



Operation Manual

Loading FX Rates

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WAY4™ supports loading FX rates from special-format files, including loading rates for future dates. Loading rates is accompanied by the generation of a response file that contains information about errors during loading.

This document is intended for WAY4 users (bank or processing center employees) currently working with the system.

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

- "Daily Procedures"
- "Scheduler Operation Manual"
- "DB Manager Manual".

The following notation is used in the document:

- Field labels in screen forms are shown in *italics*.
- Key combinations are shown in angular brackets, for example, <Ctrl>+<F3>.
- Names of screen form buttons and tabs are shown in square brackets, for example, [Approve].
- Sequences for selecting user menu items or context menu items are shown using arrows as follows: "Issuing → Contracts Input & Update".
- Sequences for selecting system menu items are shown using arrows as follows: Database => Change password.
- Variables that differ for each local instance, such as directory and file names, as well as file paths are shown in angular brackets, as in <OWS_HOME>.

Warnings and information are marked as follows:



Warnings about potentially hazardous situations or actions.



Messages with information about important features, additional options, or the best use of certain system functions.

1. Loading rates using a pipe

FX rates are loaded and response files are created by the "FX Rates Import" pipe (client\shared\javapipes\com.openwaygroup.pipe.fx_rates_import.jar) that is run using the menu item "Full → DB Administrator Utilities → Special OpenWay Utilities → FX Rates Import → RBS FX Rates Import". This menu item is run during Daily Procedures before setting a new banking date (see the "Start of Day procedure" section of the document "Daily Procedures").

After the "FX Rates Import" pipe has loaded an incoming file, an outgoing response file is created that is put into the directory specified in the OUTPUT_DIR pipe parameter (see the section ["FX Rates Import" pipe parameters](#)).

The "FX Rates Import" pipe supports two modes of operation, depending on the value of the FUTURE_RATES_LOADING parameter.

If the value of the FUTURE_RATES_LOADING parameter is "N" (or it is not set, which is the default value), FX rates are loaded to the FX_RATE table with the IS_ACTIVE="W" (Waiting) status.

Then FX rates with the IS_ACTIVE="W" status that are closest to the current banking date are copied from the FX_RATE table to the FX_SCHEME table. These rates get the status IS_ACTIVE = "P" (Posted) in the FX_RATE table, and all other rates with the IS_ACTIVE = "W" status for earlier dates (for example, if rates for a date were loaded accidentally and were then reloaded) will have their status changed to IS_ACTIVE = "C" (Closed).

As a result, if there are any loaded rates on the opening date, these rates (with the IS_ACTIVE = "P" status) will be shown in the "FX Rates" form so they can be edited and used for conversion and calculations.

Note that FX rates are not applied automatically when they are loaded (that is rates **will not** be applied automatically for conversion and calculations immediately after the pipe has loaded them).

FX rates can be applied (made effective) for conversion and calculations using the following methods:

- Automatically when the next banking date opens (using the menu item "Full → Daily Procedures → Start of Day Step By Step → Set Banking Date").
- Immediately using the "Apply FX Rates" procedure (Full → DB Administrator Utilities → Special OpenWay Utilities → Set FX → Apply FX Rates).

The "Apply FX Rates" menu item can be added as a subitem to the user menu item "RBS FX Rates Import". The procedure must be called after running the "FX Rates Import" pipe with the "N" value of the FUTURE_RATES_LOADING parameter.

If the value of the FUTURE_RATES_LOADING parameter is "Y" value, FX rates are loaded for future dates. FX rates are moved from the FX_RATE table to the FX_SCHEME table on the corresponding date, and rates are applied as follows:

- If there is one FX rate for one banking date, this rate will be shown in the "FX Rates" form when the corresponding banking date opens. The rate will be applied for conversion and calculations after the procedure for opening the banking date has been completed.

- If the "FX Rates Import" pipe loads several FX rates for one banking date, apply these rates using the "Apply FX Rates" procedure (Full → DB Administrator Utilities → Special OpenWay Utilities → Set FX → Apply FX Rates) according to the specified time when rates become effective. It is recommended to run this menu item according to a schedule (see the document "Scheduler Operation Manual").

Values of the IS_ACTIVE field in the FX_RATE table:

Value	Comments
"Y" (Yes)	Current rate used by WAY4.
"W" (Waiting)	Future rate that is waiting to be transferred to the FX_SCHEME table.
"C" (Closed)	Closed rate for a future date.
"P" (Posted)	Rate that is ready to be applied in WAY4 but has not been applied yet (not used for conversion and calculations).
space	Previous value used before as the current rate.

2. "FX Rates Import" pipe parameters

For the "FX Rates Import" pipe, the following parameters can be used:

- BANK_DATE_SHIFT (optional) – shift (in banking days) in relation to the local date (glob.ldate). Used when checking future rates (FUTURE_RATES_LOADING = "Y"). When the parameter is set, the date in the loaded file's header must correspond to the local date considering the shift.
- FUTURE_RATES_LOADING (optional) – mode for loading FX rates:
 - "Y" – future rates are loaded.
 - "N" (default) – current rates are loaded.
- RESP_FOR_DUPL_FILES (optional) – generate a response file for a duplicate file with FX rates:
 - "Y" – a response file that the file has already been imported to WAY4 is generated. The duplicate file is moved to the error directory.
 - "N" (default) – an error message is generated instead of the response file. The duplicate file remains in the incoming file directory.
- FILE_MASK – file name mask to select loaded files ("??????\k????_?? . ????" by default).
- SOURCE_DIR – directory of incoming files.
- PROCESSED_DIR – directory of loaded files.
- ERROR_DIR – directory of declined error files.
- OUTPUT_DIR – directory of response files.

3. File format

This section contains information about formats for incoming files with FX rates and the response file.

3.1 Notation

Field formats:

- **n** – numerical field containing only numbers, right-justified and left-padded to the specified length with zeros.
- **nP.S** – numerical field containing only numbers, right-justified and left-padded to the specified length with zeros. P is the total number of digits, S is the number of digits in the fractional part, the decimal point is not shown.
- **an** – character field, may contain any printable characters, left-justified and right-padded to the specified length with spaces.
- **JJJ** – date, where JJJ is the ordinal number of the day in the year (001 ... 366).
- **YYMM** – date, where YY is the last two digits of the year (00 ... 99), MM is the ordinal number of the month in the year (01 ... 12).
- **YYYYMMDD (YYYY/MM/DD)** – date, where YYYY is the year (0000 ... 9999), MM is the ordinal number of the month in the year (01 ... 12), DD is the ordinal number of the day in the month (01 ... 31).
- **HHMISS (HH:MI:SS)** – time, where HH are hours (00 ... 23), MI are minutes (00 ... 59), SS are seconds (00 ... 59).
- **b** – binary field only used for line separator characters.

Monetary amounts are shown in minimum currency units (cents, pence, etc.)

Field properties:

- **P** – position in a row (number of the first character).
- **L** – length (number of characters).
- **O** – optionality, possible values:
 - mandatory – field is mandatory
 - optional – field is optional
 - conditional – depends on data in other fields.

If a field is left empty, it must contain spaces.

3.2 Incoming file

An incoming file contains information on loaded currency rates.



If FX rates are loaded when future dates mode is enabled (FUTURE_RATES_LOADING="Y"), the date and time loaded rates become effective is considered to be the value set in the informational message's "Date From" field. If this field is empty, the "Banking Date" field value from the file header will be used (start time 00:00).

File data is stored in ASCII format. The length of each record is 200 bytes, including 2 bytes of CRLF. Each row in a file contains one message. The message types in the file are: file header, file trailer, and informational message. The file message in the file is the file header. The last message in the file is the file trailer.



In the pipe's current version, the "File Creation Date" field in the name of an incoming file is checked.

File name structure:

N	Field	Format	Value
1	File Name Prefix P · P: 1 L: 1 O: mandatory	an	"K"
2	File Sender · P: 2 L: 4 O: mandatory	an	Receiver ID. Codes are defined in the <i>Branch Code</i> field of the financial institutions table ("Full → Configuration Setup → Main Tables → Financial Institutions"). If the length of the code in the table is less than four characters, it is right-padded with spaces. If the length of the code in the table is 5 characters, the first 4 characters are used; if the code length is 6 characters, characters 2-5 are used.
3	Delimiter · P: 6 L: 1 O: mandatory	an	"_" (underline character).
4	File Number · P: 7 L: 2 O: mandatory	n	Serial number of the file on the current day. The value is right-justified and left-padded with zeros.

N	Field	Format	Value
5	Delimiter · P: 9 L: 1 O: mandatory	an	Delimiter character: "."
6	File Creation Date · P: 10 L: 3 O: mandatory	JJJ	File creation date.

File header structure:

N	Field	Format	Value
1	Row Code · P: 1 L: 2 O: mandatory	an	"FH"
2	Row Number · P: 3 L: 6 O: mandatory	n	Number of the row in the file ("000001" for the header).
3	File Label · P: 9 L: 10 O: mandatory	an	"FX_RATES"
4	Version · P: 19 L: 3 O: mandatory	an	"10"
5	File Sender · P: 22 L: 6 O: mandatory	an	Receiver ID. Codes are set in the <i>Branch Code</i> field of the financial institutions table ("Full → Configuration Setup → Main Tables → Financial Institutions"). Values are left-justified and when necessary are right-padded with spaces.

N	Field	Format	Value
6 ·	File Creation Date P: 28 L: 8 O: mandatory	YYYYMMDD	File creation date.
7 ·	File Creation Time P: 36 L: 6 O: mandatory	HHMISS	File creation time.
8 ·	Reserved P: 42 L: 2 O: mandatory	n	"00"
9 ·	File Number P: 44 L: 2 O: mandatory	n	Serial number of the file on the day. The value is right-justified and left-padded with zeros.
1 0 ·	Banking Date P: 46 L: 8 O: mandatory	YYYYMMDD	Banking date when FX rates were loaded.
1 1 ·	Reserved P: 54 L: 144 O: mandatory	an	Filled in with spaces.
1 2 ·	Terminal Symbol P: 198 L: 1 O: mandatory	an	Symbol "*"
1 3 ·	Delimiter P: 199 L: 2 O: mandatory	b	"0x0D", "0x0A" (CRLF)

File trailer structure:

N	Field	Format	Value
1	Row Code · P: 1 L: 2 O: mandatory	an	"FT"
2	Row Number · P: 3 L: 6 O: mandatory	n	Number of the row in the file.
3	Number of Rates · P: 9 L: 6 O: mandatory	n	Number of records with rates in the file.
4	Reserved · P: 15 L: 183 O: mandatory	an	Filled in with spaces.
5	Terminal Symbol · P: 198 L: 1 O: mandatory	an	Symbol "*"
6	Delimiter · P: 199 L: 2 O: mandatory	b	"0x0D", "0x0A" (CRLF)

Informational message structure:

N	Field	Format	Value
1	Row Code · P: 1 L: 2 O: mandatory	an	"RD"

N	Field	Format	Value
2	Row Number · P: 3 L: 6 O: mandatory	n	Number of the row in the file.
3	Branch Code · P: 9 L: 6 O: mandatory	an	Financial Institution identifier. Codes are defined in the <i>Branch Code</i> field of the financial institutions table ("Full → Configuration Setup → Main Tables → Financial Institutions"). If the sender is not the Head Office, the value must match that in the file header's "File Sender" field Values are left-justified and when necessary are right-padded with spaces.
4	Local Currency · P: 15 L: 3 O: mandatory	an	Numeric code of the financial institution's local currency according to ISO-4217
5	Rate Currency · P: 18 L: 3 O: mandatory	an	Numeric code of the currency for which the rate is set according to ISO-4217.
6	Rate Type · P: 21 L: 32 O: conditional	an	The FX rate type defined in the FX Types table (Full → Configuration Setup → Accounting Setup → FX Types)*
7	Middle Rate · P: 53 L: 20 O: mandatory	n20.8	FX middle rate.
8	Buy Rate · P: 73 L: 20 O: mandatory	n20.8	Buy rate.

N	Field	Format	Value
9 ·	Sell Rate P: 93 L: 20 O: mandatory	n20.8	Sell rate.
1 0 ·	CB Rate P: 113 L: 20 O: mandatory	n20.8	Central Bank rate.
1 1 ·	Authorization Buy Multiplier P: 133 L: 7 O: mandatory	n7.3	Authorization buy multiplier.
1 2 ·	Authorization Sell Multiplier P: 140 L: 7 O: mandatory	n7.3	Authorization sell multiplier.
1 3 ·	Date From P: 147 L: 14 O: optional	YYYYMMDDHHMISS	<p>The date the loaded rates become effective.</p> <p>This field is mandatory when loading rates for future dates (when the value of the global parameter FUTURE_RATES_LOADING is "Y").</p> <p>If this field is empty, the value of the Banking Date from the file header will be used as the date on which the rate becomes effective (start time 00:00).</p>
1 4 ·	Base Currency P: 161 L: 3 O: conditional	an	The numeric code of the base foreign currency used for a cross rate, according to ISO-4217.**
1 5 ·	Is Cross Rate P: 164 L: 1 O: optional	an	Multi-currency rate indicator (Y/N)**

N	Field	Format	Value
1 6 ·	Reserved P: 165 L: 33 O: mandatory	an	Filled in with spaces.
1 7 ·	Terminal Symbol P: 198 L: 1 O: mandatory	an	Symbol "*"
1 8 ·	Delimiter P: 199 L: 2 O: mandatory	b	"0x0D", "0x0A" (CRLF)

*The "Rate Type" field can be used to load data about the base currency that is used for recording cross rates in the following cases:

- before FX schemes are migrated to recording explicit cross rates
- before manual generation of the first FX scheme for recording explicit cross rates.

After beginning to work with explicit cross rates, this field is used to load standard data about an additional FX type. Data about the base currency is loaded from the "Base Currency" field.

**The "Base Currency" and "Is Cross Rate" fields may be absent in the download file in the following cases:

- before FX schemes are migrated to recording explicit cross rates
- before manual generation of the first FX scheme for recording explicit cross rates.

After beginning to work with explicit cross rates, these fields must be added to the file for loading currency rates.

3.3 Response file

Response files are created by the "FX Rates Import" pipe after an incoming file has been loaded.

An outgoing file is created in the outgoing mail directory of the corresponding financial institution (the directory set in the OUTPUT_DIR pipe parameter).

The file is a text file in ASCII format. Record length is 218 bytes, including 2 bytes of CRLF. Each row in a file contains one message. The message types in the file are: file header, file trailer, and informational message. The first message in the file is the file header. The last message in the file is the file trailer. If the incoming file does not contain errors, the response file will consist of only a header and trailer.

A response file name differs from an incoming file name by the first letter – "L" instead of "K".

File header format:

N	Field	Format	Value
1	Row Code · P: 1 L: 2 O: mandatory	an	"FH"
2	Row Number · P: 3 L: 6 O: mandatory	n	Number of the row in the file ("000001" for the header).
3	Filler · P: 9 L: 1 O: mandatory	an	Space character.
4	File Label · P: 10 L: 10 O: mandatory	an	"FX-RESP"
5	Filler · P: 20 L: 1 O: mandatory	an	Space character.
6	Version · P: 21 L: 3 O: mandatory	an	File format version number.
7	Filler · P: 24 L: 1 O: mandatory	an	Space character.

N	Field	Format	Value
8 ·	Inward File Sender P: 25 L: 6 O: mandatory	an	ID code of the incoming file sender. The value is left-justified and right-padded to the indicated length with spaces. The field has the same value as the incoming file's "File Sender" field.
9 ·	Filler P: 31 L: 1 O: mandatory	an	Space character.
1 0 ·	Inward File Date P: 32 L: 10 O: mandatory	YYYY/MM/DD	Incoming file creation date. The field has the same value as the incoming file's "File Date" field.
1 1 ·	Filler P: 42 L: 1 O: mandatory	an	Space character.
1 2 ·	Inward File Time P: 43 L: 8 O: mandatory	HH:MM:SS	Incoming file's creation time. The field has the same value as the incoming file's "File Time" field.
1 3 ·	Filler P: 51 L: 1 O: mandatory	an	Space character.
1 4 ·	Reserved P: 52 L: 2 O: mandatory	n	Filled in with zeros.
1 5 ·	Inward File Number P: 55 L: 2 O: mandatory	n	Serial number of the incoming file for the day. The field has the same value as the incoming file's "File Number" field.

N	Field	Format	Value
1 6 ·	Filler P: 56 L: 1 O: mandatory	an	Space character.
1 7 ·	File Date P: 57 L: 10 O: mandatory	YYYY/MM/DD	Response file's creation date.
1 8 ·	Filler P: 67 L: 1 O: mandatory	an	Space character.
1 9 ·	File Time P: 68 L: 8 O: mandatory	HH:MI:SS	Response file's creation time.
2 0 ·	Reserved P: 76 L: 140 O: mandatory	an	Filled in with spaces.
2 1 ·	Terminal Symbol P: 216 L: 1 O: mandatory	an	Symbol "*"
2 2 ·	Delimiter P: 217 L: 2 O: mandatory	b	"0x0D", "0x0A" (CRLF)

File trailer format:

N	Field	Format	Value
1	Row Code · P: 1 L: 2 O: mandatory	an	"FT"
2	Row Number · P: 3 L: 6 O: mandatory	n	Number of the row in the file.
3	Filler · P: 9 L: 1 O: mandatory	an	Space.
4	Number of Messages · P: 10 L: 6 O: mandatory	n	Number of informational messages in the file.
5	Filler · P: 16 L: 1 O: mandatory	an	Space character.
6	File Response Flag · P: 17 L: 23 O: mandatory	an	File acceptance indicator: "FILE REJECTED" – file was rejected "FILE ACCEPTED" – file was accepted "FILE ACCEPTED PARTIALLY" – file was partially accepted.
7	Filler · P: 40 L: 1 O: mandatory	an	Space character.

N	Field	Format	Value
8 ·	Number of Accepted Rates P: 41 L: 6 O: mandatory	n	Number of accepted rates.
9 ·	Filler P: 47 L: 1 O: mandatory	an	Space character.
10 ·	Number of Rejected Rates P: 48 L: 6 O: mandatory	n	Number of rejected rates.
11 ·	Reserved P: 54 L: 162 O: mandatory	an	Filled in with spaces.
12 ·	Terminal Symbol P: 216 L: 1 O: mandatory	an	Symbol "*"
13 ·	Delimiter P: 217 L: 2 O: mandatory	b	"0x0D", "0x0A" (CRLF)

Informational message structure:

N	Field	Format	Value
1	Row Code · P: 1 L: 2 O: mandatory	an	"RD"
2	Row Number · P: 3 L: 6 O: mandatory	n	Number of the row in the information file.
3	Filler · P: 9 L: 1 O: mandatory	an	Space character.
4	Inward Row Number · P: 10 L: 6 O: conditional	n	Number of the row in the incoming file.
5	Filler · P: 16 L: 1 O: mandatory	an	Space character.
6	Reserved · P: 17 L: 43 O: mandatory	an	Filled in with spaces.
7	Filler · P: 60 L: 1 O: mandatory	an	Space character.
8	Message · P: 61 L: 100 O: mandatory	an	Error description.

N	Field	Format	Value
9 ·	Filler P: 161 L: 1 O: mandatory	an	Space character.
1 0 ·	Error Code P: 162 L: 4 O: mandatory	an	Error code.
1 1 ·	Reserved P: 166 L: 50 O: mandatory	an	Filled in with spaces.
1 2 ·	Terminal Symbol P: 216 L: 1 O: mandatory	an	Symbol "*"
1 3 ·	Delimiter P: 217 L: 2 O: mandatory	b	"0x0D", "0x0A" (CRLF)

3.4 Error handling

If errors occur in the pipe's operation (incorrect format of a loaded file, incorrect file name):

- Error messages are written to the Process Log (see the section "Process Log" in the document "DB Manager Manual").
- All actions that were performed by the pipe are rolled back.
- The file is put into the directory specified in the pipe's ERROR_DIR parameter.