User Guide

BTS® AUTHORIZATION SERVICE GUIDE

Issue 7.5 | 29TH APRIL 2021

BORSA ITALIANA

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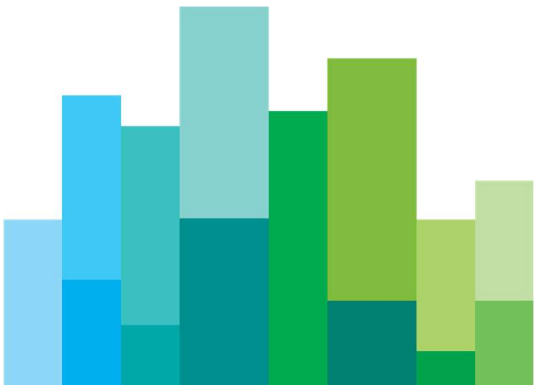
Revision History

Date	Version	Description	Author
Dec 2003	1.0	First release	BIt Systems
Jul 2005	2.2	• (Instrument) Group hierarchy level added • Max Order Amount and Max Daily Amount Filters added • Absolute and percentage thresholds available for Max Price Var filter Max Order Frequency filter unit available in seconds, minutes or hours	BIt Systems
Apr 2011	7.0	New release of traderpath® Multi Market Client with upgraded look & feel plus new functionalities	Borsa Italiana
Ago 2011	7.1	Client level added to user hierarchy	Borsa Italiana
Dec 2012	7.1.1	• Description of MaxPriceVar filters updated • Description of MaxOrderAmount filters updated Formulas of MaxDailySize and MaxDailyAmount amended	Borsa Italiana
Jan 2013	7.3	• Filters by Product Type added • Filters by Order Type added • Filter reports by Member, Client, Users Group, User, Client managed by User saved in Excel files "Suspend/Resume all filters" functionality by Member, Client, Users Group, User, Client managed by User added	Borsa Italiana
Apr 2013	7.3.1	Formulas of Max Price Var filters changed in §§ 1.3.4, 1.4.4, 1.5.4, 1.6.5, 1.7.6	Borsa Italiana
May 2014	7.4.0	- New format according to Corporate guidelines. This document replaces all previous versions which were based on old templates and old company logos - "Position: increased by buy/sell order remaining amounts and decreased twice by sell trade amounts" replaced by "Position: increased by buy/sell order remaining amounts and buy trade amounts and decreased by sell trade amounts" in §§ 4.5, 5.5, 7.3, 8.2, 8.4. - Added formula for Absolute difference in Max Price Var filter in §§ 4.4, 5.4, 6.4, 7.5 and 8.6.	Borsa Italiana
Apr 2015	7.4.1	• Description of Bundle order added § 3 • Description of Third Party order added § 3 Minor amendments	Borsa Italiana
Apr 2016	7.4.2	BTS® registered trademark update	Borsa Italiana
Apr 2021	7.5	Euronext rebranding	Borsa Italiana

1. INTRODUCTION



The BTS® is a multi market client application that works as trading and information front-end for equities and derivatives markets.

Both brokering and market maker functionalities are supported, as well as additional functions to help activity control and supervision.

Algorithmic trading capabilities are also provided to enforce sophisticated trading and quoting strategies.

Different markets are currently supported:

- Borsa Italiana Cash Markets (MTA, MOT, ExtraMOT, SeDeX, ETFPlus, TAH)
- Borsa Italiana Derivatives Markets (IDEM, IDEX, AGREX)
- EuroTLX

1.1 Scope

This document provides detailed information to use BTS® Authorisation Tool.

Basic knowledge about BTS® is a prerequisite for understanding the content of this manual. Please refer to Quick Reference Guides for an introduction to the client.

Further information about specific functions and general usage can be found in manuals available on the BTS® page (**http://www.borsaitaliana.it/borsaitaliana/gestione-mercati/BTS-bittradingstation/BTS.en.htm**).

1.2 References

- BTS Client Installation Guide
- BTS Quick Reference Guide Cash
- BTS Quick Reference Guide Derivatives

available on Borsa Italiana web site on the BTS® page (**http://www.borsaitaliana.it/borsaitaliana/gestione-mercati/BTS-bittradingstation/BTS.en.htm**).

2. AUTHORIZATION SERVICE DESCRIPTION

The **Authorization Service** provides a flow control mechanism over all orders entered by users of the same member in order to enforce operational limits, implement in-house trading policies and/or abide by market regulations.

Filters can be set in 2 complementary, yet independent hierarchies. First, they can be set by user cluster (**hierarchy A**):

A.1 all the users of a market **Member**
A.2 a **Client**
A.3 a **users group**
A.4 a **user**
A.5 a **Client** managed by a **user**

For each one of the user clusters mentioned above order filtering can be enforced by instrument cluster (**hierarchy B, listed from high to low level**):

B.1 **market (General)**
B.2 **submarket**
B.3 **product type**
B.4 **instrument group (Group)**
B.5 **instrument**

and is implemented by means of the following filter types:

Filter type	Filter description	Filter availability per operating level				
		Market	Submarket	ProductType	Group	Instrument
Max Order Size	Maximum size allowed for each order on either a single instrument or a group of instruments or the whole market	Y	Y	Y	Y	Y
Max Daily Size	Maximum cumulative position (size) allowed on a daily basis for all orders on a single instrument	N	N	N	N	Y
Max Order Amount	Maximum amount in EUR allowed for each order on a single instrument or a group of instruments or the whole market	Y	Y	Y	Y	Y
Max Daily Amount	Maximum cumulative position amount in EUR allowed on a daily basis for all orders on either a single instrument or a group of instruments or the whole market	Y	Y	N	Y	Y
Max Order Frequency	Maximum number of orders to be processed every N time units (seconds, minutes or hours) for either a single instrument or a group of instruments or the whole market	Y	Y	Y	Y	Y

Filter type	Filter description	Filter availability per operating level				
		Market	Submarket	ProductType	Group	Instrument
Max Price Var	Maximum difference or percentage difference allowed between an order price and the corresponding validation/reference price for a specific instrument or a group of instruments or the whole market	Y	Y	Y	Y	Y

Filters cannot be applied to either Cross Orders (Internal) or Quotes.

When a **bundle order** is being submitted, each one of its legs is checked against the filters set by the user. If at least one leg has been rejected, the whole bundle order is rejected. Moreover, when one of the counterparties is accepting a proposal (leg), this one is checked against the filters set by the user.

When a **third party order** is being submitted, its legs are not checked against the filters set by the user. The actual check takes place only when the proposal (leg) is being accepted.

The **Authorization Service** can be used only with functionality level set to **Member**, i.e. each user who has been granted access to it can create/update/remove filters starting from member level down to user level.

All the filter values **set, modified or deleted** for each filter will be permanently stored in the application DB. All orders rejected by any filter will be stored in the application DB and will be available for 120 days.

Here follows a synopsis of the sequence of filter validation checks that are performed before sending an order to the market.

1. Among all the filters set at the "**client managed by user**" level (**hierarchy A**) the lowest level filter only in **hierarchy B** will be selected for each filter type. If at least one of the filter validation checks has not been passed, the order will be rejected, otherwise the next set of filters will be applied (step 2).
2. Among all the filters set at the **user level** (**hierarchy A**) the lowest level filter only in hierarchy B will be selected for each filter type. If at least one of the filter validation checks has not been passed, the order will be rejected, otherwise the next set of filters will be applied (step 3).
3. Among all the filters set at the **users group level** (**hierarchy A**) the lowest level filter only in **hierarchy B** will be selected for each filter type. If at least one of the filter validation checks has not been passed, the order will be rejected, otherwise the next set of filters will be applied (step 4).

4. Among all the filters set at the **client level** (**hierarchy A**) the lowest level filter only in **hierarchy B** will be selected for each filter type. If at least one of the filter validation checks has not been passed, the order will be rejected, otherwise the next set of filters will be applied (step 5).
5. Among all the filters set at the **Member level** (**hierarchy A**) the lowest level filter only in **hierarchy B** will be selected for each filter type: if at least one of the filter validation checks has not been passed, the order will be rejected, otherwise it will be accepted and dispatched to the market.

For example, let's assume that the following filters have been set:

1. **Max Order Amount** filter for user TRD001 (**user** level of **hierarchy A**) and instrument ACE (**instrument** level of hierarchy B)
2. **Max Order Amount** filter for user TRD001 (**user** level of **hierarchy A**) and market MTA (**market** level of **hierarchy B**)
3. **Max Order Amount** filter for entire member (**Member** level of **hierarchy A**) and instrument ACE (**instrument** level of **hierarchy B**)
4. **Max Order Amount** filter for the entire member (**Member** level of **hierarchy A**) and market MTA (**market** level of hierarchy B)

If user TRD001 has entered an order for instrument ACE, the order will be checked only against **Filters 1 and 3**. In fact, among all the filters set at **user** level (**hierarchy A**) the **lowest** level filter of **Max Order Amount** type in **hierarchy** B is **filter 1**, set at **instrument** level which has higher priority than **filter 2** set at **market** level. In addition, no filters have been set at **users group** level, but the order will be also checked against **filter 3** since, among all the filters set at **Member** level (**hierarchy A**), the **lowest** level filter of **Max Order Amount** type in **hierarchy B** is **filter 3**, again set at **instrument** level which has higher priority than **filter 4** set at **market** level. If at least one of the filter validation checks has **not** been passed, the order will be rejected, otherwise it will be accepted and dispatched to the market.

3. TOOL LAYOUT

populated by one or more rows. The "State" field placed at the beginning of each filter displays a bullet that can be green [On = **active filter**] or grey [Off = **suspended filter**].

The number of active filters followed by the **total number** of filters configured for a given user cluster is displayed at the end of each node name in the Member area and in the tabs of the corresponding panes of the Filters area in digits (e.g.: [**3/3**] or [**0/3**]). If numbers are **green**, all the filters of the current level only (without including any sub-levels) are enabled and working, whereas, if numbers are **yellow**, all the filters of the current level only have been temporarily suspended and are not working. It is not possible to suspend only a subset of filters at a given level.

All the filters of a given user cluster only (without including any sub-levels) can be **suspended** and **resumed** via a pop-up menu by right-clicking the desired tree node (e.g.: TP_USER_QA) and then selecting the "**Suspend All Filters**" command (to suspend active filters), or the "**Resume All Filters**" command (to **resume** suspended filters).

Notifications about the creation, deletion and update of the filters are displayed in the "**Message Bar**" placed at the bottom of the Authorization Service window. A "**white**" message means that the request for the creation of a filter has been **accepted**, whereas a "**red**" message means that the request for the creation of a filter has been **rejected**. In addition, "**yellow**" messages can be displayed in case of configuration problems on the server side or connection issues.

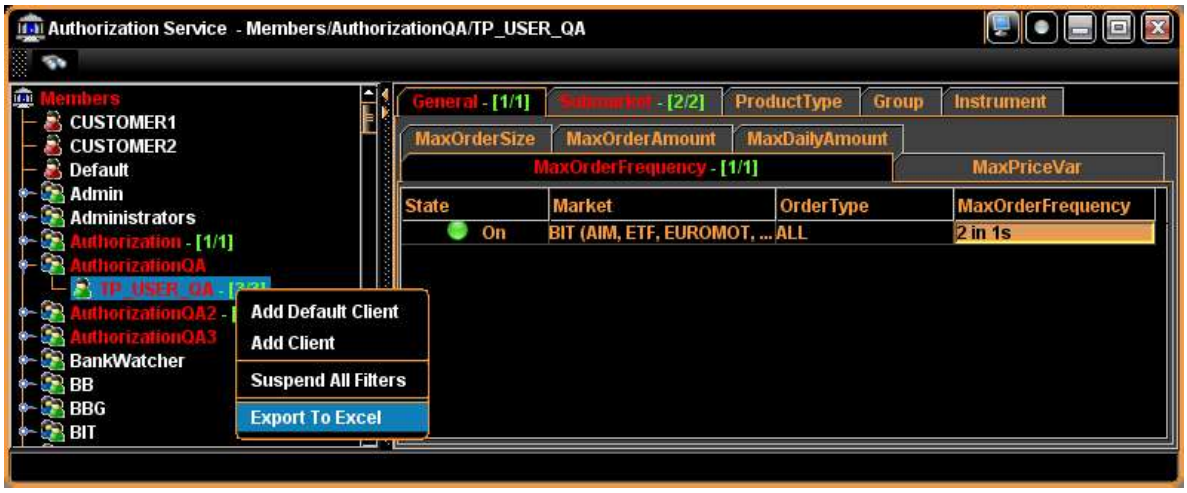
The Authorization Service applies the following logic upon suspension of filters at a given node in the user cluster hierarchy:

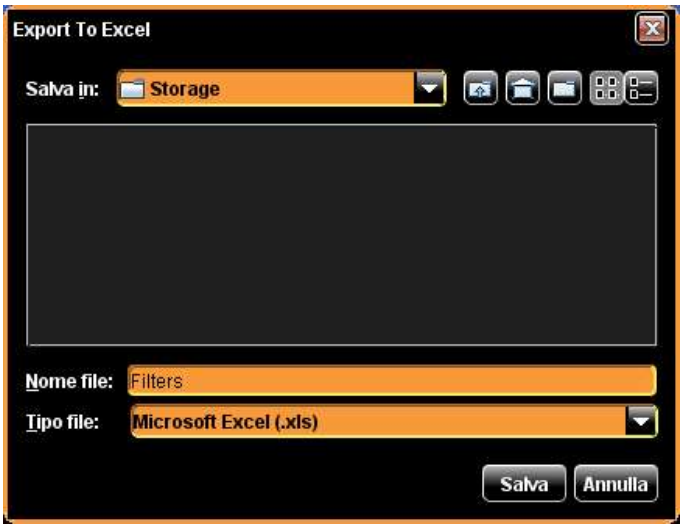
1. suspended filters are not applied to any new incoming order and related modifications;
2. orders created when filters were suspended will be never checked against these filters when they will be modified even if filter states reverts to active;

3. daily filters (MaxDailySize, MaxDailyAmount) do not calculate cumulative values (LongExec, Short Exec, Long Order, Short Order, Long Position, ShortPosition, Exec, Order, Position) for orders entered when filters are suspended. Neither trades on these orders will have any impact on the cumulative values calculated by these filters;
4. suspended filters are not applied to modifications of orders created when filters were active;
5. suspended daily filters (MaxDailySize, MaxDailyAmount) keep on calculating cumulative values (LongExec, Short Exec, Long Order, Short Order, Long Position, ShortPosition, Exec, Order, Position) for orders created when filters were active, and trades on these orders will update the above mentioned values.

All filters remain suspended until they are manually resumed by the user within the same day or later.

3.1 Export Filters to Excel





All the filters of a given user cluster only (without including any sub-levels) can be exported to Excel (as an .xls file) menu by right-clicking the desired tree node (i.e.: TP_USER_QA) and then selecting the "**Export To Excel**" command. A dialog window appears where the user can choose the storage folder and the .xls file name.

4. GENERAL FILTERS

The **General** pane in the **Filters** area allows users to set the following filters at market level for any user cluster:

1. Max Order Frequency
2. Max Order Size
3. Max Order Amount
4. Max Price Var
5. Max Daily Amount

In order to assign a new filter to a given user cluster (member, client, users group, user or client managed by user) the corresponding node must be selected in the **Member** area, then clicking the tab of one of the five panes: **MaxOrderFrequency**, **MaxPriceVar**, **MaxOrderSize**, **MaxOrderAmount**, **MaxDailyAmount** within the **General** parent pane in the **Filters** area. By clicking the right mouse button a pop-up menu appears with the **Add** command, which will add a new row in the **Filters** area. Once **Filters** have been assigned to one or more users listed in the **Member** area, the corresponding nodes will be highlighted in **red** as well as the pane names related to filters.

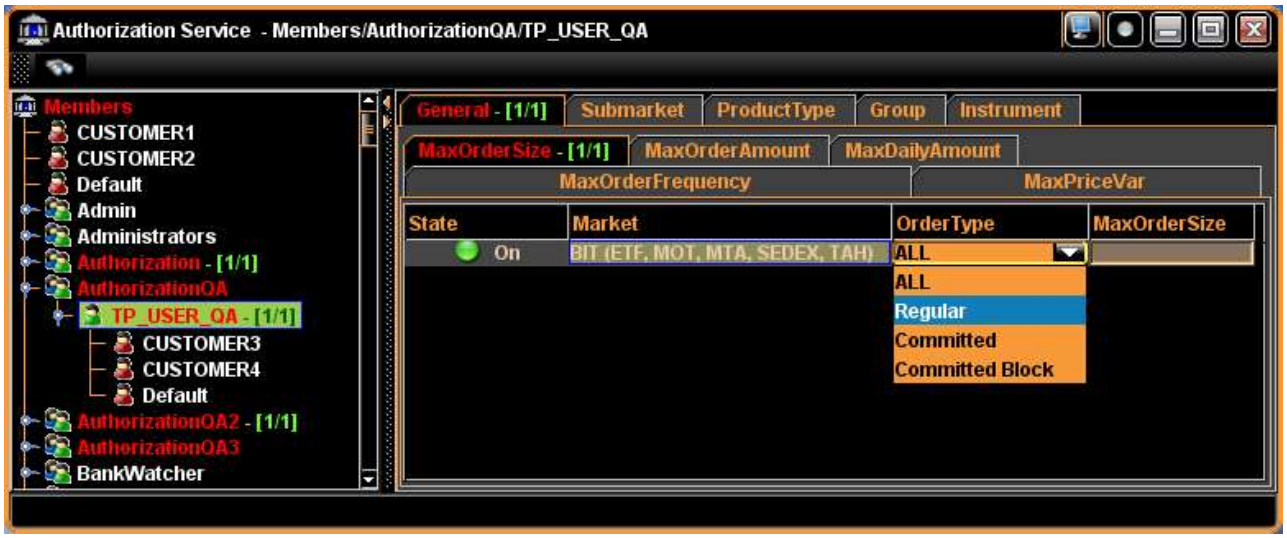
If no **Filters** have been assigned to a **Client**, this one will no longer be listed in the **Member** tree after closing the current working session and opening a new one.

The **Market** to be assigned to a filter [e.g.: BIT (ETF, MOT, MTA, SEDEX, TAH)] can be set via a combo-box showing all the markets on which the member Supervisor is enabled. With the exception of the **MaxPriceVar** filter, the market list will display only the markets that have not been assigned, yet.

Each filter can be applied to a specific order type:

- **Regular** (MIT and SOLA platforms, including Block Trades)
- **Committed** (Interbank, MIT and SOLA platforms, including Block Trades)

or to **ALL** of them by selecting the corresponding item in the **OrderType** combo box.

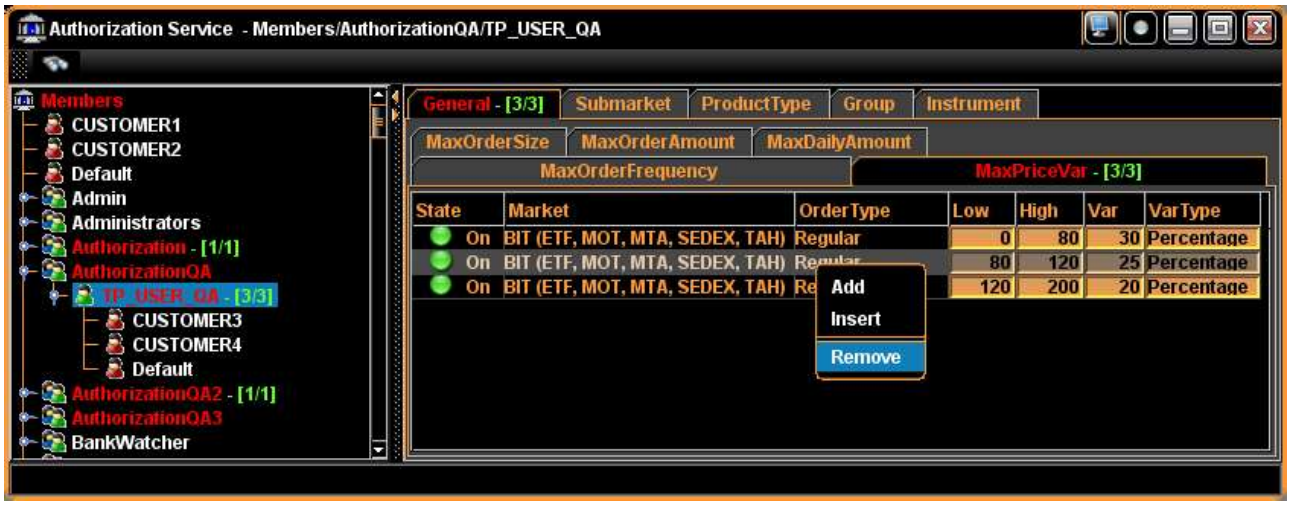


When one or more filters have been set, the corresponding fields will be highlighted in yellow, which means that values have been entered or modified, but they have not been saved, yet.

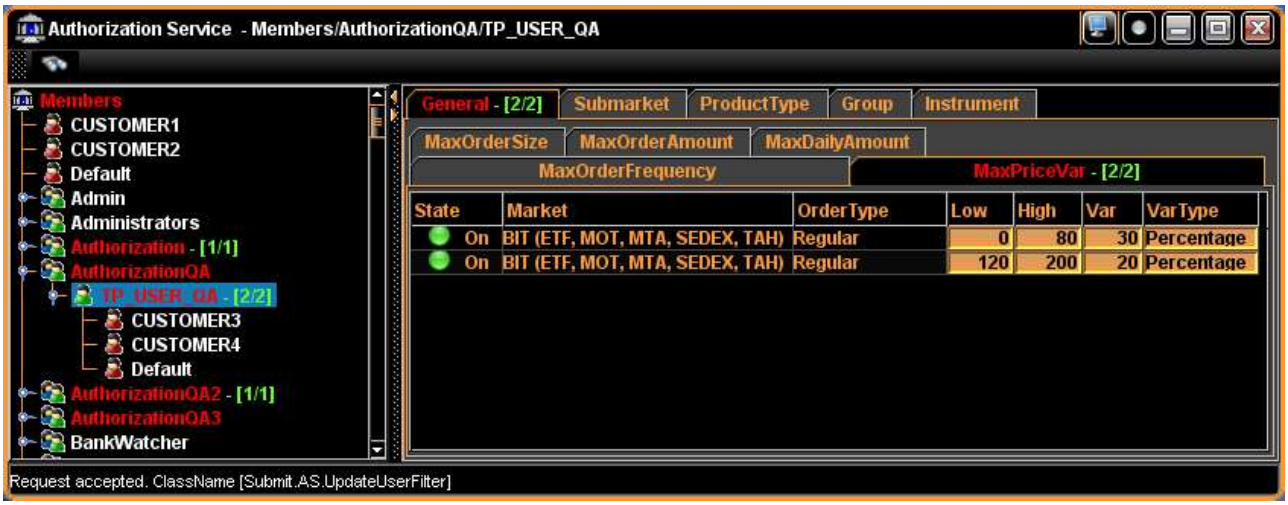
Filters can be saved selecting the corresponding tree item and then clicking the right mouse button. A pop-up menu appears with the **Update** command, which will save all filter values for the current level only. After moving to another tree item without saving changes for the previous one, it will be shown in yellow until changes at this level will have been made persistent.

Multiple updates can be made at group or member level via the **Update Recursively** command in the pop-up menu: all the changes at the current level plus those made at all lower levels of the current item only will become persistent.

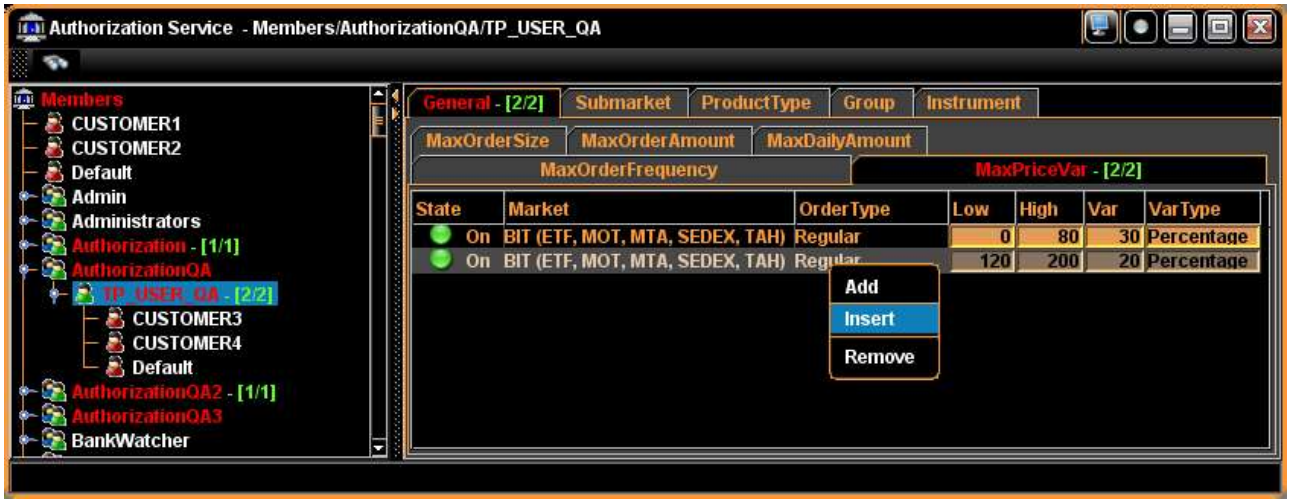
Moreover, filters for a given market and order type can be partially or totally removed. A single filter can be removed by right-clicking the corresponding field in the Filters area. A pop-up menu appears with the **Remove** command:



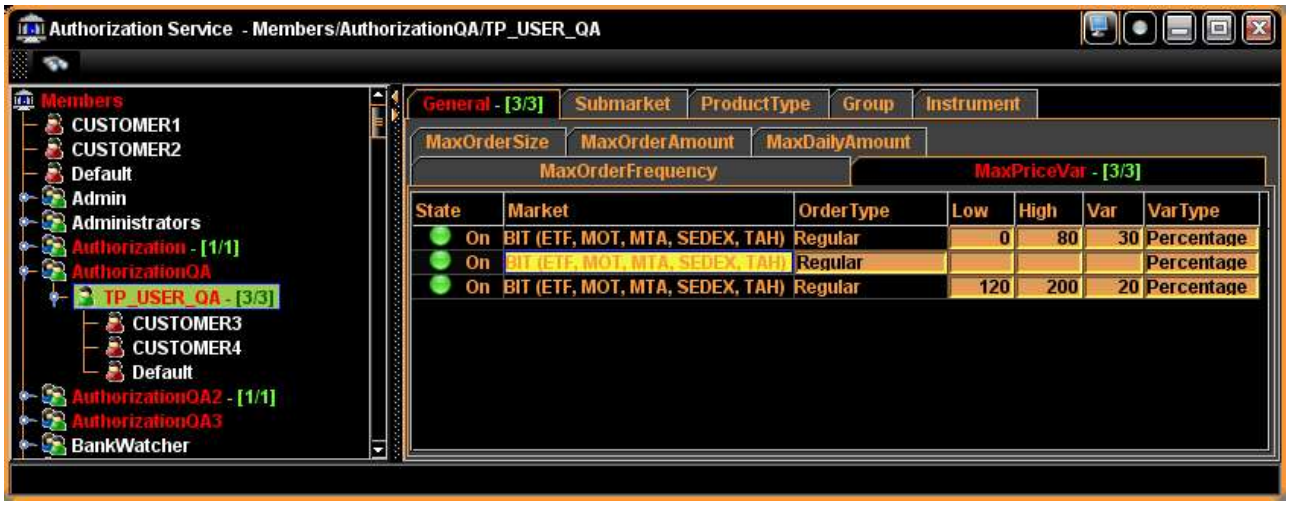
which will delete the selected filter, as shown below.



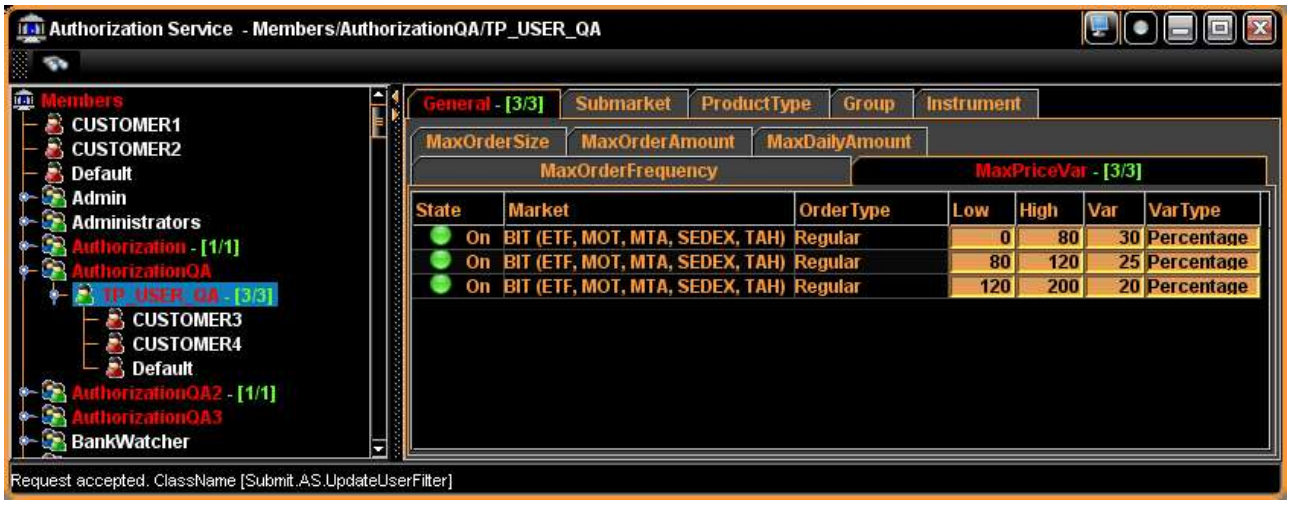
In addition, new filters can be inserted in specific positions of the existing list. A single filter can be inserted by right-clicking the corresponding field in the **Filters** area. A pop-up menu appears with the **Insert** command.



After clicking this command the selected filter will scroll down leaving room to the new one.



The user can then define the filter by following the specific creation procedure.



4.1 Max Order Frequency Filter

In order to add a new filter of this type at market level a user cluster must be selected in the **Member** area, then accessing the **General pane** and the **MaxOrderFrequency** sub-pane in the **Filters area**. By clicking the right mouse button a pop-up menu appears with the Add command, which will add a new row to the current filter pane.

By double-clicking the **MaxOrderFrequency** field for the selected market and order type a dialog window pops up with the 2 fields: **Order(s) in** and the **Time Unit** combo box with the following values: **Seconds**, **Minutes**,**Hours and Day**.

Once the user has entered both values and set the time unit (e.g. **10** Order(s) in **3** Seconds), input can be confirmed with the **ok** button, thus getting **10 in 3s** as **order frequency** in the **MaxOrderFrequency** field, which means that no more than 10 orders (insertions, updates and deletions) can be entered within 3 seconds for the selected market and order type by all the users in the current user cluster.

4.2 Max Order Size Filter

In order to add a new filter of this type at market level a user cluster must be selected in the Member area, then accessing the General pane and the **MaxOrderSize** sub-pane in the Filters area. By clicking the right mouse button a pop-up menu appears with the **Add** command, which will add a new row to the current filter pane.

The **Max Order Size** filter can be set for the selected market and order type by clicking the MaxOrderSize field and then entering the maximum size allowed. For example: a value of **1.000** means that the size of every order with the selected order type for any instrument to be sent to the selected market **cannot be greater than 1.000**.

4.3 Max Order Amount Filter

The **Max Order Amount** filter allows users to set a threshold in EUR for the amount of each order with a given order type in a specific market. Therefore any order will not be dispatched to the market if the corresponding amount exceeds the given threshold.

In order to add a new filter of this type at market level a user cluster must be selected in the Member area, then accessing the **General pane** and the **MaxOrderAmount** sub-pane in the **Filters area**. By clicking the right mouse button a pop-up menu appears with the **Add** command, which will add a new row to the current filter pane.

The **Max Order Amount filter** can be set for the selected market and order type by clicking the **MaxOrderAmount** field and then entering the maximum amount allowed, regardless of order side (Buy or Sell). For example: a value of **200,000** (EUR) means that the amount of every order to be forwarded to the selected market **for a given order type cannot exceed EUR 200,000**.

In case the currency an instrument is traded in differs from EUR, the Authorization Service will convert the order amount to EUR by using static conversion rates available in the system database when the Service has been started.

As far as market orders are concerned, amounts will be computed using the **validation price**, which is determined as follows:

Derivatives Markets (SOLA Platform)	**OpeningPrice (if available) or Price of the 1st trade or Reference Price**
Cash Markets (MIT Plaform)	**Reference Price**

If the validation price of a given instrument has not been notified by the market, it is not possible to validate orders through the current filter and they will be rejected unless the filter is removed.

4.4 Max Price Var Filter

The **Max Price Var** pane in the Filters area allows users to define one or more thresholds, each one assigned to a **price range**, so as to prevent an order from being dispatched to the market if the absolute or percentage difference between its price and the **validation price** of the current instrument exceeds the **threshold** set for the corresponding price range in the specific market for the selected order type. V**alidation price** is determined as follows:

Derivatives Markets (SOLA Platform)	**OpeningPrice (if available) or Price of the 1st trade or ReferencePrice**
Cash Markets (MIT Plaform)	**Reference Price**

In order to add a new filter made up by one ore more price ranges at market level, a user cluster must be selected in the **Member** area, then accessing the **General** pane and the **MaxPriceVar** sub-pane in the **Filters** area. By clicking the right mouse button a pop-up menu appears with the **Add** command, which will add a new row to the current filter pane.

For the selected market and order type one or more price ranges and thresholds can be set. For each range the four fields:

- Low
- High
- Var **[threshold]**
- VarType **[**Percentage **or** Absolute**]**

must be accessed by clicking each one and then entering the corresponding value.

The **Var** field sets a dynamic upper bound for buy order prices and a **dynamic** lower bound for sell order prices depending on which price range the validation price of the current instrument falls in.

A **buy** order can be dispatched to a market for a given order type only if the absolute or percentage difference between the order price and the validation price of its instrument is less than or equal to the **Var** value assigned to the price range where the validation price falls in (including the **Low** value but excluding the **High** value). If Percentage difference has been chosen, the following rule applies:

$$\frac{BuyOrder\,\mathrm{Pr}ice - Validation\,\mathrm{Pr}ice}{\left|Validation\,\mathrm{Pr}ice\right|} * 100 \le Var \quad \Rightarrow \quad \text{Buy order accepted}$$

If Absolute difference has been chosen, the following rule applies:

BuyOrderPrice – ValidationPrice <= Var ⇒ Buy order accepted

A **sell** order can be dispatched to a market for a given order type only if the absolute or percentage difference between the order price and the validation price of its instrument is greater than or equal to the -**Var** value related to the price range where the validation price falls in. If **Percentage** difference has been chosen, the following rule applies:

$$\frac{SellOrder\,\mathrm{Pr}ice - Validation\,\mathrm{Pr}ice}{\left|Validation\,\mathrm{Pr}ice\right|} * 100 \ge -Var \quad \Rightarrow \quad \text{Sell order accepted}$$

If Absolute difference has been chosen, the following rule applies:

SellOrderPrice – ValidationPrice >= -Var ⇒ Sell order accepted

For example, let's assume that the user wants to enter a buy order with a price of 118.25 for an instrument with a validation price of 108.25. The validation price falls in the second price range shown in the previous screenshot, therefore 25 will be used as threshold. Since the **Percentage** difference between the order price and the validation price is 9,24%, which is less than 25%, this buy order can be dispatched to the market.

In case the validation price for a given instrument has not been notified by the market, it is <u>not</u> possible to validate orders through the current filter and they will be rejected unless the filter is removed. On the contrary if the Validation price falls in a price range without any threshold, the current filter will <u>not</u> be applied and the order will be sent to market.

4.5 Max Daily Amount Filter

The **Max Daily Amount Filter** allows users to set up to 2 thresholds in EUR for the position amount(s) in a specific market for a given order type at any level of the user hierarchy. Thresholds can be set either for both **long** and **short** positions (**side net** or **side cumulative** mode) or for the overall position (**net** or **cumulative** mode) depending on the type of position that users need to manage, as specified below:

Mode	Description
Side Net	**LongPosition**: **increased** by **buy order** remaining amounts and **decreased** by **sell trade** amounts **ShortPosition**: **increased** by **sell order** remaining amounts and **decreased** by **buy trade** amounts
Side Cumulative	**LongPosition**: **increased** by **buy order** remaining amounts and **buy trade** amounts **ShortPosition**: **increased** by **sell order** remaining amounts and **sell trade** amounts
Net	**Position**: **increased** by **buy/sell order** remaining amounts and **buy trade** amounts and **decreased** by **sell trade** amounts
Cumulative	**Position**: **increased** by **buy/sell order** remaining amounts and **buy/sell trade** amounts

Therefore orders will not be dispatched to the market if their amounts would cause the position amount(s) in EUR to exceed the given threshold(s).

4.5.1 Side Net/Side Cumulative modes

In order to add a new filter of this type at market level a user cluster must be selected in the **Member area**, then accessing the **General pane**, the **MaxDailyAmount** and the **SideNet/SideCumulative** sub-panes in the Filters area. By clicking the right mouse button a pop-up menu appears with the **Add** command:

which will add a new row to the current filter pane.

For each market selected via the corresponding combo-box 2 thresholds in EUR can be set in the **MaxLongAmount** and **MaxShortAmount** fields, which can be accessed by clicking each of them, then entering the maximum position amounts allowed for the current market and order type on a daily basis. The **PositionTypeDesc** field, which carries the description of the position mode, can be set to **Side Net** or **Side Cumulative** via the corresponding combo-box.

With reference to the picture above, let's assume that the position mode has been set to **Side Net**: a value of **200,000** (EUR) for the **MaxLongAmount** means that the total remaining amount of all active **buy** orders with **Regular** order type reduced by the total amount of all **sell** trades executed in the selected market cannot exceed EUR **200,000.** Therefore each new **buy** order whose size and price would cause the **LongPosition** amount to exceed the **MaxLongAmount** set at market level will be rejected and not dispatched to the market.

In case the currency an instrument is traded in differs from EUR, the **Authorization Service** will convert the order amount to EUR by using conversion rates available in the system database when the Service has been started.

As far as market orders are concerned, amounts will be computed using the **validation price** of the corresponding instrument, which is determined as follows:

Derivatives Markets (SOLA Platform)	**OpeningPrice (if available) or Price of the 1st trade or Reference Price**
Cash Markets (MIT Plaform)	**Reference Price**

If the validation price of a given instrument has not been notified by the market, it is <u>not</u> possible to validate orders through the current filter and they will be rejected unless the filter is removed.

Some additional read-only fields are automatically computed for each filter every time that a new order has been entered or a new trade has been executed, as shown in the tables below. These values will be re-set at the beginning of each trading day except for multi-day (Good Till Date) orders.

Side Net mode

LongExec	Total amount of all buy trades ($\sum$ BuyTradeAmount$_i$)
ShortExec	Total amount of all sell trades ($\sum$ SellTradeAmount$_i$)
LongOrder	Total amount of all buy orders ($\sum$ BuyOrderRemAmount$_i$)
ShortOrder	Total amount of all sell orders ($\sum$ SellOrderRemAmount$_i$)
LongPosition	Long position ($\sum$ BuyOrderRemAmount$_i$ - $\sum$ SellTradeAmount$_i$ + $\sum$ BuyTradeAmount$_i$)
ShortPosition	Short position ($\sum$ SellOrderRemAmount$_i$ - $\sum$ BuyTradeAmount$_i$ + $\sum$ SellTradeAmount$_i$)

Side Cumulative mode

LongExec	Total amount of all buy trades ($\sum$ BuyTradeAmount$_i$)
ShortExec	Total amount of all sell trades ($\sum$ SellTradeAmount$_i$)
LongOrder	Total amount of all buy orders ($\sum$ BuyOrderRemAmount$_i$)
ShortOrder	Total amount of all sell orders ($\sum$ SellOrderRemAmount$_i$)
LongPosition	Long position ($\sum$ BuyTradeAmount$_i$ + $\sum$ BuyOrderRemAmount$_i$)
ShortPosition	Short position ($\sum$ SellTradeAmount$_i$ + $\sum$ SellOrderRemAmount$_i$)

4.5.2 Net/Cumulative modes

In order to add a new filter of this type at market level a user cluster must be selected in the **Member** area, then accessing the **General** pane, the **MaxDailyAmount** and the **Net/Cumulative** sub-panes in the **Filters** area. By clicking the right mouse button a pop-up menu appears with the **Add** command:

which will add a new row to the current filter pane.

For each market selected via the corresponding combo-box a threshold in EUR can be set in the **MaxAmount** field, which can be accessed by clicking it, then entering the maximum position amount allowed for the current market and order type on a daily basis. The **PositionTypeDesc** field, which carries the description of the position mode, can be set to **Net** or **Cumulative** via the corresponding combo-box.

With reference to the picture above, let's assume that the position mode has been set to **Cumulative**: a value of **200,000** (EUR) means that the total remaining amount of all active orders plus the total amount of all trades executed in the selected market cannot exceed EUR **200,000**. Therefore each new order the size and price of which would cause the cumulative position amount to exceed the **MaxAmount** set at market level will be rejected and not dispatched to the market.

In case the currency an instrument is traded in differs from EUR, the **Authorization Service** will convert the order amount to EUR by using conversion rates available in the system database when the Service has been started.

As far as market orders are concerned, amounts will be computed using the **validation price** of the corresponding instrument, which is determined as follows:

Derivatives Markets (SOLA Platform)	**OpeningPrice (if available) or Price of the 1st trade or Reference Price**
Cash Markets (MIT Plaform)	**Reference Price**

If the validation price of a given instrument has not been notified by the market, it is <u>not</u> possible to validate orders through the current filter and they will be rejected unless the filter is removed.

Some additional read-only fields are automatically computed for each filter every time that a new order has been entered or a new trade has been executed, as shown in the tables below. These values will be re-set at the beginning of each trading day except for multi-day (Good Till Date) orders.

Net mode

Exec	Total amount of all buy and sell trades ($\sum$ BuyTradeAmount$_i$ - $\sum$ SellTradeAmount$_i$)
Order	Total amount of all buy and sell orders ($\sum$ BuyOrderRemAmount$_i$ + $\sum$ SellOrderRemAmount$_i$)
Position	Net position ($\sum$ BuyOrderRemAmount$_i$ + $\sum$ SellOrderRemAmount$_i$ - $\sum$ SellTradeAmount$_i$ + $\sum$ BuyTradeAmount$_i$)

Cumulative mode

Exec	Total amount of all buy and sell trades ($\sum$ BuyTradeAmount$_i$ + $\sum$ SellTradeAmount$_i$)
Order	Total amount of all buy and sell orders ($\sum$ BuyOrderRemAmount$_i$ + $\sum$ SellOrderRemAmount$_i$)
Position	Cumulative position ($\sum$ BuyTradeAmount$_i$ + $\sum$ SellTradeAmount$_i$) + ($\sum$ BuyOrderRemAmount$_i$ + $\sum$ SellOrderRemAmount$_i$)

5. SUBMARKET FILTERS

The Submarket **pane in the** Filters **area allows users to set the following filters at submarket level for any user cluster:**

1. **Max Order Frequency**
2. **Max Order Size**
3. **Max Order Amount**
4. **Max Price Var**
5. **Max Daily Amount**

Details on how to create, update and remove filters can be found in section 5.

5.1 Max Order Frequency Filter

In order to add a new filter of this type at submarket level a user cluster must be selected in the **Member area**, then accessing the **Submarket pane** and the **MaxOrderFrequency** sub-pane in the **Filters area**. By clicking the right mouse button a pop-up menu appears with the **Add** command, which will add a new row to the current filter pane.

By double-clicking the **MaxOrderFrequency** field for the **selected submarket** and order type a dialog window pops up with the 2 fields: **Order(s)** in and the **Time Unit combo box** with the following values: **Seconds**, **Minutes, Hours and Day**.

Once the user has entered both values and set the time unit (e.g. **10 Order(s)** in **3 Seconds**), input can be confirmed with the ok button, thus getting **10** in **3s** as order frequency in the **MaxOrderFrequency** field, which means that **no more than 10 orders** (insertions, updates and deletions) can be entered **within 3 seconds** for the selected market and order type by all the users in the current user cluster.

5.2 Max Order Size Filter

In order to add a new filter of this type at submarket level a user cluster must be selected in the **Member area**, then accessing the **Submarket pane** and the **MaxOrderSize** sub-pane in the **Filters area**. By clicking the right mouse button a pop-up menu appears with the **Add** command, which will add a new row to the current filter pane.

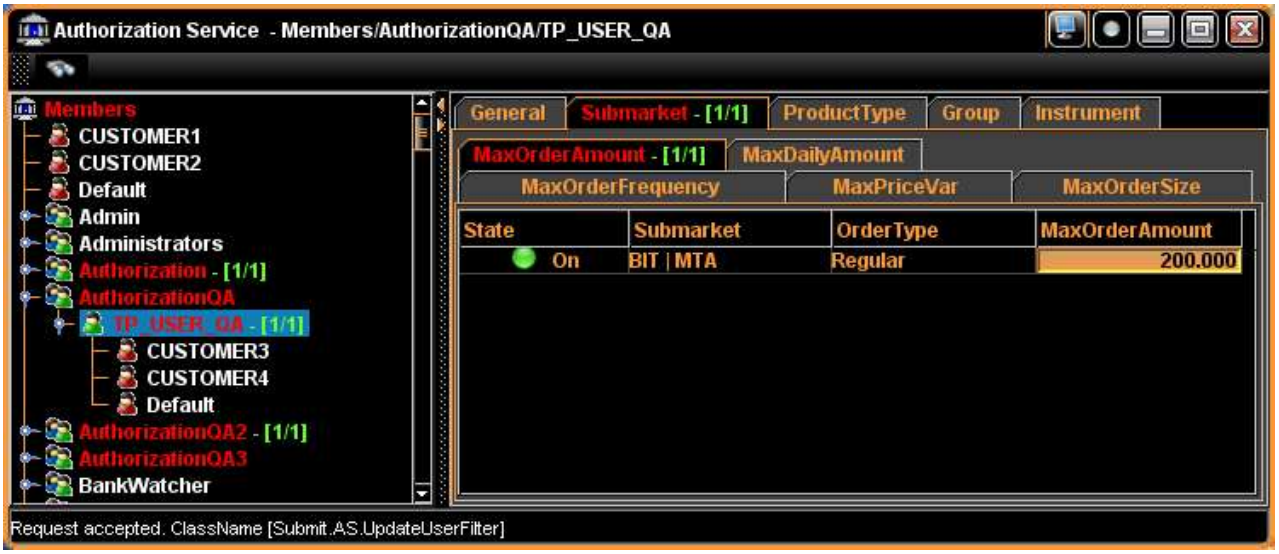
The **Max Order Size** filter can be set for the **selected submarket** and order type by clicking the **MaxOrderSize** field and then entering the maximum size allowed. For example: a value of **1,000** means that the size of every order with the selected order type for any instrument to be sent to the selected submarket **cannot be greater than 1,000**.

5.3 Max Order Amount Filter

The **Max Order Amount** filter allows users to set a threshold in EUR for the **amount** of each order with a given order type in a specific submarket. Therefore any order will not be dispatched to the market if the corresponding amount exceeds the given threshold.

In order to add a new filter of this type at submarket level a user cluster must be selected in the **Member area**, then accessing the **Submarket pane** and the **MaxOrderAmount** sub-pane in the **Filters area**. By clicking the right mouse button a pop-up menu appears with the **Add** command, which will add a new row to the current filter pane.

The **Max Order Amount** filter can be set for the **selected submarke**t and order type by clicking the **MaxOrderAmount** field and then entering the maximum amount allowed, regardless of order side (Buy or Sell).



With reference to the picture above, a value of **200,000** (EUR) means that the amount of every order to be forwarded to the selected submarket for a given order type **cannot exceed EUR 200,000**.

In case the currency an instrument is traded in differs from EUR, the **Authorization Service** will convert the order amount to EUR by using static conversion rates available in the system database when the Service has been started.

As far as market orders are concerned, amounts will be computed using the **validation price**, which is determined as follows:

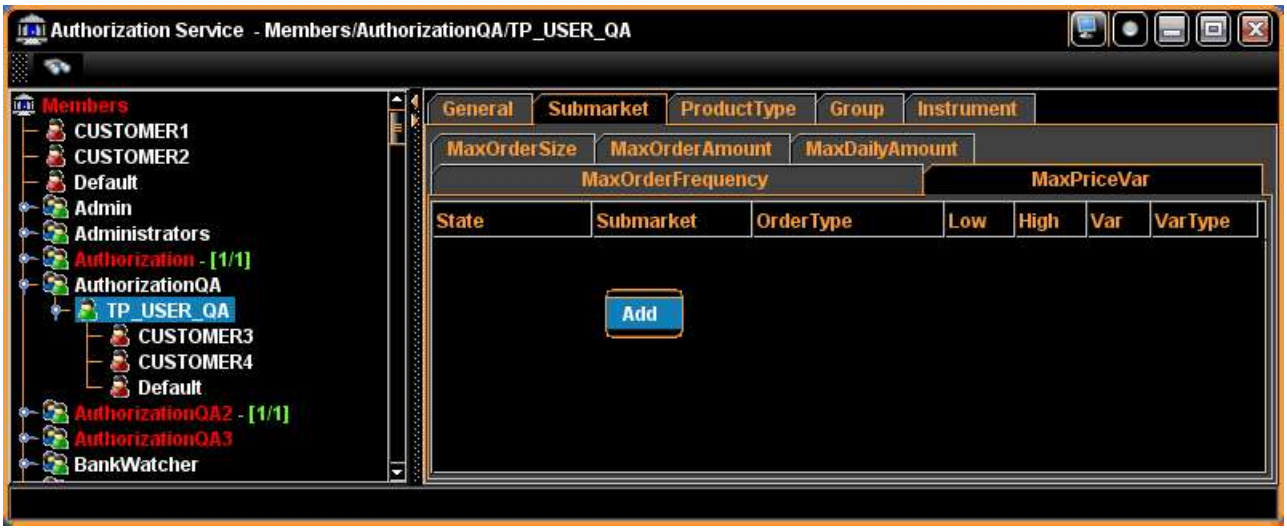
Derivatives Markets (SOLA Platform)	**OpeningPrice (if available) or Price of the 1st trade or Reference Price**
Cash Markets (MIT Plaform)	**Reference Price**

In case the validation price for a given instrument has not been notified by the market it is not possible to validate orders through the current filter and they will be rejected unless the filter is removed.

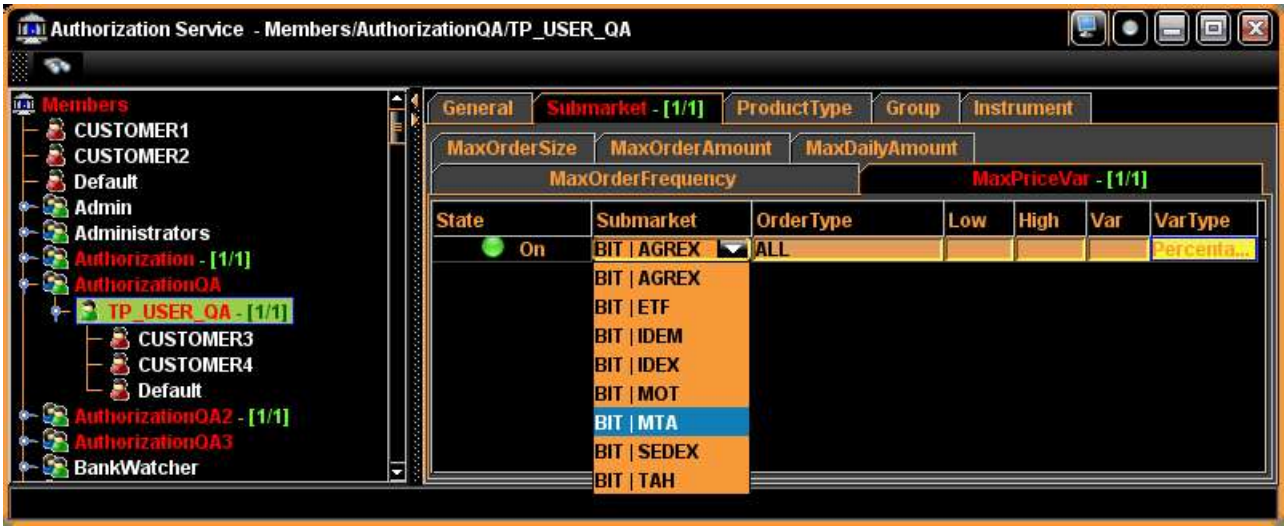
5.4 Max Price Var Filter

The **Max Price Var** pane in the Filters area allows users to define one or more thresholds, each one assigned to a price range, so as to prevent an order from being dispatched to the market if the **absolute or percentage difference** between its **price** and the **validation price** of the current instrument **exceeds** the **threshold** set for the corresponding price range in the specific submarket for the selected order type. **Validation price** is determined as follows:

Derivatives Markets (SOLA Platform)	**OpeningPrice (if available) or Price of the 1st trade or ReferencePrice**
Cash Markets (MIT Plaform)	**Reference Price**



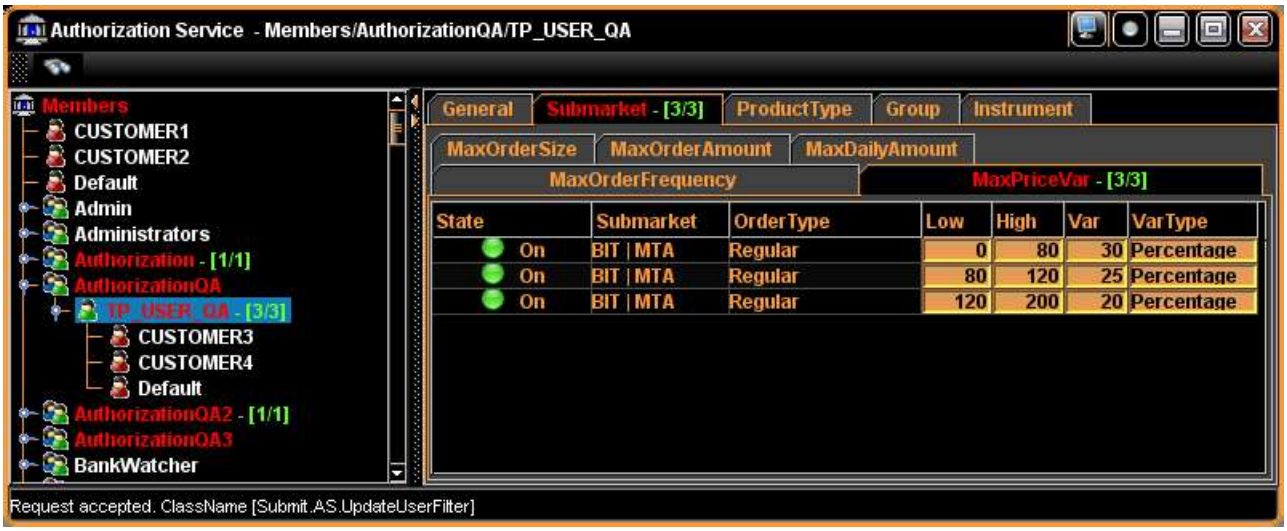
In order to add a new filter made up by one ore more price ranges at submarket level, a user cluster must be selected in the **Member** area, then accessing the **Submarket** pane and the **MaxPriceVar** sub-pane in the **Filters** area. By clicking the right mouse button a pop-up menu appears with the **Add** command, which will add a new row to the current filter pane.



For the **selected submarket** and **order type** one or more price ranges and thresholds can be set. For each range the four fields:

- **Low**
- **High**
- **Var** [**Threshold**]
- **VarType [Percentage** or **Absolute]**

must be accessed by clicking each one and then entering the corresponding value.



The **Var** field sets a dynamic **upper** bound for **buy** order prices and a dynamic **lower** bound for **sell** order prices depending on which price range the **validation price** of the current instrument falls in.

A **buy** order can be dispatched to a submarket for a given order type only if the absolute or percentage difference between the order price and the validation price of its instrument is less than or equal to the **Var** value assigned to the price range where the validation price falls in (**including** the **Low** value but **excluding** the **High** value). If **Percentage** difference has been chosen, the following rule applies:

$$\frac{BuyOrder\,\mathrm{Pr}ice - Validation\,\mathrm{Pr}ice}{\left|Validation\,\mathrm{Pr}ice\right|} * 100 \le Var \quad \Rightarrow \quad \textbf{Buy order accepted}$$

If Absolute difference has been chosen, the following rule applies:

BuyOrderPrice – ValidationPrice <= Var ⇒ Buy order accepted

A **sell** order can be dispatched to a submarket for a given order type only if the absolute or percentage difference between the order price and the validation price of its instrument is greater than or equal to the -**Var** value related to the price range where the validation price falls in. If **Percentage** difference has been chosen, the following rule applies:

$$\frac{SellOrder\,\mathrm{Pr}ice - Validation\,\mathrm{Pr}ice}{\left|Validation\,\mathrm{Pr}ice\right|} * 100 \ge -Var \quad \Rightarrow \quad \textbf{Sell order accepted}$$

If Absolute difference has been chosen, the following rule applies:

SellOrderPrice – ValidationPrice >= -Var ⇒ Sell order accepted

For example, let's assume that the user wants to enter a buy order with a price of 118.25 for an instrument with a validation price of 108.25. The validation price falls in the second price range shown in the previous screenshot, therefore 25 will be used as threshold. Since the **Percentage** difference between the order price and the validation price is 9.24%, which is less than 25%, this buy order can be dispatched to the market.

In case the validation price for a given instrument has not been notified by the market, it is not possible to validate orders through the current filter and they will be rejected unless the filter is removed. On the contrary if the Validation price falls in a price range without any threshold, the current filter will not be applied and the order will be sent to market.

5.5 Max Daily Amount Filter

The **Max Daily Amount Filter** allows users to set up to 2 thresholds in EUR for the position amount(s) in a specific submarket for a given order type at any level of the user hierarchy. Thresholds can be set either for both **long** and **short** positions (**side net** or **side cumulative** mode) or for the overall position (**net** or **cumulative** mode) depending on the type of position that users need to manage, as specified below:

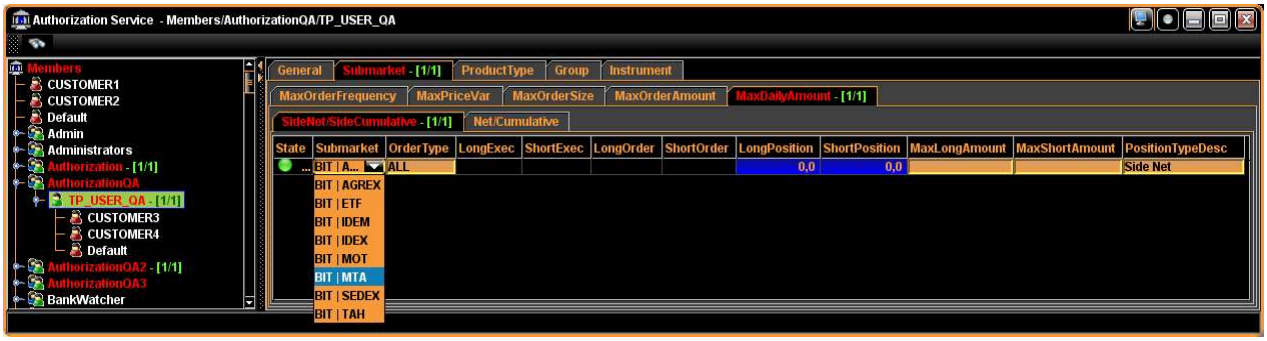
Mode	Description
Side Net	**LongPosition**: **increased** by **buy order** remaining amounts and **decreased** by **sell trade** amounts **ShortPosition**: **increased** by **sell order** remaining amounts and **decreased** by **buy trade** amounts
Side Cumulative	**LongPosition**: **increased** by **buy order** remaining amounts and **buy trade** amounts **ShortPosition**: **increased** by **sell order** remaining amounts and **sell trade** amounts
Net	**Position**: **increased** by **buy/sell order** remaining amounts and **buy trade** amounts and **decreased** by **sell trade** amounts
Cumulative	**Position**: **increased** by **buy/sell order** remaining amounts and **buy/sell trade** amounts

Therefore orders will not be dispatched to the market if their amounts would cause the position amount(s) in EUR to exceed the given threshold(s).

5.5.1 Side Net/Side Cumulative modes

In order to add a new filter of this type at submarket level a user cluster must be selected in the **Member** area, then accessing the **Submarket** pane, the **MaxDailyAmount** and the **SideNet/SideCumulative** sub-panes in the Filters area. By clicking the right mouse button a pop-up menu appears with the **Add** command:

which will add a new row to the current filter pane.



For each **submarket selected** via the corresponding combo-box 2 thresholds in EUR can be set in the **MaxLongAmount** and **MaxShortAmount** fields, which can be accessed by clicking each of them, then entering the maximum position amounts allowed for the current submarket and order type on a daily basis. The **PositionTypeDesc** field, which carries the description of the position mode, can be set to **Side Net** or **Side Cumulative** via the corresponding combo-box.

With reference to the picture above, let's assume that the position mode has been set to **Side Net**: a value of **200,000** (EUR) for the **MaxLongAmount** means that the total remaining amount of all active **buy** orders reduced by the total amount of all **sell** trades executed in the selected submarket cannot exceed EUR **200,000.** Therefore each new **buy** order whose size and price would cause the **LongPosition** amount to exceed the **MaxLongAmount** set at submarket level will be rejected and not dispatched to the market.

In case the currency an instrument is traded in differs from EUR, the **Authorization Service** will convert the order amount to EUR by using conversion rates available in the system database when the Service has been started.

As far as market orders are concerned, amounts will be computed using the validation price of the corresponding instrument, which is determined as follows:

Derivatives Markets (SOLA Platform)	**OpeningPrice (if available) or Price of the 1st trade or Reference Price**
Cash Markets (MIT Plaform)	**Reference Price**

If the validation price of a given instrument has not been notified by the market, it is not possible to validate orders through the current filter and they will be rejected unless the filter is removed.

Some additional read-only fields are automatically computed for each filter every time that a new order has been entered or a new trade has been executed, as shown in the tables below. These values will be re-set at the beginning of each trading day except for multi-day (Good Till Date) orders.

Side Net mode

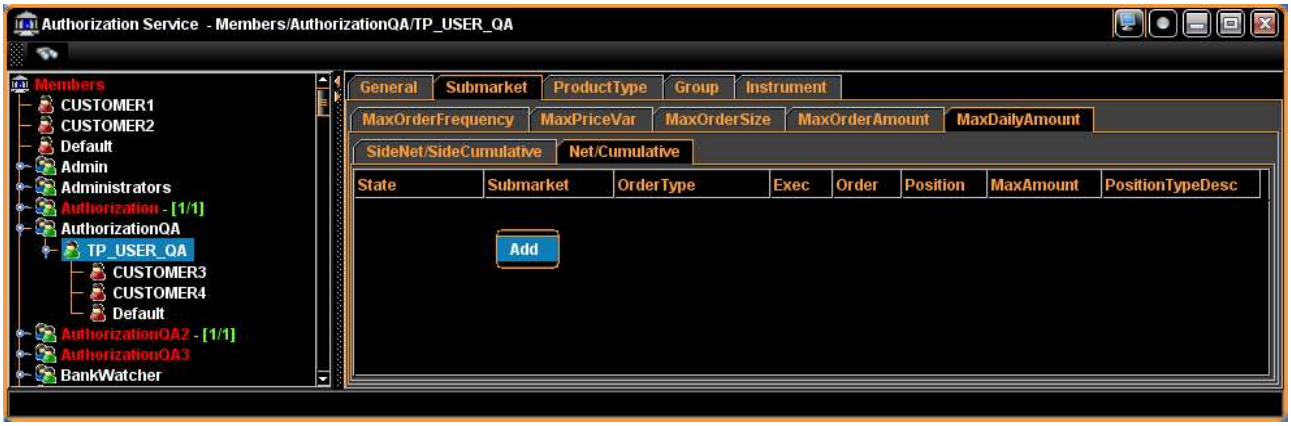
LongExec	Total amount of all buy trades ($\sum$ BuyTradeAmount$_i$)
ShortExec	Total amount of all sell trades ($\sum$ SellTradeAmount$_i$)
LongOrder	Total amount of all buy orders ($\sum$ BuyOrderRemAmount$_i$)
ShortOrder	Total amount of all sell orders ($\sum$ SellOrderRemAmount$_i$)
LongPosition	Long position ($\sum$ BuyOrderRemAmount$_i$ - $\sum$ SellTradeAmount$_i$ + $\sum$ BuyTradeAmount$_i$)
ShortPosition	Short position ($\sum$ SellOrderRemAmount$_i$ - $\sum$ BuyTradeAmount$_i$ + $\sum$ SellTradeAmount$_i$)

Side Cumulative mode

LongExec	Total amount of all buy trades ($\sum$ BuyTradeAmount$_i$)
ShortExec	Total amount of all sell trades ($\sum$ SellTradeAmount$_i$)
LongOrder	Total amount of all buy orders ($\sum$ BuyOrderRemAmount$_i$)
ShortOrder	Total amount of all sell orders ($\sum$ SellOrderRemAmount$_i$)
LongPosition	Long position ($\sum$ BuyTradeAmount$_i$ + $\sum$ BuyOrderRemAmount$_i$)
ShortPosition	Short position ($\sum$ SellTradeAmount$_i$ + $\sum$ SellOrderRemAmount$_i$)

5.5.2 Net/Cumulative modes

In order to add a new filter of this type at submarket level a user cluster must be selected in the Member area, then accessing the **Submarket** pane, the **MaxDailyAmount** and the **Net/Cumulative** sub-panes in the **Filters** area. By clicking the right mouse button a pop-up menu appears with the **Add** command:



which will add a new row to the current filter pane.

For each **submarket selected** via the corresponding combo-box a threshold in EUR can be set in the **MaxAmount** field, which can be accessed by clicking it, then entering the

maximum position amount allowed for the current submarket and order type on a daily basis. The **PositionTypeDesc** field, which carries the description of the position mode, can be set to **Net** or **Cumulative** via the corresponding combo-box.

With reference to the picture above, let's assume that the position mode has been set to **Cumulative**: a value of **200,000** (EUR) means that the total remaining amount of all active orders plus the total amount of all trades executed in the selected submarket cannot exceed EUR **200,000**. Therefore each new order the size and price of which would cause the cumulative position amount to exceed the **MaxAmount** set at market level will be rejected and not dispatched to the market.

In case the currency an instrument is traded in differs from EUR, the **Authorization Service** will convert the order amount to EUR by using conversion rates available in the system database when the Service has been started.

As far as market orders are concerned, amounts will be computed using the validation price of the corresponding instrument, which is determined as follows:

Derivatives Markets (SOLA Platform)	**OpeningPrice (if available) or Price of the 1st trade or Reference Price**
Cash Markets (MIT Plaform)	**Reference Price**

In case the validation price for a given instrument has not been notified by the market, it is <u>not</u> possible to validate orders through the current filter and they will be rejected unless the filter is removed.

Some additional read-only fields are automatically computed for each filter every time that a new order has been entered or a new trade has been executed, as shown in the tables below. These values will be re-set at the beginning of each trading day except for multi-day (Good Till Date) orders.

Net mode

Exec	Total amount of all buy and sell trades ($\sum$ BuyTradeAmount$_i$ - $\sum$ SellTradeAmount$_i$)
Order	Total amount of all buy and sell orders ($\sum$ BuyOrderRemAmount$_i$ + $\sum$ SellOrderRemAmount$_i$)
Position	Net position ($\sum$ BuyOrderRemAmount$_i$ + $\sum$ SellOrderRemAmount$_i$ - $\sum$ SellTradeAmount$_i$ + $\sum$ BuyTradeAmount$_i$)

Cumulative mode

Exec	Total amount of all buy and sell trades ($\sum$ BuyTradeAmount$_i$ + $\sum$ SellTradeAmount$_i$)
Order	Total amount of all buy and sell orders ($\sum$ BuyOrderRemAmount$_i$ + $\sum$ SellOrderRemAmount$_i$)
Position	Cumulative position ($\sum$ BuyTradeAmount$_i$ + $\sum$ SellTradeAmount$_i$) + ($\sum$ BuyOrderRemAmount$_i$ + $\sum$ SellOrderRemAmount$_i$)

6. PRODUCT TYPE FILTERS

The **Product Type pane** in the **Filters area** allows users to set the following filters at product type level for any user cluster:

1. Max Order Frequency
2. Max Order Size
3. Max Order Amount
4. Max Price Var

Details on how to create, update and remove filters can be found in section 5.

This filter class is applicable to derivatives markets oly, the product types may be selected among:

- Futures;
- Strategies;
- Options.

6.1 Max Order Frequency Filter

In order to add a new filter of this type at product type level a user cluster must be selected in the **Member area**, then accessing the **ProductType pane** and the **MaxOrderFrequency** sub-pane in the **Filters area**. By clicking the right mouse button a pop-up menu appears with the **Add** command:

which will open a dialog window to select market, product type and order type.

By pressing the **Add** button, a new row will be added to the **Filters** area.

By double-clicking the **MaxOrderFrequency** field for the selected product type and order type a dialog window pops up with the 2 fields: **Order(s)** in and the **Time Unit combo box** with the following values: **Seconds**, **Minutes, Hours and Day**.

Once the user has entered both values and set the time unit (e.g. **10** Order(s) in **3** Seconds), input can be confirmed with the **ok** button, thus getting **10** in **3s** as order frequency in the **MaxOrderFrequency** field, which means that **no more than 10 orders** (insertions, updates and deletions) can be entered **within 3 seconds** for the selected market, product type and order type by all the users in the current user cluster.

6.2 Max Order Size Filter

In order to add a new filter of this type at product type level a user cluster must be selected in the **Member area**, then accessing the **ProductType pane** and the

MaxOrderSize sub-pane in the **Filters area**. By clicking the right mouse button a pop-up menu appears with the **Add** command:

which will open a dialog window to select market, product type and order type.

By pressing the **Add** button, a new row will be added to the **Filters** area.

The **Max Order Size** filter can be set for the selected market, product type and order type by clicking the **MaxOrderSize** field and then entering the maximum size allowed. For example (see picture below), a value of **1,000** means that the size of every order with the selected product type and order type for any instrument to be sent to the selected market **cannot be greater** than **1,000**.

6.3 Max Order Amount Filter

The **Max Order Amount** filter allows users to set a threshold in EUR for the **amount** of each order with a given product type and order type in a specific market. Therefore any order will not be dispatched to the market if the corresponding amount exceeds the given threshold.

In order to add a new filter of this type at product type level a user cluster must be selected in the **Member area**, then accessing the **ProductType pane** and the **MaxOrderAmount** sub-pane in the **Filters area**. By clicking the right mouse button a pop-up menu appears with the **Add** command:

which will open a dialog window to select market, product type and order type.

By pressing the **Add** button, a new row will be added to the **Filters area**.

The **Max Order Amount** filter can be set for the selected market, product type and order type by clicking the **MaxOrderAmount** field and then entering the maximum amount allowed, regardless of order side (Buy or Sell).

With reference to the previous picture, a value of **200,000** (EUR) means that the amount of every order to be forwarded to the selected market for the current product type and order type **cannot exceed EUR 200,000**.

In case the currency an instrument is traded in differs from EUR, the **Authorization Service** will convert the order amount to EUR by using static conversion rates available in the system database when the Service has been started.

As far as market orders are concerned, amounts will be computed using the **validation price**, which is determined as follows:

Derivatives Markets (SOLA Platform)	**OpeningPrice (if available) or Price of the 1st trade or Reference Price**
Cash Markets (MIT Plaform)	**Reference Price**

In case the validation price for a given instrument has not been notified by the market it is not possible to validate orders through the current filter and they will be rejected unless the filter is removed.

6.4 Max Price Var Filter

The **Max Price Var** pane in the **Filters area** allows users to define one or more thresholds, each one assigned to a price range, so as to prevent an order from being dispatched to the market if the **absolute** or **percentage difference** between its price and the validation price of the current instrument **exceeds** the **threshold** set for the corresponding price range in the specific market for the selected product type and order type. **Validation price** is determined as follows:

Derivatives Markets (SOLA Platform)	**OpeningPrice (if available) or Price of the 1st trade or ReferencePrice**
Cash Markets (MIT Plaform)	**Reference Price**

In order to add a new filter made up by one ore more price ranges at product type level, a user cluster must be selected in the **Member** area, then accessing the **ProductType** pane and the **MaxPriceVar** sub-pane in the **Filters** area. By clicking the right mouse button a pop-up menu appears with the **Add** command:

which will open a **dialog window** to select market, product type and order type

By pressing the Add button, a new row will be added to the Filters area.

For the selected market, product type and order type one or more price ranges and thresholds can be set. For each range the four fields:

- **Low**
- **High**
- **Var [**threshold**]**
- **VarType [Percentage** or **Absolute]**

must be accessed by clicking each one and then entering the corresponding value.

The **Var** field sets a dynamic **upper** bound for **buy** order prices and a dynamic **lower** bound for **sell** order prices depending on which price range the **validation price** of the current instrument falls in.

A **buy** order can be dispatched to a market for a given product type and order type only if the absolute or percentage difference between the order price and the validation price of its instrument is **less than** or **equal** to the **Var** value assigned to the price range where the validation price falls in (**including** the **Low** value but **excluding** the **High** value). If **Percentage** difference has been chosen, the following rule applies:

$$\frac{BuyOrder\,\mathrm{Pr}ice - Validation\,\mathrm{Pr}ice}{\left|Validation\,\mathrm{Pr}ice\right|} * 100 \le Var \quad \Rightarrow \quad \text{Buy order accepted}$$

If Absolute difference has been chosen, the following rule applies:

BuyOrderPrice – ValidationPrice <= Var ⇒ Buy order accepted

A **sell** order can be dispatched to a market for a given product type and order type only if the absolute or percentage difference between the order price and the validation price of its instrument is **greater than** or **equal** to the **-Var** value related to the price range where the validation price falls in. If **Percentage** difference has been chosen, the following rule applies:

$$\frac{SellOrder\,\mathrm{Pr}ice - Validation\,\mathrm{Pr}ice}{\left|Validation\,\mathrm{Pr}ice\right|} * 100 \geq -Var \quad \Rightarrow$$ Sell order accepted

If Absolute difference has been chosen, the following rule applies:

SellOrderPrice – ValidationPrice >= -Var ⇒ Sell order accepted

For example, let's assume that the user wants to enter a buy order with a price of **118.25** for an instrument with a **validation price of 108.25**. The validation price falls in the second price range shown in the previous screenshot, therefore **25** will be used as threshold. Since the Percentage difference between the order price and the validation price is **9.24%,** which is **less than 25%**, this buy order can be dispatched to the market.

In case the validation price for a given instrument has not been notified by the market, it is <u>not</u> possible to validate orders through the current filter and they will be rejected unless the filter is removed. On the contrary if the Validation price falls in a price range without any threshold, the current filter will <u>not</u> be applied and the order will be sent to market.

7. GROUP FILTERS

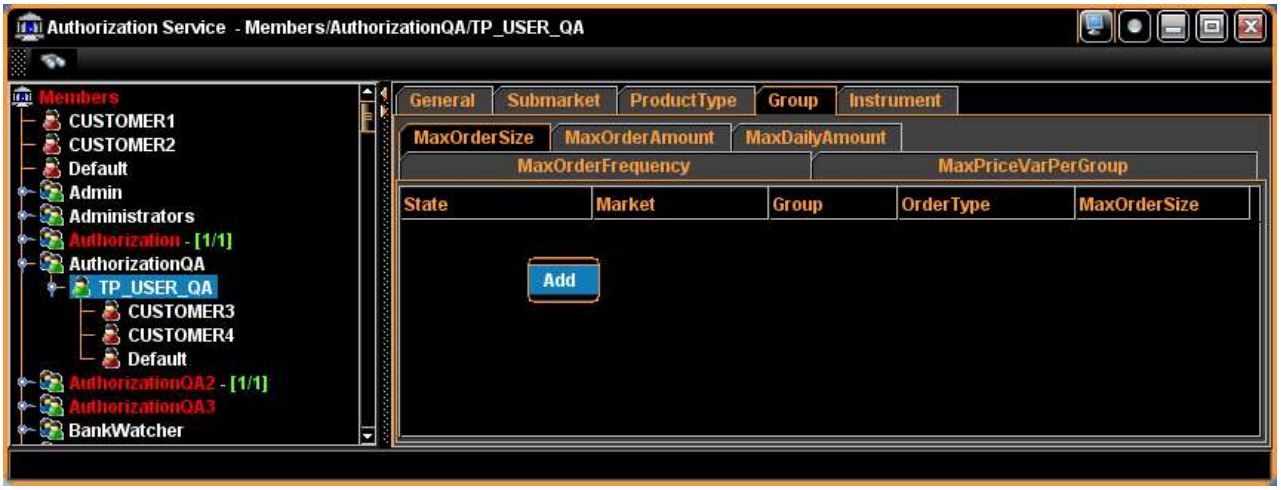
The **Group pane** in the Filters area allows users to set the following filters at instrument group level for any user cluster:

1. Max Order Size
2. Max Order Amount
3. Max Daily Amount
4. Max Order Frequency
5. Max Price Var Per Group

Details on how to create, update and remove filters can be found in section 5.

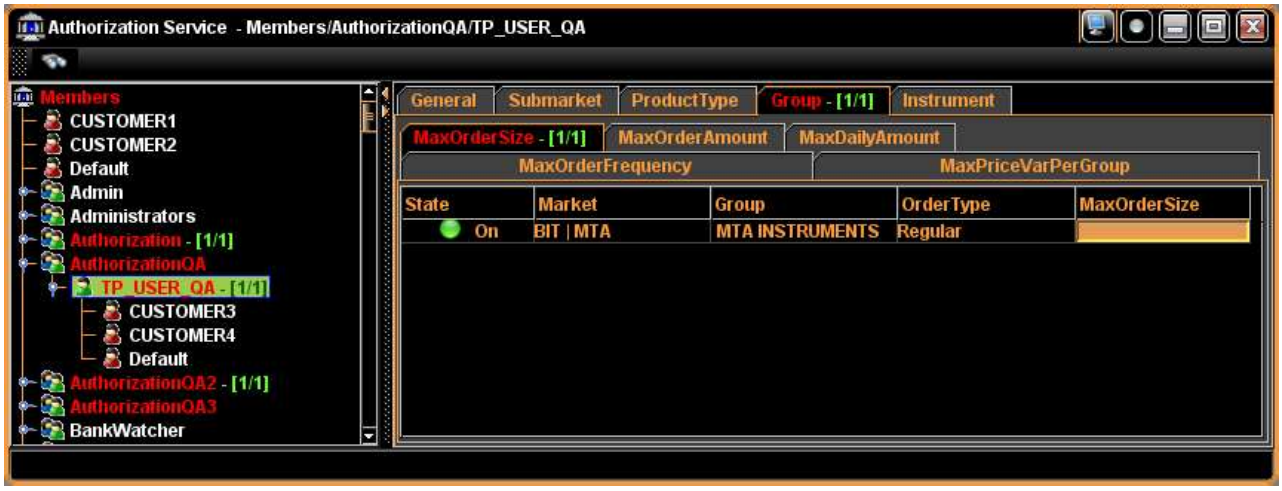
7.1 Max Order Size Filter

In order to add a new filter of this type at instrument group level a **user cluster** must be selected in the **Member area**, then accessing the **Group pane** and the **MaxOrderSize** sub-pane in the **Filters area**. By clicking the right mouse button a pop-up menu appears with the **Add** command:

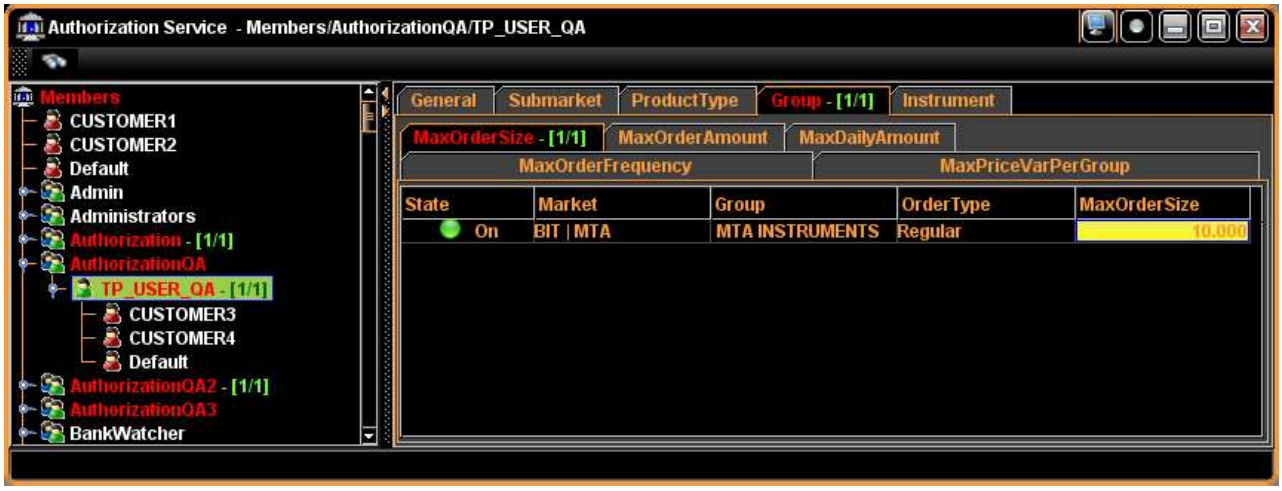


which will open a **dialog window** to select market, instrument group and order type.

By pressing the **Add** button a new row will be added to the **Filters** area.



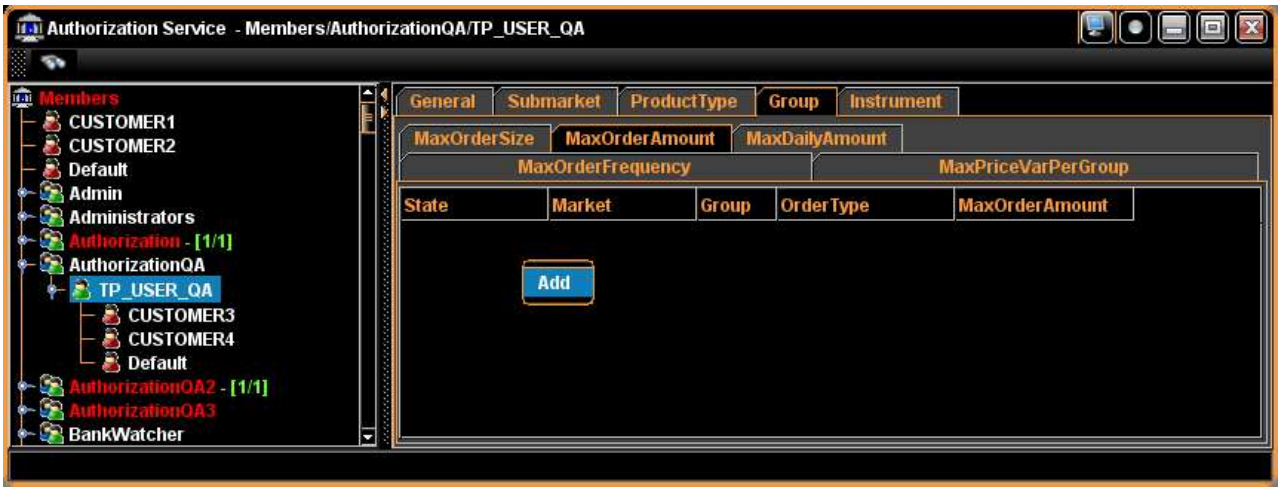
The **Max Order Size** filter can be set for the selected market, instrument group and order type by clicking the **MaxOrderSize** field and then entering the maximum size allowed. For example: a value of **10,000** means that the size of every order with the selected instrument group and order type for any instrument to be sent to the selected market **cannot be greater** than **10,000**.



7.2 Max Order Amount Filter

The **Max Order Amount** Filter allows users to set a threshold in EUR for the amount of each order with a given instrument group and order type in a specific market. Therefore any order will not be dispatched to the market if the corresponding amount exceeds the given threshold.

In order to add a new filter of this type at instrument group level a user cluster must be selected in the **Member** area, then accessing the **Group** pane and the **MaxOrderAmount** sub-pane in the **Filters** area. By clicking the right mouse button a pop-up menu appears with the **Add** command:

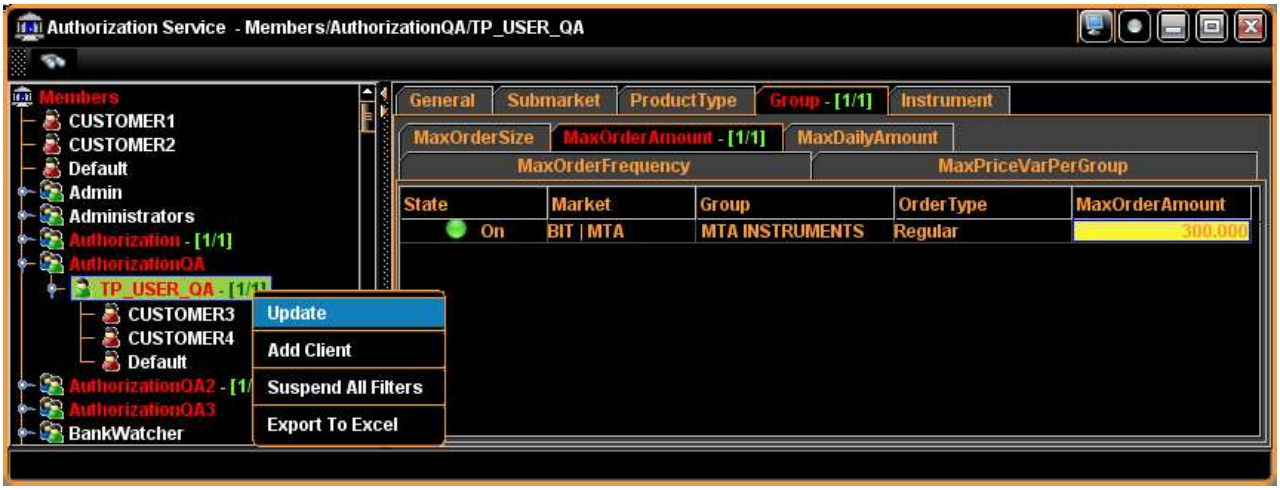


which will open a **dialog window** to select market, instrument group and order type.

By pressing the **Add** button a new row will be added to the **Filters** area.

The **Max Order Amount** filter can be set for the selected market, instrument group and order type by clicking the **MaxOrderAmount** field and then entering the maximum amount allowed, regardless of order side (Buy or Sell). For example (see picture below), a value of **300,000** (EUR) means that the amount of every order to be forwarded to the selected market for the current instrument group and order type **cannot exceed** EUR **300,000**.

In case the currency an instrument is traded in differs from EUR, the **Authorization Service** will convert the order amount to EUR by static using conversion rates available in the system database when the Service has been started.



As far as market orders are concerned, amounts will be computed using the **validation price**, which is determined as follows:

Derivatives Markets (SOLA Platform)	**OpeningPrice (if available) or Price of the 1st trade or Reference Price**
Cash Markets (MIT Plaform)	**Reference Price**

In case the validation price for a given instrument has not been notified by the market it is not possible to validate orders through the current filter and they will be rejected unless the filter is removed.

7.3 Max Daily Amount Filter

The **Max Daily Amount Filter** allows users to set up to **2 thresholds in EUR** for the position amount(s) in a specific market for a given instrument group and order type at any level of the user hierarchy. Thresholds can be set either for both **long** and **short** positions (**side net** or **side cumulative** mode) or for the **overall** position (**net** or **cumulative** mode) depending on the type of position that users need to manage, as specified below:

Mode	Description
Side Net	**LongPosition**: **increased** by **buy order** remaining amounts and **decreased** by **sell trade** amounts **ShortPosition**: **increased** by **sell order** remaining amounts and **decreased** by **buy trade** amounts

Mode	Description
Side Cumulative	**LongPosition**: **increased** by **buy order** remaining amounts and **buy trade** amounts **ShortPosition**: **increased** by **sell order** remaining amounts and **sell trade** amounts
Net	**Position**: **increased** by **buy/sell order** remaining amounts and **buy trade** amounts and **decreased** by **sell trade** amounts
Cumulative	**Position**: **increased** by **buy/sell order** remaining amounts and **buy/sell trade** amounts

Therefore orders will not be dispatched to the market if their amounts would cause the position amount(s) in EUR to exceed the given threshold(s).

7.3.1 Side Net/Side Cumulative modes

In order to add a new filter of this type at instrument group level a user cluster must be selected in the **Member** area, then accessing the **Group** pane, the **MaxDailyAmount** and **SideNet/SideCumulative** sub-panes in the **Filters** area. By clicking the right mouse button a pop-up menu appears with the **Add** command:

which will open a dialog window to select market, instrument group and order type.

By pressing the **Add** button a new row will be added to the **Filters area**.

For each market selected via the corresponding combo-box 2 thresholds in EUR can be set in the **MaxLongAmount** and **MaxShortAmount** fields, which can be accessed by clicking each of them, then entering the maximum position amounts allowed for the current market, instrument group and order type on a daily basis. The **PositionTypeDesc** field, which carries the description of the position mode, can be set to **Side Net** or **Side Cumulative** via the corresponding combo-box.

Considering the above picture, let's assume that the position mode has been set to **Side Net**: a value of **150,000** (EUR) for the **MaxLongAmount** means that the total remaining amount of all active **buy** orders reduced by the total amount of all **sell** trades executed for all the instruments in the selected instrument group of the selected market cannot exceed EUR **150,000.** Therefore each new **buy** order the size and price of which would cause the **LongPosition** amount to exceed the **MaxLongAmount** set at instrument group level will be rejected and not dispatched to the market.

In case the currency an instrument is traded in differs from EUR, the **Authorization Service** will convert the order amount to EUR by using conversion rates available in the system database when the Service has been started.

As far as market orders are concerned, amounts will be computed using the **validation price** of the corresponding instrument, which is determined as follows:

Derivatives Markets (SOLA Platform)	**OpeningPrice (if available) or Price of the 1st trade or Reference Price**
Cash Markets (MIT Plaform)	**Reference Price**

In case the validation price for a given instrument has not been notified by the market it is <u>not</u> possible to validate orders through the current filter and they will be rejected unless the filter is removed.

Some additional read-only fields are automatically computed for each filter every time that a new order has been entered or a new trade has been executed, as shown in the tables below. These values will be re-set at the beginning of each trading day except for multi-day (Good Till Date) orders.

Side Net mode

LongExec	Total amount of all buy trades ($\sum$ BuyTradeAmount$_i$)
ShortExec	Total amount of all sell trades ($\sum$ SellTradeAmount$_i$)
LongOrder	Total amount of all buy orders ($\sum$ BuyOrderRemAmount$_i$)
ShortOrder	Total amount of all sell orders ($\sum$ SellOrderRemAmount$_i$)
LongPosition	Long position ($\sum$ BuyOrderRemAmount$_i$ - $\sum$ SellTradeAmount$_i$ + $\sum$ BuyTradeAmount$_i$)
ShortPosition	Short position ($\sum$ SellOrderRemAmount$_i$ - $\sum$ BuyTradeAmount$_i$ + $\sum$ SellTradeAmount$_i$)

Side Cumulative mode

LongExec	Total amount of all buy trades ($\sum$ BuyTradeAmount$_i$)
ShortExec	Total amount of all sell trades ($\sum$ SellTradeAmount$_i$)
LongOrder	Total amount of all buy orders ($\sum$ BuyOrderRemAmount$_i$)
ShortOrder	Total amount of all sell orders ($\sum$ SellOrderRemAmount$_i$)
LongPosition	Long position ($\sum$ BuyTradeAmount$_i$ + $\sum$ BuyOrderRemAmount$_i$)
ShortPosition	Short position ($\sum$ SellTradeAmount$_i$ + $\sum$ SellOrderRemAmount$_i$)

7.3.2 Net/Cumulative modes

In order to add a new filter of this type at instrument group level a user cluster must be selected in the **Member area**, then accessing the **Group pane**, the **MaxDailyAmount** and **Net/Cumulative** sub-panes in the **Filters area**. By clicking the right mouse button a a pop-up menu appears with the **Add** command:

which will open a dialog window to select market, instrument group and order type.

By pressing the **Add** button a new row will be added to the **Filters area**.

For each market selected via the corresponding combo-box a threshold in EUR can be set in the **MaxAmount** field, which can be accessed by clicking it, then entering the maximum position amount allowed for the current instrument group and order type on a daily basis. The **PositionTypeDesc** field, which carries the description of the position mode, can be set to **Net** or **Cumulative** via the corresponding combo-box.

Considering the picture above, let's assume that the position mode has been set to **Cumulative**: a value of **150,000** (EUR) means that the total remaining amount of all active orders plus the total amount of all trades executed for all the instruments in the selected instrument group cannot exceed EUR **150,000**. Therefore each new order whose size and price would cause the **cumulative position** amount to **exceed** the **MaxAmount** set at instrument group level will be rejected and not dispatched to the market.

In case the currency an instrument is traded in differs from EUR, the **Authorization Service** will convert the order amount to EUR by using conversion rates available in the system database when the Service has been started.

As far as market orders are concerned, amounts will be computed using the **validation price** of the corresponding instrument, which is determined as follows:

Derivatives Markets (SOLA Platform)	**OpeningPrice (if available) or Price of the 1st trade or Reference Price**
Cash Markets (MIT Plaform)	**Reference Price**

In case the validation price for a given instrument has not been notified by the market it is <u>not</u> possible to validate orders through the current filter and they will be rejected unless the filter is removed.

Some additional read-only fields are automatically calculated for each filter every time that a new order has been entered or a new trade has been executed, as shown in the tables below. These values will be re-set at the beginning of each trading day except for multi-day (Good Till Date) orders.

Net mode

Exec	Total amount of all buy and sell trades ($\sum$ BuyTradeAmount$_i$ - $\sum$ SellTradeAmount$_i$)
Order	Total amount of all buy and sell orders ($\sum$ BuyOrderRemAmount$_i$ + $\sum$ SellOrderRemAmount$_i$)
Position	Net position ($\sum$ BuyOrderRemAmount$_i$ + $\sum$ SellOrderRemAmount$_i$ - $\sum$ SellTradeAmount$_i$ + $\sum$ BuyTradeAmount$_i$)

Cumulative mode

Exec	Total amount of all buy and sell trades ($\sum$ BuyTradeAmount$_i$ + $\sum$ SellTradeAmount$_i$)
Order	Total amount of all buy and sell orders ($\sum$ BuyOrderRemAmount$_i$ + $\sum$ SellOrderRemAmount$_i$)
Position	Cumulative position ($\sum$ BuyTradeAmount$_i$ + $\sum$ SellTradeAmount$_i$) + ($\sum$ BuyOrderRemAmount$_i$ + $\sum$ SellOrderRemAmount$_i$)

7.4 Max Order Frequency Filter

In order to add a new filter of this type at instrument group level a user cluster must be selected in the **Member** area, then accessing the **Group** pane and the **MaxOrderFrequency** sub-pane in the **Filters** area. By clicking the right mouse button a pop-up menu appears with the **Add** command:

which will open a **dialog window** to select market, instrument group and order type.

By pressing the **Add** button a new row will be added to the **Filters** area.

By double-clicking the **MaxOrdersFrequency** field for the selected instrument group and order type a dialog window pops up with the 2 fields: **Order(s) in** and the **Time Unit** combo box with the following values: **Seconds**, **Minutes**, **Hours** and Day

Once the user has entered both values and set the time unit (e.g. **10 Order(s) in 3 Seconds**), input can be confirmed with the ok button, thus getting **10** in **3s** as order frequency in the **MaxOrderFrequency** field, which means that **no more than 10 orders** (insertions, updates and deletions) can be entered **within 3 seconds** for the selected market, instrument group and order type by all the users in the current user cluster.

7.5 Max Price Var Per Group Filter

The **Max Price Var Per Group** pane in the **Filters area** allows users to define one or more thresholds, each one assigned to a price range, so as to prevent an order from being dispatched to the market if the **absolute** or **percentage difference** between its **price** and the **validation price** of the current instrument **exceeds** the threshold set for the corresponding price range in the specific market for the selected instrument group and order type. **Validation price** is determined as follows:

Derivatives Markets (SOLA Platform)	**OpeningPrice (if available) or Price of the 1st trade or ReferencePrice**
Cash Markets (MIT Plaform)	**Reference Price**

In order to add a new filter made up by one or more price ranges at instrument group level, a user cluster must be selected in the **Member area**, then accessing the **Group pane** and the **MaxPriceVarPerGroup** sub-pane in the **Filters area**. By clicking the right mouse button a pop-up menu appears with the **Add** command:

which will open a **dialog window** to select market, instrument group and order type.

By pressing the **Add** button a new row will be added to the **Filters** area.

For the selected market, instrument group and order type one or more price ranges and thresholds can be set. For each range the four fields:

- **Low**
- **High**
- **Var** [**threshold**]
- **Var Type** [**Percentage** or **Absolute**]

must be accessed by clicking each one and then entering the corresponding value.

The **Var** field sets a dynamic **upper** bound for **buy** order prices and a dynamic **lower** bound for **sell** order prices depending on which price range the **validation price** of the current instrument falls in.

A **buy** order can be dispatched to a market for a given instrument group and order type only if the **absolute or percentage difference** between the **order price** and the **validation price** of its instrument is **less than or equal** to the **Var** value assigned to the price range where the validation price falls in (**including** the **Low** value but **excluding** the **High** value). If **Percentage** difference has been chosen, the following rule applies:

$$\frac{BuyOrder\,\mathrm{Pr}ice - Validation\,\mathrm{Pr}ice}{\left|Validation\,\mathrm{Pr}ice\right|} * 100 \le Var \quad \Rightarrow \quad \text{Buy order accepted}$$

If Absolute difference has been chosen, the following rule applies:

$$BuyOrderPrice - ValidationPrice <= Var \quad \Rightarrow \quad \text{Buy order accepted}$$

A **sell** order can be dispatched to a market for a given instrument group and order type only if the **absolute or percentage difference** between the **order price** and the **validation price** of its instrument is greater than or equal to the **-Var** value related to the price range where the **validation price** falls in. If Percentage difference has been chosen, the following rule applies:

$$\frac{SellOrder\,\mathrm{Pr}ice - Validation\,\mathrm{Pr}ice}{\left|Validation\,\mathrm{Pr}ice\right|} * 100 \ge -Var \quad \Rightarrow \quad \text{Sell order accepted}$$

If Absolute difference has been chosen, the following rule applies:

SellOrderPrice – ValidationPrice >= -Var ⇒ Sell order accepted

For example, let's assume that the user wants to enter a **buy** order with a price of **118.25** for an instrument with a **validation price of 108.25**. The validation price falls in the second price range shown in the previous screenshot, therefore **25** will be used as threshold. Since the Percentage difference between the order price and the validation price is **9.24%,** which is less than **25%**, this buy order can be dispatched to the market.

In case the validation price for a given instrument has not been notified by the market, it is not possible to validate orders through the current filter and they will be rejected unless the filter is removed. On the contrary if the Validation price falls in a price range without any threshold, the current filter will not be applied and the order will be sent to market.

8. INSTRUMENT FILTERS

The **Instrument pane** in the **Filters area** allows users to set the following filters at instrument level for any user cluster:

1. Max Order Size
2. Max Daily Size
3. Max Order Amount
4. Max Daily Amount
5. Max Order Frequency
6. Max Price Var Per Instr

Details on how to create, update and remove filters can be found in section 5.

8.1 Max Order Size Filter

In order to add a new filter of this type at instrument level a user cluster must be selected in the **Member** area, then accessing the **Instrument** pane and the **MaxOrderSize** sub-pane in the **Filters** area. By clicking the right mouse button a pop-up menu appears with the **Add** command:

which will open a **dialog window** to select instrument and order type.

By pressing the **Add** button a new row will be added to the **Filters** area.

The **Max Order Size** filter can be set for the selected market, instrument and order type by clicking the **MaxOrderSize** field and then entering the maximum size allowed. For example: a value of **10,000** means that the size of every order with the selected instrument and order type to be sent to the selected market **cannot be greater** than **10,000**.

8.2 Max Daily Size Filter

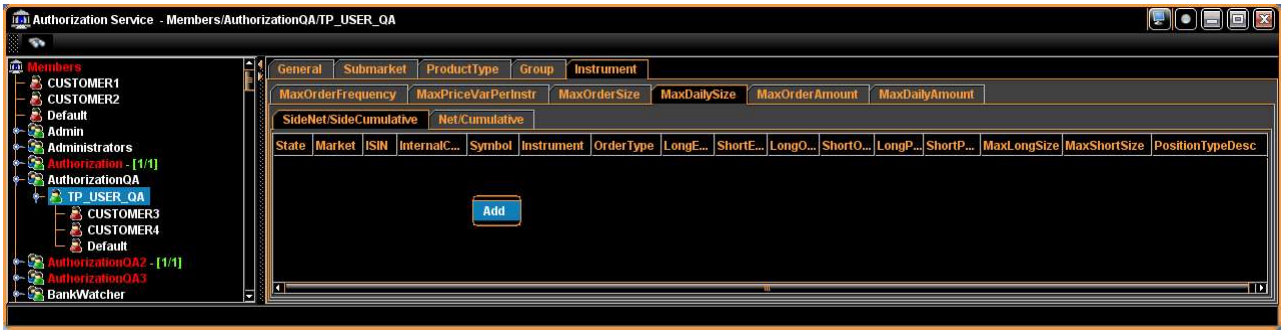
The **Max Daily Size** filter allows users to set up to **2 thresholds** for the position(s) in a specific market for a given instrument and order type at any level of the user hierarchy. Thresholds can be set either for both **long** and **short** positions (**side net** or **side cumulative** mode) or for the overall position (**net** or **cumulative** mode) depending on the type of position that users need to manage, as specified below:

Mode	Description
Side Net	LongPosition**: increased** by **buy order** remaining amounts and **decreased** by **sell trade** amounts ShortPosition**: increased** by **sell order** remaining amounts and **decreased** by **buy trade** amounts
Side Cumulative	**LongPosition: increased** by **buy order** remaining amounts and **buy trade** amounts **ShortPosition**: **increased** by **sell order** remaining amounts and **sell trade** amounts
Net	**Position**: **increased** by **buy/sell order** remaining amounts and **buy trade** amounts and **decreased** by **sell trade** amounts
Cumulative	Position: **increased** by **buy/sell order** remaining amounts and **buy/sell trade** amounts

Therefore orders will not be dispatched to the market if their sizes would cause the position(s) to exceed the given threshold(s).

8.2.1 Side Net/Side Cumulative modes

In order to add a new filter of this type at instrument level a user cluster must be selected in the **Member area**, then accessing the **Instrument pane**, the **MaxDailySize** and the **SideNet/SideCumulative** sub-panes in the **Filters area**. By clicking the right mouse button a pop-up menu appears with the **Add** command:



which will open a dialog window to select instrument and order type.

By pressing the **Add** button a new row will be added to the **Filters area**.

Two thresholds can be set in the MaxLongSize and MaxShortSize fields, which can be accessed by clicking them, then entering the maximum positions allowed for the current instrument and order type in the selected market on a daily basis. The PositionTypeDesc field, which carries the description of the position mode, can be set to **Side Net** or **Side Cumulative** via the corresponding combo-box.

With reference to the picture above, let's assume that the position mode has been set to **Side Net**: a value of **200** for the **MaxLongSize** means that the total remaining size of all active **buy** orders reduced by the total size of all **sell** trades executed for the selected instrument cannot exceed **200.** Therefore each new **buy** order the size of which would cause the **LongPosition** to exceed the **MaxLongSize** set at instrument level will be rejected and not dispatched to the market.

Some additional read-only fields are automatically calculated for each filter every time that a new order has been entered or a new trade has been executed, as shown in the tables below. These values will be re-set at the beginning of each trading day except for multi-day (Good Till Date) orders.

Side Net mode

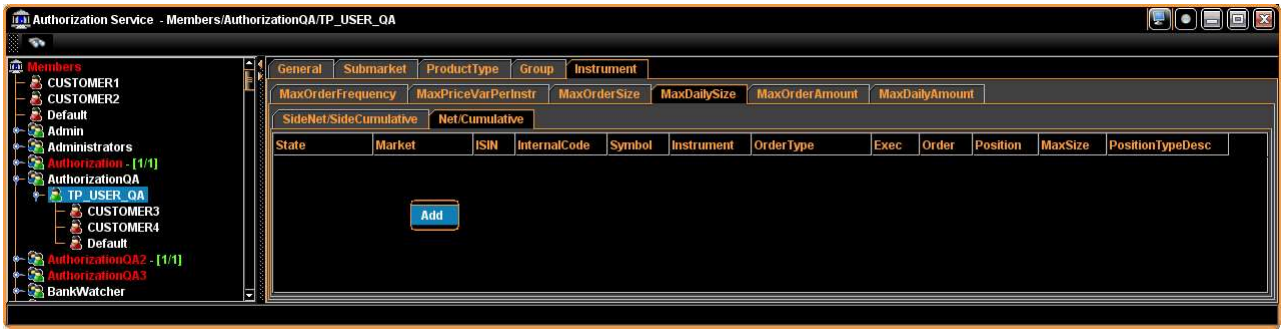
LongExec	Total size of all buy trades ($\sum$ BuyTradeSize$_i$)
ShortExec	Total size of all sell trades ($\sum$ SellTradeSize$_i$)
LongOrder	Total size of all buy orders ($\sum$ BuyOrderRemSize$_i$)
ShortOrder	Total size of all sell orders ($\sum$ SellOrderRemSize$_i$)
LongPosition	Long position ($\sum$ BuyOrderRemSize$_i$ - $\sum$ SellTradeSize$_i$ + $\sum$ BuyTradeSize$_i$)
ShortPosition	Short position ($\sum$ SellOrderRemSize$_i$ - $\sum$ BuyTradeSize$_i$ + $\sum$ SellTradeSize$_i$)

Side Cumulative mode

LongExec	Total size of all buy trades ($\sum$ BuyTradeSize$_i$)
ShortExec	Total size of all sell trades ($\sum$ SellTradeSize$_i$)
LongOrder	Total size of all buy orders ($\sum$ BuyOrderRemSize$_i$)
ShortOrder	Total size of all sell orders ($\sum$ SellOrderRemSize$_i$)
LongPosition	Long position ($\sum$ BuyTradeSize$_i$ + $\sum$ BuyOrderRemSize$_i$)
ShortPosition	Short position ($\sum$ SellTradeSize$_i$ + $\sum$ SellOrderRemSize$_i$)

8.2.2 Net/ Cumulative modes

In order to add a new filter of this type at instrument level a user cluster must be selected in the **Member** area, then accessing the **Instrument** pane, the **MaxDailySize** and the **Net/Cumulative** sub-panes in the **Filters** area. By clicking the right mouse button a pop-up menu appears with the **Add** command:



which will open a dialog window to select instrument and order type.

By pressing the **Add** button a new row will be added to the **Filters area.**

A threshold can be set in the **MaxSize** field, which can be accessed by clicking it, then entering the maximum position allowed for the current instrument and order type in the selected market on a daily basis. The **PositionTypeDesc** field, which carries the description of the position mode, can be set to **Net** or **Cumulative** via the corresponding combo-box.

With reference to the pictures nearby, let's assume that the position mode has been set to **Cumulative**: a value of **200** means that the total remaining size of all active orders plus the total size of all trades executed for the selected instrument cannot exceed **200**. Therefore each new order the size of which would cause the position to exceed the **MaxSize** set at instrument level will be rejected and not dispatched to the market.

Some additional read-only fields are automatically calculated for each filter every time that a new order has been entered or a new trade has been executed, as shown in the tables below. These values will be re-set at the beginning of each trading day except for multi-day (Good Till Date) orders.

Net mode

Exec	Total size of all buy and sell trades ($\sum$ BuyTradeSize$_i$ - $\sum$ SellTradeSize$_i$)
Order	Total size of all buy and sell orders ($\sum$ BuyOrderRemSize$_i$ + $\sum$ SellOrderRemSize$_i$)
Position	Net position ($\sum$ BuyOrderRemSize$_i$ + $\sum$ SellOrderRemSize$_i$ - $\sum$ SellTradeSize$_i$ + $\sum$ BuyTradeSize$_i$)

Cumulative mode

Exec	Total size of all buy and sell trades ($\sum$ BuyTradeSize$_i$ + $\sum$ SellTradeSize$_i$)

Order	Total size of all buy and sell orders ($\sum$ BuyOrderRemSize$_i$ + $\sum$ SellOrderRemSize$_i$)
Position	Cumulative position ($\sum$ BuyTradeSize$_i$ + $\sum$ SellTradeSize$_i$) + ($\sum$ BuyOrderRemSize$_i$ + $\sum$ SellOrderRemSize$_i$)

8.3 Max Order Amount Filter

The **Max Order Amount** filter allows users to set a threshold in EUR for the amount of each order with a given instrument and order type in a specific market. Therefore any order will not be dispatched to the market if the corresponding amount exceeds the given threshold.

In order to add a new filter of this type at instrument level a user cluster must be selected in the **Member** area, then accessing the **Instrument** pane and the **MaxOrderAmount** sub-pane in the **Filters** area. By clicking the right mouse button a pop-up menu appears with the **Add** command:

which will open a **dialog window** to select instrument and order type.

By pressing the **Add** button a new row will be added to the **Filters** area.

The **Max Order Amount** filter can be set for the selected market, instrument and order type by clicking the **MaxOrderAmount** field and then entering the maximum amount allowed, regardless of order side (Buy or Sell). For example: a value of **200,000** (EUR) means that the amount of every order to be forwarded to the selected market for the current instrument and order type **cannot exceed** EUR **200,000**.

In case the currency an instrument is traded in differs from EUR, the **Authorization Service** will convert the order amount to EUR by using conversion rates available in the system database when the Service has been started.

As far as market orders are concerned, amounts will be computed using the **validation price**, which is determined as follows:

Derivatives Markets (SOLA Platform)	**OpeningPrice (if available) or Price of the 1st trade or Reference Price**
Cash Markets (MIT Plaform)	**Reference Price**

In case the validation price for a given instrument has not been notified by the market it is <u>not</u> possible to validate orders through the current filter and they will be rejected unless the filter is removed.

8.4 Max Daily Amount Filters

The **Max Daily Amount Filter** allows users to set up to **2 thresholds** in EUR for the position amount(s) in a specific market for a given instrument and order type at any level of the user hierarchy. Thresholds can be set either for both **long** and **short** positions (**side net** or **side cumulative** mode) or for the **overall** position (**net** or **cumulative** mode) depending on the type of position that users need to manage, as specified below:

Mode	Description
Side Net	**LongPosition**: **increased** by **buy order** remaining amounts and **decreased** by **sell trade** amounts **ShortPosition**: **increased** by **sell order** remaining amounts and **decreased** by **buy trade** amounts
Side Cumulative	**LongPosition: increased** by **buy order** remaining amounts and **buy trade** amounts **ShortPosition**: **increased** by **sell order** remaining amounts and **sell trade** amounts
Net	**Position**: **increased** by **buy/sell order** remaining amounts and **buy trade** amounts and **decreased** by **sell trade** amounts
Cumulative	**Position**: **increased** by **buy/sell order** remaining amounts and **buy/sell trade** amounts

Therefore orders will not be dispatched to the market if their amounts would cause the position amount(s) in EUR to exceed the given threshold(s).

8.4.1 SideNet/SideCumulative modes

In order to **add** a new filter of this type at instrument level a user cluster must be selected in the **Member area**, then accessing the **Instrument pane**, the **MaxDailyAmount** and **SideNet/SideCumulative** sub-panes in the **Filters area**. By clicking the right mouse button a pop-up menu appears with the Add command:

which will open a dialog window to select instrument and order type.

By pressing the **Add** button a new row will be added to the **Filters area**.

Two thresholds in EUR can be set in the **MaxLongAmount** and **MaxShortAmount** fields, which can be accessed by clicking them, then entering the maximum position amounts allowed for the current instrument and order type in the selected market on a daily basis. The **PositionTypeDesc** field, which carries the description of the position mode, can be set to **Side Net** or **Side Cumulative** via the corresponding combo-box.

For example, let's assume that the position mode has been set to **Side Net**: a value of **100,000** (EUR) for the **MaxLongAmount** means that the total remaining amount of all active **buy** orders reduced by the total amount of all **sell** trades executed for the

selected instrument cannot exceed EUR **100,000.** Therefore each new **buy** order whose size and price would cause the **LongPosition** amount to exceed the **MaxLongAmount** set at instrument level will be rejected and not dispatched to the market.

In case the currency an instrument is traded in differs from EUR, the **Authorization Service** will convert the order amount to EUR by using conversion rates available in the system database when the Service has been started.

As far as market orders are concerned, amounts will be computed using the **validation price** of the corresponding instrument, which is determined as follows:

Derivatives Markets (SOLA Platform)	**OpeningPrice (if available) or Price of the 1st trade or Reference Price**
Cash Markets (MIT Plaform)	**Reference Price**

In case the validation price for a given instrument has not been notified by the market it is <u>not</u> possible to validate orders through the current filter and they will be rejected unless the filter is removed.

Some additional read-only fields are automatically calculated for each filter every time that a new order has been entered or a new trade has been executed, as shown in the tables below. These values will be re-set at the beginning of each trading day except for multi-day (Good Till Date) orders.

Side Net mode

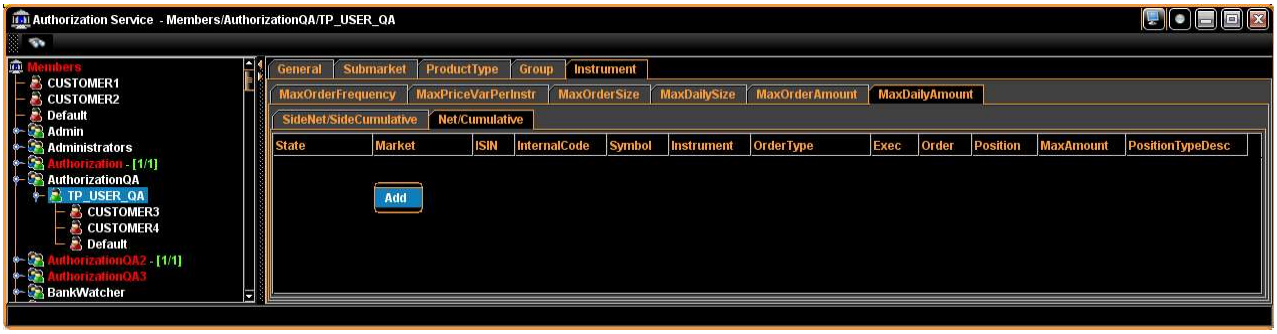
LongExec	Total amount of all buy trades ($\sum$ BuyTradeAmount$_i$)
ShortExec	Total amount of all sell trades ($\sum$ SellTradeAmount$_i$)
LongOrder	Total amount of all buy orders ($\sum$ BuyOrderRemAmount$_i$)
ShortOrder	Total amount of all sell orders ($\sum$ SellOrderRemAmount$_i$)
LongPosition	Long position ($\sum$ BuyOrderRemAmount$_i$ - $\sum$ SellTradeAmount$_i$ + $\sum$ BuyTradeAmount$_i$)
ShortPosition	Short position ($\sum$ SellOrderRemAmount$_i$ - $\sum$ BuyTradeAmount$_i$ + $\sum$ SellTradeAmount$_i$)

Side Cumulative mode

LongExec	Total amount of all buy trades ($\sum$ BuyTradeAmount$_i$)
ShortExec	Total amount of all sell trades ($\sum$ SellTradeAmount$_i$)
LongOrder	Total amount of all buy orders ($\sum$ BuyOrderRemAmount$_i$)
ShortOrder	Total amount of all sell orders ($\sum$ SellOrderRemAmount$_i$)
LongPosition	Long position ($\sum$ BuyTradeAmount$_i$ + $\sum$ BuyOrderRemAmount$_i$)
ShortPosition	Short position ($\sum$ SellTradeAmount$_i$ + $\sum$ SellOrderRemAmount$_i$)

8.4.2 Net/Cumulative modes

In order to **add** a new filter of this type at instrument level a user cluster must be selected in the **Member area**, then accessing the **Instrument pane**, the **MaxDailyAmount** and **Net/Cumulative** sub-panes in the **Filters area**. By clicking the right mouse button a pop-up menu appears with the **Add** command:



which will open a dialog window to select instrument and order type.

By pressing the **Add** button a new row will be added to the **Filters area**.

A threshold in EUR can be set in the **MaxAmount** field, which can be accessed by clicking it, then entering the maximum position amount allowed for the current instrument and order type in the selected market on a daily basis. The **PositionTypeDesc** field, which carries the description of the position mode, can be set to **Net** or **Cumulative** via the corresponding combo-box.

For example, let's assume that the position mode has been set to **Cumulative**: a value of **100,000** (EUR) means that the total remaining amount of all active orders plus the total amount of all trades executed for the selected instrument **cannot exceed** EUR **100,000**. Therefore each new order whose size and price would cause the cumulative position amount to exceed the **MaxAmount** set at instrument level will be rejected and not dispatched to the market.

In case the currency an instrument is traded in differs from EUR, the **Authorization Service** will convert the order amount to EUR by using conversion rates available in the system database when the Service has been started.

As far as market orders are concerned, amounts will be computed using the **validation price** of the corresponding instrument, which is determined as follows:

Derivatives Markets (SOLA Platform)	**OpeningPrice (if available) or Price of the 1st trade or Reference Price**
Cash Markets (MIT Plaform)	**Reference Price**

In case the validation price for a given instrument has not been notified by the market it is <u>not</u> possible to validate orders through the current filter and they will be rejected unless the filter is removed.

Some additional read-only fields are automatically calculated for each filter every time that a new order has been entered or a new trade has been executed, as shown in the tables below. These values will be re-set at the beginning of each trading day except for multi-day (Good Till Date) orders.

Net mode

Exec	Total amount of all buy and sell trades ($\sum$ BuyTradeAmount$_i$ - $\sum$ SellTradeAmount$_i$)
Order	Total amount of all buy and sell orders ($\sum$ BuyOrderRemAmount$_i$ + $\sum$ SellOrderRemAmount$_i$)
Position	Net position ($\sum$ BuyOrderRemAmount$_i$ + $\sum$ SellOrderRemAmount$_i$ - $\sum$ SellTradeAmount$_i$ + $\sum$ BuyTradeAmount$_i$)

Cumulative mode

Exec	Total amount of all buy and sell trades ($\sum$ BuyTradeAmount$_i$ + $\sum$ SellTradeAmount$_i$)
Order	Total amount of all buy and sell orders ($\sum$ BuyOrderRemAmount$_i$ + $\sum$ SellOrderRemAmount$_i$)
Position	Cumulative position ($\sum$ BuyTradeAmount$_i$ + $\sum$ SellTradeAmount$_i$) + ($\sum$ BuyOrderRemAmount$_i$ + $\sum$ SellOrderRemAmount$_i$)

8.5 Max Order Frequency Filter

In order to add a new filter of this type at instrument level a user cluster must be selected in the **Member** area, then accessing the **Instrument** pane and the **MaxOrderFrequency** sub-pane in the **Filters** area. By clicking the right mouse button a pop-up menu appears with the **Add** command:

which will open a **dialog window** to select instrument and order type.

By pressing the **Add** button, a new row will be added to the **Filters** area.

By double-clicking the **MaxOrderFrequency** field for the selected instrument and order type a dialog window pops up with the 2 fields: **Order(s) in** and the **Time Unit** combo box with the following values: **Seconds**, **Minutes, Hours and Day.**

Once the user has entered both values and set the time unit (e.g. **10 Order(s) in 3 Seconds**), input can be confirmed with the **ok** button, thus getting **10** in **3s** as order frequency in the **MaxOrderFrequency** field, which means that **no more than 10 orders** (insertions, updates and deletions) can be entered **within 3 seconds** for the selected market, instrument and order type by all the users in the current user cluster.

8.6 Max Price Var Per Instr Filter

The **Max Price Var Per Instr pane** in the **Filters area** allows users to define **one or more thresholds**, each one assigned to a **price range**, so as to prevent an order from being dispatched to the market if the **absolute** or **percentage difference** between its **price and the validation price** of the current instrument **exceeds the threshold** set for the corresponding price range in the specific market for the selected instrument and order type**. Validation price** is determined as follows:

Derivatives Markets (SOLA Platform)	**OpeningPrice (if available) or Price of the 1st trade or ReferencePrice**
Cash Markets (MIT Plaform)	**Reference Price**

In order to add a new filter made up by one or more price ranges at instrument level, a user cluster must be selected in the **Member area**, then accessing the **Instrument pane** and the **MaxPriceVaxPerInstr** sub-pane in the Filters area. By clicking the right mouse button a pop-up menu appears with the **Add** command

which will open a **dialog window** to select instrument and order type.

By pressing the **Add** button, a new row will be added to the Filters area.

For the selected market, instrument and order type one or more price ranges and thresholds can be set. For each range the four fields:

- **Low**
- **High**
- **Var [threshold]**
- **Var Type [Percentage** or **Absolute]**

must be accessed by clicking each one and then entering the corresponding value.

The **Var** field sets a dynamic **upper** bound for **buy order** prices and a dynamic **lower bound** for s**ell order** prices depending on which price range the **validation price** of the current instrument falls in.

A **buy** order can be dispatched to a market for a given instrument and order type only if the **absolute** or **percentage difference** between the **order price and the validation price** of its instrument is **less than** or **equal** to the **Var** value assigned to the price range where the validation price falls in (including the **Low** value but excluding the **High** value). If **Percentage** difference has been chosen, the following rule applies:

$$\frac{BuyOrder\,\mathrm{Pr}ice - Validation\,\mathrm{Pr}ice}{\left|Validation\,\mathrm{Pr}ice\right|} * 100 \le Var \quad \Rightarrow \quad \text{Buy order accepted}$$

If Absolute difference has been chosen, the following rule applies:

$$BuyOrderPrice - ValidationPrice <= Var \quad \Rightarrow \quad \text{Buy order accepted}$$

A **sell** order can be dispatched to a market for a given instrument and order type only if the **absolute** or **percentage difference** between the **order price** and the **validation price** of its instrument is **greater than** or **equal** to the **-Var** value related to the price range where the validation price falls in. If **Percentage** difference has been chosen, the following rule applies:

$$\frac{SellOrder\,\mathrm{Pr}ice - Validation\,\mathrm{Pr}ice}{\left|Validation\,\mathrm{Pr}ice\right|} * 100 \ge -Var \quad \Rightarrow \quad \text{Sell order accepted}$$

If Absolute difference has been chosen, the following rule applies:

$$SellOrderPrice - ValidationPrice >= -Var \quad \Rightarrow \quad \text{Sell order accepted}$$

For example, let's assume that the user wants to enter a **buy order** with a **price of 118.25** for an instrument with a **validation price of 108.25**. The validation price falls in the second price range shown in the previous screenshot, therefore **25** will be used as threshold. Since the **Percentage** difference between the order price and the validation price is 9.24%, which is less than 25%, this buy order can be dispatched to the market.

In case the validation price for a given instrument has not been notified by the market, it is not possible to validate orders through the current filter and they will be rejected unless the filter is removed. On the contrary if the Validation price falls in a price range without any threshold, the current filter will not be appled and the order will be sent to market.

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