Transaction Monitoring

Contents

Introduction

This document is intended for WAY4 administrators (bank or processing centre employees). It describes transaction monitoring functionality and setup for guaranteed delivery of transaction messages.

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

- "Store and Forward Technology"
- "Documents"

The following notation is used in the document:

- Field labels in screen forms are shown in *italics*.
- Screen form button labels are shown in square brackets, such as, [Approve].
- Sequences for selecting user menu items are given using arrows as follows: "Issuing → Contracts Input & Update".
- Sequences for selecting system menu items are given using arrows as follows: "Database => Change password".
- Key combinations used in DB Manager are shown in angular brackets, for example, <Ctrl>+<F3>.
- Warnings about potentially hazardous situations or actions are marked with the ⚠ sign.
- Messages marked with the ℹ sign contain information about important features, additional facilities, or the optimal use of specific WAY4 functions.

Chapter 1. Overview

In WAY4 transaction messages are exchanged between different devices (ATMs, payment terminals, etc.) service providers (for example, to pay for mobile phone services), payment systems and bank systems through special transport nodes responsible for processing and routing messages in collaboration with the WAY4 database (DB). Nodes include software components (operating system processes that are run separately; hereinafter physical channels/services) that are responsible for interaction with the system that is the source/target of transaction messages. One or several physical channels can operate in a logical channel, allowing flexible setup of the mechanism for guaranteed delivery of transaction messages (Store and Forward, SAF).

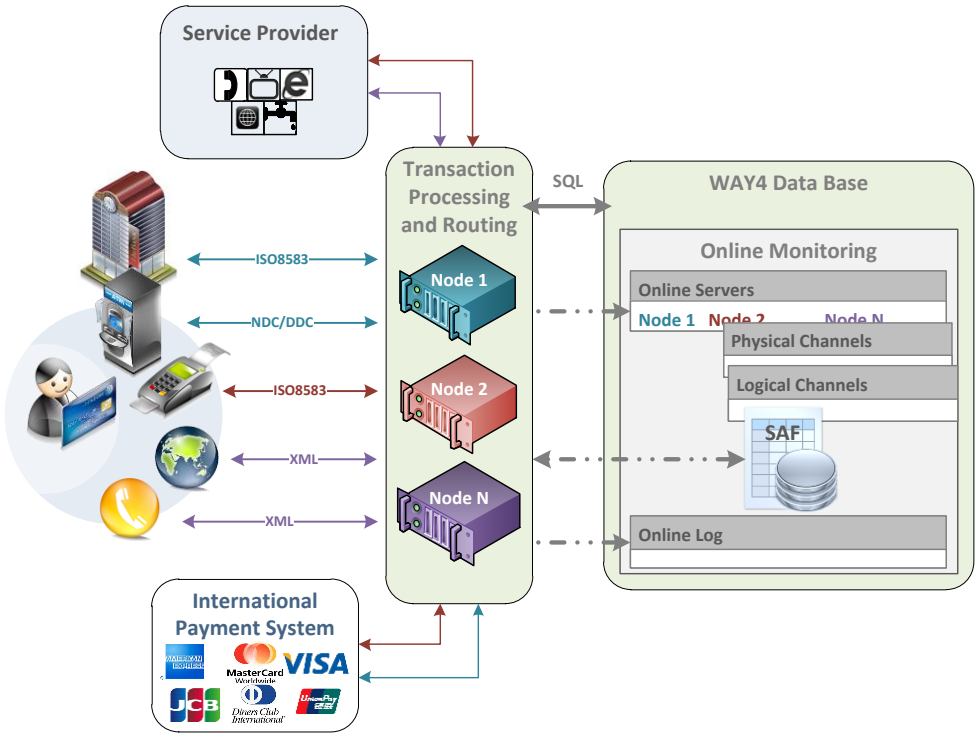


Fig. 1. Monitoring transaction message exchange in WAY4

Information about nodes and transaction messages they have processed is recorded in WAY4 DB tables and is available for monitoring in "Full → Online Monitoring" menu group forms. Store and Forward can be set up in these forms.

Chapter 2. Information about Nodes and Channels

Nodes for processing and routing messages and physical channels/services running in them are automatically registered in the WAY4 DB. Registration information includes identification data set in the configuration of the nodes and channels, for example: node identifier, name of the physical channel/service, code of the logical channel which includes this physical channel/service.

Nodes for Processing and Routing Messages

Information about nodes responsible for processing and routing transaction messages is provided in the "Online Servers" form available from the user menu item "Full → Online Monitoring → Online Servers".

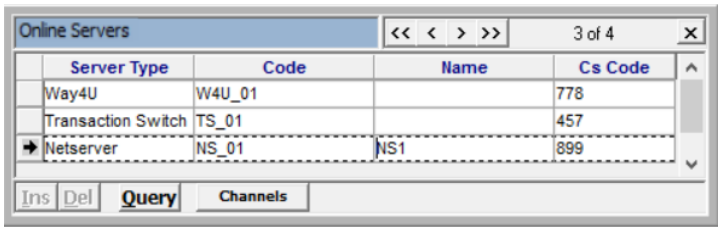


Fig. 2. List of registered nodes

This form's fields contain the following information:

- *Server Type* – node type:
  - "Netserver" – node for processing and routing requests on the WAY4™ NetServer platform.
  - "Transaction Switch" – node for processing and routing requests on the WAY4™ Transaction Switch platform.
  - "Way4U" – node for processing and routing requests on the WAY4™ Universe platform
- *Code* – code of the node according to the identifier set in its configuration.
- *Name* – user-defined logical name of the node: used, in particular, as the node name in child forms.
- *CS Code* – INTRANET identifier assigned to the node on its registration.

The [Channels] button makes it possible to get information about the state of physical channels/services used by this node (the composition of this information is described in the next section).

Physical Channels/Services

Information about the operation of physical channels/services responsible for interacting with a system that is the source/target of transaction messages is recorded in the WAY4 DB and shown in the "Physical Channels" form opened with the user menu item "Full → Online Monitoring → Physical Channels".

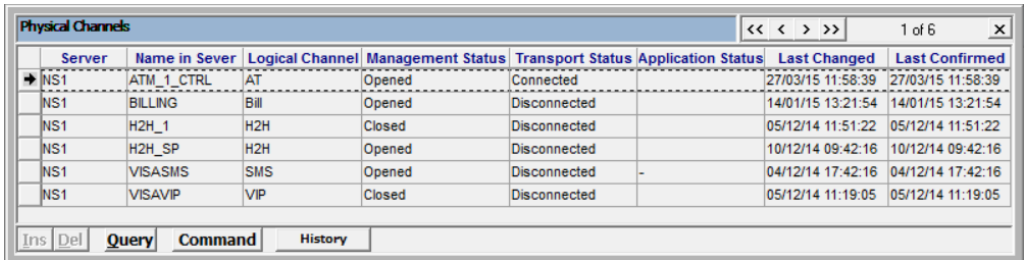


Fig. 3. State of physical channels/services

This form's fields contain the following information:

- *Server* – node name corresponding to the value of the *Name* field in the "Servers" form (see Fig. 2).
- *Name in Server* – name of the channel/service according to the node's configuration.
- *Logical Channel* – name of the corresponding logical channel defined by the *Name* field in the "Logical Channels (SaF)" form (see Fig. 4).
- *Management Status* – channel/service management status: "Opened" – running, "Closed" – stopped.
- *Transport Status* – channel/service transport status: "Connected" – connected, "Disconnected" – no connection.
- *Application Status* – channel/service application status: "Signed On" – connected; "Signed Off" – no connection. The "-" value is set when *Transport Status* = "Disconnected", and *Transport Status* = "Connected" until the first SignOn of a message.
- *Last Changed* – date of the last change in any of the channel's statuses.
- *Last Confirmed* – date of the last confirmation of the channel's current status.

The [Command] button is used to send management commands to channels. Depending on the context menu item, the command can be sent to a selected channel or simultaneously to all channels. To send a command, select it from the list provided in the "Select Channel Command" list and, after specifying the necessary parameters, click on the [Procced] button.

The [History] button makes it possible to get information about the history of changes in the statuses of the corresponding physical channels/services.

Logical Channels

Several physical channels/services can operate in one logical channel. Grouping of physical channels/services in a logical channel is determined by the configuration of the node – in settings for interaction of the corresponding channels/services with the WAY4 DB, a single identifier of the logical channel is specified.

SAF is set up in a logical channel (see "SAF Setup").

Information about logical channels is recorded in the WAY4 DB and is shown in the "Logical Channels (SaF)" form opened with the user menu item "Full → Online Monitoring → Logical Channels (SaF)".

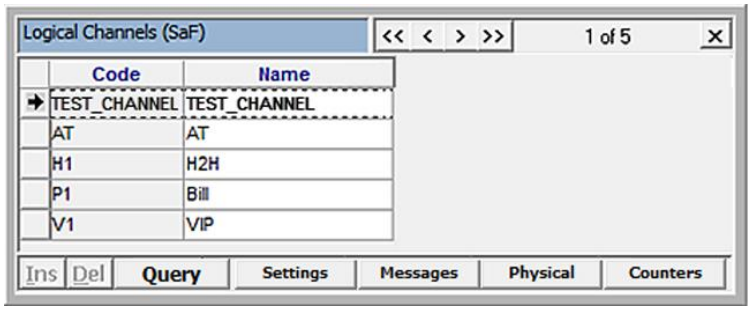


Fig. 4. List of logical channels

This form's fields contain the following information:

- *Code* – code of the logical channel specified in the settings of the corresponding physical channel (group of channels) in the node's configuration.
- *Name* – user-defined name of the logical channel; used, in particular, as the channel name in child forms; by default, corresponds to the value of the *Code* field.

The "Logical Channels (SaF)" form contains the following buttons:

- The [Settings] button opens the "Settings for <channel name>" form, in which rules can be defined for serving messages according to SAF technology.
- The [Messages] button opens the "Messages for <name of logical channel>" form containing information about messages received on this channel, and placed in special storage for further sending according to SAF rules.
- The [Physical] button opens the "Physical for <channel name>" form containing a list of physical channels grouped by this logical channel.
- The [Counters] button opens the "Final Counters for <channel name>" form that contains counter data for messages with the "Waiting" and "Suspended" status for the selected logical channel.

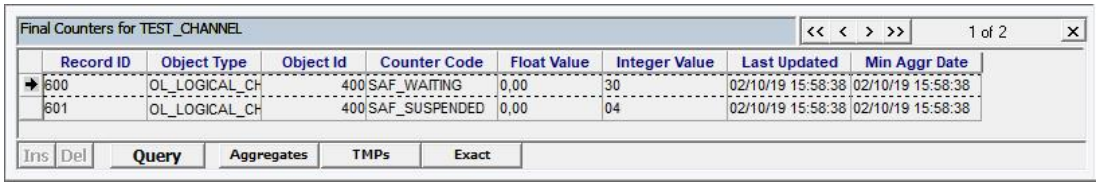


Fig. 5. Counters for messages with the "Waiting" and "Suspended" SAF statuses

The values of counters shown in this form (*Integer Value* field) correspond to the results of the last computational process and may differ from the actual number of messages (with the corresponding status) at the current time. If more up-to-date values are required, use the [Exact] button.

Note that during normal operation in SAF mode, counter values are typically null.

Chapter 3. SAF Setup and Monitoring

The need to support guaranteed message delivery (SAF) is determined by the configuration of the node that processes and routes transaction messages (see the document "Store and Forward Technology").

SAF is configured in a logical channel. Therefore, all physical channels/services operating in one logical channel have a common SAF database.

SAF Setup

To configure SAF, select a logical channel in the "Logical Channels (SaF)" form and click on the [Settings] button.

The "Settings for <channel name>" form, makes it possible to define rules for serving messages using SAF technology if parameter values differing from the default ones must be used.

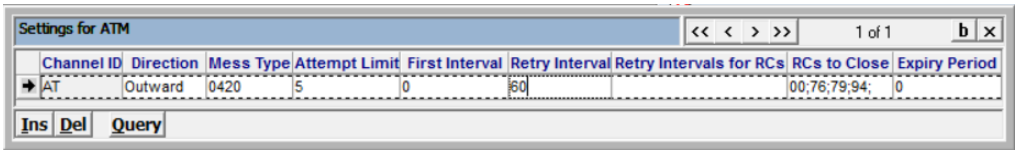


Fig. 6. Rules for serving messages using SAF technology

To add a new rule to this list, click on the [Ins] button and fill in the following fields:

- *Direction* – drop-down list to specify the message type for which the rule is being configured:
  - "Outward" – messages sent by the channel/service to external networks, for example, to payment system networks.
  - "Inward" – messages sent within a node from the receiving process (channel/service), for example, the VisaNet channel, to the next process, for example, to the authorization channel.
- *Mess Type* – the code of the message type (MTID) for which the rule is being configured.
- *Attempt Limit* – the maximum permitted number of attempts to send a message. The default value is "5".
- *First Interval* – delay in the first attempt to send the message, in seconds (by default "0", i.e. immediately).
- *Retry Interval* – the minimum time interval (in seconds) during the same message cannot be resent. The default value is "60".
- *Retry Intervals for RCs* – redefinition of *Retry Interval* depending on the previous message's specific response code (RC). The format is "code=interval;".

- *RCs to Close* – list of response codes that are interpreted by WAY4 as notification that the message has been sent to the recipient. Values are added to this field separated by a ";" specified to the right of the last element in the list. The default value is "00". If this value is not filled in, the default value is used for the rule being set up.
- *Expire Period* – time interval (in seconds) after which WAY4 stops attempts to send a message.
- *Priority* – priority for sending messages of the corresponding type. The parameter's value is an additional criterion when determining the order for processing messages. Message types with a lower value in the *Priority* field have a higher processing priority.

Monitoring Service of Messages (SAF)

According to the principles of SAF technology, messages arriving on a certain channel (to a service for processing) are preliminarily put into special storage for subsequent sending.

This store is accessed from the "Logical Channels (SaF)" form by clicking on the [Messages] button that opens the "Messages for <name of logical channel form>".

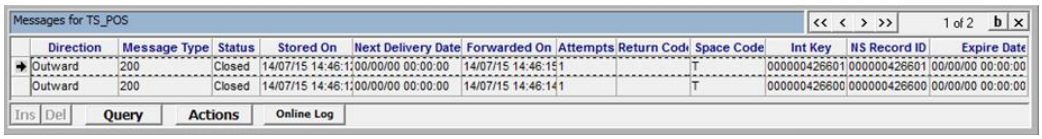


Fig. 7. List of messages arriving to the SAF store

This form contains links to messages received by the channel, specifying the following service parameters:

- *Direction* – message type (sent to an external network or served inside the corresponding transport node).
- *Message Type* – message type code (MTID).
- *Status* – message sending status ("Waiting" – waiting to be sent, "Close" – sent or "Suspend" – delayed).
- *Stored On* – date and time the message was saved.
- *Next Delivery Date* – date and time of the next attempt to send a message that is waiting to be sent.
- *Forwarded On* – date and time notification was received that a message was delivered.
- *Attempts* – number of attempts made to send a message.
- *Return Code* – response code received from the next network node.
- *Space Code* – code of the source of information about the message.
- *Int Key* – unique identifier to link messages in a transaction chain (initial and secondary), assigned by the node.

- *NS Record ID* – unique identifier of a log record (see "Transaction Message Log").

The "Messages for <channel name>" form contains the [Actions] button with a context menu for changing a message's status. This context menu contains the following items:

- "Suspend" – gives the message the "Suspended" status, preventing further attempts to send it.
- "Resume" – gives the message the "Waiting" status, attempts to send the message can be continued.
- "Close" – gives the message the "Closed" status, meaning that the message has been sent to the recipient.

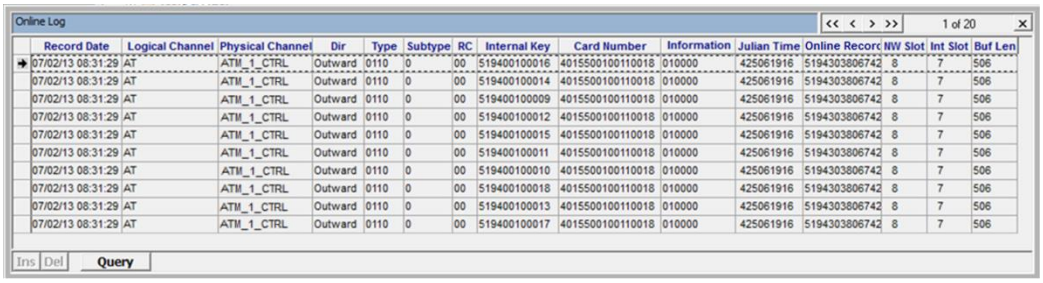
For direct access to a message itself, click on the [Online Log] button to open the "Online Log" form (see "Transaction Message Log").

Chapter 4. Monitoring Transaction Activity

During exchange of transaction messages, nodes that process and route them record the information being sent in a special WAY4 DB log. Moreover, when transaction information is received from external systems, is entered manually, and as the result of internal system processes, documents with transaction information are registered in the WAY4 DB. Information accumulated in this way makes versatile monitoring of transaction activity possible.

Transaction Message Log

Transaction messages registered in the WAY4 DB can be viewed in the "Online Log" grid form (opened with the user menu item "Full → Online Monitoring → Online Log").


Online Log

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Record Date	Logical Channel	Physical Channel	Dir	Type	Subtype	RC	Internal Key	Card Number	Information	Julian Time	Online Record	NW Slot	Int Slot	Buf Len
07/02/13 08:31:29	AT	ATM_1_CTRL	Outward	0110	0	00	519400100016	4015500100110018	010000	425061916	5194303806742	8	7	506
07/02/13 08:31:29	AT	ATM_1_CTRL	Outward	0110	0	00	519400100014	4015500100110018	010000	425061916	5194303806742	8	7	506
07/02/13 08:31:29	AT	ATM_1_CTRL	Outward	0110	0	00	519400100009	4015500100110018	010000	425061916	5194303806742	8	7	506
07/02/13 08:31:29	AT	ATM_1_CTRL	Outward	0110	0	00	519400100012	4015500100110018	010000	425061916	5194303806742	8	7	506
07/02/13 08:31:29	AT	ATM_1_CTRL	Outward	0110	0	00	519400100015	4015500100110018	010000	425061916	5194303806742	8	7	506
07/02/13 08:31:29	AT	ATM_1_CTRL	Outward	0110	0	00	519400100011	4015500100110018	010000	425061916	5194303806742	8	7	506
07/02/13 08:31:29	AT	ATM_1_CTRL	Outward	0110	0	00	519400100010	4015500100110018	010000	425061916	5194303806742	8	7	506
07/02/13 08:31:29	AT	ATM_1_CTRL	Outward	0110	0	00	519400100018	4015500100110018	010000	425061916	5194303806742	8	7	506
07/02/13 08:31:29	AT	ATM_1_CTRL	Outward	0110	0	00	519400100013	4015500100110018	010000	425061916	5194303806742	8	7	506
07/02/13 08:31:29	AT	ATM_1_CTRL	Outward	0110	0	00	519400100017	4015500100110018	010000	425061916	5194303806742	8	7	506

Ins Del Query

Fig. 8. Transaction message log

This table's fields contain the following information:

- *Record Date* – date the record was added to the log.
- *Logical Channel* – code of the logical channel from which the record was added.
- *Physical Channel* – code of the physical channel from which the record was added.
- *Dir* – message type (for external or internal recipients).
- *Type* – message type code (MTID).
- *Subtype* – internal extension code for an MTID message.
- *RC* – response code contained in a message.
- *Internal Key* – unique identifier of a messages in a transaction chain (both for initial (0100/0110 or 0200/0210), and secondary messages (0420/0430 – Reversals, 0422/0432 – Chargebacks, 0220/0230 – Adjustments or Representments)).
- *Card Number* – number of the card (PAN) used to make the transaction.
- *Information* – information about a message (for example, transaction code assigned by the acquiring module according to the transactions dictionary; message text if the transaction was unsuccessful).

- *Julian Time* – time the message was processed (in seconds) relative to 01.01.1970 with consideration of the time zone (GMT).
- *Online Record ID* – unique identifier of the log record.
- *NW Slot, Int Slot* – internal fields.
- *Buf Len* – message length.

Voice Authorization Log

When acquiring bankcards with imprinters, information about voice authorizations is logged in the WAY4 DB (for more information, see the document "Voice Authorization Module").

To get information about voice authorizations that were made, select the user menu item "Full → Online Monitoring → Voice Authorization Log" that opens a grid form of the same name.

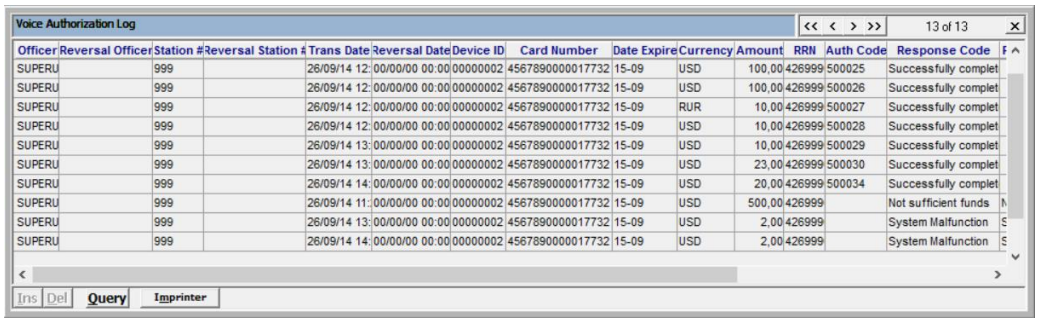

Fig. 9. Voice authorization log

This table's fields contain the following information:

- *Officer* – bank (processing centre) employee who performed authorization.
- *Reversal Officer* – bank (processing centre) employee who reversed authorization
- *Station #* – code of the workstation from which authorization was performed (according to settings "Configuration Setup → Merchant Device Setup → OpenWay Stations").
- *Reversal Station #* – code of the workstation from which authorization was reversed (according to settings "Configuration Setup → Merchant Device Setup → OpenWay Stations").
- *Trans Date* – date and time of authorization.
- *Reversal Date* – date and time authorization was reversed.
- *Device ID* – identifier of the imprinter (value of the *Terminal ID* field in the contract of the corresponding device) used to make the transaction.
- *Card Number* – number (PAN) of the card used for the transaction.
- *Date Expire* – card expiry date in "YY-MM" format.
- *Currency* – transaction currency.

- *Amount* – transaction amount.
- *RRN* – unique number of the original transaction (Retrieval Reference Number, RRN).
- *Auth Code* – authorization code.
- *Response Code* – response code.
- *Response Message* – message text if the transaction was unsuccessful.
- *Status* – transaction status.
- *Is On Us* – indicates whether the transaction is On-Us ("Yes"/"No" – the bank is/is not the issuer of the card used for the transaction).

The [Imprinter] button opens the "Imprinter for Voice Authorization Log" form with information about the imprinter used for the selected transaction.

Log of Registered Documents

To get information about documents registered in WAY4 as the result of various types of transactions, use the menu item "Full → Online Monitoring → Online Docs" to open the "Online Docs" grid form.

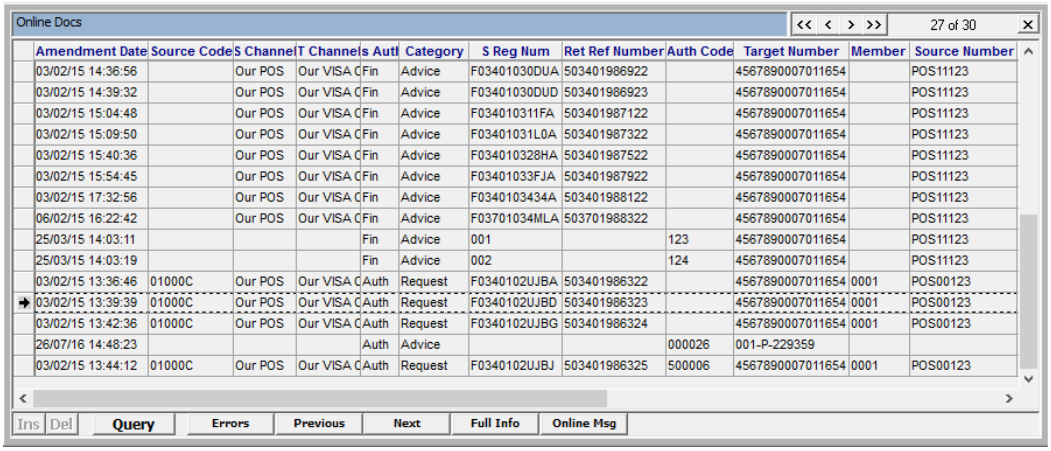

Fig. 10. Log of registered documents

For more information about this form's fields, see the document "Documents".

For a document selected in the list:

- The [Errors] button makes it possible to get information about an error (if applicable) with which the corresponding transaction ended.
- The [Previous] button makes it possible to get information about the previous document in a document chain.
- The [Next] button makes it possible to get information about the next document in a document chain.
- The [Full Info] button makes it possible to get detailed information about a selected document.
- The [Online Msg] button makes it possible to get information from the transaction message log (see "Transaction Message Log").