



Repo API

Spotware Systems Ltd

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1. Changes

Version	Date	Changes
2.2.0	2017-03-01	<ul style="list-style-type: none">• added entities <code>DealOffset</code> and <code>DealOffsets</code>• added <code>BalanceHistory.source</code> and <code>BalanceHistory.externalId</code>• added <code>BalanceOperationType</code> enum values: <code>BALANCE_OPERATION_TYPE_WITHDRAW_INVESTMENT_TO_STRATEGY</code> <code>BALANCE_OPERATION_TYPE_DEPOSIT_FROM_INVESTOR</code>
2.3.0	2017-04-05	<ul style="list-style-type: none">• added <code>Trader.frenchRisk</code>
2.4.0	2017-11-10	<ul style="list-style-type: none">• added <code>BalanceOperationType</code> enum values: <code>BALANCE_OPERATION_TYPE_DEPOSIT_MANAGEMENT_FEE</code> <code>BALANCE_OPERATION_TYPE_WITHDRAW_MANAGEMENT_FEE</code> <code>BALANCE_OPERATION_TYPE_DEPOSIT_PERFORMANCE_FEE</code>• added <code>ClosePositionDetail.performanceFee</code>• added <code>CommissionType.COMMISSION_TYPE_4</code>• added <code>OrderStatus.ORDER_STATUS_RESERVED</code>• field <code>Order.positionEffect</code> is deprecated now
2.5.0	2019-02-04	<ul style="list-style-type: none">• added <code>Symbol.rolloverCommission3Days</code>• added <code>ClosePositionDetail.quoteToDeposit</code>• added <code>ClosePositionDetail.profit</code>• added <code>TraderGroup.reportingTagValue</code>• added <code>EndOfDayOpenPositionsReport.EndOfDayOpenPositionsReportData.quoteToDeposit</code>
2.6.0	2019-07-18	<ul style="list-style-type: none">• added new type of requests to fetch historical ticks
2.7.0	2019-10-25	<ul style="list-style-type: none">• removed <code>TraderGroup.reportingTagValue</code>

2.8.0	2020-01-27	<ul style="list-style-type: none"> • added entity <code>DynamicLeverages</code> • added entity <code>CommissionProfiles</code> • added entity <code>VolumeProfiles</code> • added entity <code>ExecutionProfiles</code> • added <code>Symbol.defaultCommissionProfileId</code> • added <code>Symbol.defaultVolumeProfileId</code> • added <code>Symbol.defaultExecutionProfileId</code> • added <code>TraderGroup.allowWorseGSL</code> • added <code>TraderGroup.Symbol.commissionProfileId</code> • added <code>TraderGroup.Symbol.volumeProfileId</code> • added <code>TraderGroup.Symbol.executionProfileId</code> • deprecated <code>Symbol.symbolBookType</code> • deprecated <code>Symbol.defaultGSLExecutionPolicy</code> • deprecated <code>TraderGroup.Symbol.tradingCommissionRate</code> • deprecated <code>TraderGroup.Symbol.minVolume</code> • deprecated <code>TraderGroup.Symbol.maxVolume</code> • deprecated <code>TraderGroup.Symbol.minStake</code> • deprecated <code>TraderGroup.Symbol.maxStake</code> • deprecated <code>TraderGroup.Symbol.commissionType</code> • deprecated <code>TraderGroup.Symbol.minCommission</code> • deprecated <code>TraderGroup.Symbol.minCommissionType</code> • deprecated <code>TraderGroup.Symbol.minCommissionAssetId</code> • deprecated <code>TraderGroup.Symbol.stepVolume</code> • deprecated <code>TraderGroup.Symbol.stepStake</code> • deprecated <code>TraderGroup.Symbol.maxExposure</code> • deprecated <code>TraderGroup.Symbol.bookType</code> • deprecated <code>TraderGroup.Symbol.gslExecutionPolicy</code>
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2.9.0	2020-03-23	<ul style="list-style-type: none"> • renamed entity <code>DynamicLeverages</code> to <code>DynamicLeverageProfiles</code> • added entity <code>ProtectionProfiles</code> • added entity <code>SwapFreeProfiles</code> • added entity <code>ScheduleProfiles</code> • removed <code>Symbol.tradingEnabled</code> • removed <code>Symbol.executePendingsAndProtections</code> • added <code>Symbol.defaultProtectionProfileId</code> • added <code>Symbol.defaultSwapFreeProfileId</code> • added <code>Symbol.defaultGSLScheduleId</code> • added <code>Symbol.scheduleProfileId</code> • removed <code>Order.PositionEffect</code> • removed <code>Position.leverage</code> • removed <code>Position.leverageInCents</code> • removed <code>Trader.leverage</code> • added <code>TraderGroup.Symbol.protectionProfileId</code> • added <code>TraderGroup.Symbol.swapFreeProfileId</code> • removed <code>TraderGroup.Symbol.leverage</code> • removed <code>TraderGroup.Symbol.leverageInCents</code> • removed <code>TraderGroup.Symbol.dividends</code> • deprecated <code>TraderGroup.Symbol.tolerance</code> • deprecated <code>TraderGroup.Symbol.gslCharge</code> • deprecated <code>TraderGroup.Symbol.slDistance</code> • deprecated <code>TraderGroup.Symbol.tpDistance</code> • deprecated <code>TraderGroup.Symbol.gslDistance</code> • deprecated <code>TraderGroup.Symbol.rolloverCommission</code> • deprecated <code>TraderGroup.Symbol.skipRolloverDays</code> • deprecated <code>TraderGroup.Symbol.rolloverChargePeriod</code> • deprecated <code>TraderGroup.Symbol.rolloverCommission3Days</code> • renamed <code>GSLSchedules</code> to <code>GSLScheduleProfiles</code> • renamed <code>GSLSchedule</code> to <code>GSLScheduleProfile</code>
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2.9.0	2020-03-23	<ul style="list-style-type: none"> • deprecated <code>GSLScheduleProfile.isDeleted</code> • deprecated <code>GSLScheduleProfile.isDefault</code> • added <code>ProtectionProfile</code> • added <code>SwapFreeProfile</code> • added <code>ScheduleProfile</code> • removed <code>SymbolBookType.SYMBOL_BOOK_TYPE_GROUP_DEFINES</code> • added value <code>ACCORDING_TO_GSL_AND_LEVERAGE</code> to enum <code>LimitedRiskMarginCalculationStrategy</code> • added enum <code>SymbolDistanceType</code>
2.10.0	2020-06-16	<ul style="list-style-type: none"> • added <code>moneyDigits</code> into: <ul style="list-style-type: none"> ◦ <code>BalanceHistory</code> ◦ <code>BonusHistory</code> ◦ <code>ClosePositionDetail</code> ◦ <code>Deal</code> ◦ <code>EndOfDayTraderReportData</code> ◦ <code>MarginCall</code> ◦ <code>Position</code> ◦ <code>SwapCalculation</code> • added <code>preciseMinCommission</code> into <code>CommissionProfile</code> • renamed values in <code>CommissionType</code>: <ul style="list-style-type: none"> ◦ <code>COMMISSION_TYPE_1</code> - <code>USD_PER_MILLION_USD</code> ◦ <code>COMMISSION_TYPE_2</code> - <code>USD_PER_LOT</code> ◦ <code>COMMISSION_TYPE_3</code> - <code>PERCENTAGE_OF_VALUE</code> ◦ <code>COMMISSION_TYPE_4</code> - <code>QUOTE_CCY_PER_LOT</code> • renamed values in <code>SwapCalculationType</code>: <ul style="list-style-type: none"> ◦ <code>POINTS</code> → <code>PIPS</code> ◦ <code>INTEREST</code> → <code>PERCENTAGE</code>
2.10.1	2020-06-16	<ul style="list-style-type: none"> • Changes in Copyrights

2.11.0	2020-09-15	<ul style="list-style-type: none"> • removed value <code>AssetType.ASSET_TYPE_STRATEGIES</code> • added value <code>AssetType.ASSET_TYPE_CRYPTO</code> • added <code>SwapAndDividendProfileEvent</code> • added <code>SwapAndDividendProfile</code> • added <code>SwapAndDividendSymbol</code> • added <code>TraderGroup.swapAndDividendProfileId</code> • added <code>HolidayEvent</code> • added <code>Holiday</code> • added <code>HolidayProfileEvent</code> • added <code>HolidayProfile</code> • added <code>Symbol.holidayProfileId</code> • deprecated fields in <code>TraderGroup.Symbol</code>: <ul style="list-style-type: none"> ◦ <code>swapRollover3Days</code> ◦ <code>swapLong</code> ◦ <code>swapShort</code> ◦ <code>swapCalculationType</code> ◦ <code>dividendTime</code> ◦ <code>dividendsLong</code> ◦ <code>dividendsShort</code> • deprecated <code>ClosePositionDetail.performanceFee</code>
2.12.0	2020-11-05	<ul style="list-style-type: none"> • deprecated value <code>BALANCE_OPERATION_TYPE_WITHDRAW_MANAGEMENT_FEE</code> in enum <code>BalanceOperationType</code>. • renamed value in <code>BalanceOperationType</code>: <ul style="list-style-type: none"> ◦ <code>BALANCE_WITHDRAW_PERFORMANCE_FEE</code> → <code>BALANCE_WITHDRAW_COPY_FEE</code> • added <code>Trader.managementFee</code>
2.13.0	2021-05-19	<ul style="list-style-type: none"> • added <code>TraderGroup.negativeBalanceProtection</code> • added value <code>BALANCE_DEPOSIT_NEGATIVE_BALANCE_PROTECTION</code> to enum <code>BalanceOperationType</code>
2.14.0	2021-07-14	<ul style="list-style-type: none"> • added <code>ClosePositionDetail.pnlConversionFee</code> and <code>CommissionProfile.pnlConversionFeeRate</code> • added <code>Trader.sendStatementToBroker</code> • added <code>Trader.ibCommissionsType</code>
2.15.0	2021-07-23	<ul style="list-style-type: none"> • added the sequence number header <code>spotware-sequence-number</code> into each published Repo API message (excluding Spot Events)

2.16.0	2021-09-30	<ul style="list-style-type: none"> • added enum <code>ExecutionPolicy</code> • deprecated <code>ExecutionProfile.bookType</code> • added fields <code>executionPolicy</code> and <code>conditionVolumeUsd</code> to <code>ExecutionProfile</code>
2.17.0	2021-10-27	<ul style="list-style-type: none"> • added <code>SwapAndDividendSymbol.dividendTime</code> • added <code>defaultSwapPeriod</code> and <code>defaultSwapTime</code> to <code>Symbol</code> • added <code>swapPeriod</code> and <code>swapTime</code> to <code>SwapAndDividendSymbol</code>
2.18.0	2022-02-02	<ul style="list-style-type: none"> • made <code>swapRollover3Days</code>, <code>swapLong</code>, <code>swapShort</code>, <code>swapCalculationType</code> optional in <code>SwapAndDividendSymbol</code>

2. General Description

The purpose of this document is to outline the rules of engagement for interfacing with the Spotware Systems Reporting API in order to receive real-time based server events and notifications.

Repo API uses Google Protocol Buffers version 2 for message events and for snapshots.

Event – is a real-time notification about creation/modification/deletion of any important entity on the server such as Trader, Position, Symbol, etc. Each RabbitMQ message within an event (excluding Spot events) contains a header (spotware-sequence-number) with the linearly incremented sequence number. Every server restart will produce a new sequence, starting from number 1. For example, receiving two consecutive Events with sequence number = 23456 and then with the next sequence number = 1 means that everything is correct and there was just server restart and there is no reason for reconciliation. But receiving two consecutive Events with sequence number = 23456 and then with the next sequence number = 23460 means that some messages were lost (due to different reasons) and reconciliation must be performed.

Snapshot – is a list of the entities, requested by the Client. Should be used only for getting an initial snapshot of the DB structure, in order to match future events with the existing entity or to get some missed entity by its ID.

Optimal way of getting snapshots is to take them during weekend.

Structure of the used messages described in the ReportingMessages.proto (must be provided additionally). See <https://developers.google.com/protocol-buffers/docs/proto> how to work with messages and how to build messages for your favourite language. Protocol compiler you can find here: <https://developers.google.com/protocol-buffers/docs/downloads>

3. Connectivity

3.1. Events

For real-time events we use [RabbitMQ](#), so in order to start receiving events there should be established connection with RabbitMQ.

Information about connectivity could be found here:

- .NET/C# Client API Guide <https://www.rabbitmq.com/dotnet-api-guide.html>
- Java Client API Guide <https://www.rabbitmq.com/api-guide.html>

Information which should be provided by Spotware admins:

- rabbit.queue
- rabbit.spot_queue
- rabbit.host
- rabbit.port
- rabbit.username
- rabbit.password

3.2. Snapshots

For getting initial snapshots of the DB entities Spotware team should whitelist your IP address. No authentication is required.

4. Usage

4.1. Events

After connection to RabbitMQ is established you will start getting RabbitMQ messages.

These messages contain next information:

1. `ContentType` - should be "application/x-protobuf"
2. `MessageType` - type of the protocol buffers message from file `ReportingMessages.proto`. For example `TraderGroupEvent`, `TraderEvent`, `AuthenticationEvent`
3. `ContentLength` - size of serialized protocol buffers message in bytes.
4. `Body` - byte array.

So if `messageType` is for example `TraderGroupEvent` - you can restore message for Java

```
TraderGroupEvent event = TraderGroupEvent.parseFrom(message.getBody());
```

In case connection with RabbitMQ is lost, all events will be stored on our side and will be send all together as soon as connection is restored. This will help to keep you data consistent and prevent data loss to avoid additional reconciliation and main DB load.

4.2. Snapshots

It is possible to request next snapshots of entities:

1. "assets"
2. "assetClasses"
3. "authentications"
4. "balanceHistories"
5. "bonusHistories"
6. "countries"
7. "deals"
8. "orders"
9. "positions"
10. "priceSnapshots"
11. "priceStreams"
12. "symbols"
13. "symbolCategories"
14. "traders"

15. "traderGroups"
16. "swapCalculations"
17. "actions"
18. "dealOffsets"
19. "eodSpotSnapshotReports"
20. "eodOpenPositionReports"
21. "eodTraderReports"
22. "commissionProfiles"
23. "dynamicLeverageProfiles"
24. "volumeProfiles"
25. "executionProfiles"
26. "protectionProfiles"
27. "swapFreeProfiles"
28. "scheduleProfiles"
29. "gslScheduleProfiles"
30. "swapAndDividendProfiles"
31. "holidayProfiles"
32. "holidays"

Repo webservice are used for such purposes:

4.2.1. Get list of entities

When using this type of requests make sure that you have set a timeout no less than 20 seconds. The limit of concurrent requests can be applied (current limit is 2). Structure of the request (except "eodSpotSnapshotReports", "eodOpenPositionReports" and "eodTraderReports" entities – see description for them below):

```
Host:port/repo/entity?id&size&direction
```

where

- **Host:port** – should be provided by Spotware
- **entity** – one of the specified above entity
- **direction** - sorting direction, can be only "asc" or "desc" (sorting by entity id). Required.
- **id** – id of the entity, positive integer value. Optional. In case of "asc" direction server will return entities with id greater than specified id. In case of "desc" direction server will return entities with id less than specified id.
- **size** – amount of returned entities, integer value from 100 to 15000 (for "traderGroups" it's from

1 to 5). Required.

For example:

Request the first 100 Deals

```
http://{host}:{port}/repo/deals?id=0&size=100&direction=asc  
or  
http://{host}:{port}/repo/deals?size=100&direction=asc
```

Request 100 Deals which id are less than Deal with specified id

```
http://{host}:{port}/repo/deals?id=1001&size=100&direction=desc
```

Request the latest 100 Deals

```
http://{host}:{port}/repo/deals?size=100&direction=desc
```

Structure of the request for “eodSpotSnapshotReports”, “eodOpenPositionReports” and “eodTraderReports” entities:

```
Host:port/repo/entity/date?size&page&direction
```

where:

- **Host:port** – should be provided by Spotware
- **entity** – one of the specified above entity
- **date** – the day of reports, in YYYY-MM-DD format. Required.
- **direction** – sorting direction, can be only "asc" or "desc". Required.
- **page** - page number, positive integer value. Optional.
- **size** – amount of returned entities, integer value from 100 to 15000. Required.

For example:

Request the first 100 Reports for 23/12/2016

```
http://{host}:{port}/repo/eodSpotSnapshotReports/2016-12-  
23?size=100&page=0&direction=asc
```

4.2.2. Get entity by id

Request Authentication with id = 70

```
http://{host}:{port}/repo/authentications/70
```

If entity with this id doesn't exist, it will return an error. Method is not available for "actions", "eodSpotSnapshotReports", "eodOpenPositionReports" and "eodTraderReports" entities. Response always has "Content-Type: application/x-protobuf". In order to build a message from received bytes you can use `Authentication.parseFrom(messageBody)`.

4.3. Pricing Events and Historical Data

4.3.1. Spot Events

Spot events can be received via RabbitMQ like [common events](#) from `rabbit.spot_queue`

4.3.2. Historical Tick Data

This type of requests fetches historical tick data for a specified period. Please note that maximum period duration for one request is 24 hours.

```
http://{host}:{port}/repo/tickData?symbolId&type&fromTimestamp&toTimestamp&size
```

where:

- `Host:port` – should be provided by Spotware
- `symbolId` – ID of a symbol. Required.
- `type` – type of ticks `BID` or `ASK`. Required.
- `fromTimestamp` – start of a period in the Unix Timestamp format (with milliseconds). Required.
- `toTimestamp` – end of a period in the Unix Timestamp format (with milliseconds). Required.
- `size` – amount of returned ticks, integer value from 100 to 15000. Required.

For example:

Request the first 100 ASK ticks for symbol 1 from July 22, 2019 11:12:31.681 till July 22, 2019 12:32:30.231

```
http://{host}:{port}/repo/tickData?symbolId=1&type=ASK&fromTimestamp=1563793951681&toTimestamp=1563798750231&size=100
```