clear to trade

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High priority

Advanced Risk Protection Functionality: Introduction of Pre-Trade Limits

Related Eurex Circulars: 053/10, 103/10

Related Eurex Clearing Circular: 010/10

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Content may be most important for:	**Attachments:**
➲ Middle + Backoffice ➲ IT/System Administration ➲ Auditing/Security Coordination	none

Summary:

Eurex Release 13.0 introduces the Advanced Risk Protection functionality which will rely on data calculated by Eurex Clearing's real-time risk calculation capacity. It will replace the Pre-Trade-Risk Limit features introduced with Eurex Release 10.0.

The service will enable the definition of configurable risk limits as well as corresponding pre-defined actions following a violation of such limits. Limits can then be set both by Clearing Members for each of their Non-Clearing Members and by any Non-Clearing Member for itself.

Should the intraday margin calculation reveal an excess of any such limit, Eurex Clearing's risk management systems will swiftly communicate such limit breach to the derivatives trading layer, i.e. the Eurex® system, where the appropriate action assigned to the specific limit will be taken.

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Advanced Risk Protection Facility: Introduction of Pre-Trade Limits

Eurex Release 13.0 introduces the Advanced Risk Protection functionality which will rely on data calculated by Eurex Clearing's real-time risk calculation capacity. It will replace the Pre-Trade-Risk Limit features introduced with Eurex Release 10.0.

The service will enable the definition of configurable risk limits as well as corresponding pre-defined actions following a violation of such limits. Limits can then be set both by Clearing Members for each of their Non-Clearing Members and by any Non-Clearing Member for itself.

Should the intraday margin calculation reveal a violation of any such limit, Eurex Clearing's risk management systems will swiftly communicate such limit violation to the derivatives trading layer, i.e. the Eurex® system, where the appropriate action assigned to the specific limit will be taken.

Four different pre-defined limit types are offered

Four pre-defined types of limits are available, each representing different aggregates of risk values, calculated on Eurex Clearing's real-time risk calculation engine. All limit types are to be set on member level, i.e. per Member ID used:

Limit Type	Short Code	Margin Coverage	Functional View
Exposure	TMR	Total Margin Requirement	Total obligation towards the Clearing House
Profit & Loss	CULI	Premium Margin + Current Liquidating Margin + Variation Margin + Option Premium	Current P&L – current liquidating value of the position
Cash	CASH	Variation Margin + Option Premium	Cash flow due the next morning
Risk	NDM	Additional Margin + Future Spread Margin	Potential future risk of the position

When setting any such limit, Members will be able to choose from the actions to be taken described below.

Three different action levels are available

When setting one of the four above-mentioned limits, Members will be able to choose from the following action levels to be employed upon violation of the limit:

- Action Level 1: Broadcasting a Broadcast Alert Message to both the Member which entered the limit (Maintenance Member) and the affected Member which violated the limit.
- Action Level 2: Limiting the Member's frequency of Order / Quote Entry and Order / Quote Modification by enforcing a minimum delay between two such transactions in any single product.
- Action Level 3: Setting the Member to state "HALT", similar to the Stop Button procedure already available.

With the initial launch of the Advanced Risk Protection functionality the actions linked to levels 2 (Limiting the Member's trading frequency) and 3 (Setting the Member to state "HALT") are only available in the Eurex® derivatives trading System. A further extension to other markets (e.g. Xetra®) is envisaged for a later stage.

There are two ways to maintain the limits

In general, two interfaces exist to maintain the limits and action levels. The limits and action levels can both be maintained in the Eurex® system[1]. The limits can also be maintained via the Enhanced Risk Solution[2] – the real-time risk interface of Eurex Clearing. The Enhanced Risk Solution is the recommended interface to maintain the limits, as it allows intra-day maintenance.

The following paragraphs first describe the three action levels in detail and their maintenance available via the Eurex® system and then outline usage via the Enhanced Risk Solution. In the following, the functionality in the Eurex® system is described from the GUI perspective, however, as a matter of fact, the functionality is also available via the VALUES interfaces[3], respectively.

With respect to the terminology, the following applies:

Maintenance Member: The Member that enters or modifies a limit is called the Maintenance Member. The limit entered / modified can be a limit valid for a Non-Clearing Member defined by itself, or a limit defined by a Clearing Member valid for a Non-Clearing Member.

Releasing a limit / Member: If a previously defined limit value has been reached, the respective actions will be performed (e.g. the affected Member will be throttled or stopped - depending on the level's actions), i.e. the limit is triggered. To undo this action (e.g. remove the throttle or activate the Member again) the limit has to be released, i.e. the Member has to be set to "active" again.

Deleting a limit: As a matter of fact, a previously defined limit can be deleted again (please see "Delete Button" in the **Risk Monitoring Maintenance** window in the Eurex® system or the respective request via the interfaces). After deletion, the limit no longer exists, regardless whether or not it had been triggered.

Action Level 1 – Warning

Limits for all action levels have to be entered in multiples of 1,000. The amount is always entered in the clearing currency of the respective Clearing Member.

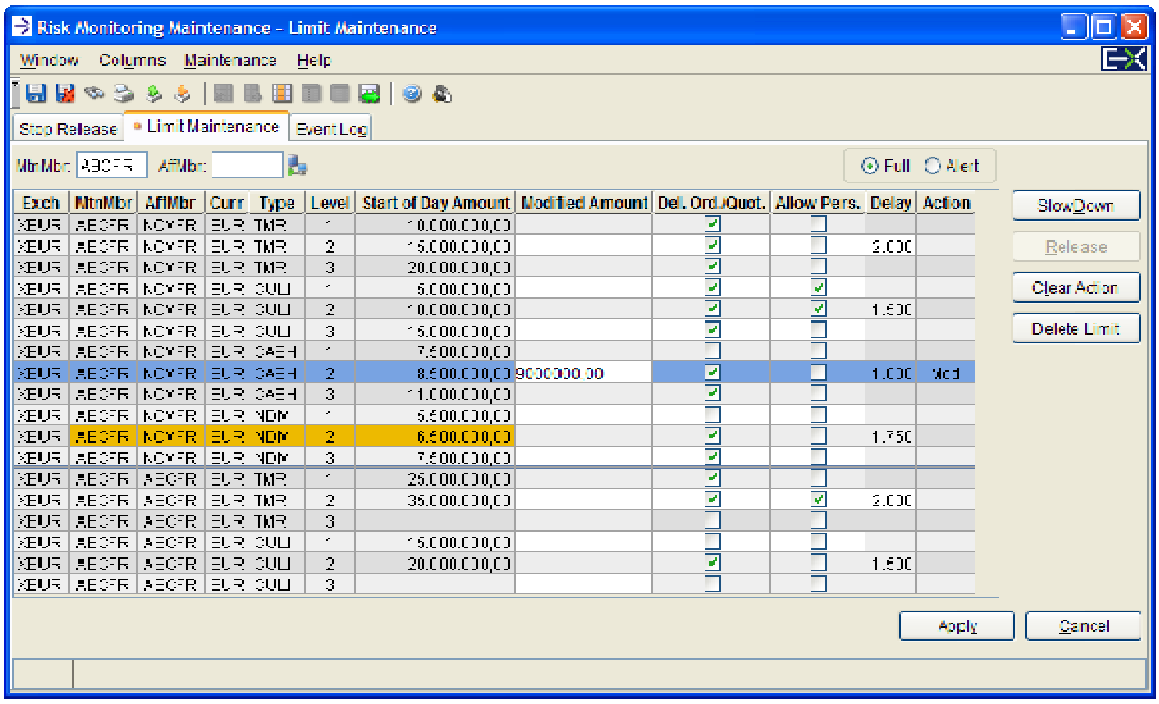
Exceeding a limit on level 1 is reported by a warning message sent by the Eurex® system via private member message broadcast.

If the limit was set by the Member that exceeded it, only that particular Member receives a message. If the limit was set by the Clearing Member with validity for a Non-Clearing Member, the message is broadcast to both the Clearing Member and the affected Non-Clearing Member. Furthermore, the exceeded limit is highlighted in the following table on the **Limit Maintenance Tab**:

[1] The respective screen **Risk Monitoring Maintenance** window is available in both the Eurex @X-ceed Trading and the Eurex @X-tract Clearing GUI.

[2] For more information on the Enhanced Risk Solution, please refer to the document Enhanced Risk Solution Interface Specification, available in the Member Section of the Eurex website under the path: www.eurexchange.com > Member Section > Releases > Eurex 13.0 > Interfaces.

[3] For more information on the VALUES API, please refer to the VALUES API Member Front End Development Guide - Final Version, available in the Member Section of the Eurex website under the path: www.eurexchange.com > Member Section > Releases > Eurex 13.0 > Interfaces.



Picture 1: *Risk Monitoring Maintenance* window

Members can optionally specify all orders and quotes to be deleted upon a level 1 violation. In addition to the deletion of orders and quotes, entry of further orders can be restricted to persistent orders only, i.e. once the box *Allow Pers*. is ticked, the affected Member is not allowed to enter non-persistent orders. In contrast to persistent orders, non-persistent orders are not contained in the “drop copy” information.

Action Level 2 – Member Slowdown

Upon exceeding a level 2 limit, a throttling mechanism is applied to the Member in question according to the configured parameters (a minimum delay between add / modify transactions in each product – the delay is specified in milliseconds with valid values from 250 up to 5.000). If a Member is throttled for exceeding more than one limit on level 2, the most restrictive transaction delay time is applied to that Member.

Delete requests and inquiries are not subject to throttling.

A level 2 limit violation is reported by a message sent by the Eurex® system via private member message broadcast. If the limit was set by the Member that exceeded it, only that particular Member receives a message. If the limit was set by a Clearing Member with validity for a Non-Clearing Member, the message is broadcast to both the Clearing Member and the affected Non-Clearing Member. Furthermore, the exceeded limit is highlighted in the table on the *Limit Maintenance* tab.

Members trying to enter orders whilst being throttled receive an error message in the **Order Entry** window whenever an order entry is rejected due to the throttling:



Members can optionally specify orders and quotes to be deleted upon a level 2 violation. In addition to the deletion of orders and quotes, entry of further orders can be restricted to persistent orders only.

Action Level 3 – Member Stop

Upon violation of a level 3 limit, the Member is set to "HALT" immediately and all of the Member's on-exchange orders and quotes are deleted, even if the respective box is not ticked.

As a result of the "HALT" status, the affected Member is prevented from:

- Entering new orders
- Entering new quotes
- Carrying out clearing functions (i.e. give-up / take-ups, position transfers).

Exceeding a limit on level 3 is reported by a message sent by the Eurex® system via private member message broadcast. This message is sent to the Member exceeding the limit and the Member's clearer. The exceeded limit is highlighted in the table on the *Limit Maintenance* tab and the stop action is displayed in the **Message Log** window.

If the level 3 limit was set by a Clearing Member for its Non-Clearing Member, legal messages are sent per Stop button procedure. In such cases, the Clearing Member is required – in line with the existing Stop button procedure – to provide a statement in writing to the Eurex Exchanges and to Eurex Clearing explaining the reasons for utilization of the Stop button[4].

If the limit was set by the Non-Clearing Member itself, these messages are not sent out. Inquiry and monitoring of private data as well as public market data is not affected by the "Stop" action. Clearing Members cannot set a level 3 limit for themselves. Members can configure an audio alert for level 3 violations via the *Audio* tab of the **Preferences** window in the Eurex @X-ceed Trading GUI. Direct access to the tab from the **Risk Monitoring Maintenance** window can be done via the Speaker button (only in the Eurex @X-ceed Trading GUI).

Limit Maintenance via the Enhanced Risk Solution

Members can also use the AMQP-based connection Enhanced Risk Solution in FIXML format to maintain limits.

Via Enhanced Risk Solution, Members can set and inquire their own limits and Non-Clearing Members can also inquire limits set for them by the Clearing Member. In addition, Clearing Members can set and inquire all limits set by them for their Non-Clearing Members. However, Clearing Members cannot inquire limits set by the Non-Clearing Member for itself.

Each Enhanced Risk Solution broadcast and inquiry includes the respective limit utilization for each limit. Due to the nature of a real-time broadcast interface, the Enhanced Risk Solution will therefore not only include specific alert broadcasts if the limit is triggered (i.e. the utilization is => 100 percent), but provides the current utilization of the limits with every broadcast and inquiry.

As the Enhanced Risk Solution is a direct interface to the real-time risk system of Eurex Clearing, the trading layer-specific setting (like a minimum delay between two transactions for action level 2 or order book clearance for action levels 1 and 2) are to be set via the Eurex® system in the **Risk Monitoring Maintenance** window.

Intra-day changes of limits and their attributes

Via the **Risk Monitoring Maintenance** window, the Eurex® system does not support intra-day change of risk limit amounts. Entry and change of limit amounts entered here will become valid as of the next business day. Intra-day changes of risk limit amounts are supported via the Enhanced Risk Solution only. Changes initiated via the Enhanced Risk Solution will be effective only for the current day and will be overwritten in an end-of-

[4] Please refer to section 9.2.2 paragraph 3 and section 9.2.3.2 in relation to section 9.2.3.3.2 of the Clearing Conditions for Eurex Clearing AG.

day process with the limits defined in the Eurex® system (i.e. those limits visible in the **Risk Monitoring Maintenance** window). If this is not desired, the respective limit change must also be done via the **Risk Monitoring Maintenance** window.

Contrary changes to the Order / Quote Delete and Persistent Orders Only flags, as well as the level 2 delay parameter will have an immediate effect if performed via the **Risk Monitoring Maintenance** window. If a change to the flags or delay parameter affects a limit type that is already triggered, it is necessary to release this limit (type) first for the changes to take effect.

Deleting a limit via the Enhanced Risk Solution or in the Eurex® system via the **Risk Monitoring Maintenance** window has immediate effect.

Usage and responsibilities of the Advanced Risk Protection Functionality

The Risk Protection Functionality is a very powerful tool for real-time risk monitoring and controlling. Via the action level 3, i.e. the "HALT" facility, it could have severe impact on Members' trading activities.

Therefore, it is essential to use this functionality very cautiously. This is true especially for action level 3.

The functionality is designed to work as an "emergency brake", i.e. especially the limits for action level 3 should be set in a way so that the limit is only triggered in case of severe deviations from the usual risk exposure or trading behavior.

The real-time risk management system of Eurex Clearing will immediately include new prices and positions into the four-limit types metric and consequently will also trigger the defined limits. Therefore it is important that limits will be set in a way that they are not triggered by regular market moves or mistrades.

Maintenance Members are responsible for limit settings and the respective impacts in all cases. This includes limits that are set by Members for themselves and also limits that are set by Clearing Members for their Non-Clearing Members. The legal framework of the Advanced Risk Protections functionality is included in the Clearing Conditions[5] and the limit definition set by Clearing Members for their Non-Clearing Members should be based on a legal contract which is linked to the respective part of the Clearing Conditions.

Eurex Clearing will neither monitor or control the limit settings nor, generally, change any existing limits on behalf of Non-Clearing Member and / or Clearing Members.

Reactivate stopped Members

Release process of triggered limits and reactivation of stopped Members is strictly manual and can only be carried out by the Member that has set the respective limit. As the actions are always performed as pre-trade actions on trading layer, limit release and reactivation of a stopped Member have to be performed via the **Risk Monitoring Maintenance** window in the Eurex® system, which requires a four-eye principle confirmation.

If several action levels are triggered for one limit type, releasing a trigger causes the automatic release of all action level limits of the same type. The Maintenance Member may select any triggered limit and press the Release button, whereupon the window requests confirmation that all limits of the selected type should be released. Release of individual limits of one type is not possible. Both Clearing Members' and Non-Clearing Members' currently triggered limits must be released separately by the respective limit owner.

A Member set to "HALT" for exceeding an action level 3 limit can only be reactivated through the release process using the *Limit Maintenance* tab. An attempt to reactivate a Member through any other window is rejected by means of an error message. This is exactly the same processing used in case the Member has been set to "HALT" via the already productive Stop button.

[5] Please refer to section 3.3.4 of the Clearing Conditions for Eurex Clearing AG.

Before stopped Members are released, limit settings have to be checked, as the release of a Member itself has no impact on limit settings. In case a Member is released without a limit change, it is most likely stopped again immediately as the limit is triggered again. Therefore, generally, the limit should be reset to a new value, which has been agreed between the involved parties, e.g. between the Clearing Member and his Non-Clearing Member.

Intraday changing of limits is done by means of the Enhanced Risk Solution. In case a Member wishes to reactivate the stopped Member intra-day using the Eurex® system only, the process needs to be accompanied by Eurex Clearing. Maintenance Members cannot change limits in the Eurex® system effective intraday since Eurex Clearing needs to verify the new limit settings before reactivation.

Therefore, the required steps for reactivation of a stopped Member depend on whether or not the Enhanced Risk Solution is available to the Maintenance Member:

A. Reactivation – Enhanced Risk Solution used by the Maintenance Member:

1. Set New Limit intraday – Maintenance Member to set new limit via the Enhanced Risk Solution, which has an immediate effect
2. Release stopped Member – Maintenance Member to release stopped Member via the Release button in the **Risk Monitoring Maintenance** window
3. Set New Limit for the next business day – Maintenance Member to set new limit via the **Risk Monitoring Maintenance** window which becomes active the next day.

B. Reactivation – Member uses Eurex® system only, i.e. no Enhanced Risk Solution

1. Set New Limit for the next business day – Maintenance Member to set new limit via the **Risk Monitoring Maintenance** window that becomes active the next day
2. Contact Eurex Clearing's Risk Operations, tel. +49-69-211-1 24 52, e-mail: risk@eurexchange.com, and confirm in writing the limit changes – Eurex Clearing verifies the new limit setting in the **Risk Monitoring Maintenance** window and written request and, if required, changes the limit for the remainder of the business day.
3. Release stopped Member – Maintenance Member to release stopped Member via the Release button in the **Risk Monitoring Maintenance** window. Please note that without previously contacting Eurex Clearing (see step 2), the release could lead to an immediate stop again. In this case, reactivation cannot be performed by the Maintenance Member alone. As described in step 2, Eurex Clearing needs to be contacted in advance of releasing a stopped Member. However, Eurex Clearing does not guarantee any service level with respect to timing of their response. If Members wish to be independent and perform the reactivations in a straight-through process (i.e. without intervention of Eurex Clearing) they need to use the Enhanced Risk Solution.

Required Resource Access Level Settings for Users

The following Resource Access Levels (RALs) need to be set in the Eurex @X-ceed Trading GUI via the **User Security Profile Maintenance** window for those authorized users (precondition RAL 89 → 2 or 3) who wish to use the new Advanced Risk Protection functionality:

- RAL Risk Limits, ID 67 → 3 (Tab Administration): For entry, maintenance and deletion of limits.
- RAL Four-Eye-Principle, ID 19 → 1 (Tab Security): To enable the User for four-eye approval.
- RAL Stop Button/Slowdown Button/Risk Limit Maintenance, ID 20 → 3 (Tab Security): For Manual Slowdown and Release

All limit maintenance activities are audit-trailed

All limit maintenance activities are audit-trailed in a dedicated report[6]. For Clearing Members, the TT130 Risk Event Report contains all details concerning Advanced Risk Protection limits and their maintenance. Non-Clearing Members can retrieve similar information in the TT131 Risk Event Trader Report. Both reports are daily reports and can be selected in the Eurex @X-tract Clearing GUI via the **Report Selection** window.

Further service planned with Eurex Release 13.1

To support Members' limit determinations it is planned to introduce a new XML- and TXT-based report. This end-of-day report would provide for each Clearing Member's Trading Member historical data on the minimum and maximum values of the four limit types available:

- TMR = Total Margin Requirement
- CULI = Premium Margin + Current Liquidating Margin + Variation Margin + Option Premium
- CASH = Variation Margin + Option Premium
- NDM = Additional Margin + Future Spread Margin

The Member report will be a daily report and will contain minimum and maximum values per Member for the last 30 days based on the daily extreme margin / cash flow values during the intra-day real-time risk calculations. The introduction of this report is planned to take place with Eurex Release 13.1, which is scheduled for April 11, 2011.

If you have any questions or require further information, please contact the Risk Operations team at tel. +49-69-211-1 24 52.

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[6] For more information on available reports, please refer to the document "XML Report Reference Manual", which is available in the Member Section of the Eurex website under the path www.eurexchange.com > Member Section > Releases > Eurex 13.0 > Manuals > Technical.