NYSE Pillar
Risk Controls

NYSE Equities
NYSE Arca Equities
NYSE American Equities
NYSE National Equities
NYSE Chicago Equities
NYSE Arca Options (New)
NYSE American Options (New)
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1. Introduction

The NYSE Group equities and options markets offer a suite of client configurable risk controls on the NYSE Pillar trading platform. This functionality is currently available to Entering Firms (including NYSE Floor Brokers and Options Market Makers) and to equities Clearing Firms provided consent by the Entering Firm.

Users may view, set, and monitor these controls via the NYSE Pillar Trade Ops Portal (TOP) web UI or via API using the NYSE Pillar Binary Gateway (options markets only at this time).

All risk controls are optional, with the exception that for Options Market Makers, Activity-based risk limits are mandatory for order/quote entry (see Activity-based Controls for more detail).

The suite of risk controls currently available consists of the following:

<table>
<thead>
<tr>
<th>Risk Control</th>
<th>Pre-/Post-Trade</th>
<th>Equities Markets</th>
<th>Options Markets</th>
</tr>
</thead>
<tbody>
<tr>
<td>Single Order Max Qty</td>
<td>Pre-trade</td>
<td>Y</td>
<td>Y</td>
</tr>
<tr>
<td>Single Order Max Notional Value</td>
<td>Pre-trade</td>
<td>Y</td>
<td>Y</td>
</tr>
<tr>
<td>Gross Credit (Open + Executed)</td>
<td>Pre-trade</td>
<td>Y</td>
<td></td>
</tr>
<tr>
<td>Activity-based Controls</td>
<td>Post-trade</td>
<td></td>
<td>Y</td>
</tr>
<tr>
<td>Kill Switch</td>
<td>N/A</td>
<td></td>
<td>Y</td>
</tr>
<tr>
<td>• Cancel orders - auction orders; non-auction orders; GTC orders</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>• Block/Re-enable order entry</td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

2. Risk Entities

A Risk Entity is a business unit for which different risk limits may be set. Applicability per market and risk control type is as follows:

<table>
<thead>
<tr>
<th>Risk Entity</th>
<th>Equities Markets</th>
<th>Options Markets</th>
<th>Single Order Max Notional Value</th>
<th>Single Order Max Qty</th>
<th>Activity-based</th>
<th>GRMP for Activity-based</th>
<th>Kill Switch</th>
</tr>
</thead>
<tbody>
<tr>
<td>MPID</td>
<td>Y</td>
<td>Y</td>
<td>Y</td>
<td>Y</td>
<td></td>
<td></td>
<td>Y</td>
</tr>
<tr>
<td>MPID + SubID</td>
<td>Y</td>
<td>Y</td>
<td>Y</td>
<td>Y</td>
<td></td>
<td></td>
<td>Y</td>
</tr>
<tr>
<td>Floor Broker Firm + MPID + SubID</td>
<td>Y - NYSE only</td>
<td></td>
<td>Y</td>
<td>Y</td>
<td></td>
<td>Y</td>
<td></td>
</tr>
<tr>
<td>MPID + MMID</td>
<td>Y</td>
<td>Y</td>
<td>Y</td>
<td>Y</td>
<td></td>
<td></td>
<td>Y</td>
</tr>
<tr>
<td>Underlying Symbol + MPID</td>
<td>Y</td>
<td></td>
<td>Y</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Underlying Symbol + MPID + MMID</td>
<td>Y</td>
<td></td>
<td>Y</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>
• **Standard Identifiers**
  - **MPIDs, MMIDs, and Underlying Symbols** - are automatically available as Risk Entities, as applicable per market
  - **Options Market Maker** - risk is calculated separately per MPID + MMID, and does not roll up to MPID level. SubIDs are not applicable.

• **Optional MPID + SubID Hierarchy**
  - Entering Firms have the ability to register SubIDs within their MPIDs upon request to NYSE Client Relationship Services (CRS)
  - Allows firm to segment risk at a lower level than MPID (e.g. different trading desks)
  - An MPID level limit includes the aggregated risk calculations of all associated SubIDs
  - SubID format
    - FIX - 4 characters alphanumeric
    - Binary v2 order message (options markets only at this time) - 4 characters alphanumeric
    - Binary v1 order message (equities markets only) - 1 character alphanumeric

• **“SubIDIndicator” order instruction** - in NYSE Pillar Gateway, if a SubID is provided on an order with Self-trade Prevention (STP), the default behavior is that the STP identifier becomes the combination of the MPID + SubID.

For a given order, to use SubID for risk control purposes but ignore it for STP, the “SubIDIndicator” instruction may be specified with a value of 1. See the NYSE Pillar Gateway FIX and Binary protocol specifications for more details.

  - 0/*tag not sent* = for this order, use SubID for both Pre-Trade Risk Controls and STP (within the MPID)
  - 1 = for this order, use SubID for Risk Controls only (STP at MPID level)

---

<table>
<thead>
<tr>
<th>Risk Entity</th>
<th>NYSE Pillar Gateway (all markets)</th>
<th>CCG/UTPDirect Gateways (NYSE only)</th>
</tr>
</thead>
</table>
| MPID*       | OnBehalfOfCompID (FIX-115); MPID field (Binary) | • Entering Firms to provide NYSE Client Relationship Services with an MPID to associate to each existing mnemonic  
  • Pillar will use the mnemonic provided on orders in OnBehalfOfCompID (Binary/FIX-115) to look up associated MPID |
| ➔ SubID within MPID | OnBehalfOfSubID (FIX-116); MPSubID field (Binary) | Pillar will treat the mnemonic provided on orders in OnBehalfOfCompID (Binary/FIX-115) as the SubID |
| ➔ MMID within MPID; options markets only | SenderSubID (FIX-50); MMID field (Binary) | N/A |

*For orders routed through NYSE Floor Brokers - distinct limits set per Floor Broker Firm (CRD) + MPID + SubID*
3. Risk Users

Risk Users are firms entitled to view, configure, and/or take action (kill switch, reinstate) on risk controls and Risk Entities.

Multiple users may set different limits for the same Risk Entity. The most restrictive limit is always enforced.

- **Entering Firm** - includes direct members and sponsoring members. Entitlements are further separated for:
  - **NYSE Floor Broker** - access is limited to Floor Broker CRD + MPID + SubID risk entities.
  - **Options Market Maker** - access is limited to MPID + MMID and Underlying + MPID + MMID risk entities.

- **Clearing Firm - Equities Markets Only**
  - A correspondent clearing firm may be designated as a Risk User by Entering Firm consent via TOP
  - Consent is given per Risk Entity (individual MPID, MPID + SubID, or Floor Broker Firm CRD + MPID + SubID)
    - to view Entering Firm risk controls and/or configure their own Clearing Firm risk controls

4. Risk Controls

4.1 Single Order - Maximum Quantity, Maximum Notional Value

**Market Applicability:** equities markets; options markets

**Breach Action:**

- **Equities Markets** - single order reject on order arrival
- **Options Markets** - single order reject on order arrival, except market orders entered during pre-open/halt are subjected to the Maximum Notional Value check after the opening/re-opening auction and cancelled if the leaves quantity breaches the limit

**Calculation:**

- **Single Order Max Qty** - value as specified in OrderQty field of the order
- **Single Order Max Notional Value** - calculated as risk reference price x OrderQty. See FAQ for more detail regarding reference prices

**Configuration:**

- **Single Order Max Qty** - limit represented in number of shares (equities markets) or contracts (options markets)
- **Single Order Max Notional Value** - limit represented in USD

**Design:** implemented in the order path. Each individual order that would exceed the configured limit will be rejected on arrival (except for Single Order Max Notional check on options market orders entered during pre-open/halt. See Breach Action for more detail)
4.2 Gross Credit Open + Executed (equities only)

**Market Applicability:** equities markets

**Breach Action:** configurable, see below

**Calculation:** sum of the USD values of open orders and executed orders across all symbols on a given day, where both buy and sell orders are counted as positive values. Orders fully or partially routed to away markets are included in the calculations. Calculations are adjusted for execution price and trade busts. For initial phase, trade corrections and allocations are not counted.

**Configuration:**

- **Limit** - represented in USD
- **Breach Action** - to be taken automatically upon breach:
  - Notification only
  - Block only - accept cancels; reject order, modify, cancel/replace
  - Cancel Non-Auction orders & Block

**Reinstatement following breach:** steps to reinstate the affected Risk Entity are as follows.

- Increase credit limit or cancel orders to reduce credit usage below the breached limit
- **Reinstatement Approvals** - submit via TOP or NYSE Pillar Binary Gateway - Risk Admin session
  - Risk User whose limit was breached - approval required
  - **Entering Firm** - approval required for breach of both their own and Clearing Firm limits
    - Limit set by NYSE member Customer for trading activity by Floor Broker Firm on behalf of Customer - approval required by both Customer and Floor Broker Firm
  - **Clearing Firm** - approval conditionally required based on Entering Firm consent (see Configure → Consent to Clearing Firm, above):
    - Read - approval required for breach of Entering Firm limits only
    - Write - approval required for breach of Clearing Firm limits only
    - Read & Write - approval required according to both Read and Write above

**Design:** implemented in a dedicated process outside of the order path. As such, one or multiple marginal orders that would cause a breach will be accepted and may execute before the breach action is triggered. Firms may limit this marginal risk by utilizing the single order controls
### 4.3 Activity-based Controls (options only)

Activity-based Controls are available on the options markets - mandatory for Options Market Makers, and optional for all other Entering Firms.

Rolling Transaction/Volume/Percentage limits are configured and breach action applied per Underlying Symbol. GRMP keeps count of the number of breaches across all Underlying Symbols and has its own breach action that applies across all Underlying Symbols.

#### 4.3.1 Rolling Transaction/Volume/Percentage - per Underlying Symbol (options only)

**Market Applicability:** options markets

**Specifics for Options Market Makers:**

- **Activity-based risk limits** - are mandatory for order/quote entry in all underlying symbols - both appointed and non-appointed. If an Underlying + MPID + MMID is not configured with an Activity-based limit, all orders/quotes with those identifiers will be rejected
  - There is no default limit for Activity-based Controls in Pillar
  - Market Makers must set and maintain their own limits. This includes initial “day 1” setup and on an ongoing basis as new underlying symbols are added to the NYSE Arca and NYSE American Options markets (intraday or overnight) and/or Market Makers begin or cease trading certain symbols

- **Arbitrage & Intrinsic Value Check Breaches** - an order/quote reject due to failing the matching engine Arbitrage (buy side) or Intrinsic Value (sell side) price checks will also trigger an automated breach action of Cancel Non-Auction Orders & Block in the affected Underlying + MPID + MMID, and increment the GRMP counter. The Market Maker must then follow the same steps to reinstate as described for Activity-based Controls

  For more information regarding these price checks, including details on their calculation, see [Functional Differences – NYSE Group Options Platforms](#) → Arbitrage Check and Intrinsic Value Check

**Breach Action:** configurable, see below

**Calculation:**

- **Transaction Based** - counts the number of order/quote executions that occur over the rolling time period
- **Volume Based** - counts the number of order/quote contracts executed over the rolling time period
- **Percentage Based** - calculates the number of order/quote contracts executed as a percent of open order/quantity over the rolling time period. This percentage is calculated for each of the firm’s orders/quotes for the given underlying symbol, and these individual percentages are summed and compared against the configured risk limit.

**Example of Percentage Based:** If a firm has four open orders/quotes for a given underlying symbol on the book, and specifies its percentage based risk limit for that underlying symbol to be 100%, its risk level would be calculated as follows:

<table>
<thead>
<tr>
<th>Order/Quote ClOrdID</th>
<th>Order/Quote Quantity</th>
<th># of Contracts Executed</th>
<th>Percentage Calculation for the Underlying Symbol</th>
</tr>
</thead>
<tbody>
<tr>
<td>ClOrdID-1</td>
<td>100</td>
<td>40</td>
<td>40%</td>
</tr>
<tr>
<td>ClOrdID-2</td>
<td>50</td>
<td>20</td>
<td>40%</td>
</tr>
<tr>
<td>ClOrdID-3</td>
<td>200</td>
<td>20</td>
<td>10%</td>
</tr>
<tr>
<td>ClOrdID-4</td>
<td>150</td>
<td>15</td>
<td>10%</td>
</tr>
</tbody>
</table>
When the aggregate percentage of contracts executed among all the firm’s orders for this underlying symbol during the 100 millisecond time period reaches the specified limit of 100%, Percentage Based RM would be breached, and the remaining open quantity in the four orders would be cancelled by the Exchange. In this case, that occurs when 95 contracts are executed.

**Configuration:**

- **Underlying Symbol** - select one, or bulk update across all underlying symbols
- **Type** - one of Transaction, Volume, or Percentage per underlying symbol
- **Breach Action** - to be taken automatically upon breach:
  - Notification only
  - Block only - accept cancels; reject order, modify, cancel/replace
  - Cancel Non-Auction orders & Block - excludes from cancellation MOO, LOO, GTX, IOC (this covers all Options Cross Orders - CUBE, QCC, Customer to Customer), and GTC orders
- **Limits** - valid limit values must comply with the following parameters:

<table>
<thead>
<tr>
<th>Type</th>
<th>Min</th>
<th>Max</th>
<th>Increment</th>
</tr>
</thead>
<tbody>
<tr>
<td>Activity-based – Rolling Transaction</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>TimeLimit</td>
<td>100,000 microseconds</td>
<td>300,000,000 microseconds</td>
<td>1,000 microseconds</td>
</tr>
<tr>
<td>CountLimit</td>
<td>1 transaction</td>
<td>2,000 transactions</td>
<td>1 transaction</td>
</tr>
<tr>
<td>Activity-based – Rolling Volume</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>TimeLimit</td>
<td>100,000 microseconds</td>
<td>300,000,000 microseconds</td>
<td>1,000 microseconds</td>
</tr>
<tr>
<td>CountLimit</td>
<td>1 contract</td>
<td>500,000 contracts</td>
<td>1 contract</td>
</tr>
<tr>
<td>Activity-based – Rolling Percentage</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>TimeLimit</td>
<td>100,000 microseconds</td>
<td>300,000,000 microseconds</td>
<td>1,000 microseconds</td>
</tr>
<tr>
<td>PercentageLimit</td>
<td>50%</td>
<td>200,000%</td>
<td>1%</td>
</tr>
</tbody>
</table>

- **IOC Attribution** - controls whether IOC and FOK orders will be included/excluded from calculations
  - Include
  - Exclude

An intraday update to any of the above configurations will end the current rolling timer, reset calculations to 0, and start a new time window taking into account execution activity that occurs after the reset only.

**Reinstatement following breach:** the Risk User (Entering Firm/Options Market Maker) whose limit was breached must submit Reinstatement Approval via TOP or NYSE Pillar Binary Gateway - Risk Admin session for the affected Risk Entity (Underlying Symbol + MPID or Underlying Symbol + MPID + MMID)
**Design:** implemented in the execution path. Pillar will evaluate for a breach at the end of each transaction and apply the breach action if applicable, before processing the next transaction. A single transaction may include one or multiple executions in excess of the configured limit.

### 4.3.2 Global Risk Mitigation Protection (GRMP) - across all Underlying Symbols (options only)

**Market Applicability:** options markets

**Breach Action:** Cancel Non-Auction Orders & Block, across ALL underlying symbols. Accept cancels; reject order, modify, cancel/replace. Excludes from cancellation MOO, LOO, GTX, IOC (this covers all Options Cross Orders - CUBE, QCC, Customer to Customer), and GTC orders

**Configuration:**

- **Limits** - valid limit values must comply with the following parameters:

<table>
<thead>
<tr>
<th>Type</th>
<th>Min</th>
<th>Max</th>
<th>Increment</th>
</tr>
</thead>
<tbody>
<tr>
<td>Activity-based – Rolling Transaction/Volume/ Percentage Global Risk Mitigation Protection (GRMP)</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>TimeLimit</td>
<td>100,000 microseconds</td>
<td>300,000,000 microseconds</td>
<td>1,000 microseconds</td>
</tr>
<tr>
<td>CountLimit</td>
<td>25 underlying-level breaches</td>
<td>100 underlying-level breaches</td>
<td>1 underlying-level breach</td>
</tr>
</tbody>
</table>

- **Note:** all Risk Entities are preconfigured with the minimum GRMP limit of 25 underlying-level breaches over 100,000 microseconds

**Calculation:** Pillar keeps an aggregate counter of the number of Rolling Transaction, Volume, and/or Percentage breaches that occur for the MPID or MPID + MMID across all underlying symbols, over the course of the GRMP rolling time window.

**Reinstatement following breach:** steps to reinstate the affected Risk Entity are as follows.

- The Risk User (Entering Firm/Options Market Maker) whose limit was breached must submit a request for reinstatement by email to the Options Trade Desk at tradingox@nyse.com (this step cannot be done via TOP or NYSE Pillar Binary Gateway)

- Once the Options Trade Desk has manually approved GRMP reinstatement on behalf of the Risk User, the MPID or MPID + MMID will be unblocked for order/quote entry in all underlying symbols except those that specifically triggered the GRMP breach, which the Risk User must then individually approve for reinstatement

- **Design:** implemented in the execution path. Pillar will evaluate for a breach at the end of each transaction and apply the breach action if applicable, before processing the next transaction. A single transaction may include one or multiple executions in excess of the configured limit.
5. Tools & Entitlements

Pillar risk controls are accessible via the following tools. The same functionality is available in both tools, with the exception that Entering Firms may only configure email addresses and update consent to Clearing Firm settings via TOP.

5.1 NYSE Pillar Trade Ops Portal

Market Applicability: equities markets; options markets

NYSE Pillar Trade Ops Portal (TOP) is a web-based user interface.

- The risk module is available in the existing TOP UI
- Users should fill out and submit TOP request forms to provision access to the new module:
  - NYSE Pillar Trade Ops Portal - User Request and Authorization
  - NYSE Pillar SubID Request Form
- A firm (Risk User) may have different levels of entitlement for individual user logins. See Entitlements table below for more information
  - View Only
  - Risk Desk - view and configure
  - Risk Officer - view, configure, action (kill switch, reinstate)

5.2 NYSE Pillar Binary Gateway

Market Applicability: options markets

- NYSE Pillar Binary Gateway
  - A dedicated “Risk Admin” session allows API interaction with risk controls, and excludes order/quote entry entitlements
  - Messaging in binary protocol, but applies to both FIX and Binary order flow based on Risk Entity
  - See NYSE Pillar Options Binary Gateway Protocol Specification
    - Risk Limit Update Request
    - Risk Action Request
    - Risk Control Acknowledgement
    - Risk Control Alert

- Risk Admin session configuration
  - Each Risk Admin session is configured as a single Risk User type - Entering Firm or Options Market Maker firm
  - Entitlement is Risk Officer - view, configure, action (kill switch, reinstate). See Entitlements table below for more information
  - Users should fill out and submit gateway session request forms to provision Risk Admin sessions:
    - Session Request Form - Certification Environment
    - Session Request Form - Production
## 5.3 Entitlements

<table>
<thead>
<tr>
<th>Entitlement</th>
<th>Capabilities</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>View</strong></td>
<td>Ability to view risk controls.</td>
</tr>
<tr>
<td></td>
<td>• <strong>Configurations</strong> - view risk control limits and related configurations</td>
</tr>
<tr>
<td></td>
<td>• <strong>Gross Credit</strong> - monitor credit usage</td>
</tr>
<tr>
<td><strong>Configure</strong></td>
<td>• <strong>Risk Control configurations</strong></td>
</tr>
<tr>
<td></td>
<td>o Configure risk control limits and other associated properties</td>
</tr>
<tr>
<td></td>
<td>o Intraday updates to controls are supported</td>
</tr>
<tr>
<td></td>
<td>• <strong>Consent to Clearing Firm - Equities Markets Only</strong></td>
</tr>
<tr>
<td></td>
<td>for each Risk Entity, the Entering Firm may optionally consent to</td>
</tr>
<tr>
<td></td>
<td>providing a correspondent clearing firm with one of the following</td>
</tr>
<tr>
<td></td>
<td>entitlements:</td>
</tr>
<tr>
<td></td>
<td>o <strong>Read</strong> - view, receive notifications, approve reinstatement for</td>
</tr>
<tr>
<td></td>
<td>Entering Firm limits only</td>
</tr>
<tr>
<td></td>
<td>o <strong>Write</strong> - set, receive notifications, approve reinstatement for their</td>
</tr>
<tr>
<td></td>
<td>own Clearing Firm limits only</td>
</tr>
<tr>
<td></td>
<td>o <strong>Read &amp; Write</strong> - superset of Read and Write capabilities above</td>
</tr>
<tr>
<td></td>
<td>The Entering Firm may change the consent during Pillar operational hours</td>
</tr>
<tr>
<td></td>
<td>only. Upon acceptance of the change, Pillar will send the Clearing Firm an</td>
</tr>
<tr>
<td></td>
<td>email notification reflecting the new configuration.</td>
</tr>
<tr>
<td></td>
<td>• <strong>Email Address</strong> - for each Risk Entity, Entering Firm and Clearing Firm</td>
</tr>
<tr>
<td></td>
<td>may configure an email address to receive the following notifications</td>
</tr>
<tr>
<td></td>
<td>o <strong>Gross Credit</strong> - notifications sent at 50/75/90% and breach of limit</td>
</tr>
<tr>
<td></td>
<td>o <strong>Activity-based Risk Controls</strong> - notification sent upon breach of limit</td>
</tr>
<tr>
<td></td>
<td>o <strong>Kill Switch</strong> - notification upon block/unblock</td>
</tr>
<tr>
<td></td>
<td>o <strong>Email Address &amp; Consent to Clearing Changes</strong> - notification upon</td>
</tr>
<tr>
<td></td>
<td>changes to email address and Consent to Clearing Firm settings</td>
</tr>
<tr>
<td><strong>Kill Switch Action</strong></td>
<td>Take manual action on a Risk Entity’s open orders and/or ability to enter</td>
</tr>
<tr>
<td></td>
<td>new orders:</td>
</tr>
<tr>
<td></td>
<td>• Block new order entry</td>
</tr>
<tr>
<td></td>
<td>• Unblock</td>
</tr>
<tr>
<td></td>
<td>• Cancel Non-Auction Orders (except GTC)</td>
</tr>
<tr>
<td></td>
<td>• Cancel Auction Orders</td>
</tr>
<tr>
<td></td>
<td>• Cancel GTC Orders</td>
</tr>
<tr>
<td></td>
<td>Following a Kill Switch - Block action, the affected Risk Entity may be</td>
</tr>
<tr>
<td></td>
<td>unblocked only by the same Risk User (firm) that applied the block.</td>
</tr>
<tr>
<td><strong>Reinstate</strong></td>
<td>Following a credit breach, approve reinstatement for the affected Risk</td>
</tr>
<tr>
<td></td>
<td>Entity to resume accepting incoming orders</td>
</tr>
</tbody>
</table>
6. NYSE Pillar Trade Ops Portal (TOP)

<Placeholder - this section to be updated with screenshots for Options Activity-based Controls in a subsequent document version>.

The following details how users can leverage new screens available in TOP to enable Pre-trade Risk features applied at the Pillar Matching Engine. Once entitled for these features, they can be accessed via new tabs available in TOP (highlighted below):

The TOP Pre Trade Risk Monitor and Pre Trade Risk Settings screenshots within this document assume an Entering Firm user with Risk Officer access and use the dummy Risk Entities established in the table below:

<table>
<thead>
<tr>
<th>Risk Entity</th>
<th>Entering Firm CRD</th>
<th>Clearing Firm CRD</th>
</tr>
</thead>
<tbody>
<tr>
<td>PILR</td>
<td>999999999</td>
<td>123123</td>
</tr>
<tr>
<td>PILR+1 (subID of PILR)</td>
<td>999999999</td>
<td>123123</td>
</tr>
<tr>
<td>PILX</td>
<td>999999999</td>
<td>123123</td>
</tr>
</tbody>
</table>

**Pre Trade Risk Monitor**

Displays current credit calculations inside the Pillar Matching Engine and supports the ability for user to take Kill Switch or Reinstatement action on Risk Entities. The default view is that all Risk Entities will be collapsed:

The display above shows the three Risk Entities as their current state in the Pilar Matching Engine. The first entity (PILR) is blocked due to breach action.

Risk Entities can be expanded to show the limits being enforced and calculated in the Pillar Matching Engine for a given Risk Entity. In the expanded view below, the Entering Firm gross credit limit for PILR is in excess of 100%, while other limits for PILR and the limits for other Risk Entities are not:
The **Kill Switch** button (based on entitlement) allows the following actions on a given Risk Entity:

![Image](image1.png)

The **Submit** button becomes available once an action is selected:

![Image](image2.png)

When a Risk Entity is blocked by breach (utilization of 100% for a gross credit limit), an **Approve** button will appear on the grid (based on entitlement, as seen for Risk Entity PILR in earlier screenshots) to allow users to take steps to reinstate the impacted Risk Entity. Clicking on **Approve** allows a user to take action to approve reinstatement. The user can also see which other Risk User types would need to approve reinstatement, and whether or not they have done so. Workflow to approve is below:
Once approved, the **APPROVE** icon on the Risk Monitor becomes a **STATUS** icon and the user will only be able to see status of the entity when clicking on the **STATUS** icon.
**Pre Trade Risk Settings**

Allows users to view and update risk settings. The default view is that all Risk Entities would be collapsed:

![Pre Trade Risk Settings](image1)

Users can click on Risk Entities to expand and show the settings for a given Risk Entity, as displayed below:

![Pre Trade Risk Settings](image2)

Clicking the ▼ button allows a user to update/establish settings for a Risk Entity:

![Pre Trade Risk Settings](image3)
Entering Firm users will have access to another tab, where they can grant/update consent for Clearing Firm users (based on entitlement). The submit icon becomes available when the consent checkbox is clicked:
7. Frequently Asked Questions (FAQ)

Coverage

1. Which NYSE Group exchanges offer risk controls? Is risk aggregated across the exchanges?

Risk controls are independently offered and separately calculated by each NYSE Group equities and options market.

2. Do the risk controls apply to orders from all gateway protocols?

Yes, risk controls may be calculated for orders originating from both NYSE Pillar (“native”) Gateway and legacy NYSE CCG/UTPDirect. See Risk Entities for setup details.

3. What enhancements are planned for the future?

Future phases will introduce options Clearing Firm users, the equities API, and additional risk controls commonly requested by members for their own use as well as for use in sponsored access arrangements. Details and timelines will be communicated as these plans progress.

Risk Entities

4. What is a Risk Entity, and which Risk Entities are available to me?

A Risk Entity is a business unit for which risk limits may be set. A risk limit applies to all order flow with the corresponding Risk Entity across all gateway sessions on a given market.

By default in the TOP UI or Pillar Binary Gateway - Risk Admin session, Entering Firms have access to all their MPIDs. Options Market Makers have access to all MMIDs associated with a given MPID.

Options Entering Firms/Market Makers also have access to all underlying symbols traded on the applicable market, for configuring Activity-based risk limits.

In addition, Entering Firms may choose to register SubIDs within their MPIDs upon request to NYSE Client Relationship Services, after which any such registered MPID + SubID combinations will become available in TOP and NYSE Pillar Binary Gateway - Risk Admin sessions. See Functional Overview #4(a).

Equities Markets Only - Entering Firms may additionally consent to providing correspondent Clearing Firms with pre-trade risk entitlements for those Risk Entities that they clear. See Entitlements → Configure → Consent to Clearing Firm.

5. What are SubIDs? Do I need them, and how might they be useful?

SubID is available via a customer-defined field on orders. It is not required, but may be used to set risk limits at a more granular level than MPID. For example, a firm may want to set different risk limits for different trading desks/strategies sharing the same MPID.

SubIDs are supported for all Entering Firms except Options Market Makers, who are identified by their MMIDs.

6. How do orders routed to NYSE Floor Brokers fit into the risk controls structure?

- Risk Entity & Entitlements - Floor Brokers may set limits on behalf of their customers’ MPID + SubID/mnemonic
  - Risk Entity is represented as Floor Broker CRD + MPID + SubID/mnemonic
- Customers are able to view and will receive notifications for any limits set by the Broker
- Customers may also set their own limits at this level for the orders they route to each Floor Broker Firm, if desired

- **Reinstatement** - following a breach that involves the “Block” action, reinstatement approvals are required as follows:
  - **If Entering Firm owns the limit** - both Entering Firm and Floor Broker need to approve reinstatement
  - **If Floor Broker owns the limit** - only the Floor Broker needs to approve reinstatement

- **Hierarchy** - Entering Firm limits at the MPID or MPID + SubID level apply both to orders routed directly to the matching engine, as well as orders routed to NYSE Floor Brokers and subsequently routed to the matching engine

7. **How do Options Market Makers fit into the risk controls structure?**

- **Risk Entity & Entitlements** - Market Makers may set limits per MPID + MMID and per Underlying + MPID + MMID
  - The Entering Firm associated with the MPID is able to view and will receive notifications for any limits set by the Market Maker
  - However, the Entering Firm may not set limits or take any action at the Market Maker level

- **Reinstatement** - following a breach that involves the “Block” action, reinstatement approval is required from the Market Maker only

- **Hierarchy** - none. There is no concept of hierarchy for Market Maker risk calculations (MMID calculations do not roll up to MPID level calculations), and SubIDs are not applicable

**Configuration**

8. **For a given Risk Entity and risk control, if one Risk User sets a lower risk limit compared to another Risk User, which one will be enforced?**

Pillar enforces all risk limits independently, so the most restrictive limit will always be enforced.

Example - for MPID = ABCD, if the Clearing Firm sets a credit limit of $1 million with the breach action “Block,” and the Entering Firm sets a credit limit of $1.2 million with the action “Cancel and Block,” the first order/execution for ABCD to breach 1M will block new order entry for ABCD.

9. **What is the meaning of risk limit values set to 0 and not set at all?**

0 is the most restrictive limit ($0, 0 shares/contracts, 0 Transactions, etc.).

Not setting a limit means unlimited order entry/trading (subject to limits otherwise enforced by Exchange trading rules). A limit not set is represented in the TOP UI as a blank field, and in the NYSE Pillar Binary Gateway as limit = -1 or RiskControlActivation field = 0 (off).

10. **Can risk limits be updated intraday? Do the settings persist overnight?**

Yes, risk limits can be updated intraday and persist from end of day to the next start of day.

**Risk Reference Price**

11. **What reference price is used in calculating the Single Order Notional and Gross Credit value of an open order?**
The risk reference price is assigned to an order on arrival, except for Single Order Max Notional check on options market orders entered during pre-open/halt. See Single Order - Maximum Notional Value Breach Action for more detail on this scenario.

The reference price is generally the limit price of the order, except as provided below, and is updated upon acceptance of any subsequent Modify or Cancel/Replace Requests.

- **Equities Markets** - for Opening/Closing D Orders (NYSE Floor Broker), Market orders, and Market Pegged orders entered during the Core trading session, Pillar will use the consolidated last sale. For such orders entered during the Early or Late trading sessions, Pillar will use the prior day official closing price

- **Options Markets** - for Market orders, Pillar will use the contra-side Market Collar (for Buy orders - upper market collar, for Sell orders - lower market collar)

**General Processing**

12. **Will a Risk User that chooses to set limits for these risk controls experience more latency compared to a Risk User that does not set limits?**

No. All orders on the Exchange will pass through the risk checks regardless of whether limits are configured. As such, an Entering Firm that chooses not to set limits nor permit its Clearing Firm to set limits on its behalf will not achieve any latency advantage with respect to its trading activity on the Exchange. In addition, any latency applied to all participants as a result of this implementation is *de minimis.*

13. **What executions count toward Activity-based controls?**

Executions for all single leg and complex order types are counted, with a client configuration that controls whether to include/exclude IOC and FOK executions. Both auction and continuous trading executions are counted.

For the Rolling Transaction calculation, each leg of a complex order is counted as 1 transaction.

14. **Is the automated breach action to “Cancel Non-Auction orders & Block” subject to Exchange rules restricting order cancellation? What about the Kill Switch commands to “Cancel Auction Orders” and “Cancel Non-Auction Orders” ?**

Yes, all existing cancel restrictions defined in Exchange rules and systemically enforced today will continue to be enforced upon a credit breach or Kill Switch event by excluding certain orders from cancellation as necessary. For example, upon a Kill Switch command to “Cancel Auction Orders” after a MOO/LOO Cancellation Cutoff time, MOC/LOC orders will be cancelled but MOO/LOO orders will remain open.

15. **After updating Risk Entity settings, approving reinstatement, or initiating a Kill Switch action, how do I verify whether it was processed?**

Via TOP - following each of these commands, it is advised that the user always check the TOP Risk Monitor page before taking any further action, regardless of whether TOP responded with an acknowledgement or error message. Processing may be verified for each applicable Risk Entity via Risk Monitor as follows:

- **Update Risk Entity settings** - verify the new settings appear as rows
- **Approve reinstatement** - verify the “Approve” icon disappears. If approvals from other Risk Users are required and still pending, you may also click the “Status” icon and verify that your firm is listed with a Status of “Approved”
- **Kill Switch block** - verify an indicator appears in the “Block by Kill Switch” column
- **Kill Switch un-block** - verify the indicator disappears in in the “Block by Kill Switch” column
- **Kill Switch cancel non-auction orders** - verify the “All Orders” calculation is updated to reflect the cancelled orders
- **Kill Switch cancel auction orders** - verify the “Auc Orders” calculation is updated to reflect the cancelled orders

Via NYSE Pillar Binary Gateway - Risk Admin session - to query current status, the user may send a Risk Action Request with RiskActionType = 1 (Query Risk Entity for current configs/calculations/status).

**Breach and Kill Switch**

16. **How will I know if a reject or UROUT is the result of an automated risk breach or Kill Switch action?**

The following new reason codes will be sent on reject and UROUT messages via both NYSE Pillar Gateways and legacy NYSE CCG/UTPDirect:

R223: Risk - Single Ord Max Qty
R224: Risk - Single Ord Max Notional
R225: Risk - Gross Credit Breach
R226: Risk - Kill Switch
R284: Risk - Roll Transact Breach
R285: Risk - Roll Vol Breach
R286: Risk - Roll Pct Breach
R287: Risk - Roll GRMP Breach
R288: Risk - MM Arbitrage Breach
R289: Risk - MM Intrinsic Breach

17. **Following a Credit breach, what process should I follow in approving reinstatement?**

First, you should cancel open orders and/or increase the breached credit limit(s) such that the current credit calculation is lower than the credit limit(s) that triggered the breach. Then, each Risk User whose reinstatement approval is required should approve reinstatement. See **Gross Credit → Reinstatement following breach**.

18. **Which type of consent given by an Entering Firm to their correspondent Clearing Firm will allow the Clearing Firm to use Kill Switch actions?**

Write and Read & Write include the Kill Switch capabilities for the Clearing Firm.

19. **For a given Risk Entity, if one Risk User commits the Kill Switch-Block command, can a different Risk User commit the Kill Switch-Unblock command?**

No, Unblock must be performed by the same Risk User who committed the Block. For example, if the Clearing Firm blocks a Risk Entity, the Entering Firm will not be able to Unblock it; only the Clearing Firm may do so.

**Email Notifications**

20. **What types of email notifications will I receive as a risk control user?**

Email notifications will be sent for Gross Credit thresholds/breach and Activity-based breach; when reinstatement is processed for a previously breached Risk Entity; Kill Switch block/unblock events, changes to the email address configuration, and changes in consent given to a Clearing Firm by Entering Firm.

21. **How many email addresses may be configured to receive email notifications?**
One email address per Risk Entity, per Risk User (Entering Firm, NYSE Floor Broker Firm, Options Market Maker, Clearing Firm). It is recommended that Risk Users utilize a distribution list email address in the event that multiple recipients within the firm are interested in receiving the notifications.

22. **What information will be provided in the Gross Credit and Activity-based threshold/breach notifications?**

A separate email or NYSE Pillar Binary Gateway message will be generated for each underlying action (notify; block; cancel, as applicable) when:
- Gross Credit calculation exceeds 50/75/90% and breach (100%) of the configured limit
- Activity-based calculation breaches (100%) the configured limit

The following data elements will be included in the email:
- **Risk Entity** - that met the threshold/breach condition
- **C RD Number, Type (Entering/Clearing/Floor Broker/Options Market Maker) and Text Name of the Risk User** - that configured the Gross Credit or Activity-based limit for the affected Risk Entity
- **Risk Control** - the limit value and action (notify; block; cancel) of the Gross Credit or Activity-based control configured for the affected Risk Entity
- **Notification Type** - Thresholds (> 50%; > 75%; > 90%); Breach (> 100%)

**Customer Outputs**

23. **Will I be able to receive output files reflecting my risk control settings and activity?**

Yes, a new set of files for Risk Outputs will be introduced for use by Entering Firms and Clearing Firms. Upon request, the outputs will be made available for secure pick-up via Managed File Transfer (MFT) on the same lines as existing outputs.

Firms may subscribe to outputs by submitting a request to [NYSE-CustomerOutput@theice.com](mailto:NYSE-CustomerOutput@theice.com).
## 8. Document Version History

<table>
<thead>
<tr>
<th>Date</th>
<th>Doc. Version #</th>
<th>Change Summary</th>
</tr>
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<tbody>
<tr>
<td>May 19, 2021</td>
<td>2.0</td>
<td>Added support for NYSE Group options markets:</td>
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<tr>
<td></td>
<td></td>
<td>- Updated Single Order Max Quantity and Single Order Max Notional Value with options market details</td>
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<td></td>
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<td>- Activity-based Risk Controls</td>
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<tr>
<td></td>
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<td>- Risk Controls API - NYSE Pillar Binary Gateway Risk Admin session</td>
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<tr>
<td></td>
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<td>- Risk Users and their associated Risk Entities - Entering Firm, Options Market Maker</td>
</tr>
<tr>
<td>May 11, 2020</td>
<td>1.0</td>
<td>Initial version of the document, covering Pillar Pre-trade Risk Controls for NYSE Group equities markets:</td>
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<tr>
<td></td>
<td></td>
<td>- Single Order Maximum Quantity</td>
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<td></td>
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<td>- Single Order Maximum Notional Value</td>
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<tr>
<td></td>
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<td>- Gross Credit (Open + Executed)</td>
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