

1. What functionality is currently available as part of the Cboe U.S. Equities Risk Management offering?

This document will mainly describe new functionality introduced into the Cboe U.S. Equities Risk Management offering through a phased rollout in 2020. For additional information and a complete list of existing risk management functionality currently available as part of Cboe U.S. Equities Risk Management, please review the following Web Portal Port Controls, Secure Web API, and U.S. Equities Risk Management Specifications:

- Web Portal Port Controls Specification – This document outlines current risk management functionality available as Port Controls via the Web Portal.
- Secure Web API – This document outlines which Port Controls can be updated via API.
- US Equities Risk Management Specification – This document describes the technical specifications associated with Equities Risk Management functionality.

2. What new functionality is being introduced into the Cboe U.S. Equities Risk Management offering through a phased rollout in 2020?

The new patent-pending Cboe U.S. Equities Risk Management functionality being introduced is comprised of three (3) interrelated and complementary enhancements. When taken together, Cboe U.S. Equities Members are enabled with a powerful and flexible risk management solution that provides various levels of granularity.

These enhancements include:

- **MPID Level Risk Controls** – Provides Members and Clearing Firms acting on their behalf the ability to manage risk at the MPID level through Gross and/or Net Notional Risk Thresholds, to subsequently receive notifications to signal when a Member is approaching its designated thresholds, and to authorize the Exchange to automatically block new orders submitted and cancel open orders upon threshold breaches.
- **Equity Purge Ports** – Enables Members the ability to cancel a subset (or all) open orders across MPID(s), Symbol(s), or ‘*RiskGroupID(s)*’, across multiple logical ports/sessions.
- **Strategy Level Risk Controls** – Allows Members to manage risk at a more granular order-by-order level through applying *RiskGroupIDs* to individual orders submitted. All orders tagged with a specific *RiskGroupID* may be subject to a ‘*RiskGroupID Risk Profile*’ created and defined by the Member to include Gross or Net Notional Risk Thresholds per order subset.

3. Will Members require new Logical Ports/Sessions to take advantage of this new risk functionality?

MPID Level Risk Controls will not require any additional sessions to utilize. Dedicated Logical (FIX or BOE) ‘**Equity Purge Ports**’ will be created for purge functionality, and will unlock the ability to define ten (10) ‘*RiskGroupID Risk Profiles*’ through Strategy Level Risk Controls. Any orders submitted through designated Purge Ports other than purge requests will be rejected. This will provide unencumbered logical ports/sessions containing no additional order traffic to send purge requests.

4. Are Strategy Level Risk Controls dependent on Equity Purge Ports?

Yes, Strategy Level Risk Controls are dependent on Equity Purge Ports as one (1) Purge Port will allow you the ability to define ten (10) ‘*RiskGroupID Risk Profiles*’. The reason this functionality is tightly coupled is because Strategy Level Risk Controls and Equity Purge Ports share the common order tag required as the basis for Risk Profiles – the ‘*RiskGroupID*’.

By entering ‘*RiskGroupIDs*’ through New Order messages, Members will be enabled with two layers of risk management: order-by-order maximum risk thresholds defined through ‘*RiskGroupID Risk Profiles*’, paired with the ability to manually mass-cancel open orders per ‘*RiskGroupID*’ in the case that certain thresholds are breached, e.g., 50%, 70% or 90%.

5. What is a 'RiskGroupID'?

'RiskGroupIDs' allow Members to group at a more customized, granular, and user-specified level across orders. *RiskGroupIDs* are available on an order-by-order basis, and can be included on each new order entered for Members to effectively manage risk through the assignment of specific order groups to individual *RiskGroupIDs*. *RiskGroupIDs* are also the basis for *RiskGroupID Risk Profiles* through Strategy Level Risk Controls. This allows Members the flexibility to group specific subsets of orders based on their own risk requirements and thresholds. For example, the same *RiskGroupID* can be entered across symbols, prices, and/or strategies to allow for a subsequent purge request tailored to a Members' risk profile.

- Only Purge Ports will have the ability to cancel open orders and/or self-impose a risk lockout by *RiskGroupID*.
- The *RiskGroupID* is a 2 byte unsigned integer providing 65,535 possibilities.
- Purge requests will be rejected if both a Symbol and *RiskGroupID* are entered, as these filters are available on an either/or basis. *RiskGroupIDs* can however be paired with an MPID as part of a single purge request. If a Member wishes to get more granular than symbol with their purge requests, it is recommended that they use different *RiskGroupIDs* for different order buckets in order to maintain separation when canceling.
- In a single purge request, a list of *RiskGroupIDs* can be supplied (up to a maximum of 10) in order to cancel open orders across multiple *RiskGroupIDs*.
- *RiskGroupID Risk Profiles* are defined through setting Gross or Net Notional Risk Thresholds via upload to the Customer Web Portal or the Secure Web API.

6. How will Members initially define and then subsequently update their *RiskGroupID Risk Profiles*?

Members can initially define and then subsequently update their *RiskGroupID Risk Profiles* via upload to the Customer Web Portal or the Secure Web API. Limits are configured by the Member (i.e. Trading Firm) by default, but control of risk limits for a particular MPID may be optionally delegated to the Clearing Firm under MPID Level Risk Control functionality.

The Cboe Customer Web Portal is available through the public website at <http://markets.cboe.com>.

7. How are risk limit levels and risk limit types defined through MPID Level Risk Controls and Strategy Level Risk Controls?

Risk limits can be defined at one of the following levels:

- MPID Level – Risk limits apply to activity for the defined MPID.
- RiskGroupID Risk Profile Level – Risk limits apply to activity for the defined *RiskGroupID* and MPID combination.

A collection of risk limits may be defined for each level. When any one of the limits is breached, open orders will be cancelled, and any new orders received will be rejected. Members may configure both an MPID level limit as well as a more specific *RiskGroupID* level limit for a subset of the order flow for that same MPID. Both limits will be in effect concurrently.

The risk limit types available are the following:

- **Absolute Gross Notional Value** – A notional value (price * size) is calculated for each execution. Buy trades and sell trades both are counted as positive values. All values are summed, and when the absolute value of the sum exceeds the defined limit, then the risk limit is breached.
- **Absolute Net Notional Value** – A notional value (price * size) is calculated for each execution. Buy trades count as positive values and sell trades count as negative values. All values are summed, and when the absolute value of the sum exceeds the defined limit, then the risk limit is breached.

8. Will updates made to *RiskGroupID Risk Profiles* be immediately effective?

RiskGroupID Risk Profiles uploaded via the Customer Web Portal may be applied immediately or staged for the next trading day. Those uploaded via the Secure Web API after 6:30 a.m. ET will apply the following trading day, as the Secure Web API does not support applying changes to risk limits intraday.

9. Will Members be required to update their *RiskGroupID Risk Profiles* each day to ensure they maintain the correct risk thresholds?

No, *RiskGroupID Risk Profiles* will persist day-over-day so that Participants' are not required to recreate their Risk Profiles on a daily basis (e.g. *RiskGroupID* 1 = Gross Notional X or Net Notional X limits).

10. Will there be a way to enforce risk thresholds across Logical Port(s)/Session(s) so that orders submitted are required to include RiskGroupID Risk Profiles?

Yes, a new optional port level attribute will be available to validate that each new order submitted through that specific session contains a RiskGroupID. Once this port level setting is selected, any orders submitted through that session that are not tagged with a RiskGroupID will be rejected in an effort to ensure intended risk thresholds are maintained.

11. What type of firm will benefit from the use of Strategy Level Risk Controls and Equity Purge Port functionality?

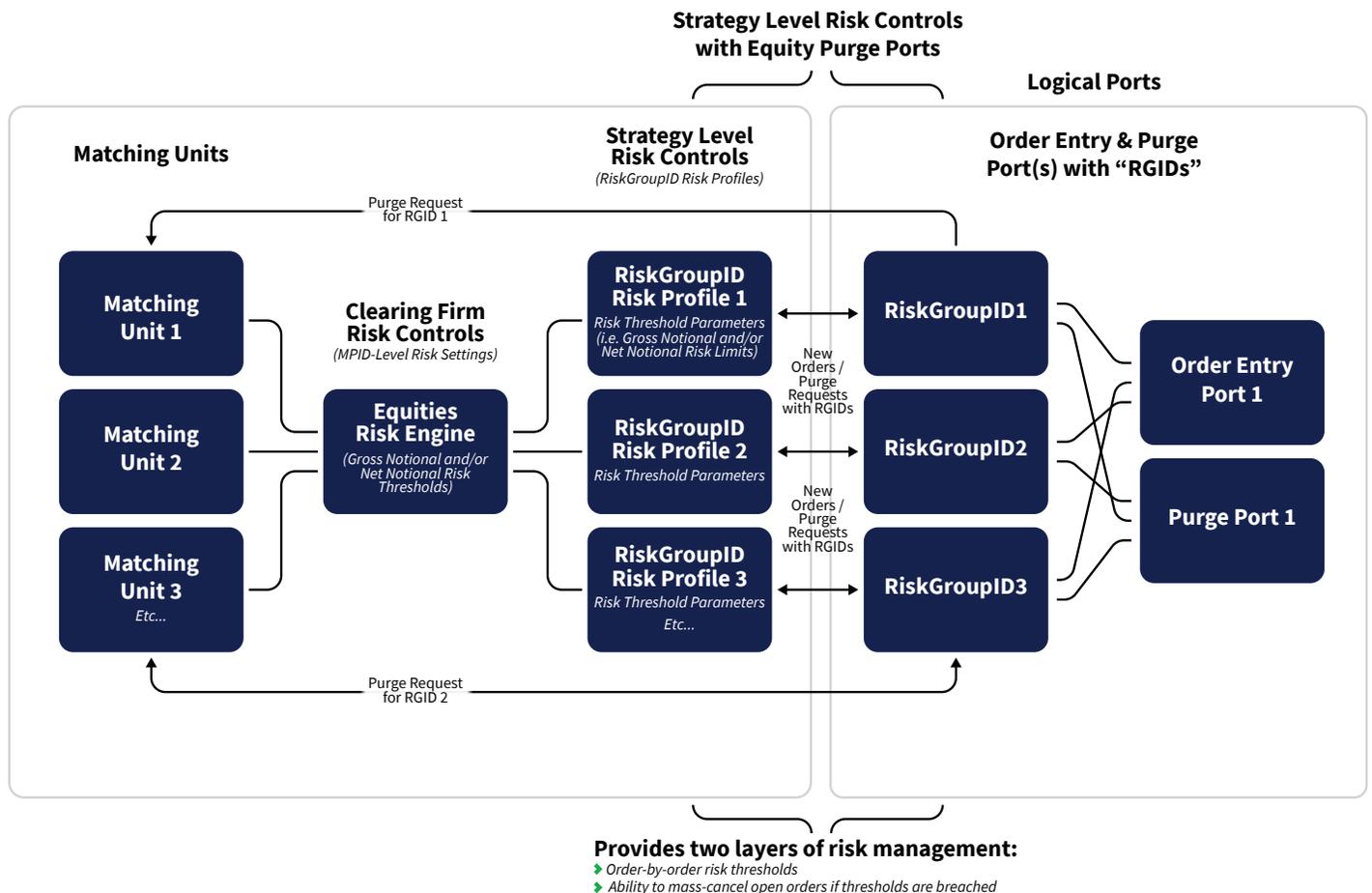
Strategy Level Risk Controls are suited for any Member running multiple strategies at a given time, for those operating multiple groups with disparate risk profiles, or for Sponsoring Members managing risk on behalf of their Sponsored Access customers.

Firms who benefit from Purge Port functionality tend to be Members who have multiple open orders at any given point in time and need a fast and efficient way to manage risk and potentially cancel an array of open orders.

Strategy Level Risk Controls coupled with Purge Ports provide Members the ability to effectively manage their exposure across individual desks, strategies, and/or risk profiles through the assignment of orders to user-specified order groups. This ability to group orders by symbol, price, customer, and/or strategy allows for the flexibility to submit subsequent purge requests for all, or subsets of, open orders tailored to varying levels of risk tolerance.

12. Is there a way to visualize the new functionality being introduced into the Cboe U.S. Equities Risk Management offering across Strategy Level Risk Controls, Equity Purge Ports, RiskGroupIDs, RiskGroupID Risk Profiles, and the new Equities Risk Engine?

The following diagram is intended to illustrate the interaction between Strategy Level Risk Controls, Purge Port(s), RiskGroupID(s), and RiskGroupID Risk Profiles.



13. How will cancel/reject behavior be handled?

When 100% of a *RiskGroupID Risk Profile* threshold is breached, all open orders will be cancelled and any new orders will be rejected. In order for trading to resume, the user group that controls the *RiskGroupID Risk Profile* must use the Customer Web Portal to raise the existing Gross or Net Notional Risk Thresholds. Limits may not be reset, but limits may be raised intraday via the Customer Web Portal to allow trading to continue when a breach occurs.

Risk limits do not affect an in-process equity auction, including an auction in a Cboe-Listed symbol. If a Risk trip occurs after an auction cutoff time, then no resting orders will be cancelled for the MPID until the auction is concluded. If there are shares leftover that would normally transition from the auction book to continuous trading, then those shares will be cancelled before that transition occurs.

All risk limit evaluation is performed by the new Equities Risk Engine that consumes a trade by trade feed consisting of activity from all matching units. When a *RiskGroupID Risk Profile* threshold breach is detected, the process immediately sends a message to all matching units in the environment to reject new orders and cancel existing orders. Although order cancellation and order rejection is performed immediately following a breach, a single order removing against multiple resting orders will be allowed to do so completely, even if a risk limit is breached before the last execution occurs. Orders that have been routed away may also receive executions before those orders may be cancelled by Cboe. As a result, risk limits are enforced on a best efforts basis.

14. How will a Member be notified upon breach of a *RiskGroupID Risk Profile* Threshold?

Members will be notified upon breaches of *RiskGroupID Risk Profile* thresholds at the following levels: 50%, 70%, 90%, and 100%. Members can be notified either through email notification or via a new 'RiskThresholdWarning' message sent over a Standard FIX Drop port to enable programmatic receipt.

Members can setup notification recipients via the Customer Web Portal Risk Management Tool under the Notification Settings tab.

15. Will busted trades impact total Gross and/or Net Notional Thresholds?

No, busted trades will not decrease total Gross and/or Net Notional Thresholds for the day.

16. How will a Member submit a purge request through an Equity Purge Port?

Equity Purge Ports are existing functionality on the Cboe U.S. Equities Exchanges today, and purge requests are initiated by sending a single message over an individual logical (FIX or BOE) Purge Port, per Exchange.

17. What filters will be available in a purge request message through Equity Purge Ports to allow specific orders to be included, or omitted, from a single purge request?

The following filters will be available as part of a purge request message:

- > MPID
- > Symbol
- > RiskGroupID

18. Are Equity Purge Ports able to be used as a 'kill-switch' across Logical Ports/Sessions?

In the case that all optional filters available are left blank (MPID, Symbol, and RiskGroupID), a purge request will act as a kill-switch by canceling all open orders across all sessions, initiated through a Member-sent (FIX or BOE) message through a single logical Purge Port. However, Purge Port functionality can be used to cancel a subset of open orders through the use of applicable filters as well.

19. Will Members require more than one Equity Purge Port?

Cboe recommends that at least two Purge Ports be obtained per Exchange for redundancy purposes. This will allow Members to take advantage of independent and dedicated hosts that have been established to support Purge Port functionality.

Additionally, Members who require more than the allocated ten (10) RiskGroupID Risk Profiles per Purge Port may obtain additional Purge Ports to increase their number of Risk Profiles. Lastly, Members may choose to obtain additional Purge Ports at their discretion to support different desks/groups, strategies, and/or risk profiles.

20. How will Members receive cancel acknowledgements following a purge request sent via an Equity Purge Port?

A single mass cancel acknowledgement containing the total number of orders cancelled will be sent to the Purge Port specifically once all cancels have been processed, and multiple order cancel acknowledgements can also be sent through each individual session as cancels are processed for each open order that exists, if selected. Members will have the flexibility to select single versus multiple cancel messages per purge request.

21. When a single cancel acknowledgement is requested (i.e. all orders canceled in a single message sent to the Purge Port specifically), would the Order IDs or any reference back to the original orders be included in the single message?

No, you will only receive the total number of orders that were canceled as part of the single cancel message sent to the Purge Port specifically. There is no way to know exactly which orders were canceled other than opting to get a cancel message for each order.

22. Will Members be able to 'lockout' following a purge request sent via an Equity Purge Port?

Yes, Members may optionally issue, using BOE or FIX, a self-imposed order lockout in conjunction with a purge request to help prevent any new or incoming orders. Lockouts will be available at the following levels:

- MPID
- Symbol
- RiskGroupID

Additionally, a *RiskGroupID Risk Profile* threshold breach of 100% will also trigger a lockout on any subsequent orders.

23. Will Members be able to lockout a RiskGroupID for a specific Symbol, and have it unlocked for other Symbols?

Members will not be able to lockout a *RiskGroupID* for a specific Symbol and have it unlocked for other Symbols. For example, a Member cannot lockout *RiskGroupID* 123 for AAPL but have *RiskGroupID* 123 unlocked for MSFT. The purge request will be rejected if a lockout is requested for both a Symbol and a *RiskGroupID*.

24. How would a Member reset previously submitted lockouts following a purge request or RiskGroupID Risk Profile threshold breach?

In order to continue trading following a self-imposed lockout in conjunction with a purge request, a risk reset message should be sent using FIX or BOE as defined in the respective specification. Risk reset functionality is available on the New Order message which allows a Member to reset by MPID, Symbol, or both. Additionally, a single *RiskGroupID* can be included as part of the New Order message to reset a previously locked-out *RiskGroupID*.

In order to continue trading following a *RiskGroupID Risk Profile* threshold breach, a user from either the trading firm or clearing firm must raise the defined limit.

25. Will purge requests be prioritized over other messages?

Purge messages will not be prioritized in any way over other messages, and will be handled as per the normal sequence of events. Purge Ports will however feed into dedicated order handlers, and therefore purge messages will not be subject to order-queueing as order entry will not be supported via Purge Ports.

26. Will Cboe U.S. Equities Risk Management functionality introduce additional latency?

No, Cboe U.S. Equities Risk Management functionality will not introduce any additional latency.

27. Is certification required in order to utilize the new Cboe U.S. Equities Risk Management functionality?

U.S. Equities Exchange Members are not required to certify with the [Cboe Trade Desk](#) prior to using the new Cboe U.S. Equities Risk Management functionality, but testing in the certification environment is strongly recommended prior to utilizing the features in a production environment.

28. What Exchanges will the complete Cboe U.S. Equities Risk Management offering be available on?

The complete Cboe U.S. Equities Risk Management offering will be available on the Cboe BZX, BYX, EDGX, and EDGA Equities Exchanges.