

Risk Controls

OpenDay
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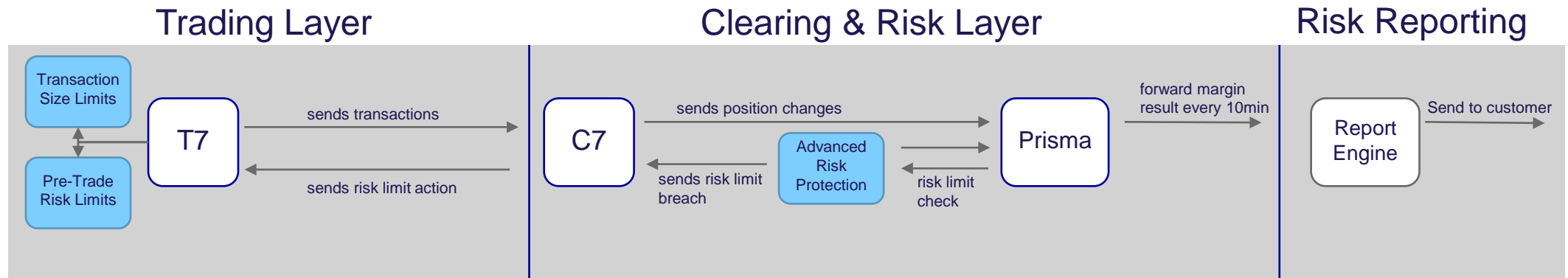
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Overview of Eurex Risk Controls

Functionality	Objectives / Use Cases
Market Maker Protection	Prevent too many simultaneous trade executions on quotes to reduce market risk
Transaction Size Limit	Prevent erroneous order by setting max order quantity per BU / User (group) / Product (group) for OB / TES / Spread
Maximum Order Value	Prevent erroneous order by setting max order value per user
Price Validation	Prevent erroneous price and potential mis-trades
Pre-Trade Risk Limit	Check whether the open position limit would be breached before an order is accepted
Safeguard for TES Uploading	Prevent abuse when loading trades on other platforms to the clearing system via T7
Advanced Risk Protection	Define multi-level individual risk limits for themselves or for associated NCMs
Panic Cancel	Delete all on-book orders and quotes (OQ)
Stop Button for Trading	Stop further entry of OQ from BU or Trader and delete all on-book and TES OQ
Stop Button for Clearing	Stop further entry of OQ from dependent NCM and delete all on-book and TES OQ
Change of Member Status	Stop further entry of OQ from BU if status is "INACTIVE" or "HALT", does not delete OQ
Negative Roles	Prevent a BU or Trader from using a specific functionality
ETI Throttle	Prevent vital components of T7 be harmed from excessively high transaction rates
Fuse Box	Prevent denial-of-service triggered by flooding of orders and quotes entered by user

System View of Eurex Risk Controls

System View



Available Risk Controls

1. Transaction Size Limits (TSL)

Transaction Size Limits functionality restricts the tradeable quantity at transaction entry. They ensure to limit the order size and act as a fat finger check. TSLs can be defined for a Trading participant by the member, the Clearing member or the exchange. Exceeding the TSL results in a rejection of the order.

2. Pre-Trade Risk Limits (PTRL)

Pre-Trade Limits enable control of accumulated position size on product level. Separate limit for TES and orderbook supported. Limit check is performed before order entry. Different limits for buy and sell side possible. Exceeding the PTRL results in a rejection of the order.

3. Advanced Risk Protection (ARP)

T7 supports the Eurex Clearing provided Advanced Risk Protection functionality (ARP) and, on trigger from C7, will slow down or suspend a participant. The deletion of Eurex transactions of an affected participant may be triggered based on the configuration in C7.

Automatic actions contain: information only (level 1); throttle time period between order entries (level 2); and halt of trading including deletion of open orders and quotes (level 3).

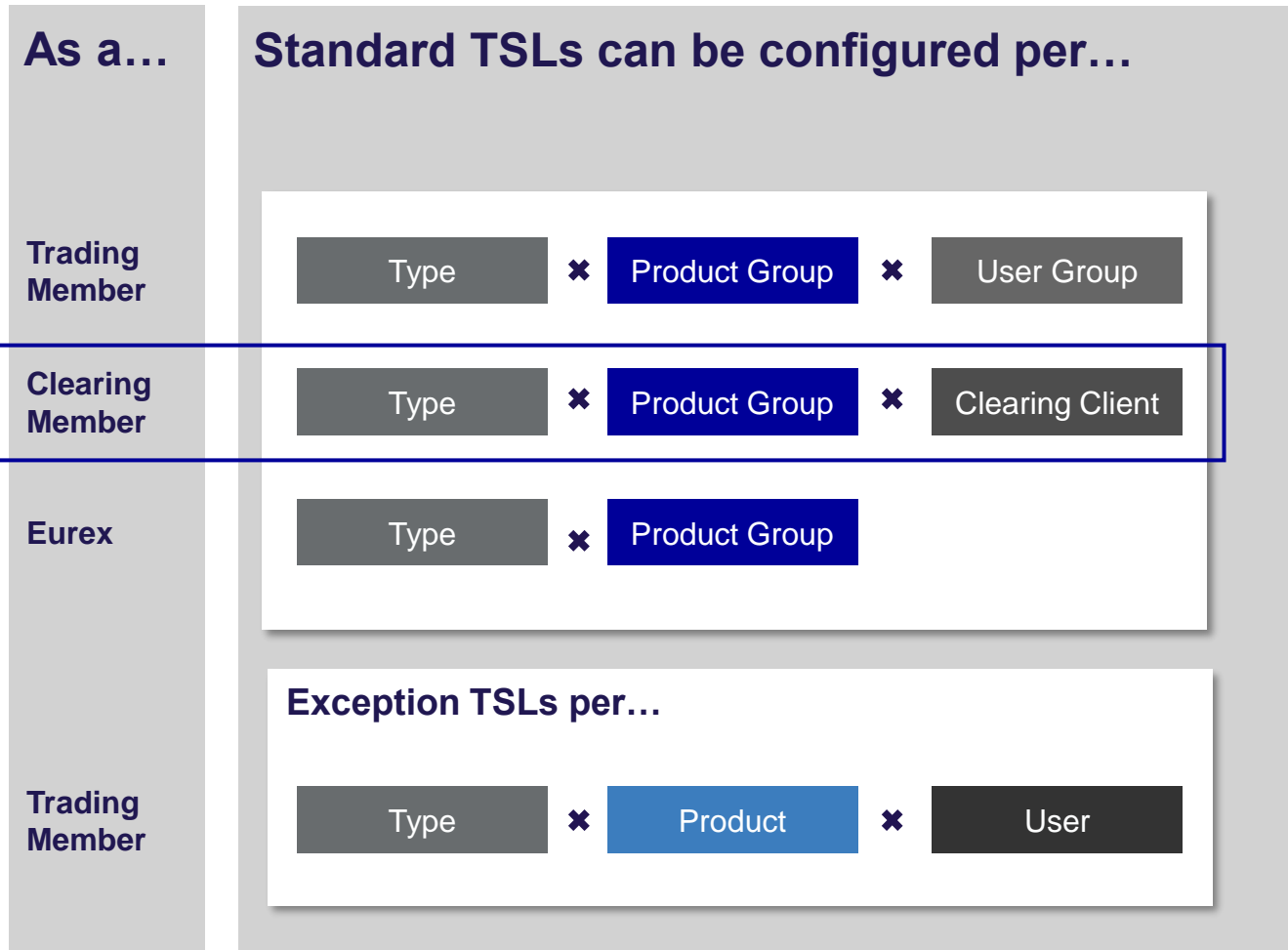
ARP ultimately halts all trading activities of the participant and serves as a last line of defense.

Soft Breach available

4. Reports

Transparency on risk exposures in terms of margin. Input to own risk monitoring and configuration of ARP.

1. Transaction Size Limits



Transaction Size Limits (TSLs) allow Clearing & Trading Members to enforce a **maximum size in lots of incoming orders, quotes or TES trades**.

- TSLs are defined by the Exchange, can be configured by Clearing Members and Trading Members separately for **Order book, TES and Future Spreads (TSL Type)**.
- **Standard TSLs (STSLs)**: limits defined per TSL Type, TSL product group and Clearing Client/TSL user group.
- **TSL Product Groups** are defined by Eurex and apply to all Clearing and Trading Members.
- Clearing Members define STSLs per TSL Type, TSL product group, and Clearing Client.
- Trading Members define STSLs per TSL Type, TSL product group, and self-managed TSL User Group.
- Trading Members can define Exceptions TSLs (ETSLs) per TSL Type, Product, and User and per TSL User Group. The number of ETSLs per Trading Member is limited.

2. Pre-Trade Risk Limits

Cornerstones of Pre-Trade Risk Limits:

Pre-Trade Risk Quantity Limit is designed to consider intraday position buildup and existing orders into calculation with the benefit of allowing position reducing orders. Low Latency, simple & real-time check for both on-book trading and off-book trading. Separate limits can be set at a product level by a) DC Market Participant for his own risk groups; b) a GCM for his DC Market Participant and his own risk groups; or c) the Exchange for a business unit.

PTRL Configuration

- PTRL can be setup by Clearing Members, for business units of their related DC market participants, and for their own DC market participants trading business unit.
- PTRL configurable for on-book and TES transactions.
- Separately configurable Buy and Sell limits
- Clearing Member can configure PTRL per trading participant and product.

DC Market Participant



Product

PTRL Application

- Applied on pre-trade entry
- Per product, business unit and trade direction.
- Currently, PTRL can be applied for all futures instruments which are enabled for extended trading hours.

PTRL Calculation

- Considers the aggregated limit of all open orders and quotes.
- Plus the netted position of all trades relative to the trading direction long or short.
- Additionally for options differentiate between calls and puts.
- Special attributes for:
 - Netting coefficient (NC) for future spreads
 - Quote Weighting Coefficient (QWC) for options
 - Delta Equivalent Quantities

Limit

≥

Order quantity

+

Open quantity

+

Net position

2. PTRL Features

Netting Coefficient (NC)

- For **Futures Spreads**, a Netting Coefficient can be defined.
- The NC allows trading participants to determine with **how much weight Futures Spreads are considered** when calculating the relevant quantity consumptions.
- The NC has valid values between 0 and 1 with a precision of 4 decimals. No negative values are allowed. A value of 1 means that the Futures Spread is fully counted, whereas a NC of 0 means that the Futures Spread is not counted at all.

Quote Weighing Coefficient (QWC)

- Similarly to Futures Spreads, a Quote Weighing Coefficient can be defined.
- The QWC allows trading participants to determine with **how much weight quotes on options** are considered when calculating the relevant quantity consumptions.
- The QWC has valid values between 0 and 1 with a precision of 4 decimals. No negative values are allowed. A value of 1 means that the Futures Spread is fully counted, whereas a NC of 0 means that the Futures Spread is not counted at all.

Delta Equivalent Quantities

- For the risk profile of each options instrument while consuming PTRL, Delta Equivalent Futures Instrument quantities will be applied based on a fixed, end-of-previous day specific **option-delta that will weigh each order and quote** incoming transaction as well as when it is executed.
- Instrument specific constant deltas will be published via reference data valid per day.

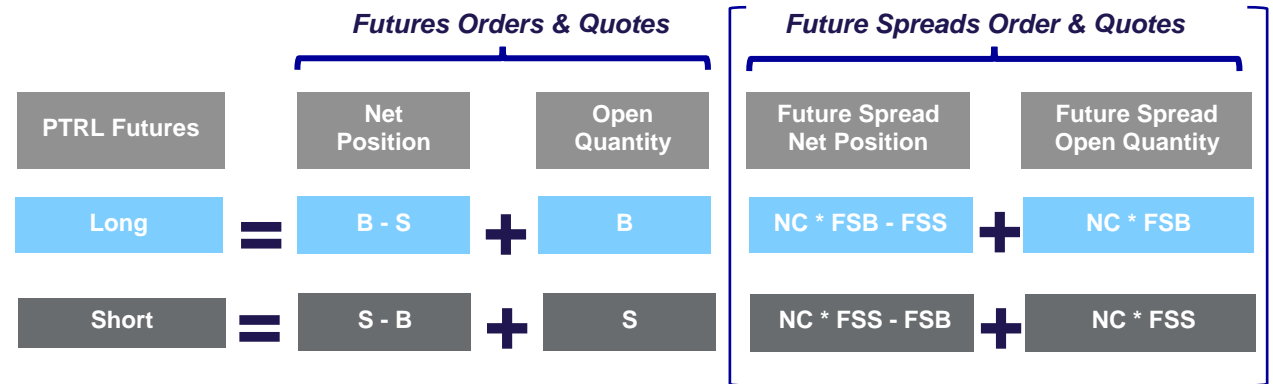
Complex Instrument treatment

- Like Future Spreads, complex instruments in **option strategies affect the PTRL consumption as a whole** and will not be broken down to leg instrument components since only delta equivalent quantities apply.
- Specifically, for option volatility strategies (OVS), this changes the treatment for underlying futures leg PTRL consumption. Corresponding **futures underlying quantity of an OVS** will be considered in respective long or short Net Position & Open Quantity of reference Option PTRL consumption for OVS.

2. PTRL Consumption for Futures and Options

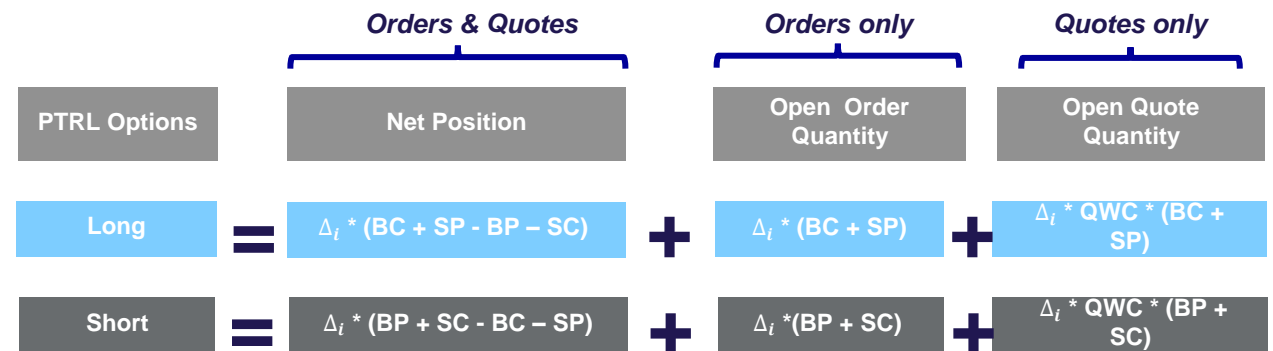
Futures

- PTRL consumption for a trade direction (buy or sell) consists the **aggregated limit of all open orders and quotes and the netted position of all the trades** relative to the trading direction Buy (B) and Sell (S).
- The Netting Coefficient (NC) allows trading participants to determine with how much weight Futures Spreads are considered. Futures Spread Net Position Buy and Futures Spread Open Buy Quantity are weighted with the NC.



Options

- **Puts/Calls counted based on their position effect**, i.e., Buy Call (BC) & Sell Put (SP) count to long position, while Buy Put (BP) & Sell Call (SC) to short position.
- Quote Weighting Coefficient (QWC): adjusting weight for quotes between 0% -100%. Optional parameter which can be configured.
- Delta Equivalent Quantities (Δ_i) reflects options risk contribution via the instrument's T-1 delta.



3. Advanced Risk Protection

- **Advanced Risk Protection (ARP)** functionality in C7 GUI enables automatic actions on trading layer on member level after breaching a limit set in terms of margin. It is a proactive safeguard for setting intelligent limits with impact on trading activities (pre-trade)
- **Automatic actions after post-trade margin checks** include:
 1. **information only (Level 1),**
 2. **throttle, i.e. minimum time period between order entries (Level 2),**
 3. **and halt of trading including deletion of open orders and quotes (Level 3) (Soft Breach possible).**

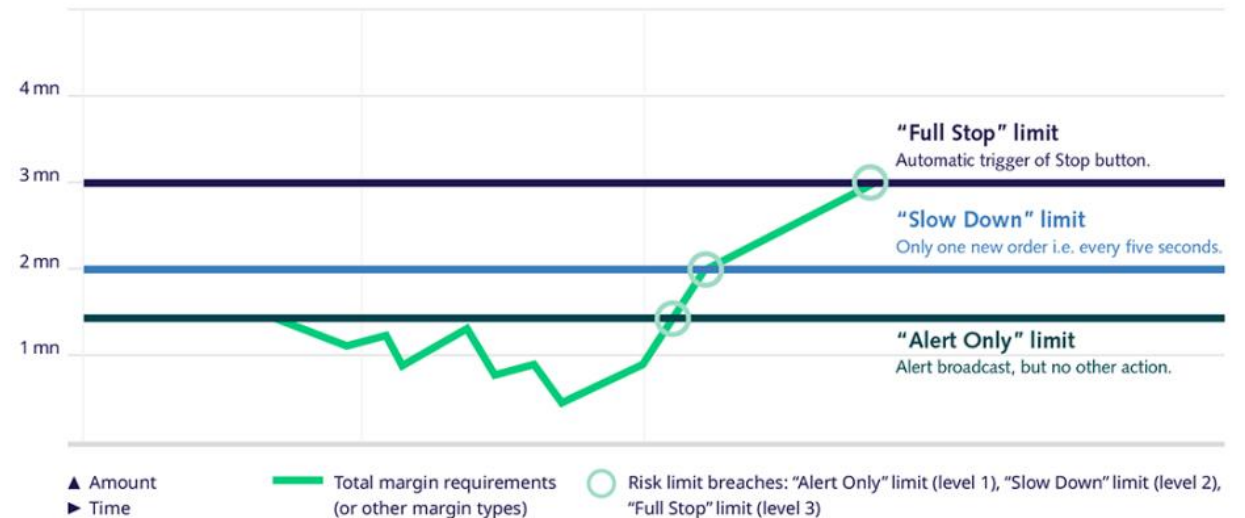
Cornerstones of ARP:

- Latency – timely processing of positions without undue delay
- Margin calculation – PRISMA (portfolio-approach) for ETDs and RBM for cash market products
- Application – limits are set on DC Market Participant level either by Clearing Member or DC Market Participants for themselves



Margin calculation **mechanics designed to strike a balance between timely processing** positions without undue delay **and consistent treatment of transactions from a strategy trade**

- Additionally, Stop/Slowdown buttons are provided for manual intervention at any time by Clearing Member



Advanced Risk Protection

Stop Release

➤ The ARP Stop Button halts the trading and clearing activities of the trading participants.

“Stop” or “Release” actions can be invoked by:

- CM for their NCMs
- Clearing House for CMs and NCMs, also on behalf of the CM

Support by Clearing Data Control (12453)

Limit Maintenance

➤ The ARP Limit Maintenance enables defining individual risk limits for Trading Members via C7 Clearing GUI

Maintenance Participant	Affected Participant	Type1	Level	Delay in Millisec	Delete Orders/Quotes
			Broadcasting an alert message	Only applicable for Level 2	Only applicable for Level 3
CM	→ NCM		Applying a slowdown for Add and Modify orders/quotes.	Specified minimum time between two add/modify orders and quotes for the participant in all the products.	Y T7 will delete all orders/quotes and pending TES trades for the given participant.
NCM	→ NCM		Setting the member to “HALT” in trading & clearing	0 or value in range 250-5.000 milliseconds.	N T7 will delete all pending TES trades but open orders and quotes will remain with restricted maintenance options.

Slowdown

Release Limit

- NCMs can be manually slowed down by the CM. Orders/quotes will not be deleted regardless of “Delete Orders/Quotes” flag.
- Release actions are performed automatically once the risk exposure decreases below the respective limit. They can also be performed manually by the Maintenance Participant. Only the most severe breached limit can be released which automatically releases all lower levels of the same risk type.

Event Log

➤ The Event Log provides an overview about relevant risk limit events and stop button usage.

- Only the Maintenance Participant can see the relevant events. Historical data can be inquired by using date filter (only available for the last 10 business days).

➤ Related Reports: **TT130/TT131 Risk Event (Trader) Report, CC100 Risk Values History for Limits**

➤ Further documentation: <https://www.eurex.com/ec-en/technology/c7/system-documentation-c7>

1 TMR - Total Margin Requirement; CULI - Premium Margin + Current Liquidating Margin + Variation Margin + Option Premium; CASH - Variation Margin + Option Premium; NDM - Initial Margin + Additional Margin

T7 Risk Functionalities – Summary

	Functional Scope	Validation	Consequence of Violation	Product Scope	Memory Effect	Effectiveness	Clearer Limit Maintenance
Transaction Size Limits (TSL) 'Fat-finger Check'	Quantity of incoming order/quote is validated against specified quantity size limit.	Quantity of incoming order/quote exceeds specified TSL.	Rejection of incoming order/quote.	TSLs apply to Product groups.	No memory effect; exclusively transaction based.	Immediately (exclusively handled by T7)	T7 Clearer GUI
Pre-Trade Risk Limits (PTRL) 'Risk Tracking'	Quantity of incoming order/quote is added to a quantity counter comprising open quantity in order book plus open net traded quantities.	Quantity counter exceeds specified PTR limit.	Rejection of incoming order/quote.	PTR Limits apply to individual products.	Quantity contributions from all orders/quotes stored in the order book plus all net traded quantities of the current business day.	Immediately (exclusively handled by T7)	T7 Clearer GUI T7 ETI
Advanced Risk Protection (ARP) 'Last Line of Defense' Result	Level 1 risk limit on margin set in C7 GUI. Limit breach triggers automatic		Immediate warning message.				
	Level 2 risk limit on margin set in C7 GUI. Limit breach triggers automatic activation of ARP Level 2 flag in T7.	Incoming order/quote is validated against level 2 flag.	Throttle of incoming order/quote.	Margin Limits apply simultaneously to all products.	Based on global margin requirement; mark-to-market of global margin requirement after a trade occurred.	Deferred (in the order of seconds; requires information from outside of T7, i.e. from PRISMA).	C7
	Level 3 risk limit on margin set in C7 GUI. Limit breach triggers automatic activation of ARP Level 3 flag in T7.	Incoming order/quote is validated against level 2 flag.	NCM is set to hold. Rejection/deletion of all open and incoming transactions. Alternative is the Soft Breach leaving orders in the book				

Thank you!

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