cash	Copenway.0400.00.0220	OpenWay Cash Completion Reversal	Cash	Partial Reversal				
Openway-Hypercom	Cash	Copenway-hypercom.0100	OW-Hypercom Cash Authorization	Cash	Request				
Openway-Hypercom	Cash	Copenway-hypercom.0200	OW-Hypercom Cash	Cash	Advice				
Openway-Hypercom	Cash	Copenway-hypercom.0200	OW-Hypercom Cash Void Sale	Cash	Partial Reversal	AutoRepeatFor			
Openway-Hypercom	Cash	Copenway-hypercom.0200	OW-Hypercom Cash Refund	Cash	Partial Reversal				
Openway-Hypercom	Cash	Copenway-hypercom.0220	OW-Hypercom Cash Sales Completio	Cash	Advice	AutoRepeatFor			
Openway-Hypercom	Cash	Copenway-hypercom.0220	OW-Hypercom Cash Offl Void Sale	Cash	Partial Reversal	AutoRepeatFor			
Openway-Hypercom	Cash	Copenway-hypercom.0400	OW-Hypercom Cash Reversal	Cash	Reversal	AutoReversal			
Openway-Hypercom	Cash	Copenway-hypercom.0400	OW-Hypercom Cash Void Sale Rever	Cash	Adjustment	AutoReversal			
Openway-Hypercom	Cash	Copenway-hypercom.0400	OW-Hypercom Cash Refund Reversa	Cash	Adjustment	AutoReversal			
	Cash	CPC	Cash Pre-auth CardRead	Cash	Request				
	Cash	CPF	Cash Pre-auth Fallback SBT	Cash	Request				
	Cash	CPI	Cash Pre-auth ICC	Cash	Request				
	Cash	CPL	Cash Pre-auth Manual w CVV2	Cash	Request				
	Cash	CPM	Cash Pre-auth Manual	Cash	Request				
	Cash	CPP	Cash Pre-auth with PIN	Cash	Request				
	Cash	CPQ	Cash Pre-auth Fallback PBT	Cash	Request				
	Cash	CPS	Cash Pre-auth ICC SBT	Cash	Request				

### POS Operations dictionary

The table of POS terminal operations contains the following fields:

- *Protocol* – protocol name (see "POS Protocols dictionary").
- *Transaction Class* – financial transaction type.
  - "Cash" – cash disbursement.
  - "Retail" – retail transaction.
  - "Unique" – casino transaction, etc.
- *Code* – operation code.
- *Name* – operation name.
- *Trans Type* – transaction type.
- *Request Cat* – request/advice category of the document generated according to the transaction message.
  - "Request" – request to make a transaction.
  - "Advice" – notification that a transaction has been made.
  - "Reversal" – notification that a transaction has been reversed.
  - "Part Reversal" – notification of a transaction's partial reversal.
  - "Adjustment" – notification that the transaction amount has been adjusted.
  - "Post Advice" – message that can be sent after the transaction has been made.
- *Automatic Tag* – this field is filled in for operations that are executed automatically.
- *Category* – financial/authorization message category.
- *Service Class* – transaction classification; the value of this parameter determines the way a document will be processed in the system; if this field is empty, it means the default value *Service Class* = "Transaction" is used.
- *Is Online* – specifies whether a request to the issuer is made when a transaction is executed.
- *Date* – method for determining the transaction date:

- "From Terminal" – transaction date and time is determined according to data received from the POS terminal.
- "From Host" – transaction date and time is determined according to the time of the server processing the request received from the terminal.
- *Is Checked* – drop-down list for specifying whether a service card check is required (the "Yes" value) when executing credit transactions; the "No" value or an empty value specifies that when executing this transaction, the cashier's service card does not need to be checked.
- *Trans Cond* – drop-down list for specifying transaction conditions (used for backward compatibility).
- *Special Parameters* – special parameters of the transaction.
- *Document Tag* – additional tags in a document generated as a result of executing the operation.



Note that users are not permitted to change the values in the fields of the "POS Operations" form.

### 1.2.3 POS Hardware Types dictionary

Each POS terminal contract in the system has hardware components required for executing operations on the POS terminal (see "[POS Operations dictionary](#)"). The list of POS hardware components contains "virtual" components.

POS Hardware Types			
		1 of 2	
	Name	Code	Protocol
→	Alarm Log	AlrmLog	
	Security Devices	HSM	
<div> <div>Ins</div> <div>Del</div> <div>Query</div> <div>Messages</div> </div>			

*POS Hardware Types dictionary*

The POS Hardware dictionary contains the following fields:

- *Name* – component name.
- *Code* – code of the component in the system.
- *Protocol* – the type of protocol for the component (this field is not filled in for components that are compatible with all registered protocol types).



Note that it is not permitted to change the values in the fields of this form.

The [Messages] button opens the "Messages for <component name>", containing a list of messages generated in the system when working with this component (see "[POS Message Types dictionary](#)").

## 1.2.4 POS Message Types dictionary

During operation of a POS terminal, certain messages can be generated in the system; each message corresponds to a specific POS terminal component.

POS Message Types						1 of 597
Protocol	Device Type	Hardware Type	Name	Code	Error Level	
SO8583 BIN MAC - Batch		Security Devices	LRC does not match the value computed from input	SMRC:91	Warning	
SO8583 BIN MAC - Batch		Security Devices	The Count value is not between limits	SMRC:92	Warning	
SO8583 BIN MAC - Batch		Security Devices	TAK (MAC key) is missing	TAKERR	Warning	
SO8583 BIN MAC - Batch		Security Devices	TPK (Terminal PIN key) not defined	TPKERR	Warning	
SO8583 BIN MAC - Batch		POS Management	PMS Error	PMS_ERR	Error	
SO8583 BIN MAC - Batch		POS Management	PMS Fatal Error	PMS_FATAL	Fatal Error	
SO8583 BIN MAC - Batch		POS Management	PMS Information	PMS_LOG	Information	
SO8583 BIN MAC - Batch		POS Management	PMS OK	PMS_OK	OK	
SO8583 BIN MAC - Batch		POS Management	PMS Warning	PMS_WARN	Warning	
SO8583 HEX MAC - Opt Batch		Alarm Log	Start Transaction Process Error	BVXAUTH	Warning	
SO8583 HEX MAC - Opt Batch		Alarm Log	Bad status returned by Database	BVXERR	Information	
SO8583 HEX MAC - Opt Batch		Alarm Log	Change TPK with current Master key	C332	Warning	
SO8583 HEX MAC - Opt Batch		Alarm Log	Change TAK with current Master key	C335	Warning	
SO8583 HEX MAC - Opt Batch		Alarm Log	Change TPK and TAK with current Master key	C340	Warning	
SO8583 HEX MAC - Opt Batch		Alarm Log	Console OK	CONSOLEOK	OK	
SO8583 HEX MAC - Opt Batch		Alarm Log	Message Format Error	FORMERR	Warning	
SO8583 HEX MAC - Opt Batch		Alarm Log	Attempt to route message to source channel	ROUTEERR	Information	
SO8583 HEX MAC - Opt Batch		Alarm Log	Terminal status is OK	TERMS0	Information	

Table of messages generated during POS terminal operation

The table of POS terminal messages contains the following fields:

- **Protocol** – name of the protocol (see "[POS Protocols dictionary](#)") for which this type of message can be generated. If the field is empty, the message can be generated for any protocol.
- **Device Type** – type of POS terminal registered in the system; this field is used to differentiate messages by device type; for example, when executing the same operation (with the same value in the **Code** field) on different types of POS terminals, messages with different values in the **Error Level** field may be generated.
- **Hardware Type** – name of the POS terminal component (see "[POS Hardware Types dictionary](#)") for which this message is generated during this component's operation.
- **Name** – message description.
- **Code** – message code.
- **Error Level** – error severity level specified in the message generated by the controller or the system during the corresponding procedures.
- **Group Code** – service field.
- **Security** – access level (number). Users in the group for which an access level number is specified that is equal to or more than the number in this field will have access to the operation.



User group access levels are specified in the Security Level field of the "Constants for <group name>" form opened by clicking the [Constants] button in the "User Groups and Users - View" form (Full → DB Administrator Utilities → Users & Grants → User Groups and Users – View).



- *Usage Operation* – service field.



Note that it is not permitted to change the values in the fields of this form.

The [Description] button opens the "Description for <message description>" form, containing additional information for a message.

## 2 Configuring POS Terminal Contracts

Description of a POS terminal and its configuration includes registration of specific information in the Way4 DB about merchants and their terminals and about rules for processing transaction information by the Way4 acquiring module.

### 2.1 Configuring POS Terminal Contracts

POS terminal contract parameters are described in the section "[Information about Device Contracts](#)" of the document "Acquiring Module".

#### 2.1.1 Configuring Executable Operations

Allowed operations for a POS terminal are set up in the "Operations for <POS terminal name>" form (see [figure](#)).



Setup of allowed operations for a POS terminal is an obsolete feature and is supported for backward compatibility.



It is recommended to limit the list of allowed operations for a POS terminal in the device's Service Package (see the document "[Service Packages](#)").

There are two ways to open this form:

- After selecting the user menu item "Acquiring → POS/Imprinter Controller → POS Management", in the "POS Management" form that opens, select the required POS terminal and click the [Operations] button.
- After selecting the user menu item "Acquiring → Acquiring Contracts → Acquiring Contracts", select the required account contract, click the [Devices] button in the account contract form, select the POS terminal and click the [POS] button in the device contract form. The "POS for <POS terminal name>" form will open. Click the [Operations] button in this form.



The "POS Management" form is the same as the "POS for <POS terminal name>" form described in the section "POS Terminals" of the document "Acquiring Module User Manual".

Operations for TEST POS				
		<< < > >>		1 of 26
Operation Type	Status	Hardware Problem	Last Changed	
→ Retail Pre-auth CardRead	Active		00/00/00 00:00.00	
Retail Reversal CardRead	Active		00/00/00 00:00.00	
Retail Auth CardRead	Active		00/00/00 00:00.00	
Retail Data Capture CardRead	Active		00/00/00 00:00.00	
Balance Inquiry Retail	Active		00/00/00 00:00.00	
Retail Pre-auth Manual	Active		00/00/00 00:00.00	
Retail Reversal Manual	Active		00/00/00 00:00.00	
Retail Auth Manual	Active		00/00/00 00:00.00	
Retail Data Capture Manual	Active		00/00/00 00:00.00	
Retail Auth with PIN	Active		00/00/00 00:00.00	
Retail Pre-auth with PIN	Active		00/00/00 00:00.00	
Retail Refund Manual	Active		00/00/00 00:00.00	
Retail Refund CardRead	Active		00/00/00 00:00.00	
<input type="button" value="Ins"/> <input type="button" value="Del"/> <input type="button" value="Query"/> <input type="button" value="Ch Status"/> <input type="button" value="History"/>				

### List of allowed operations for a POS terminal

To fill in the list of allowed operations for the first time, click the [Setup] button in the device configuration form ("POS Management" or "POS for <POS terminal name>") and choose the "Check and Fill" context menu. The list of operations is generated with consideration of the following:

- If the terminal type has "Yes" in the *All Ops* field of the "POS Types" form (see. "[POS Types dictionary](#)"), the list is not filled in (all operations compatible with the protocol for this terminal type will be available for the POS terminal).
- If a value other than "Yes" is specified in the *All Ops* field, the list will contain operations from the "POS Operations" dictionary (see "[POS Operations dictionary](#)") which are available for this terminal type, and all operations (except for the case described in the next item) will have the "Closed" (not allowed) status.
- If operations allowed by default are defined for the corresponding terminal type (in the "Dflt Oper for <POS terminal name>" form), after the list has been loaded, these operations will have the "Active" status.

To delete an operation from the list of allowed operations, select the required row in the table and click [Del].

An operation can also be allowed or prohibited by changing its status. To do so, click the [Ch Status] button. Clicking this button changes the status of the operation from "Active" to "Closed".

The *Last Changed* field contains the date and time the operation's status was last changed.

The [History] button in the "Operations for <POS terminal name>" form (see [figure](#)) opens a form with the operation's status change history.

The list of allowed operations can be restored after rows are deleted from the table in the device configuration form ("POS Management" or "POS for <POS terminal name>") by clicking the [Setup] button and selecting the context menu item "Check and Fill".

## 2.1.2 Specifying Encryption Keys

Encryption keys are created by the security officer using cryptographic hardware and include a specific number of digits.

Encryption keys are only stored in the system and in a PIN pad encrypted using another encryption key. A check value is used to verify an encryption key. This value is only determined by the encryption key value and does not depend on how it was encrypted.

To specify encryption keys, use the "Keys for <POS terminal name>" form (see [figure](#)) which is opened by clicking the [Keys] button in the device configuration form ("POS Management" or "POS for <POS terminal name>").



The "POS Management" form is the same as the "POS for <POS terminal name>" form described in the section "POS Terminals" of the document "Acquiring Module User Manual".

Keys for TEST ACQ							<< < > >>		1 of 5		b x	
Key Algorithm	Key Type	Key Name	DES Key	Key Check	Used as MK	Storage MK						
3DES ABA	Key Loading Key	KLK1	U898987A8787ADBDB3781FF9893781FF9	AB6C99	Yes							
3DES ABA	Key Loading Key	KLK3	U0123456789ABCDEF0123456789ABCDEF	D5D44F								
3DES ABA	Terminal Master Key	TMK1	U8787ADB3781FF9898987ADB3781FF989	FF7AC7	Yes							
3DES ABA	Terminal Master Key	TMK2	U8787ADB3781FF9898987ADB3781FF989	FF7AC7								
3DES ABA	Key Loading Key	KLK2	U8787ADB3781FF9898987ADB3781FF989	FF7AC7	No							

Ins Del Query Manage Key Options

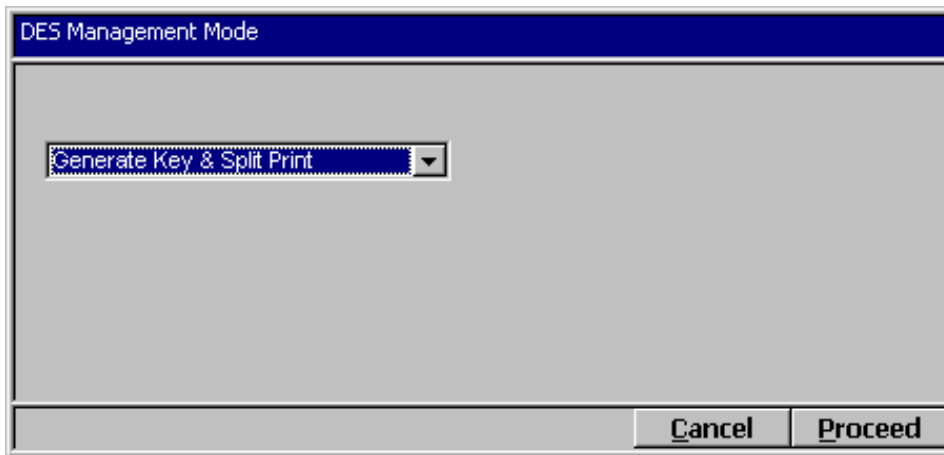
Form for specifying POS terminal encryption keys

This form contains the following fields:

- **Key Algorithm** – encryption algorithm for which this key will be used.
- **Key Type** – encryption key type selected from a list generated from the "PM Key Types" system dictionary.
- **Key Name** – encryption key name.
- **DES Key** – encryption key value.
- **Key Check** – encryption key check value.
- **Used As MK** – specifies whether the key will be used as the master key.
- **Storage MK** – specifies the master key used to encrypt this key when sending it to the terminal.
- **Serial Number** – key identifier distinguishing it among keys of the same type.
- **Is Active** – specifies (when the "Yes" value is set) that the encryption key can be used; an empty value in this field corresponds to the "No" value.
- **Date From** – the start date of the interval during which this key can be used.
- **Date To** – the end date of the interval during which this key can be used.
- **Max Usage** – a number specifying how many times this encryption key can be used.
- **Max Wrong Attempts** – number of attempts to incorrectly use the key before it is blocked.
- **Wrong Attempts Threshold** – when this value is exceeded, a signal about incorrect attempts to use the key will be made.
- **Current Usage** – the current value of this encryption key's usage counter.

- *Wrong Attempts* – counter of attempts to use the key incorrectly.
- *Storage Form* – the form in which the key is stored in the database.
- *Key Code* – the *Key Type* value shown in the form specified in the *Storage Form* field.
- *Parent Key* – parent key.
- *Add Data* – additional data.

The [Manage] button in the "Keys for <POS terminal name>" form (see [figure](#)) opens the "DES Management Mode" form used for manual generation of keys (see [figure](#)).

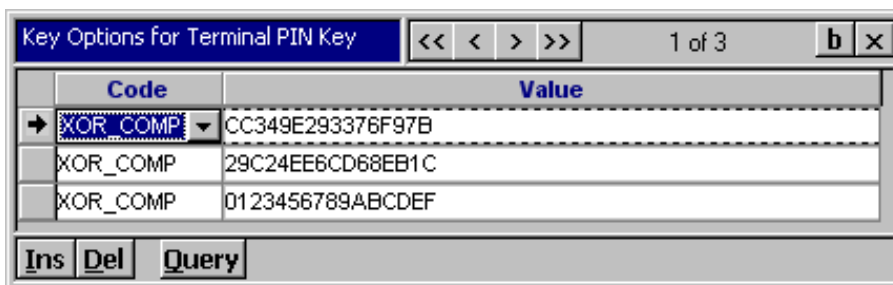


The dialog box titled "DES Management Mode" has a blue header bar. Below the header is a large grey area containing a dropdown menu with the text "Generate Key & Split Print". At the bottom right of the dialog are two buttons: "Cancel" and "Proceed".

#### Form for manual generation of keys

To confirm changes, click the [Proceed] button, to cancel, click [Cancel].

The [Key Options] button in the "Keys for <POS terminal name>" form (see [figure](#)) opens the "Key Options for Terminal PIN Key" form, used to store and enter key parameters (see [figure](#)).



The form titled "Key Options for Terminal PIN Key" has a blue header bar. Below the header is a table with two columns: "Code" and "Value". The table contains three rows of data. Below the table are three buttons: "Ins", "Del", and "Query".

Code	Value
XOR_COMP	CC349E293376F97B
XOR_COMP	29C24EE6CD68EB1C
XOR_COMP	0123456789ABCDEF

#### Additional parameters of a key

This form contains the following fields:

- *Code* – key parameter code.
- *Value* – key value.

In this form, click the [Ins] button to add a record to this table; click [Del] to delete a record.

## 2.1.3 Enabling MAC Mode

To enable MAC (Message Authentication Code) mode, set the "Mandatory" value in the *Mac Status* field of the device configuration form ("POS Management" or "POS for <POS terminal name>"). The mode is disabled if the "None" value is set in this field.



The "POS Management" form is the same as the "POS for <POS terminal name>" form described in the section "POS Terminals" of the document "Acquiring Module User Manual".

## 2.1.4 Mandatory PIN Mode

To enable the mode for mandatory PIN entry when executing any operation on a POS terminal, set the "Mandatory" value in the *PBT Status* field of the device configuration form ("POS Management" or "POS for <POS terminal name>" form). If the "Optional" value is set in this field, a PIN is only required for operations for which PIN entry is mandatory. When the "None" value is set in this field, operations for which PIN entry is mandatory cannot be executed on this POS terminal.



The "POS Management" form is the same as the "POS for <POS terminal name>" form described in the section "POS Terminals" of the document "Acquiring Module User Manual".



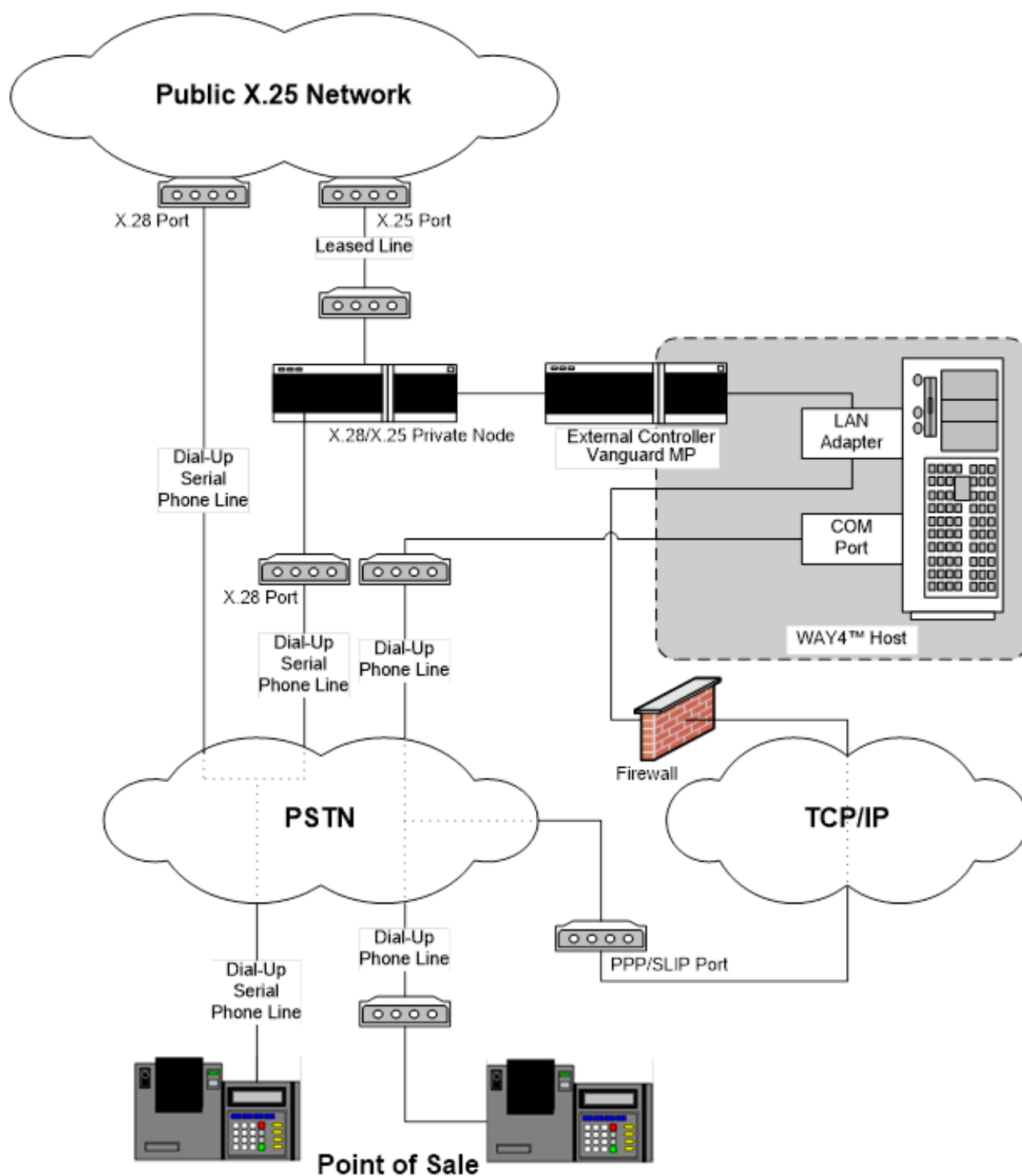
The value in this field can be redefined depending on transaction conditions (*Transaction Condition*) using the DEV tag (Subfield YYYY, see the document "Terminal Device Attribute Setup") specified as the value of the override parameter for the corresponding device type (see "[POS Types dictionary](#)"). If even one of the bits:

- 4th bit – "Online PIN (default for simple PIN)"
- 5th bit – "(reserved) OffLine PIN clear"
- 6th bit – "(reserved) Offline PIN encrypted (default for offline PIN)"

is specified in "Subfield YYYY", this is interpreted as *PBT Status*="Optional". If none of these bits are specified in the override parameter, the "None" value is used. DEV tag values have a higher priority than the value of the *PBT Status* field.

## 2.2 Connecting POS Terminals

The scheme for connecting POS terminals to the system is shown in the figure.



In the current version of the system, the following types of POS terminal connections are used:

- X.25 protocol leased line.
- X.28 protocol dial-up line.
- Leased telephone line.
- Dial-Up telephone line.
- TCP/IP connection.

## 2.3 Downloading software to POS terminals

The procedure for downloading software depends on the POS terminal type. For more information, see the administrator manual for the corresponding terminal type.

## 2.4 Configuring Software for Working with Encryption Keys

For PIN-based transactions (PBT), master keys and PIN block (a PIN block is a part of a message containing PIN data) encryption keys must be generated. These keys must be entered in the PIN pad, POS terminal and Way4 database. Zone PIN block encryption keys must be generated and placed in the POS controller's configuration file (the CHANNEL\_ZPK parameter in the NetServer channel configuration).

PIN block encryption keys (TPK – Terminal Pin Key) must be contained in POS terminals and the corresponding records in the Way4 database. TPK keys may be stored in the POS terminal's RAM only when encrypted under the master key contained in the PIN pad. Each POS terminal must have its own PIN block encryption key. All PIN pads must have different master keys. TPK keys in POS terminals must correspond to the keys in the database.

For more information about working with encryption keys, see "[Working with Encryption Keys in OpenWay Software](#)".



## 3 POS controller setup and operation

The POS controller is a collection of software that runs on the NetServer platform, used to ensure the interaction of the POS terminal network with the processing center. A POS channel is a NetServer process serving POS terminal online requests. One POS channel can process requests from many POS terminals.

### 3.1 Request Types and Request Processing

#### 3.1.1 Request Types

##### 3.1.1.1 Authorization

When this request is executed, an authorization code and response code are received from the bank that issued the card and the specified amount is blocked in the cardholder's account. A receipt with the transaction results and corresponding amounts must be printed on the terminal. The cardholder does not have to sign the receipt, since this is not a financial transaction.

##### 3.1.1.2 Retail/Cash

This is the basic POS terminal operation. When this request is executed, an authorization code and response code are received from the issuing bank and the corresponding amount is blocked in the cardholder's account. A receipt with the transaction results and amounts must be printed on the terminal. If the operation is signature-based (SBT), the receipt must be signed by the cardholder. The receipt is the main document if results are disputed. The corresponding NetServer process automatically initiates a request to the issuing bank to reimburse funds based on the operation's results.

##### 3.1.1.3 Authorization Confirmation

This request confirms an authorization that was made earlier. The corresponding NetServer process generates a financial request to the issuing bank to reimburse funds. A receipt with the transaction results and amounts must be printed on the terminal. If the operation is signature-based (SBT), the receipt must be signed by the cardholder; moreover, the receipt is the main document if results are disputed.

##### 3.1.1.4 Balance Inquiry

This operation allows information about a cardholder's account balance to be received without generation of financial messages. For purposes of confidentiality, the results may only be displayed on the PIN pad screen, and the cardholder must be able to delete the information from the screen after viewing.

### 3.1.1.5 Ministatement

This operation makes it possible to get information about a cardholder's most recent transactions. The operation always requires PIN entry (PINBased). The cardholder can select the account type for which the most recent transactions will be checked

### 3.1.1.6 Credit


This operation makes it possible to credit a cardholder's account. The operation is always performed using a cashier's service card and requires the cashier to enter their card's PIN (PINBased), and a message must contain an authentication code (MAC).


In the fields of the second (or first) track of the magnetic stripe, the message for this operation must contain data from the cashier service card's magnetic stripe, and the PIN block must contain the cashier's PIN. The number of the bank card or data from the second track of the magnetic stripe of the bank card for the money recipient in a credit operation is sent to the acquirer as part of additional information about the operation.

The bank card is not authenticated during this operation.

### 3.1.1.7 Reconciliation

Reconciliation is performed on a POS terminal when closing a billing cycle at a merchant or cashpoint.

 For correct reconciliation, the terminal must be assigned the correct reconciliation type in device configuration forms ("POS Management" or "POS for <POS terminal name>"). For these terminal types, the *Batch Upl* field in the POS Types dictionary (see "[POS Types dictionary](#)") must contain "Yes".

 The "POS Management" form is the same as the "POS for <POS terminal name>" form described in the section "[POS Terminals](#)" of the document "Acquiring Module User Manual".

For the Openway Native protocol, reconciliation is performed as described below.

All operations (online and offline) that were made since the end of the last reconciliation operation are stored in the POS terminal's memory). In this case, offline operations are understood to be those made autonomously on the POS terminal without a connection with the POS controller. Offline operations also include those made on POS terminals operating on earlier versions of the protocol (in this case, online authorization was performed during transactions, but information about the financial operation was not transmitted online).

Online and offline operations are totalled separately as follows.

When closing a cycle, the POS terminal sends the POS controller a message with the totals of online financial operations (message type "0500"). If the totals transmitted by the terminal and totals stored

in the Way4 database are reconciled, a message with response code "00" (totals matched) is returned to the terminal. Otherwise, response code "95" (totals do not match) is returned to the terminal.

If totals for reconciliation of online operations matched, and there were no offline operations on the POS terminal, reconciliation is completed.

If online totals were reconciled and offline operations were made on the POS terminal, the POS terminal initiates the Batch Upload operation (upload data on offline operations, message type "0220").



If NetServer is used, the Batch Upload operation is executed using Way4 POS Management Server software (see the document "Configuring POS Management Server").

If the online totals were not reconciled, the POS terminal executes the Batch Upload operation for online operations (message type "0320") and for offline operations, if there were any.

After executing Batch Upload, the terminal sends the POS controller a message with the totals of all operations (message type "0520"). In this case, a response message about reconciliation results is not sent to the POS terminal.

### 3.1.1.8 Refund

This operation is used to credit a cardholder account. It is used if the original transaction cannot be reversed, for example, because of a negative response to a reversal request. The message for this operation must contain a reference to the original transaction (RRN) (retail transaction, cash disbursement or authorization) in field 37. The refund amount can differ from the original transaction amount. This operation cannot be reversed.

### 3.1.1.9 Utility Payment

This operation is used to pay for services (for example, utilities) from a cardholder's account using a standing payment order created for the card contract. The payment recipient account is specified in the standing payment order.

### 3.1.1.10 Credit Voucher

This operation is used to credit a cardholder account that was debited as the result of a retail transaction performed earlier. This operation is used when information about the original transaction (RRN) is not available to perform a reversal. This operation can be reversed.

### 3.1.1.11 Universal Reversal

A message for this operation is sent when an operation that has already been executed must be reversed. The operation can be reversed manually by a cashier or automatically by the POS terminal to reverse the last operation executed, for example, in time-out cases when the POS terminal did not receive a response from the POS controller within a specified time period.

### 3.1.1.12 Universal Bill Payment

A message for this operation is sent if a payment was made to a billing system such as a mobile operator. Payments can be made by card or cash

### 3.1.1.13 Keys Change

A message for this operation is sent if terminal encryption keys must be changed.

This feature is optional and is supplied according to a separate agreement with OpenWay.


## 3.1.2 Request Check

Any request coming from a POS terminal is checked for admissibility.


Parameters of the POS terminal's registration record in the database and device Service Package parameters are used for the check.


Checks according to POS terminal registration parameters:

- The admissibility of this operation on this POS terminal is checked according to the list of allowed operations (see "[Configuring Executable Operations](#)").
- Permission to execute this operation at this time is checked according to the values of the *Business Hours from, to* fields of the registration record form; if these fields are not filled in, operations on the POS terminal can be executed at any time.
- Protection of the request by a digital signature is checked if "Mandatory" or "Optional" is specified in the *MAC Status* field of the device configuration form ("POS Management" or "POS for <POS terminal name>") (see the section "[Enabling MAC Mode](#)").

 If "None" is specified in the *MAC Status* field of the device configuration form ("POS Management" or "POS for <POS terminal name>") (see the section "[Enabling MAC Mode](#)") a request containing a digital signature will be rejected.

- A check for the presence for PIN information in the request is made if "Mandatory" or "Optional" is specified in the *PBT Status* field of the device configuration form ("POS Management" or "POS for <POS terminal name>") (see "[Mandatory PIN Mode](#)").

 If the "None" is specified in the *PBT Status* field of the device configuration form ("POS Management" or "POS for <POS terminal name>") (see the section "[Mandatory PIN Mode](#)"), a request containing PIN data will be rejected.

 The "POS Management" form is the same as the "POS for <POS terminal name>" form described in the section "[POS Terminals](#)" of the document "Acquiring Module. Operation Manual".

The POS terminal's Service Package parameters are used to check whether the transaction currency is allowed.

If any of these checks are failed, the transaction will be declined with the corresponding response code.

Reversals, authorization confirmations and refunds require checks concerning operation history (presence of an original transaction, correspondence of amounts, etc.). If these checks are failed, a negative response will be sent for the transaction.

If all checks are passed, necessary POS terminal and merchant data are added to the request after which it is sent to the corresponding NetServer channel for processing, for example to the ON-US service channel or payment system channel (Visa, Mastercard, and others).

## 3.2 POS Channel Description

POS channels serve online requests from POS terminals.

Depending on the composition of the terminal pool, their number, and exchange intensity, one or several POS channels are set up.

A special file in XML format is used to describe POS channel parameters. The name of this file is specified in the NetServer main configuration file (server.xml).

Configuration data for the POS terminal connection with the POS controller is usually found in the POS channel configuration file configured by the WAY4 vendor.

## 4 Monitoring the POS Network

The acquirer monitors the POS network in order to prevent malfunctions.

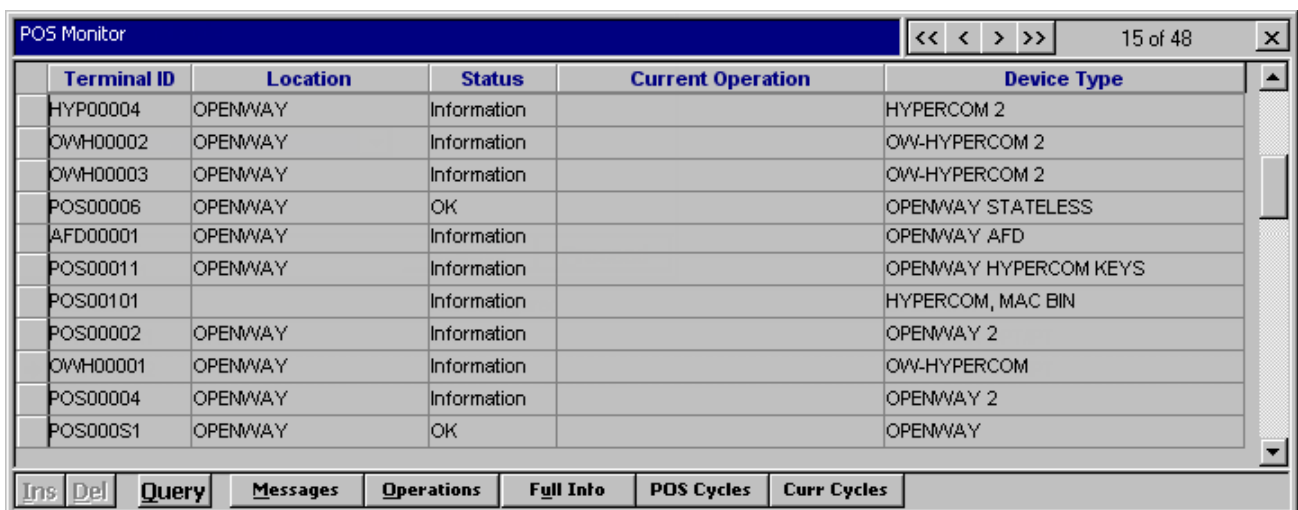
The monitoring procedure is executed using the user menu item "Acquiring → POS/Imprinter Controller → POS Monitor".

Before starting to monitor the POS network, ensure that the required financial institution is set in the status bar. If the user is granted privileges to work with several financial institutions, select "Acquiring → POS/Imprinter Controller → Set Financial Institution" from the user menu to select the required values.

### 4.1 POS State

To analyze the state of POS terminals, select the user menu item "Acquiring → POS/Imprinter Controller → POS Monitor".

The "POS Monitor" form will open.



Terminal ID	Location	Status	Current Operation	Device Type
HYP00004	OPENWAY	Information		HYPERCOM 2
OWH00002	OPENWAY	Information		OWH-HYPERCOM 2
OWH00003	OPENWAY	Information		OWH-HYPERCOM 2
POS00006	OPENWAY	OK		OPENWAY STATELESS
AFD00001	OPENWAY	Information		OPENWAY AFD
POS00011	OPENWAY	Information		OPENWAY HYPERCOM KEYS
POS00101		Information		HYPERCOM, MAC BIN
POS00002	OPENWAY	Information		OPENWAY 2
OWH00001	OPENWAY	Information		OWH-HYPERCOM
POS00004	OPENWAY	Information		OPENWAY 2
POS000S1	OPENWAY	OK		OPENWAY

Navigation buttons: Ins, Del, Query, Messages, Operations, Full Info, POS Cycles, Curr Cycles. Page: 15 of 48.

*Information about the state of POS terminals*

This form contains the following columns:

- *Terminal ID* – unique identifier of the POS terminal in the system.
- *Location* – POS terminal location.
- *Status* – POS terminal status. The following POS terminal status values are possible:
  - OK – the POS terminal is operating correctly.
  - Information – the POS terminal is operating correctly, but the status of one or several operations changed.
  - Not configured – the POS terminal is not configured, operations are not possible.

- **Warning** – errors occurred during the POS terminal's operation. To see error messages, click the [Messages] button.
- **Closed** – the contract for this device is closed (see the section "Closing Contracts" of the document "Acquiring Module").

To determine the reason for a change in a POS terminal's status, check the messages form or list of operations.

- *Current Operation* – current operation being executed by the POS terminal.
- *Device Type* – POS terminal type registered in the system and described in the "POS Types" dictionary ("Configuration Setup → Merchant Device Setup → POS Types").

For additional information about the state of POS terminals, and to change the status of a POS terminal, use the following control buttons:

- [Messages] – opens a form containing a list of messages starting from the time the POS terminal was registered in the system.
- [POS Cycles] – opens a form with information about the history of POS cycles (see "[POS Cycle History](#)").
- [Curr Cycles] – opens a form with information about the current POS terminal cycle (see "[POS Terminal Current Cycle](#)").
- [Operations] – opens the "Operations for <POS terminal name>" form, containing a list of operations available at the present time for this device, specifying the status of each operation (see "[Operations with POS Terminals](#)").
- [Full Info] – opens the "Full Info for <POS terminal name>" form, containing information about device parameters (see the section "[POS Terminals](#)" of the document "Acquiring Module. User Manual").

## 4.2 Operations with POS Terminals

To view the list of operations with a POS terminal, select the required POS terminal in the "POS Monitor" form's list (see "[POS State](#)") and click the [Operations] button.

This command opens the "Operations for <POS terminal name>" form.



The ability to change the status of POS terminal operations is obsolete functionality which is supported for backward compatibility.

Work with these forms as described in the section "[Configuring Executable Operations](#)".

Operations for TEST POS				<< < > >>	1 of 163	b x
	Operation Type	Status	Hardware Problem	Last Changed		
<input type="checkbox"/>	Unique Data Capture CardRead	Active		00/00/00 00:00:00		
<input type="checkbox"/>	Unique Data Capture ICC	Active		00/00/00 00:00:00		
<input type="checkbox"/>	Unique Data Capture Manual	Active		00/00/00 00:00:00		
<input type="checkbox"/>	Info Advice ICC SBT	Active		00/00/00 00:00:00		
<input type="checkbox"/>	Unique Reversal ICC SBT	Active		00/00/00 00:00:00		
<input type="checkbox"/>	Credit Reversal ICC SBT	Active		00/00/00 00:00:00		
<input type="checkbox"/>	Unique Refund ICC SBT	Active		00/00/00 00:00:00		
<input type="checkbox"/>	Unique Pre-auth ICC SBT	Active		00/00/00 00:00:00		
<input type="checkbox"/>	Unique Data Capture ICC SBT	Active		00/00/00 00:00:00		
<input type="checkbox"/>	Util Payment Reversal CardRead	Active		00/00/00 00:00:00		
<input type="checkbox"/>	Utility Payment PBT	Active		00/00/00 00:00:00		
<input type="checkbox"/>	Util Payment Reversal Manual	Active		00/00/00 00:00:00		
Ins Del		Query	Ch Status	History		

List of operations with a POS terminal

## 4.3 Working with POS Cycles

Information about operations on a POS terminal are recorded in the Way4 database by keeping special counters within certain time intervals (cycles). Management of two types of cycle is supported in Way4.

- "Batch Upload" – counters are accumulated in POS cycles to record online and offline operations for subsequent reconciliation with terminal data. Only financial transactions ("Advice", "Reversal" or "Adjustment" categories) are recorded in a cycle. Management of this type of cycle is enabled by setting *Batch Upl* = "Yes" for the terminal type (see ["POS Types dictionary"](#)).
- "All Documents" – information is recorded for all operations made at the POS terminal during a calendar day (regardless of the transaction category and statuses of documents generated in Way4). Transaction data from manually created documents or documents imported from external systems is also recorded in a cycle. Management of this type of cycle is enabled in one of the following ways:
  - For all terminal types – by setting the global parameter ALLD\_CYCLE\_ON to "Y".
  - For a specific terminal type – by setting the tag ALLD\_CYCLE\_ON=Y in the *Special Configuration* field of the corresponding record from the terminal type dictionary (see ["POS Types dictionary"](#)).

A "Batch Upload" cycle is determined by the interval between two reconciliation operations (see ["Reconciliation"](#)). Each new cycle is created when the first operation is performed after reconciliation, regardless of its result.

An "All Documents" cycle is limited by the calendar date. Each new cycle is created when the first operation is performed on a new calendar date, relative to the date of the last operation.

In general a "Batch Upload" cycle is organized as follows:

- Immediately after opening, the cycle has the "Active" status (i.e. in the "POS Cycles for <POS terminal name>" form, see [figure](#), the *Cycle Event* field contains the value "Active"). This status remains until reconciliation is executed.



- On the POS terminal, the cycle is closed and online operations are reconciled (see ["Reconciliation"](#)).
- If reconciliation was successful (i.e. online operation counter values stored in the database correspond to counter values received from the POS terminal) the cycle gets the "Closed" status. If offline operations were also executed on the POS terminal during the cycle:
- The POS terminal initiates the Batch Upload procedure (the current cycle gets the "Uploading" status). The values of cycle counters are corrected resulting from upload of data to the database.
- After the Batch Upload procedure is executed, another reconciliation procedure is executed (now the new counter values are considered). As a result, the cycle gets the "Closed" status (reconciliation successful) or "In Doubt" (reconciliation not successful).
- If reconciliation of online operations was not successful:
  - The cycle gets the "In Doubt" status.
  - The Batch Upload procedure is started (the POS terminal uploads data for online and offline operations) and the current cycle gets the "Uploading" status.
  - After executing the Batch Upload procedure, the reconciliation procedure is repeated.
  - If the totals received from the Batch Upload procedure were reconciled, the cycle gets the "Closed" status; otherwise, it gets the "In Doubt" status.
- If after these operations, totals were still not reconciled, it is possible to close the cycle on the host's side by clicking the [Actions] button in the "POS Cycles for <POS terminal name>" form (see [Fig. 18](#)).

### 4.3.1 POS Terminal Current Cycle:

The current POS cycle:

- has the "Active" status (*Cycle Event* = "Active", see the [figure](#) in the section ["POS Cycle History"](#)).
- is the "All Documents" type and has the "Closed" status as a result of manually closing the cycle before processing the next operation executed on the POS terminal.
- is the "Batch Upload" type and has the "Closed" or "In Doubt" status as a result of closing the cycle and reconciliation before processing the next transaction for an operation executed on the POS terminal.

For information about a POS terminal's current cycles, use the "Curr Cycles for <POS terminal name>" form (see [Fig. 18](#)). This form is opened in the parent form "POS Monitor" (see [Fig. 16](#) in the section ["POS State"](#)) by selecting a row corresponding to the required terminal and clicking the [Curr Cycles] button.

Curr Cycles for TEST ACQ							
				<< < > >>		1 of 2	
Device	Cycle Type	Device Cycle	Replenishment Cycle	Last Cycle Number	Prev Cycle Code	Prev Device Cycle	Prev Replenishment Cycle
→ POS00123	All Documents			2		2	2
POS00123	Batch Upload	100	100	100		99	99

*Current cycle for a POS terminal*

This form contains the following fields:

- *Device* – POS terminal identifier.

- *Cycle Type* – cycle type ("Batch Upload" or "All Documents").
- *Device Cycle* – current cycle number (if the cycle is closed, this field will be empty).
- *Replenishment Cycle* – same value as in the *Device Cycle* field.
- *Last Cycle Number* – last number assigned to the cycle; the number of an active cycle will be used, if there is such a cycle.
- *Prev Cycle Code* – number assigned to the cycle as a result of reconciliation; usually the value in this field increases with each cycle closed. The value is filled in according to the cycle code received from the POS terminal.
- *Prev Device Cycle* – if this is an active cycle ("Active"), this field contains the number of the previous cycle; after reconciliation (in the "Closed" or "In Doubt" status) – the number of the current cycle.
- *Prev Replenishment Cycle* – corresponds with the value in the *Prev Device Cycle* field.

This form contains the following control buttons:

- The [Actions] button opens a context menu containing the following items:
  - "Replenishment" – close a cycle that has the "Active" status.



It is not recommended to use this button to close cycles that have statuses other than "Active".

- "Reset Code" – reset the value of the cycle code (*Prev Cycle Code*).
- [POS Cycles] – button for access to information about the POS cycle history (see "[POS Cycle History](#)").

### 4.3.2 POS Cycle History

The "POS Cycles for <POS terminal name>" form (see [Fig. 19](#)) contains information about the history of POS terminal cycles. This form is opened by clicking the [POS Cycles] button in the "POS Monitor" form (see [Fig. 16](#) in the section "[POS State](#)") or in the "Curr Cycles for < POS terminal name>" form (see [figure](#) in the section "[POS Terminal Current Cycle](#)").

POS Cycles for OPENWAY						<< < > >>		1 of 7		b x	
	Cycle Number	Cycle Code	Cycle Event	Date From	Date To	Merchant Card Contract	Cycle Type				
→	7		Active	27/04/12 13:55:01	00/00/00 00:00:00		Batch Upload				
	6	000006	Closed	27/04/12 13:39:34	27/04/12 13:40:13		Batch Upload				
	5	000005	Closed	27/04/12 13:30:32	27/04/12 13:33:04		Batch Upload				
	4	000004	Closed	27/04/12 11:50:21	27/04/12 12:01:11		Batch Upload				
	3	000003	In Doubt	19/04/12 16:57:59	19/04/12 18:03:31		Batch Upload				
	2	000002	Closed	19/04/12 16:40:35	19/04/12 16:40:56		Batch Upload				
	1	000001	Closed	30/12/05 18:29:02	19/04/12 16:31:17		Batch Upload				
Ins Del Query Actions Counters Messages											

#### POS Cycle history

Rows in this table correspond to POS terminal cycles, and columns contain the following information:

- *Cycle Number* – POS terminal cycle serial number, assigned by Way4.
- *Cycle Code*:
  - for "Batch Upload" – number assigned to the cycle as the result of reconciliation, based on data from the POS terminal; usually the value in this field increases each time a cycle is closed.
  - for "All Documents" – date (in YYYYMMDD format) of operations that were made in the cycle.
- *Cycle Event* – POS cycle status. This field may have the following values:
  - "Active" – the cycle is active.
  - "In Doubt" – discrepancies were found during reconciliation.
  - "Uploading" – uploading in process (Batch Upload procedure is being executed).
  - "Replenishment" – the cycle was closed in the "Active" status (see [Closing a cycle](#)).
  - "Closed" – the cycle is closed (see [Closing a cycle](#)).
- *Date From* – start date and time of cycle.
- *Date To* – for "Batch Upload" cycles, the date and time of reconciliation (with subsequent transfer of the cycle to the corresponding status); for "All Documents" cycles, the cycle closing date and time; for a current cycle, this field contains null values.
- *Merchant Card Contract* – cashier service card number.
- *Cycle Type* – cycle type.

The [Counters] button opens the "Counters for <POS terminal name>" form (see [Fig. 20](#)) with information on the state of cycle counters.

#### 4.3.2.1 "Batch Upload" Cycle Counters

"Batch Upload" cycle counter values are used during reconciliation (see [Reconciliation](#)).

For the OpenWay Native protocol, each counter accumulates information about the number and total financial amount of operations grouped by three attributes:

- "Direction" – direction of funds activity (Debit/Credit).
- "Request Category" – (Advice/Reversal).
- "Currency" – operation currency.

Rules for recording different operation types in counters are specified by the mode for calculating totals (see [Totals Calculation Modes](#)).

For reconciliation to be successful, counter values stored in the database must match those received from the POS terminal.

Counters for POS00002-OPENWAY							1 of 2		b x	
Key Value	Direction	Request Category	Currency	Cycle N Docs	Cycle Balance	Device N Docs	Device Balance	Device Cycle		
→ DANR810	Debit	Reversal	RUR	6	-466,66	6	-466,66	114		
DANP810	Debit	Advice	RUR	13	1 150,00	13	1 150,00	114		

#### State of "Batch Upload" cycle counters

For "Batch Upload" cycles, the "Counters for <POS terminal name>" (see [Fig. 20](#)) contains the following information:

- *Key Value* – this value is generated automatically based on the values of other fields.

- *Direction* – transaction direction:
  - "Credit" – the cardholder's account is credited.
  - "Debit" – the cardholder's account is debited.
- *Request Category* – request category:
  - "Advice" – execution of an operation.
  - "Reversal" – reversal (adjustment) of an operation.

For protocols with *Is Adjusting Totals* = "Yes", reversals are recorded in the same counters as original operations.

- *Currency* – operation currency.
- *Cycle N Docs* – number of operations recorded by the corresponding Way4 counter (both in the process of registering online operations and in the Batch Upload process).
- *Cycle Balance* – total financial amount of operations recorded by the corresponding Way4 counter.
- *Device N Docs* – number of operations recorded by the corresponding POS terminal counter (obtained during reconciliation).
- *Device Balance* – total financial amount of operations recorded by the corresponding POS terminal counter (obtained during reconciliation).



If for this terminal type (see [Fig. 1](#) in the section "POS Types dictionary") "standard" mode for checking counters is set (*Strong Counters* = "No"), the values of the *Cycle Balance* and *Device Balance* fields will be compared during the check. If for this terminal type, "strong" mode for checking counters is set (*Strong Counters* = "Yes"), the values of the *Cycle N Docs* and *Device N Docs* fields will also be compared during the check.

- *Device Cycle* – current cycle number.

The [Dispense] button in the "Counters for <POS terminal name>" form (see [Fig. 20](#)) opens the "Dispense for ..." form (see [Fig. 21](#)) which contains detailed information about operations.

This form is used to obtain information about the operations from which the *Cycle N Docs* and *Cycle N Balance* counter values were taken, for example, in analyzing a situation when counter values did not correspond in reconciliation.

Dispense for [Empty], [Empty] << < > >> 1 of 5 b x				
	Trans Date	Amount	Is Reversed	State
→	23/01/12 19:28:11	1,50		Dispensed
	23/01/12 19:28:12	1,92		Dispensed
	23/01/12 19:28:12	3,33		Dispensed
	23/01/12 19:28:12	5,00		Dispensed
	23/01/12 19:28:11	11,50		Dispensed
Ins Del Query Doc				

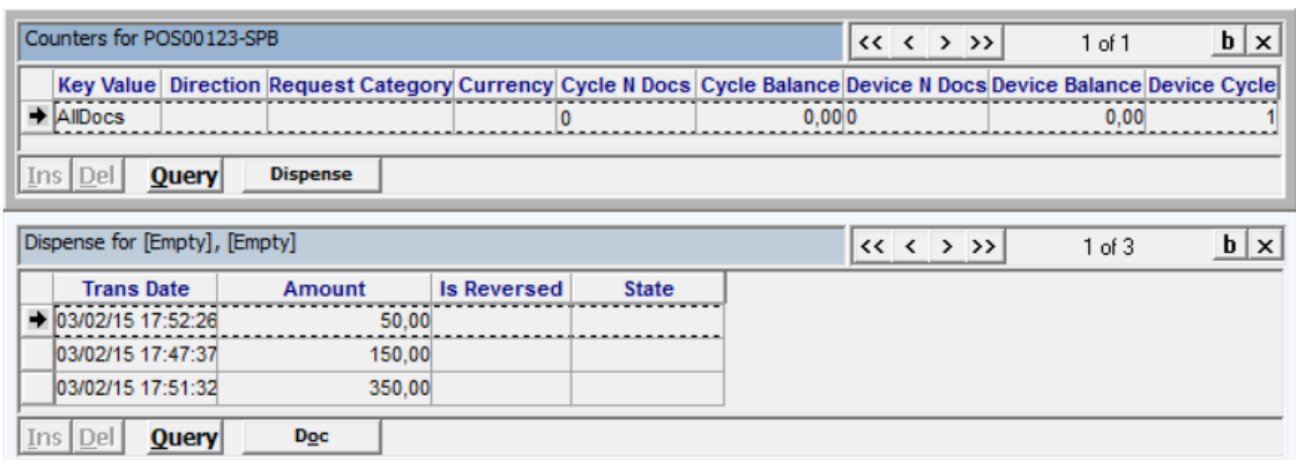
*Detailed information about operations*

The "Dispense for..." form contains the following fields:

- *Trans Date* – transaction date and time.
- *Amount* – transaction amount.
- *Is Reversed* – indicates a reversal (adjustment) operation. Possible values:
  - "Reversing" – the operation reverses an operation that has not been confirmed by the Batch Upload procedure. The "Reversed" value is specified for an unconfirmed operation in the State field. A similar value is set for an adjustment operation if a protocol with Is Adjusting Totals = "Yes" is used (in this case, adjustments are recorded in the same counter as original operations).
  - "Adjusting" – the operation adjusts an earlier operation. The value is set if the adjustment is recorded in the same counter as the original operation (a protocol with Is Adjusting Totals = "Yes" is used).
- *State* – operation state. This field can have the following values:
  - "Dispensed" – the operation was executed online.
  - "Marked" – an online operation that was not confirmed during initial reconciliation is awaiting confirmation during Batch Upload (the operation remained in the "Dispensed" state until upload was started). If the POS terminal confirms this operation by uploading the corresponding data, the state will change to "Matched"
  - "Matched" – an operation that was uploaded by the Batch Upload procedure.
  - "Reversed" – the operation was reversed, since final reconciliation (after Batch Upload) did not confirm it.
  - "Closed" – the operation was confirmed as the result of initial reconciliation of online operations or final reconciliation after execution of the "Batch Upload" procedure.
- The [Doc] button makes it possible to get information about a document created in the system for an operation selected from the list (opens the "Doc for Dispense for..." form).

#### 4.3.2.2 "All Documents" Cycle Counters

Unlike "Batch Upload" cycles, in an "All Documents" cycle, a single counter is used that accumulates information for all operations made on the POS terminal during a calendar day.



The screenshot shows two software windows. The top window, titled 'Counters for POS00123-SPB', displays a table with columns: Key Value, Direction, Request Category, Currency, Cycle N Docs, Cycle Balance, Device N Docs, Device Balance, and Device Cycle. The first row shows 'AllDocs' with a cycle balance of 0,000 and device balance of 0,00. Below the table are buttons for 'Ins', 'Del', 'Query', and 'Dispense'. The bottom window, titled 'Dispense for [Empty], [Empty]', displays a table with columns: Trans Date, Amount, Is Reversed, and State. It lists three transactions from 03/02/15: 17:52:26 (50,00), 17:47:37 (150,00), and 17:51:32 (350,00). Below this table are buttons for 'Ins', 'Del', 'Query', and 'Doc'.

Key Value	Direction	Request Category	Currency	Cycle N Docs	Cycle Balance	Device N Docs	Device Balance	Device Cycle
AllDocs				0	0,000		0,00	1

Trans Date	Amount	Is Reversed	State
03/02/15 17:52:26	50,00		
03/02/15 17:47:37	150,00		
03/02/15 17:51:32	350,00		

Counter and list of corresponding "All Documents" cycle operations

For "All Documents" cycles, the "Counters for <POS terminal name>" form contains the following information:

- *Key Value* – the "AllDocs" value.
- *Device Cycle* – current cycle number.

The remaining fields are not filled in for the "All Documents" counter.

The [Dispense] button in the "Counters for <POS terminal name>" form opens the "Dispense for ..." form containing information about operations.

- *Trans Date* – transaction date and time.
- *Amount* – transaction amount.

The remaining fields are not filled in for the "AllDocs" counter.

The [Doc] button makes it possible to get information about a document created in the system for an operation selected from the list (opens the "Doc for Dispense for..." form).

### 4.3.3 Closing a cycle

A POS terminal cycle is closed in Way4 as follows:

- Automatically:
  - For "Batch Upload" cycles – as the result of successful reconciliation (initial reconciliation of online operations or final reconciliation when the Batch Upload procedure is completed) the cycle goes to the "Closed" status.
  - For "All Documents" cycles – when the first operation is made in a new calendar day, a new cycle opens and the current one will get the "Closed" status
- Manually:
  - If an active cycle (*Cycle Event* = "Active") must be closed, first its status must be changed to "Replenishment". To do this, in the "Curr Cycles for <POS terminal name>" form, click the [Actions] button and select "Replenishment" from the context menu. A cycle with *Cycle Event* = "Replenishment" is changed to the "Closed" status by clicking the [Actions] button in the "POS Cycles for <POS terminal name>" form.
  - If a cycle that has the "In Doubt" status must be closed (there was a discrepancy in counter values after initial reconciliation of online operations or after Batch Upload), use the [Actions] button in the "POS Cycles for <POS terminal name>" form.

### 4.3.4 Generating reimbursement

In general, a merchant is reimbursed as follows: When processing contracts (for example, when closing the banking day) documents for POS terminal operations are processed, confirmed by reconciliation in closing the financial cycle, and if they are processed successfully, get the "Posted" status. According to due normalization settings, a funds entry is made between "Merchant Receivable" and "Merchant Current" accounts. Funds are transferred to the merchant's accounts when standing payment orders configured for "Merchant Current" accounts are processed.

If the global parameter `WAIT_BATCH_UPLOAD` is set (see the document "WAY4 Global Parameters"), documents for operations waiting for confirmation by the "Batch Upload" procedure are not included in processing; therefore, it is possible that the corresponding amounts will not be included in the current normalization. If documents are confirmed by the "Batch Upload" procedure and the value of the global parameter `USE_CUT_OFF_TIME` is "B", the value of the *Cut-Off Time* parameter will be considered when processing documents (see the section "POS Terminals" of the document "Acquiring Module. User Manual").

If turnover must be reflected in a "Merchant Receivable" account within a billing cycle, the "ENTRY\_GROUPING" tag is used. For this, in the appropriate Account Scheme (menu item "Full → Configuration Setup → Products → Acquiring Products → Acquiring Account Schemes") specify the value "ENTRY\_GROUPING=BY\_BATCH;" in the *Template Details* field for the "Merchant Receivable" account.

Reimbursement of a merchant can also be initiated when a final message is received with data about online operations (message type "0500") that were performed in the financial cycle. If the value of the global parameter `SETTLE_MERCHANT_BY_POS_CYCLES` is "Y", regardless of the results of the cycle's reconciliation, a job will be generated to pay the merchant and this job will be processed in the order of the existing queue. The parameter `SETTLE_MERCHANT_BY_POS_CYCLES` can also be defined (in ascending order of priority) by a tag with the same name for a specific financial institution (the *Special Parms* field of a financial institution's form) or contract (the *Add Info* field of a contract's form) (see the document "WAY4 Global Parameters").

To run the reimbursement procedure, use the menu item "Acquiring → POS / Imprinter Controller → Acq Cycle Settlement". The procedure to process the queue of reimbursement jobs can be scheduled (see the document "Scheduler Manual").



The procedure for processing the job queue must not overlap with the standard procedure for processing documents.

The merchant reimbursement procedure includes the following:

- Processing documents that were generated in financial cycles (according to the number of the cycle and contract specified in the job).



Cycle numbers in documents must not be registered in ways that differ from standard mechanisms for numbering cycles.

If for some reason a cycle document was not processed (it got the "Decline" status), it is assumed that after errors have been fixed, the document will be processed by the standard procedure; for example, closing the banking day, and that reimbursements for the document will be generated according to normalization settings in the "Merchant Receivable" account type.

Similarly, documents for operations waiting for "Batch Upload" to be performed will be processed by the next standard procedure only after the cycle has been closed, and reimbursements will be generated according to "Merchant Receivable" normalization settings.



- Entry between "Merchant Receivable" and "Merchant Current" accounts.
- Processing standing payment orders with the "BY\_BATCH;" tag (in the *Posting Details* field, see the document "Standing Payment Orders") that are configured for "Merchant Current" accounts.

To support functionality for unscheduled reimbursement, set the tag "ENTRY\_GROUPING=BY\_BATCH;" for the "Merchant Receivable" account type (as described earlier) and configure the corresponding payment orders with the "BY\_BATCH;" tag for "Merchant Current" accounts.



## 5 Working with Encryption Keys in OpenWay Software

Encryption keys are generated using an HSM (see the document "Host Security Module RG7000 Operation and Installation Manual").

### 5.1 Generating Keys

The key generation procedure is described in the document "Terminal Key Management".



The system supports a procedure for automatic key change. This functionality is provided according to a separate agreement with OpenWay.

### 5.2 Entering the Master Key in the PIN Pad

For information on entering the master key in the PIN pad, see the system administrator manual for the appropriate terminal type.

### 5.3 Entering TPK in the Database

To process PIN-based transactions (PBT), the terminal's encrypted TPK key and its check value must be entered in the corresponding Way4 database record (see "[Specifying Encryption Keys](#)"). To do so, the encrypted TPK value received on the HSM and recorded in the log must be entered in the *Des Key* field of the terminal command record. The *Check Value* field is filled in with the corresponding TPK check value. Check the correspondence of keys in the database and in terminal PIN pads. For information about the *PBT Status* parameter, see "[Mandatory PIN Mode](#)".

### 5.4 Entering TPK and Check Values in Terminals

For information about entering TPK and check values in terminals, see the administrator manual for the appropriate terminal type.

## 5.5 Entering TAK in the Database

To process transactions requiring MAC signatures, the terminal's encrypted TAK key and its check value must be entered in the corresponding Way4 database record (see "[Specifying Encryption Keys](#)"). The *Check Value* field of the TAK key is filled in with the corresponding TAK check value. Check the correspondence of keys in the database and in terminal PIN pads. For information about the *MAC Status* parameter, see "[Enabling MAC Mode](#)".

## 5.6 Entering TAK and Check Values in Terminals

For information about entering TAK and check values in terminals, see the administrator manual for the appropriate terminal type.

## 6 Request Transmission Scenarios

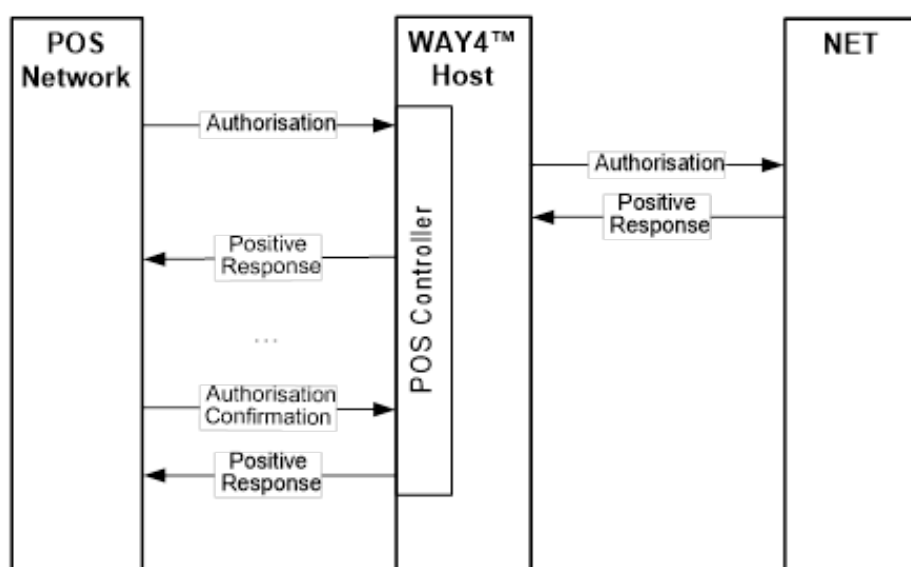
An online request from a POS network is received for processing by the POS controller (Way4 Host). In most cases, the request is sent to a payment system network (NET) or Host- to-Host channel. On-us transactions are processed in Way4.

Typical request transmission scenarios can be grouped as follows:

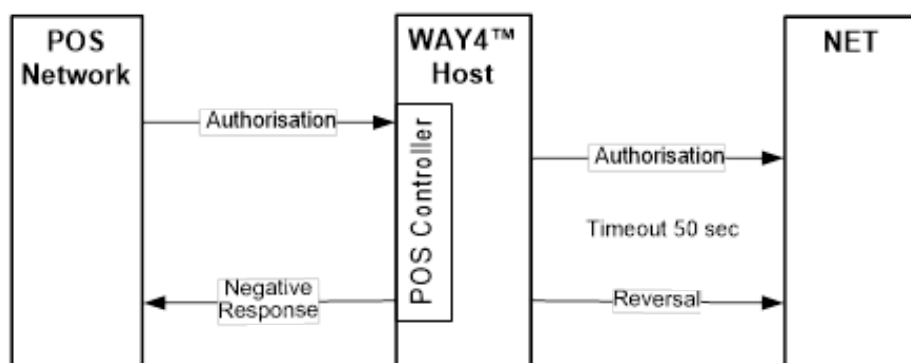
- Deferred confirmation authorization.
- Retail/cash.
- Balance inquiry.

### 6.1 Deferred Confirmation Authorization

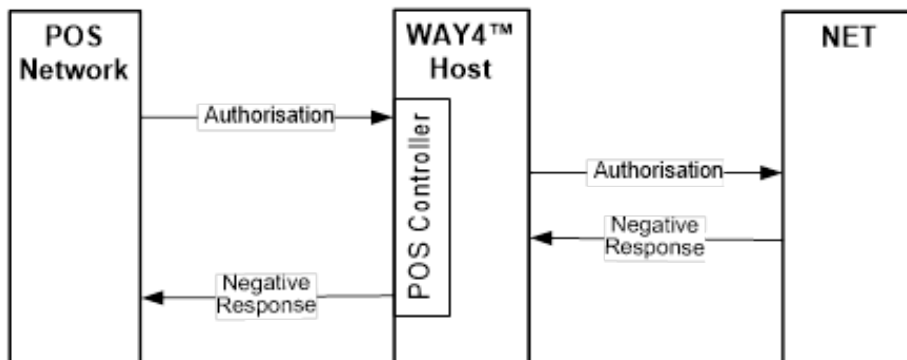
Request transmission scenarios for deferred confirmation authorization are shown in the figures:



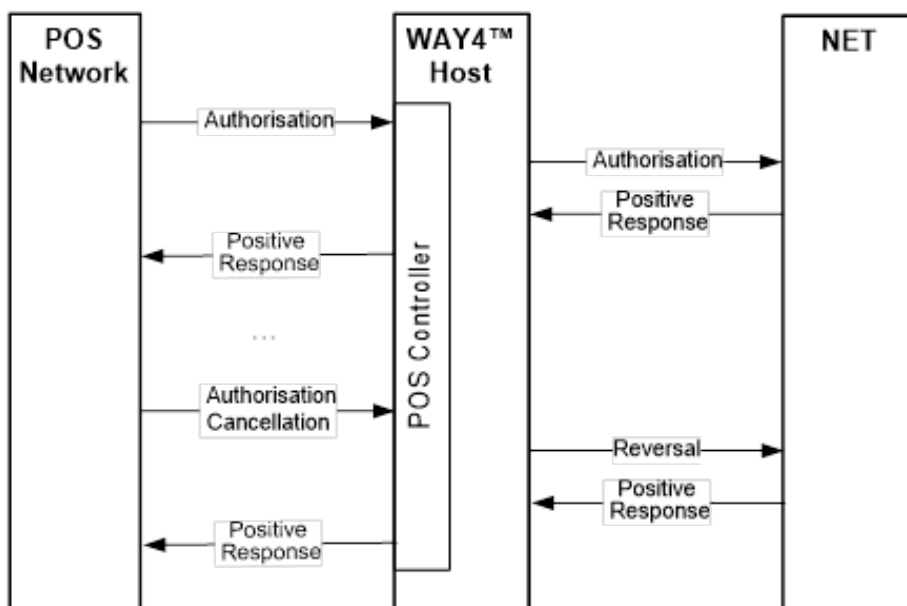
*Successful authorization in an external network with deferred advice*



*No response during a specified period*



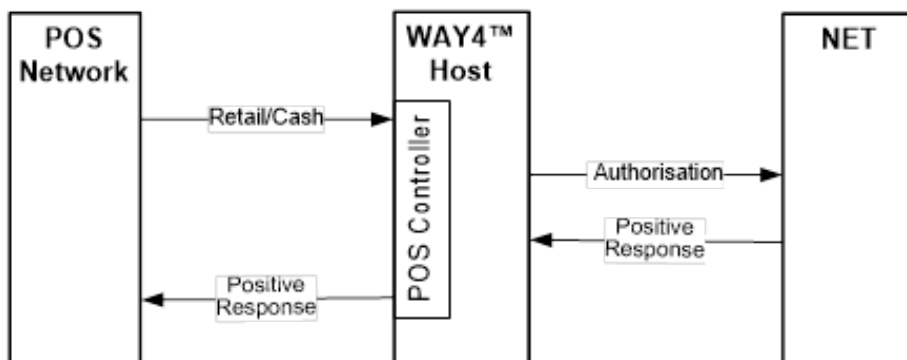
*Negative authorization response from an external network*



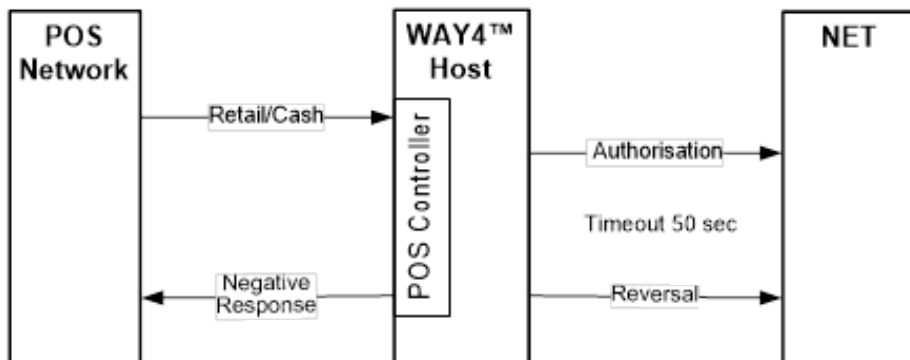
*Reversal of a previous authorization in an external network*

## 6.2 Retail/cash

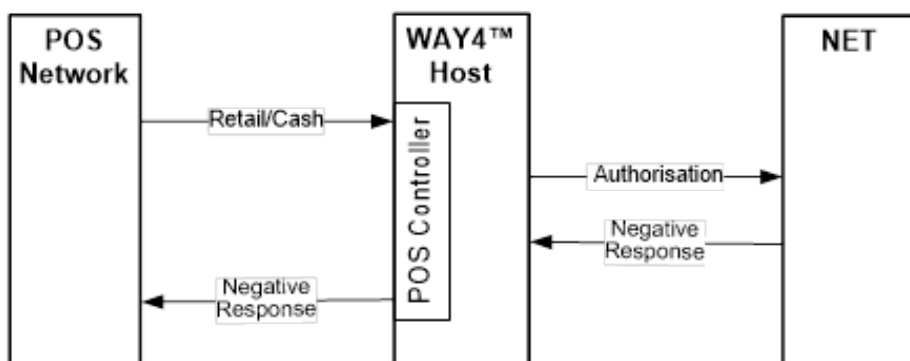
Request transmission scenarios for retail/cash operations are shown in the figures:



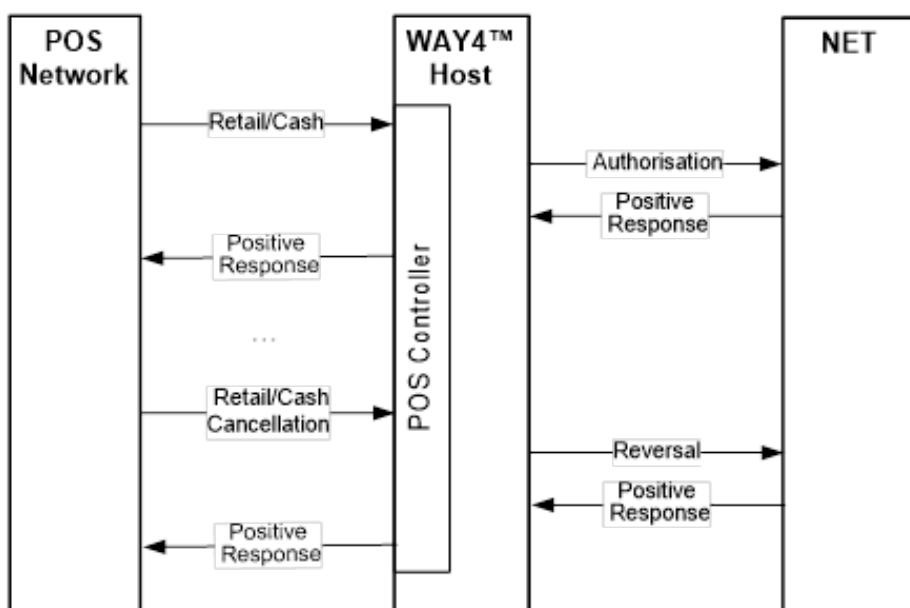
*Successful purchase (additional financial request from the POS network is not required)*



*No response during a specified period*



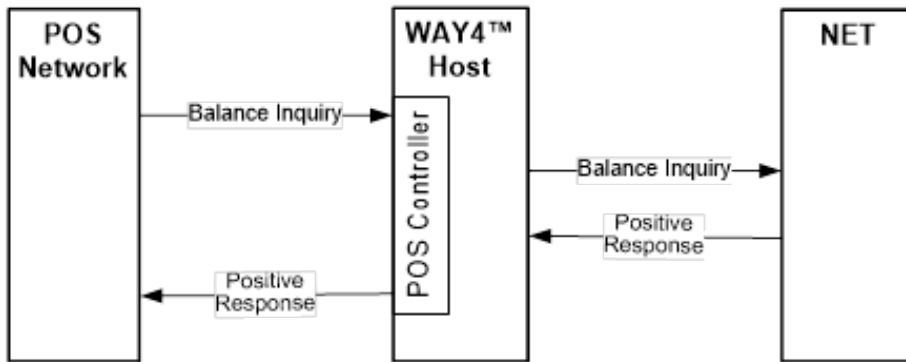
*Negative authorization response from an external network: purchase or cash dispense is not allowed*



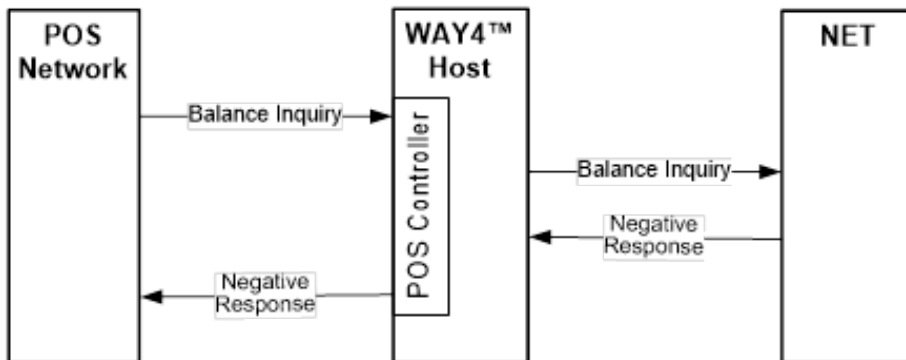
*Successful reversal of the previous successful retail/cash operation*

## 6.3 Balance Inquiry

Request transmission scenarios for balance inquiries are shown in the figures:



*Successful balance inquiry in an external network*



*Negative response to a balance inquiry in an external network*

## 7 Totals Calculation Modes

For each available currency type in a POS terminal in Way4, the following operation counter types are maintained: Advice Debit, Reversal Debit, Advice Credit, Reversal Credit. Information about counter values is provided in the "Counters for..." form (see the section "[POS Cycle History](#)"). Totals calculation modes determine the correspondence between operation types and the types of counters in which they are recorded.

There are two totals calculation modes; each of which has its own table for comparing the operation type and the name of the counter used to record this operation.

- Correspondence between operation type and counter name for calculation mode "1"

Counter Type	Operation Type
Advice Debit	Purchase/Cash Authorisation Confirmation Purchase with Cash Back Universal Bill Payment Advice (card and cash)
Reversal Debit	Universal Reversal on Purchase/Cash Universal Reversal Advice on Purchase/Cash Universal Reversal on Authorisation Refund
Advice Credit	Credit Credit Voucher
Reversal Credit	Universal Reversal on Credit

Pre-Authorization and Utility Payment operations are non-financial operations and are not considered during comparison. Original operations that were automatically reversed by the terminal and their reversals (Automatic Reversal) are considered in counters.

- Correspondence between operation type and counter name for calculation mode "2"

Counter Type	Operation Type
--------------	----------------

Advice Debit	Purchase/Cash Authorisation Confirmation Purchase with Cash Back Universal Bill Payment Advice (card and cash) Pre-paid purchase AFD Completion
Reversal Debit	Universal Reversal on Purchase/Cash Universal Reversal on Authorisation Confirmation Universal Reversal on Purchase with Cash Back Universal Reversal on Universal Bill Payment Advice (card and cash) Universal Reversal on Pre-paid purchase Universal Reversal on AFD Completion Refund
Advice Credit	Credit Credit Voucher
Reversal Credit	Universal Reversal on Credit Universal Reversal on Credit Voucher

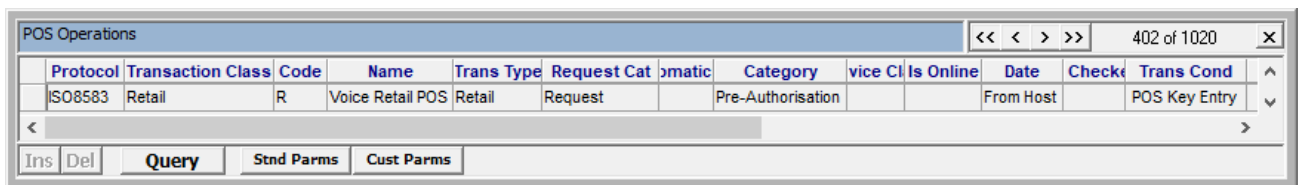
Pre-Authorization and Utility Payment operations are non-financial operations and are not considered during comparison. Neither original operations that were automatically reversed by the terminal nor their reversals (Automatic Reversal) are considered in counters.



## 8 Configuring voice authorization

The Way4 acquiring module provides the ability to conduct voice authorization if execution of the corresponding operation on the POS terminal is for some reason impossible (without using an imprinter). In the acquirer's system such an operation is registered as a preauthorization document for the corresponding POS terminal. This is done in the voice authorization window ("Acquiring → POS / Imprinter Controller → Voice Authorization Screen")

When this feature is used, an operation with the following parameters must be registered in the "POS Operations" dictionary (see the section "[Fixed Dictionaries](#)"):



Protocol	Transaction Class	Code	Name	Trans Type	Request Cat	Automatic	Category	Voice Cl	Is Online	Date	Check	Trans Cond
ISO8583	Retail	R	Voice Retail POS	Retail	Request		Pre-Authorisation			From Host		POS Key Entry

### *POS terminal operation parameters for voice authorization*

In the *Protocol* field of the "POS Operations" form, it is necessary to specify the protocol set for the terminal of the used type according to the "POS Types" dictionary (see the section "[Custom POS Dictionaries](#)").

This operation is added to the list of operations available for POS terminals in the settings of contracts for the corresponding devices, in the "POS for <device name>" form ("Acquiring → Acquiring Contracts → Acquiring Contracts → [Devices] → [POS]"). To update the list of available operations, click the [Setup] button and select the menu item "Check and fill".

When registering new POS terminals of the corresponding type, additional settings are not required and voice authorization will be available by default.

The aforementioned settings make it possible to register preauthorization documents through the voice authorization window ("Acquiring → POS / Imprinter Controller → Voice Authorization Screen") by specifying the identifier of the corresponding POS terminal.

Financial documents related to voice authorization that was made are registered in the Way4 database as the result of batch upload of the merchant's transaction information. For their correct processing, uploaded UFX files must contain the following data about transaction conditions (<TransCondition> element):

```
<Doc>
...
  <TransType>
    <TransCode>
      <MsgCode>DpP--00-</MsgCode>
    </TransCode>
    <TransCondition> , IMPRINTER, NO_TERM, AUTHENTICATED, AUTH_MERCH, TRANS_AUTH, SBT, SBT_
MAN, CARD, CARDHOLDER, MERCH, KEY_ENTRY, </TransCondition>
  </TransType>
...
</Doc>
```



The feature described in this section makes it possible to use the voice authorization window, including to solve various kinds of problem situations when servicing POS terminal operations.