
# *PrecISE Risk Controls*

## *Business Requirements*

*Technology Division*
*Confidential*

Version: 1.9

Issue Date: January 21, 2016
Print Date: January 21, 2016

**Produced by**:

International Securities Exchange, Inc.

60 Broad Street, New York NY 10004

www.ise.com

# About This Document

This document specifies the business requirements for functional design of PrecISE's Risk Control features.

## Document Audience

The audience for this document includes:

- Product Management
- Development
- Software Quality Management
- Technology Member Services
- Market Operations
- Business Development
- Legal

## Revision History

The following table provides document revision history.

| Version | Date | Change | Author(s) |
|---|---|---|---|
| 0.1 | 3/21/14 | First Draft<br>This document is supplemental to" PrecISE Risk Limits for Customer and Firm" located in J:\Product Management\PrecISE\Business Requirements\Risk Management | L. Loughney, M. Marinich, R. Phadnavis, A. Feldman |
| 0.5 | 10/15/2014 | Several changes to the document based on internal development meetings and meetings with business over the past many months. | L. Loughney, M. Marinich, R. Phadnavis, A. Feldman |
| 1.0 | 10/21/2014 | Several changes to the document based upon feedback from PMG in meeting 10/21.<br>Typos corrected in 2.4.6.1, 2.4.6.2 | L. Loughney, M. Marinich, R. Phadnavis, A. Feldman |
| 1.1 | 11/07/2014 | Samples for Running Totals added in Appendix.<br>Added Reference Price, lifecycle events and order records – subject to running totals<br>Incorporated comments from PMG and Biz Dev.<br>Updated formulas for Running Totals, added PTA<br>Reorganized risk perspective and risk maintenance requirements<br>Added Risk Setting Migration requirements | R. Phadnavis, M.Marinich, L. Loughney, A. Feldman |
| 1.2 | 11/19/2014<br>11/21/2014<br>11/28/2014<br>12/03/2014 | Samples for Intraday Running Totals added in Appendix: 6.2<br>Sample errors corrected<br>Reference to Risk Check Matrix corrected to 2.5.14<br>Explanation of trade bust ER and negative quantity 2.5.6.1 Daily Order Quantity | L. Loughney, M. Marinich, R. Phadnavis, A. Feldman |
| 1.3 | 12/09/2014 | Added Firm User Report with enhancements for Risk management from Steve Wang | L. Loughney, M. Marinich, R. Phadnavis, A. Feldman, S. Wang |
| 1.4 | 12/22/2014 | Made changes to Risk checks and running total calculation sections | R. Phadnavis, M. Marinich |
| 1.5 | 1/5/2015 | Changes to running total calculation section. PTA Reversing/Overtaking use the same formulas as Trade Bust. | R. Phadnavis |
| 1.6 | 1/6/2015 | When an order alteration is performed, the order's Open Qty is the value that is to be used when validating against the Max Order Quantity risk parameter. See 2.7 Alteration Rules | L. Loughney, M. Marinich, R. Phadnavis, A. Feldman |
| 1.7 | 2/13/2015 | Changes to running total calculation section. | R. Phadnavis, M. Marinich |
| 1.8 | 3/2/15 | Added user risk instance requirements. | M. Marinich, R. Phadnavis |
| 1.9 | 3/9/2015<br>3/27/2015 | • Added updates to FE Gui (3. Risk Management GUI)<br>• Further definition of "OK" button on FE<br>• Explicitly clarified that FE will not send alert for Threshold changes by | L. Loughney |

| | | | |
|---|---|---|---|
| | | Risk Admin (5.1.1 Update BU Threshold)<br>• Removed word “profile”from document to eliminate confusion about what the word defines<br>• Changes to 5.1.2 Update Email Lists | |

# Reviewers and Approvers

## Reviewers

This document was reviewed by:

| Name | Group | Date |
|---|---|---|
| Geralyn Endo | Business Development | |
| Tommy Martin | Business Development | |
| Jamlen Frondoso | PMG | |
| Binita Adhikari | BAT | |
| Bo Dai | BAT | |

## Approvers

This document was approved by:

| Name | Group | Date |
|---|---|---|
| Geralyn Endo | Business Development | |
| Jamlen Frondoso | PMG | |
| Mike Marinich | Development | |

## Key Definitions, Acronyms, and Abbreviations

| Abbreviation/Term | Description |
|---|---|
| **General Terms** | |
| BU | Business Unit or Desk. An autonomous unit of order execution or trade correction within a member firm. All same desk users can view and modify desk orders and trades.<br>This document may use BU and desk interchangeably.<br>Internal BU (ISE Member) ISE 6-character business unit identified in Reference Data (for example: ABC01E)<br>External BU (non-member) – this BU is not identified in Reference Data and is recognized only in the PrecISE application (for example, a desk connected via FIX to PrecISE. Multiple external desks may be connected to PrecISE via one desk). |
| CC | Client Category helps to classify the party on whose behalf the order is submitted for clearing and billing purposes. Client categories supported by ISE and PrecISE Trade include but not limited to Customer, Proprietary Firm, Broker-Dealer. |
| CCC | Custom Client Category extends Client category to allow PrecISE user to associate orders and trades with the clients on whose behalf those were entered. CCC derives from a client category and associates with a set of attributes used at the time of order entry and PTA. |
| CRUD | Create, Read, Update, Delete permissions |
| D/A | Done Away functionality allows PrecISE Trade users to record and manage orders and trades |

| | |
|---|---|
| Done Away | typically done on a different execution venue. |
| PTA | Post Trade Allocation, a process of updating trade data by adjusting traded quantity and price, busting trades and deal items (ISE MOPS only), splitting deal items and adjusting their clearing attributes. |
| ER | Execution Report, a message used by PrecISE Trade to communicate order status update. |
| Execution type or ExecTyp | Part of the execution report, refers to the purpose of this instance of the execution report. Examples include: order status, trade, cancel, replace, trade busts. |
| **Risk Terminology** | |
| Notional Value or NV | Calculated value of financial assets used to measure risk associated with these assets. Within PrecISE Trade, notional value is calculated for financial transactions such as an orders as well as for entire daily activity. |
| Order Notional Value or ONV | ONV is a calculated dollar amount per order that helps measure risk associated with the order. Used as a risk setting with a limit by PrecISE Trade. |
| Order Quantity or OQ | OQ is the order quantity is used to validate risk exposure of an order in terms of number of contracts. Used as a risk setting with a limit by PrecISE Trade. |
| Day Notional Value or DNV | Aggregate notional value per day. Used as a risk setting with a limit by PrecISE Trade. |
| Day Order Quantity or DOQ | Aggregate quantity or all orders per day. Used as a risk setting with a limit by PrecISE Trade. |
| Daily Threshold Percentage | A risk setting that holds threshold percentage for the daily risk limits. Used to generate warnings when DOQ or DNV value is reaching its limit. One threshold percentage will be set at the BU level. |
| Restricted Symbols | A risk setting that contains a list of symbols disallowed for use. |
| Locate Code Requirement | A risk setting that enforces use of Locate Code for applicable orders. |
| Reject Order for Symbol not in regular state | A risk setting that forces PrecISE Trade to reject orders for instruments which are not in regular state. |
| Risk Parameters | A collection of Risk Settings. The DNV, DOQ, ONV and OQ will be prepended with the word Maximum to signify it's the limit for the associated risk setting.<br>• Maximum Order Quantity<br>• Maximum Day Order Quantity<br>• Maximum Order Notional Value<br>• Maximum Day Notional Value<br>• Restricted Symbols<br>• Locale Code Required<br>• Reject Order for Symbol not in regular state |
| Risk Perspective | Risk perspective reflects risk levels and associates risk parameters with business parties, such as PrecISE users, desks and PrecISE desk clients.<br>Three perspectives are included in the new PrecISE Risk Management implementation:<br>• User Risk Perspective<br>• BU Risk Perspective<br>• Client Risk Perspective (also CCC Perspective) |
| RUD | (R) Read, (U) Update, (D) Delete permissions |
| User Risk Perspective | User risk perspective defines risk controls for the PrecISE user level. This perspective will include all standard risk parameters and the PrecISE user login name as the distinctive |

| | |
|---|---|
| | criteria. Current implementation already supports the user level risk perspective. In the new implementation, it will be extended with additional risk parameters. |
| BU Risk Perspective | BU risk perspective defines risk controls at the PrecISE entire business unit level. This perspective will include all standard risk parameters as well and the BU name as the distinctive criteria. |
| Client Risk Perspective | Client risk perspective defines risk controls for the PrecISE BU client level. This perspective will include all standard risk parameters as well and the CCC name as the distinctive criteria.<br>With this perspective, PrecISE users will be able to enforce risk controls for each one of their BU clients separately. |
| Risk Instance | Risk instance is an instance of a risk perspective with a collection of risk parameter values associated with a user name, a CCC name or a BU name. |
| Risk Running Totals/ Running Totals (RT) | Accumulated measure of order activity for the following: DOQ, DNV. |
| LCV | Last contributed value of an order to Risk Instance's running total. |
| NCV | New contributed value of an order to Risk Instance's running total. |
| Kill Switch | A function within PrecISE that allows an authorized PrecISE front-end user to deactivate gateway users for his configured list of BUs. |
| **PrecISE Trade users and their roles** | |
| Role | For the purposes of this document, a role defines the way an actor is authorized to engage with PrecISE. The role consists of one or several entitlements. An entitlement defines the targeted scope, for example, Orders/Trades or Risk ~~Profile~~ Instances. Scope is further refined to: Users, Business Units and Clients. Permitted Actions are defined as Create, Read, Update and Delete. Within the scope of risk implementation, a single entitlement will be defined to cover these actions. |
| Regular PrecISE user | A precise user who does not have any special risk admin or master user privileges. |
| MU (Master User) | A PrecISE Trade user with special privilege to view, modify and cancel orders and update trades for other desk users. |
| | |
| Risk Admin | Risk Administrator has authorization to edit the following perspectives for his/her own desk.<br>• User Risk<br>• BU Risk<br>• Client Risk |
| **Order Properties Used in Risk Calculations** | |
| Reference Price or RefPx | The reference price refers to the price used for the open portion of the orders for notional value risk calculations. |
| Order Quantity or OrdQty | Order quantity |
| Deleted Quantity or DelQty | Part of order status, represents quantity that has been deleted on the order and no longer open for trading |
| Open Quantity or OpenQty | Part of order status, represents part of order quantity that is still open for trading. |
| Traded Quantity or TrdQty | Part of order status, represents part of order quantity that has been already traded. |
| Not Sent Quantity or NotSentQty | Part of Parent or Routed order status, represents part of order quantity, available to create child orders against. |

| | |
|---|---|
| Last Quantity or LastQty | Part of the order status, represents the quantity this last change (execution type) applies to. While it is usually positive for most execution types. it is negative for a trade bust. |
| **Risk Views** | |
| Risk Management window | Currently PrecISE Trade includes a risk management window to display risk parameters for PrecISE users. In the new implementation, it will be extended to include BU and client perspectives. |
| Risk Matrix | In the Risk Management window, the grid of columns displaying the Risk Instances. |

# Table of Contents

# Table of Figures

# Chapter 1 Introduction

This chapter provides an introduction to the PrecISE Risk Management BRD by setting up the business case, revealing the current limitations, summarizing functionality that will remain unchanged, and outlining the summary of enhancements.

## 1.1 Business Case

The SEC has published Rule 15c3-5, also known as the " Market Access Rule", for Broker/ Dealers with market access. This rule states "controls and procedures must be reasonable, designed to prevent the entry of orders that exceed appropriate pre-set credit or capital thresholds in the aggregate for each customer and the broker-dealer".

PrecISE is a trading application that provides direct order entry to the Options markets, so its users are directly affected by this rule. Several members have stopped using PrecISE because the front-end's current risk limits only apply to the individual PrecISE trader. At present, risk is not controlled for either the customer or the trading desk as a whole, which causes members to be in violation of compliance rules.

ISE plans to introduce risk limits on the customer and desk (BU) levels to accomplish the following:

- Encourage current users to increase their usage of PrecISE to enter orders.
- Enable PrecISE users to remain compliant with SEC rules.
- Potentially attract new users as a result of these enhancements.

## 1.2 Summary of Current Limitations

The current implementation has several limitations that are addressed in this document.

- New SEC rules highlight a gap in risk management for PrecISE at the trading desk and client levels. Currently PrecISE Trade supports risk for user level only.
- No systematic way currently exists to warn PrecISE users, Risk Admins, or Market Ops before risk limits are reached.
- ISE Market Ops requires a more integrated role in risk management than currently exists.

## 1.3 What Stays Unchanged

The following functionality is expected to remain unchanged:

- Kill switch

## 1.4 Enhancement Summary

The following is being introduced to address the existing implementation limitations:

- Provide desk (BU) and client level risk management, in addition to user-level risk
- Support risk-limit thresholds.
- Support alerts to PrecISE Trade users, risk admins and ISE MOPS when risk limits are reaching their thresholds, as well when risk limits are reached or exceeded.
- Support alerts to interested parties (user, administrator, ISE MOPs) when risk limits are altered on the user, desk (BU), and client (CCC) levels
- Support a unified way to manage risk settings.
- Enhance the risk management GUI to support all levels of risk: user, desk (BU) and client.

# Chapter 2 Common Requirements

This chapter provides common business rules for the enhanced risk control implementation. These rules will be further detailed in the Use Case section.
This section will be divided into the following functional areas:

- In-Scope Deliverables
- Enhancements to Administrative Roles
- Risk perspectives and risk instance management
- Risk evaluation, calculation, and Running Totals
    - Order Entry
    - Order Alteration
    - Order Deletion
    - Trades
    - PTA
- Alerts and warnings

## 2.1 In-Scope Deliverables

The following risk perspectives are in scope for this implementation:

1. User perspective.
2. BU perspective
3. Client perspective.

PrecISE Trade must provide the following functionality:

- Enforce maximum risk settings when PrecISE Trade user performs applicable activity.
- Calculate running totals reflecting order activity for a User, BU, and Custom Client Category perspectives.
- Provide interface to manage and persist risk instance data to BU Risk Admins and ISE MOPS.
- Allow ISE MOPS maintain risk settings for every BU.
- Broadcast risk alerts and warnings to risk Admins and ISE MOPs.

PrecISE must also provide High Availability and fault tolerance for the new risk implementation as follows:

- Automatically resume risk processing after a failover of the process that executes risk processing.
- It is permissible that the running totals may not be recovered exactly to the same values those had at the time of the failure as the recovery process is envisioned to employ same process of running totals calculation as executed every morning.
- Support global switch to support ability to turn risk processing off, no restart required. To turn risk processing back on, the global risk processing switch will need to be turned on and the process hosting risk processing will have to be restarted.

## 2.2 Administrative Roles

- The Master User (MU) role remains the same.
- The Risk Administrator (RA) can manage risk for the user, client and BU perspectives. No separate entitlements are required per perspective.
- ISE MOPS Risk Admin role will be added to allow ISE MOPS to maintain risk for any PrecISE BU. This role is not related to the Risk Admin role. MOPs will have CRUD rights to all risk instances for every BU.

The table below displays the entitlements that now comprise each role listed in the left-hand column (CRUD stands for Create, Read, Update and Delete).

| | Role | Orders/Trades | | | Risk Perspectives | |
|---|---|---|---|---|---|---|
| | | Users' Own | Other Users, Same BU | Other BUs | Risk Instances (Own BU), threshold and email addresses | All Risk Instances(Other BUs), threshold and email addresses |
| 1. | PrecISE User | CRUD | RUD | N/A | R for BU and CCC, can only see his own user risk limits. | No access |
| 2. | Master User (MU) | N/A | | RUD | Not Applicable since MU role does not apply to own BU. | R |
| 3. | Risk Admin (RA) | N/A | | | CRUD | CRUD if also a MU of the other BU. |
| 4 | ISE MOPS Risk Admin | N/A | | | CRUD for all PrecISE BUs | |

**Figure 1 Administrative Roles Matrix**

## 2.3 Risk Perspective Requirements

The section outlines common rules that govern risk perspectives, risk instances, and thresholds.

### *2.3.1 High Level Requirements*

PrecISE Trade must provide the following functionality:

1. Support one risk instance for a BU perspective for each Business unit configured in PrecISE.
2. Support one risk instance per PrecISE user.
3. Support one instance per a CCC within a BU.
4. Provide interface to manage and persist risk instance data.
5. Enforce maximum risk settings when user performs applicable activity.
6. Calculate running totals and check those against the threshold.
7. Broadcast alerts and warnings.

### *2.3.2 Risk Instances: General Rules*

These rules apply to all risk instances:

1. Risk instances can be created at any time, and become effective as soon as it's initialized. The process of initializing a risk instance will include calculation of its running totals based on the available orders and trade records.
2. For a risk instance created intraday, PrecISE will calculate running totals from the beginning of the day.
3. When a risk instance is created, all risk settings are optional. However, at least one must be specified to be able to create the instance.
4. Changes to a risk instance (including deletion) become effective immediately. Deleted instances are excluded from risk validation.
5. Automatically resume risk calculations in case of failure and recover risk instance state from persistent storage.

6. Risk instances are independent. No validation is performed comparing values from one risk instance to another. NO rollup of user risk parameters to the BU level is performed. No rollup of CCC risk parameters to the BU level is performed.

### *2.3.3 CCC Risk Instances*

1. A CCC risk instance is associated with the CCC itself, not with CCC name.
2. A CCC Name change does not affect risk calculation for the instance associated with the CCC.
3. Only one risk instance can be created for a CCC within a BU.
4. If a CCC is deleted, the associated risk instance calculation will stop, and the risk instance will get deactivated.
5. Removing a user copy does not affect Risk processing.
6. When another CCC is created with a name of a previously deleted CCC, a new risk instance must be associated with it in order to start enforcing risk settings for that client.

### *2.3.4 User Risk Instances*

1. A user risk instance, per BU, is associated with the user login name in the RSA.
2. Only one such active risk instance is allowed per user.
3. If user login name is renamed in the RSA, a new user risk instance must be created.
4. If user is inactivated in RSA, the associated user risk instance will have to be explicitly deleted.
5. In the event that the user's BU is changed, no user risk settings are carried over and a new risk instance must be created.

### *2.3.5 Thresholds*

One threshold value applies for the entire desk. All risk instances within the desk use the desk threshold.

## 2.4 Risk Setting Maintenance

This section concentrates requirements for maintaining and viewing Risk settings. Other sections will further refine these requirements.

### *2.4.1 BU Risk Admin Requirements*

This section outlines requirements for BU Risk admins. The following will apply:

1. BU Risk Admin must be able to maintain risk settings as outlined in this section.
2. PrecISE Trade front-end must provide BU Risk Admin with a GUI to maintain risk settings. No UI outside of PrecISE Trade front-end will be provided.
3. BU Risk Admin must receive risk validation and threshold alerts via email. Dedicated email group must be maintained for this purpose at the BU level.

### *2.4.2 ISE MOPS requirements*

This section outlines requirements for ISE MOPS. The following will apply:

1. ISE MOPs must be able to maintain risk settings for every BU.
2. PrecISE Trade front-end must provide ISE MOPS with a GUI to maintain risk settings for PrecISE BUs. No Risk Management UI outside of PrecISE Trade front-end will be provided. RSA Admin GUI will no longer be used to maintain risk settings.
3. ISE MOPs must receive email notifications of risk validation and threshold alerts. Dedicated ISE MOPS email group must be maintained for this purpose.

4. There is no separate threshold value for ISE MOPS.

### *2.4.3 Viewing Risk Settings*

These rules apply to viewing Risk settings and running totals for regular users and master users:

1. Every user will have View Access to all risk instances and their running totals within the same BU.
2. Each Running Total will be displayed in two modes:
    a. As an absolute value.
    b. As the percentage-completed of the maximum limit for the instance.
3. Master users can view all risk settings and running totals for all BUs he/she manages.
4. No automatic refresh is required for this view.

### *2.4.4 Risk Settings Migration*

This section outlines requirements for migrating existing RSA-based Risk settings to a new risk instance layout. The following rules apply:

1. PrecISE Trade must provide a way to migrate user risk settings currently stored in the RSA database to the new layout as user risk instance settings. The migration process must not remove RSA settings, so a smooth fall back to existing risk implementation is supported.
2. There is no requirement to migrate RSA user risk settings per BU. The migration will be done at one shot for all PrecISE BUs.
3. There is no requirement to update user risk settings in the RSA once the BU Risk Admins or ISE MOPS begin using new interface to maintain risk instances.

## 2.5 Risk Evaluation and Running Totals

The section outlines common rules for risk control implementation. This includes identifying the user and system activity that affects risk calculation and how the risk validation is performed. The exact numeric calculation for each type or order (Single vs. combo and alike) is defined in a different BRD (PMG: PrecISE Risk Management Settings v1.7) and outside the scope of this document. This section will also outline rules for PrecISE proprietary routing types such as parent, child, and done-away.

### *2.5.1 Reference Price*

The following rules apply to Reference Price usage and adjustments:

1. For a limit order (not spread):
    a. The reference price is the limit price on the order.
    b. When limit price is altered, order reference price will become the new order price.
    c. When a limit order changes to market order, last used reference price will be used as reference price.
2. For single-leg market orders or for individual legs of spread orders
    a. It is the snapshot of the current market price of the instrument.
    b. If a market price is not available, a configured price will be used as reference price.
    c. When the market price becomes available, the reference price is changed to the snapshot of the market price and daily notional value is recalculated.
    d. When a market order (non-spread) changes to limit order, the new limit price will be used as reference price.
3. Reference Price will be configured as follows:
    a. System default reference Price will be set up in the PrecISE configuration.
    b. Reference Price may be set at the BU level to specify a BU specific reference Price.

### *2.5.2 Running Totals*

Running totals (RT) display the accumulated measure of order activity for DOQ and DNV. They are also referred to as Cumulative Running Totals (CRT).
The following rules apply to running totals:

1. Calculation starts when PrecISE Trade starts in the morning.
2. Totals get calculated irrespective of order side.
3. During order lifecycle running totals may adjust without user interaction, users need to recognize the fact that their running totals are more or less limiting, based on the above.
4. Execution Reports are used to calculate the DOQ and DNV running totals and the execution type field dictates how it accounts towards the running totals.
5. For Child, Exchange and DoneAway orders, trades result in a recalculation of the DNV running totals, if the trade price is different from the reference price.
6. It is not required to mitigate any race conditions between risk evaluation and timing of running total adjustments. The running total adjustments resulting from users' prior activities may not be performed in time for current risk evaluation.
7. When a child is routed within the same BU, Parent and Routed trees will be counted separately.

### *2.5.3 User Transactions Subject to Risk Evaluation*

- Order Creation
- Order Alter
- PTA

### *2.5.4 Order Ownership and Running Totals*

The user who originally enters the order is considered to be the order owner for the lifetime of the order. It is always the order owner's CRTs that are adjusted and used for risk evaluation when alterations against the order take place. This rule is true regardless of who alters the order. See 2.4.9 Exchange and Done Away Orders and Trades.
If an order is routed, however, the user who accepts a routed order then becomes the owner for that order. (See 2.4.10.2. Child Orders).

### *2.5.5 Calculation of Running Totals at Startup*

These order and trade records contribute to calculation of running totals at start-up/restart time:

- Latest order status records.
- 'Active and Non-Reversing' trade records.

#### 2.5.5.1 Daily Order Quantity for Orders

The following table displays how DOQ RT would be calculated for each perspective depending upon the order routing type.

| Routing Order types | BU | User | Client |
|---|---|---|---|
| Parent/Routed | NotSentQty | OrdQty-DelQty | NotSentQty |
| Child (C/DA/X) | OrdQty-DelQty | If user not same as P/R or if it's a counter order: OrdQty-DelQty | OpenQty |

| | | | |
|---|---|---|---|
| Standalone (X/DA) | OpenQty | OpenQty | OpenQty |

#### 2.5.5.2 Daily Order Quantity for Trades

The following table displays whether the DOQ running total is affected by trades against each routing order type (for each perspective), and if so, the value that would be applied.

| Trades belonging to Order types | BU | User | Client |
|---|---|---|---|
| Parent/Routed | Not Applicable | Not Applicable | Not Applicable |
| Child (C/DA/X) | Not Applicable | Not Applicable | TradeQty |
| Standalone (X/DA) | TradeQty | TradeQty | TradeQty |

#### 2.5.5.3 Daily Notional Value for Orders

The following table displays how RT for DNV is calculated for each perspective with the attributes of each order. See Reference Price. Please note 'C' denotes the contract size in this tables.

| Routing Order types | BU | User | Client |
|---|---|---|---|
| Parent/Routed | NotSentQty*RefPx*C | (OrdQty-DelQty)*RefPx*C | NotSentQty*RefPx*C |
| Child (C/DA/X) | (OrdQty-DelQty)*RefPx*C | If user not same as P/R or if it's a counter order: (OrdQty-DelQty)*RefPx*C | OpenQty*RefPx*C |
| Standalone (X/DA) | OpenQty*RefPx*C | OpenQty*RefPx*C | OpenQty*RefPx*C |

#### 2.5.5.4 Daily Notional Value for Trades

The following table displays whether the DNV running total is affected by trades against each routing order type (for each perspective), and if so, how it would be calculated. See Reference Price. Please note 'C' denotes the contract size in this tables.

| Trades belonging to Order types | BU | User | Client |
|---|---|---|---|
| Parent/Routed | Not Applicable | Not Applicable | Not Applicable |
| Child (C/DA/X) | Not Applicable | Not Applicable | TradeQty*TradePx*C |
| Standalone (X/DA) | TradeQty*TradePx*C | TradeQty*TradePx*C | TradeQty*TradePx*C |

### *2.5.6 Calculation of Running Totals after Startup*

The following order lifecycle events contribute to calculation of running totals after startup:

- Order creation
- Order Alter
- Order Cancel
- New Trade
- PTA
- Trade Bust

**Calculation of incremental changes to running totals**

An order status update contributes a value towards the risk instance's running total. The last contributed value (LCV) refers to the amount this order contributed as of the last update on the status of this order. The new contributed value (NCV) refers to the new amount this order will contribute as a result of the new order status update.

Upon receiving a new order status update (by way of an execution report); the LCV will be deducted from the instance-wide running total and the NCV will be added to it. After adjusting the running totals, the new order status update is accounted for and the NCV becomes the LCV in preparation for the next update.

**Multileg Orders**

For multi-leg orders, the same formulas apply – except that they are aggregated over all applicable legs (with the exception of stock legs).

**Formulas**

LCV: Last contributed value of an order to risk instance's running total.

NCV: New contributed value of an order to risk instance's running total.

LastER: Last status execution report.

NewER: New execution report.

RefPx: See Reference Price.

Upon getting a newER (for every risk instance),

1. Calculate the NCV from the tables below.
2. Instance.RT += -LCV + NCV.
3. LCV ← NCV.

### 2.5.6.1 NCV for Daily Order Quantity

For a Trade Bust, the last quantity on the execution report is a negative number.

| Perspective | Execution Types | | | | |
|---|---|---|---|---|---|
| | **Order On Book** | **Order Cancel** | **Order Replace** | **Trade** | **Trade Bust/PTA Reverse/Overtake** |
| **Parent/Routed orders** | | | | | |
| BU | LCV + newER.NotSentQty | LCV – lastER.NotSentQty | LCV + (newER.OrdQty – lastER.OrdQty) | None | None |
| User | | | | | |
| CCC | | | NCV (old CCC) = LCV – lastER.NotSentQty<br>NCV (new CCC) = LCV + newER.NotSentQty | | |
| **Standalone X/DA orders** | | | | | |
| BU | LCV + newER.OpenQty | LCV – lastER.OpenQty + newER.OpenQty | LCV + (newER.OrdQty – lastER.OrdQty) | None | LCV + newER.LastQty |
| User | | | | | |
| CCC | | | NCV (old CCC) = LCV – lastER.OpenQty<br>NCV (new CCC) = LCV + newER.OpenQty | For DA<br>NCV (old CCC) = LCV – newER.LastQty<br>NCV (new CCC) = LCV + newER.LastQty | |
| **Child (C/DA/X) orders** | | | | | |
| BU – only if it's a counter order. | LCV + newER.OpenQty | LCV – lastER.OpenQty + newER.OpenQty | LCV + (newER.OrdQty – lastER.OrdQty) | None | LCV + newER.LastQty |
| User – only if user is not the same as P/R or it's a counter order | | | | | |
| CCC | | | NCV (old CCC) = LCV – lastER.OpenQty<br>NCV (new CCC) = LCV + newER.OpenQty | For DA<br>NCV (old CCC) = LCV – newER.LastQty<br>NCV (new CCC) = LCV + newER.LastQty | |

### 2.5.6.2 NCV for Daily Notional Value

Please note 'C' denotes the contract size in these tables.

| Perspective | Execution Types | | | | |
|---|---|---|---|---|---|
| | **Whole Order On Book** | **Order Cancel** | **Order Replace** | **Trade** | **Trade Bust/PTA Reverse/Overtake** |
| **Parent/Routed orders** | | | | | |
| BU<br>User<br>CCC | LCV + (newER.NotSentQty * RefPx*C) | LCV – (lastER.NotSentQty * RefPx*C) | if RefPx has changed (single-leg)<br>LCV + (newER.NotSentQty * newRefPx*C) – (lastER. NotSentQty * oldRefPx*C)<br>else<br>LCV + (newER.OrdQty – lastER.OrdQty) * RefPx*C<br>NCV (old CCC) = LCV – (lastER. NotSentQty * oldRefPx*C)<br>NCV (new CCC) = LCV + (newER. NotSentQty * newRefPx*C) | None | None |
| **Standalone X/DA orders** | | | | | |
| BU<br>User<br>CCC | LCV + (newER.OpenQty * RefPx*C) | LCV + (newER.OpenQty – lastER.OpenQty) * RefPx*C | if RefPx has changed (single-leg)<br>LCV + (newER.OpenQty * newRefPx*C) – (lastER.OpenQty * oldRefPx*C)<br>else<br>LCV + (newER.OrdQty – lastER.OrdQty) * RefPx*C<br>if lastER.CCC ≠ newER.CCC<br>1. NCV (old CCC) = LCV – (lastER.OpenQty * oldRefPx*C)<br>2. NCV (new CCC) = LCV + (newER.OpenQty * newRefPx*C)<br>else<br>same as BU/User above. | LCV + (newER.LastQty * LastPx*C) – (newER.LastQty * RefPx*C)<br>if order.CCC ≠ newER.CCC (for DA)<br>1. NCV (old CCC) = LCV – (newER.LastQty * RefPx*C)<br>2. NCV (new CCC) = LCV + (newER.LastQty * LastPx*C)<br>else<br>same as BU/User above. | LCV + (newER.LastQty * LastPx*C) |
| **Child (C/DA/X) orders** | | | | | |
| BU – only if it's a counter order. | LCV + (newER.OpenQ | LCV + (newER.OpenQty – | if RefPx has changed (single-leg)<br>LCV + (newER.OpenQty * newRefPx*C) – | LCV + (newER.LastQty * LastPx*C) – (newER.LastQty * RefPx*C) | LCV + (newER.LastQty * LastPx*C) |

| **Perspective** | **Execution Types** | | | | |
|---|---|---|---|---|---|
| | **Whole Order On Book** | **Order Cancel** | **Order Replace** | **Trade** | **Trade Bust/PTA Reverse/Overtake** |
| User – only if user is not the same as P/R or it's a counter order | ty * RefPx*C) | lastER.OpenQty) * RefPx*C | (lastER.OpenQty * oldRefPx*C)<br>else<br>LCV + (newER.OrdQty – lastER.OrdQty) * RefPx*C | | |
| CCC – only if the CCC not same as P/R or it's a counter order. | | | if lastER.CCC ≠ newER.CCC<br>1. NCV (old CCC) = LCV – (lastER.OpenQty * oldRefPx*C)<br>2. NCV (new CCC) = LCV + (newER.OpenQty * newRefPx*C)<br>else<br>same as BU/User above. | if order.CCC ≠ newER.CCC (for DA)<br>3. NCV (old CCC) = LCV – (newER.LastQty * RefPx*C)<br>4. NCV (new CCC) = LCV + (newER.LastQty * LastPx*C)<br>else<br>same as BU/User above. | |

#### 2.5.6.3 DoneAway PTA with trade quantity increase

While doing Post Trade Allocation for DoneAway trades, the user is allowed to increase the quantity of the trade. All the risk perspectives need to be adjusted to reduce the DOQ and DNV RTs; based on increase in the quantity.

For example, if the order qty was 10, the BU RT would be 10. Now, the user enters a trade for 3. The BU RT continues to be 10. Now, the user PTAs the trade and also increases the trade qty to 5. That leads to following sequence:

1. The reversal adjusts the BU RT down to 7 (10-3).
2. The overtake adjusts the BU RT up to 12 (7+5).

The following table is used to adjust DOQ and DNV RTs upon a DA PTA that increases the trade qty:

| **Perspective** | **DoneAway Overtake PTA with trade quantity increase** | |
|---|---|---|
| | **DOQ RT** | **DNV RT** |
| **Standalone DA orders.** | | |
| BU | if OpenQty has decreased LCV - (lastER.OpenQty – newER.OpenQty) | if OpenQty has decreased LCV – ((lastER.OpenQty – newER.OpenQty) * RefPx) |
| User | | |
| CCC | | |
| **Child DA orders.** | | |
| BU – only if it's a counter order. | if OpenQty has decreased LCV - (lastER.OpenQty – newER.OpenQty) | if OpenQty has decreased LCV – ((lastER.OpenQty – newER.OpenQty) * RefPx) |
| User – only if user is not the same as P/R or it's a counter order | | |
| CCC – only if the CCC not same as P/R or it's a counter order. | | |

### *2.5.7 Order of Risk Validation*

The following rules will apply to order of validation:

1. A user transaction is evaluated against every specified risk parameter in all risk instances this message qualifies for.
2. There is no requirement regarding the order in which the risk instances will be evaluated.
3. User transaction evaluation will not stop if risk evaluation fails against one or several instances.
4. When a user transaction fails risk validation against one or several instances - every validation failure is collected and communicated back to the user via one summary of failures.
5. In case the risk validation has failed, user transaction will be rejected. The reject message will include risk parameters that failed validation.
6. In case instrument status is not available at the time of user transaction risk check, the risk setting to prevent the transaction when instrument is not in regular state will be omitted.

### *2.5.8 Risk Validation record book keeping*

The following rules will apply to risk validation record book keeping:

1. When validating a user transaction for risk, PrecISE will record every risk validation decision, pass or fail in the audit trail database.
2. The logged decision data will contains risk instance limits and calculated order risk to support evidence how PrecISE came up with the risk decision.

### *2.5.9 Third Party Orders*

Execution reports related to a third-party order will not count toward the risk running totals for any risk instance.

### *2.5.10 Exchange and Done Away Orders and Trades*

- Exchange/Done Away orders and trades follow same rules for Risk Processing specified in sections above.
- For reserve and MEQ orders, entire order quantity is subject to Risk processing.
- Should an exchange order be altered by another user in the same desk, the totals for the owner (entering user) are adjusted. Risk checks in such a case are also done against the owner (entering user).

#### 2.5.10.1 Inactive Orders

- Risk evaluations are NOT performed for orders that are entered as inactive or that are altered while Inactive.
- Activation of an Inactive order triggers the submission of a new exchange order and therefore the rules for a new exchange order will apply.
- Inactivation of a live exchange order triggers cancellation of an exchange order and therefore rules for an exchange order cancellation will apply.

### *2.5.11 Staging Orders*

#### 2.5.11.1 Parent and Routed Orders and Trades

- Parent orders and Routed orders are subject to risk processing. (See 2.5.14 Risk Check Matrix)
- Trades attached to Parent/Routed orders are subject to risk processing. (See 2.5.14 Risk Check Matrix)

#### 2.5.11.2 Child Orders

1. Orders submitted as Child from a Parent order are **NOT** subject to risk processing unless the user or CCC on the order is different from the parent.
2. A user that accepts a routed order becomes the owner user for that order.
3. A Child order is subject to risk processing upon acceptance at the destination BU.
4. When a child order is routed within the same BU, Parent and Routed trees will be counted separately.
5. Trades that belong to child orders are subject to risk processing.

### *2.5.12 Time Validity for an Order*

Risk evaluations are performed for orders with all validities.

### *2.5.13 CCC Events and Risk Validations*

1. **Editing the name of the CCC** does NOT affect any risk validations or running totals associated with the risk instance for that CCC.

2. **If a CCC is deleted**, the risk instance associated with that CCC is deleted as well and therefore, no risk check is done for that CCC.
3. **If a new CCC is created with a name of a deleted CCC**, risk instances associated with the deleted CCC will **NOT** be reinstated. A risk admin will need to create a **NEW** risk instances for the newly created CCC.

### *2.5.14 Risk Check Matrix*

The following table describes at what points risk is checked based on the user-initiated message and order type.

| Order Types / User initiated messages | Standalone Exchange or Done Away | Parent | Routed | Child, Exchange or DoneAway (under a Routed or Parent order) |
|---|---|---|---|---|
| Order Entry | Check | Check | Check | Check - only if user or CCC is different from parent |
| Alter | Check | Check | Check | Check - only if user or CCC is different from parent |
| Cancel Request | No action | No action | No action | No action |
| PTA (only for CCC) Request | Check | No action | No action | Non-child orders: check (only for CCC). |
| Trade Entry (DoneAway) | Check (only for CCC). | N.A | N.A | DoneAway orders only: check (only for CCC). |

## 2.6 Alerts and Warnings

This section outlines common rules for risk related alerts and warnings.
PrecISE Trade will generate email alerts in the following cases:

1. **Accepted change to a risk instance** (addition, change or deletion) made by PrecISE Risk Admins to risk instances of any risk perspective.
2. **Accepted change to a risk instance** (addition, change or deletion) made by ISE MOPS to risk instances of any risk perspective.
3. Deletion of a CCC risk instance caused by the deletion of the associated CCC.
4. **Violation of a risk instance limits**.
5. Where there are multiple violations for a transaction, every validation failure details will be aggregated in one notification.
6. Running total alerts:
    i. **Daily Maximum Threshold reached or exceeded**. Alerts will continue once threshold is reached and exceeded. Threshold alerts will not be issued once a daily limit is reached or exceeded.
    ii. **Daily Maximum limit reached or exceeded**. Alerts will continue once limit is reached and exceeded.
7. MOPS will be copied on ALL alert emails from PrecISE.

PrecISE user who initiates a transaction that is subject to risk checks will receive a rejection message in case the transaction violates risk settings. The rejection message will include the following details: name and type of risk instance, risk parameters and their limits that have been violated.

### *2.6.1 Alert Email Destinations*

PrecISE will support a single list of email addresses per BU for all risk notifications. The risk administrators would be provided with the user interface to manage the same. Other user will not be able to see the email list.
PrecISE will support a single list of email addresses for MOPS users to get email notifications. Only ISE support personnel will be able to modify this list.

### *2.6.2 Alert types*

Alerts are classified into the following types based on the action that leads to the generation of the alert:

| No. | Alert type | Action leading to alert | Types of notification |
|---|---|---|---|
| 1 | Risk instance changed alert | Changes to risk instance | Email only. |
| 2 | Running total alert | Calculation of Running totals | Email only. |
| 3 | Violation alert | User Transactions | Email and reject popups. |

### *2.6.3 Alert Text*

The messages displayed to the user are covered in this section. Where there has been more than one violation, all messages for the violation must be aggregated. The notification text should be used for both emails and reject popups as laid out in Section 2.4.2.

| Action | Alert text | Example |
|---|---|---|
| **Risk instance changed** | | |
| Risk instance modified | The risk parameters for <perspective type (desk/user/client)> <risk instance name> were modified by <the risk administrator/ISE>. | The risk parameters for user johndoe were modified by the risk administrator. |
| **Running Total alert** | | |
| Threshold met/exceeded | The <DOQ/DNV> threshold of {<value> <unit>} for <perspective type (desk/user/client)> <risk instance name> was reached. {(<limit> - <value>) <unit>} remain. | The daily order quantity threshold of 35000 contracts for client janedoe-CUST was reached. 13000 contracts remain. |
| Limit reached/exceeded | The <DOQ/DNV> limit of {<value> <unit>} for <perspective type (desk/user/client)> <risk instance name> was reached or exceeded. Current aggregate <DOQ/DNV>: <current value>. | The daily notional value limit of $10000 for user johndoe was reached or exceeded. Current aggregate daily notional value: $12000. |
| **Violation alert** | | |
| Risk violated | Transaction <qty/NV> {<value><unit>} exceeds the preset limit of <OQ/DOQ/NV/DNV> {<limit><unit>} for <perspective type (desk/user/client)> <risk instance name>. | Transaction notional value $6500 exceeds the preset limit of notional value $6000 for desk FELD01. |
| PreOpen reject | PreOpen Orders currently not accepted for <perspective type (desk/user/client)> <risk instance name>. | PreOpen Orders currently not accepted for client jane-doe. |
| Locate Code reject | Locate Code is required for <perspective type (desk/user/client)> <risk instance name>. | Locate code is required for user johndoe. |

| | | |
|---|---|---|
| Restricted list violation | This symbol is currently restricted for <perspective type (desk/user/client)> <risk instance name>. | This symbol is currently restricted for desk FELD01. |

### *2.6.4 Email Attributes*

Notification emails must have the following information at the start in the following order:

1. The subject of the email must be:
    a. "Risk instance changed" when risk instance changed alert.
    b. "Aggregate Total alert" for a running total alert.
    c. "Risk violation" for a risk violation alert.
2. "Desk: <BU name>", example Desk: FELD01
3. For violation alerts: User <username>'s transaction was rejected. For example: "User johndoe's transaction was rejected."
4. The alert text.
5. The text: "Please contact the Risk Administrator for further information."
6. The text: "This email is sent from an unattended mailbox. Replies to this message go unattended and may be rejected. This e-mail and its attachments are intended only for the individual or entity to whom it is addressed and may contain information that is confidential, privileged, inside information, or subject to other restrictions on use or disclosure. Any unauthorized use, dissemination or copying of this transmission or the information in it is prohibited and may be unlawful. If you have received this transmission in error, please notify the sender immediately by return e-mail, and permanently delete or destroy this e-mail, any attachments, and all copies (digital or paper). Unless expressly stated in this e-mail, nothing in this message should be construed as a digital or electronic signature."

### *2.6.5 Reject Popup Text*

Reject popups would use the same alert text. In addition, the following text must be added at the end of the message: "Please contact the Risk Administrator for further information."

## 2.7 Alteration Rules

When an order quantity alteration is performed, the order's Open Qty is the value that is to be used when validating against the Max Order Quantity risk parameter. The following values will NOT be used:

- the delta between the previous OpenQty and Current Open Qty
- the OriginalQty (which includes trades and current open qty)

Biz dev and Product Management are aware of the following:

- Using Open Qty for validation once the order has partially traded makes it possible to create one or more altered orders from the original that could (when followed by partial fills) cumulatively exceed the value in max quantity setup by the Risk Admin.

### Examples

The following examples were provided by Product Management:

Max Order Qty = 15

**Scenario 1**

Orig qty = 10

No trade, open qty 10

User modifies open qty to **17** (*orig qty 17*)

Result: Rejected, because **17** > 15

**Scenario 2**

Orig qty = 10

Traded 2, open qty 8

User modifies open qty to **15** (*orig qty 2+15=17*)

Result: Accepted, because **15** = 15

**Scenario 3**

Orig qty = 10

Traded 8, Open 2

User modifies open qty to **10** (*orig qty 8+10=18*)

Result: Accepted, because **10** < 15

# Chapter 3 Risk Management GUI

This chapter describes the Risk Management GUI, a user interface that enables BU Risk Admins and ISE MOPS to maintain risk settings. In addition, the GUI allows PrecISE users to view risk settings and running totals.

## 3.1 Common Elements

### *3.1.1 Screen Organization*

Risk Management screen will be organized by BU name, one per tab. Upon clicking on a BU tab, the view associated with that BU will open with the following elements:

- A control to maintain threshold value
- A control to maintain list of BU email addresses
- Reference Price Default
- Each display may include no more than one BU instance if one is entered. User risk instances and Client risk instances associated with the BU may also be displayed if these risk instances have been entered.
- Actions to add, delete a risk instance.
- Actions to save changes and refresh the view.

Risk instance tables will support in-line editing, no separate risk instance view will be provided. Once a risk instance is created, its type and associated name will not be editable.

### *3.1.2 Common Elements by BU*

Values entered in the three fields below provide common elements that apply for all users and clients associated with a BU. Risk admins and MOPs Admins have rights to update these fields.

- Threshold percentage
- Reference Price
- Email list – notifications to parties with an interest in the associated BU

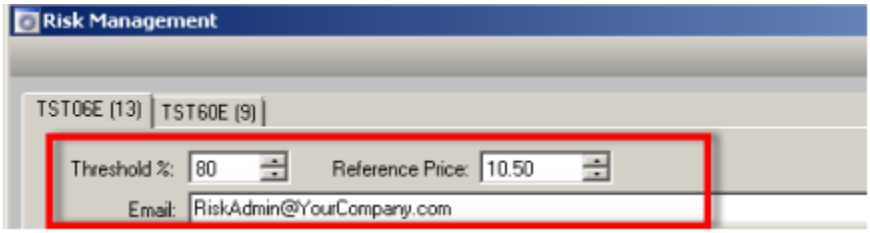


**Figure 2 Three Common Elements per BU**

### *3.1.3 Common Navigation/Functionality*

These buttons are displayed in all views, however, their function is dependent upon context.

- **Close** button in upper right closes the window and is the same across all views
- **Refresh** button is located in upper right corner of window and **makes a request to WS for the data**. This button refreshes the data only for the BU tab in view. No warnings/popups/ confirmation dialogues are displayed when it is clicked.

- **CANCEL** button is located at the bottom of the window and is the same across all views. Cancel closes the window and does not apply changes that have been entered in any tabs (in views where access is NOT view-only).
- **RESET** button is located at the bottom of the window. RESET returns all tabs to the previously requested data; it **does NOT requery the data from WS**.
    - For the PrecISE user view, RESET is NOT active (is grayed out)
    - When active in the MOPs view and Risk Admin view, a confirmation dialogue appears asking the user if it is the user's intention to refresh the values on the screen.
    - For the MOPs user, all changes entered on other BU tabs (which have not yet been applied) will be reset.
    - For a Risk Admin with MU privileges, all changes entered on other BU tabs (which have not yet been applied) will also be reset..
    - For a Risk Admin with no MU privileges, the Reset applies only to the BU tab in view.
    - For a MU with no Risk admin entitlement, the RESET button is NOT active.
- **Apply** button is active only for MOPs and Risk Admin views. It saves the changes entered across all BU tabs.
- **OK** button. Action is applicable to all BU tabs.

| | **Preliminary State** | **Result after clicking "OK"** | **Secondary Result** |
|---|---|---|---|
| 1 | No entry made | closes all tabs and exits the window | N/A |
| 2 | Data entered | Confirmation Popup appears: Continue with modification?<br>• Yes (Continue)<br>• No (Do not Continue)<br>• Cancel | 1)Yes: Continue<br>• If successful: "Risk Settings Updated Successfully" Message. Window Closed.<br>• If error: popup appears, window remains open<br>2) No, Do not continue<br>• Window remains open<br>3) Cancel<br>• Window remains open |

## 3.2 MOPS View

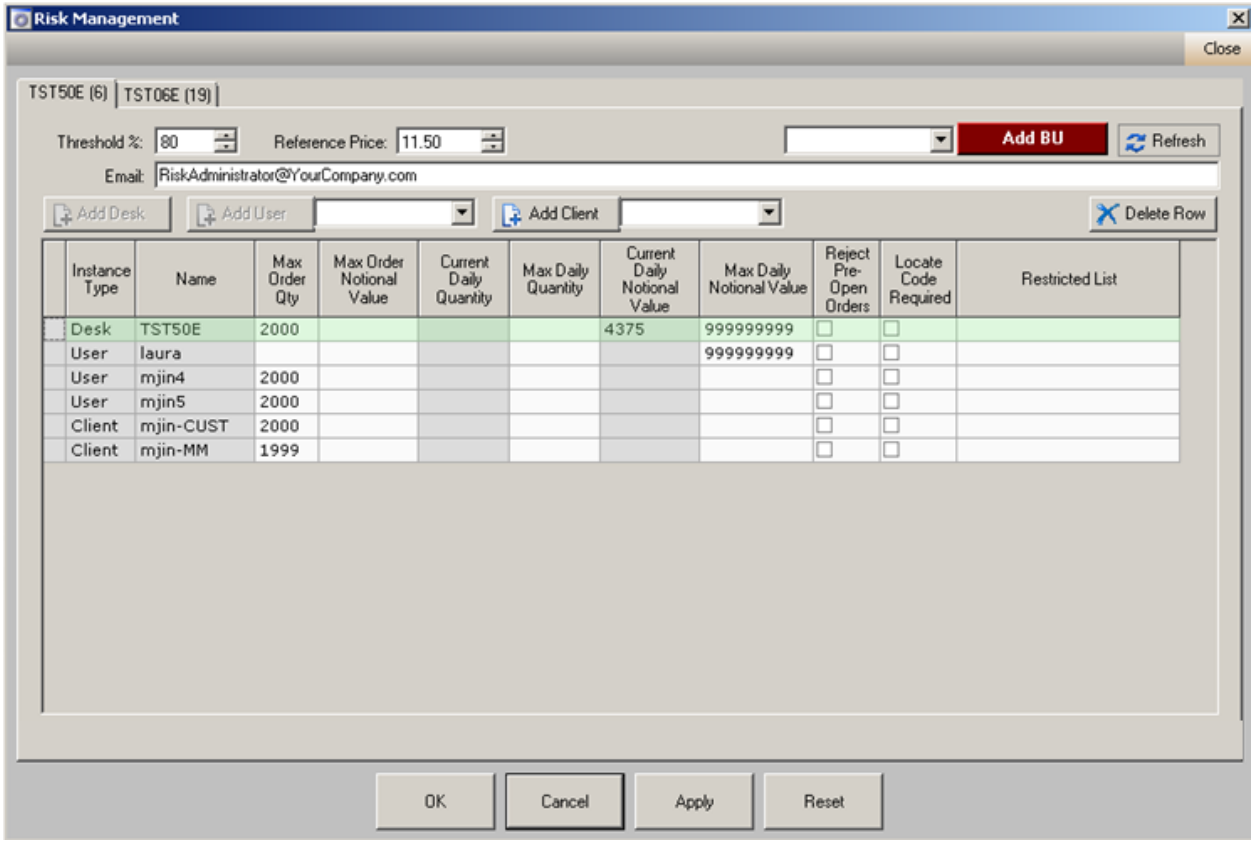


**Figure 3 Risk Management: MOPs View**

The risk management screen will host a special control for ISE MOPS risk admin users. This control allows MOPs to pick any BU, add it as a tab view (as described in a previous section), and edit the respective BUs risk settings.


All columns shaded white are editable by MOPs. Gray columns are not editable.

## 3.3 Risk Adminstrator View

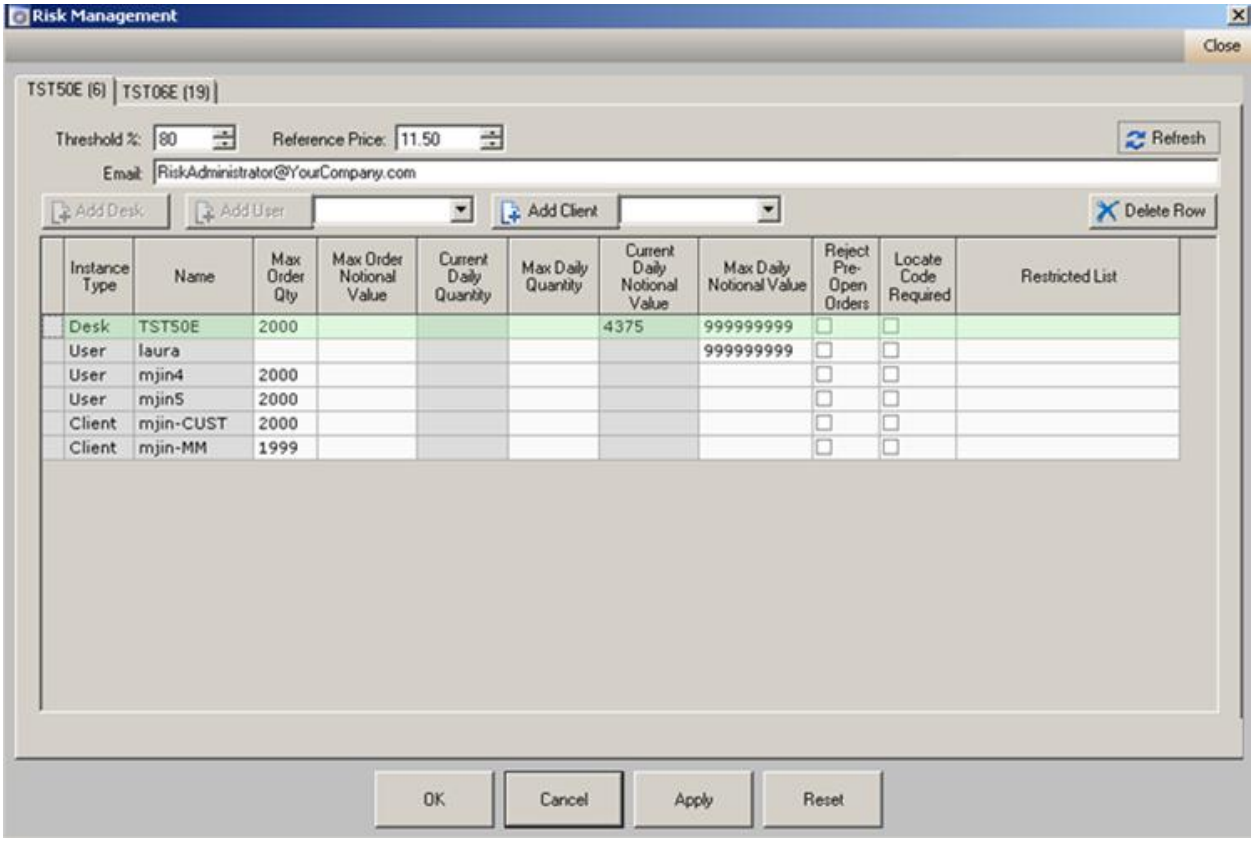


**Figure 4 Risk Management: Risk Admin View**

All columns shaded white are editable by risk admins. Gray columns may not be edited.

The Risk admin has access to view and update:

- All user risk instances associated with the BU.
- All client risk instances associated with the BU.

**Risk Admin + MU Entitlement**
For Risk Admins with a MU entitlement, multiple tabs each displaying a BU name for which the Risk Admin is an entitled user, are supported.

**Risk Admin + NO MU Entitlement**
For a Risk Admin with NO MU entitlement, only the Risk Admin's own BU may be displayed.

## 3.4 PrecISE User View

Three buttons are active in this view:

- CLOSE
- REFRESH
- Cancel

All fields are view-only.

Only one user instance associated with this BU can be displayed. It must belong to the user who has created and logged in to the PrecISE session.

Any number of client risk instances that are associated with the BU can be displayed.

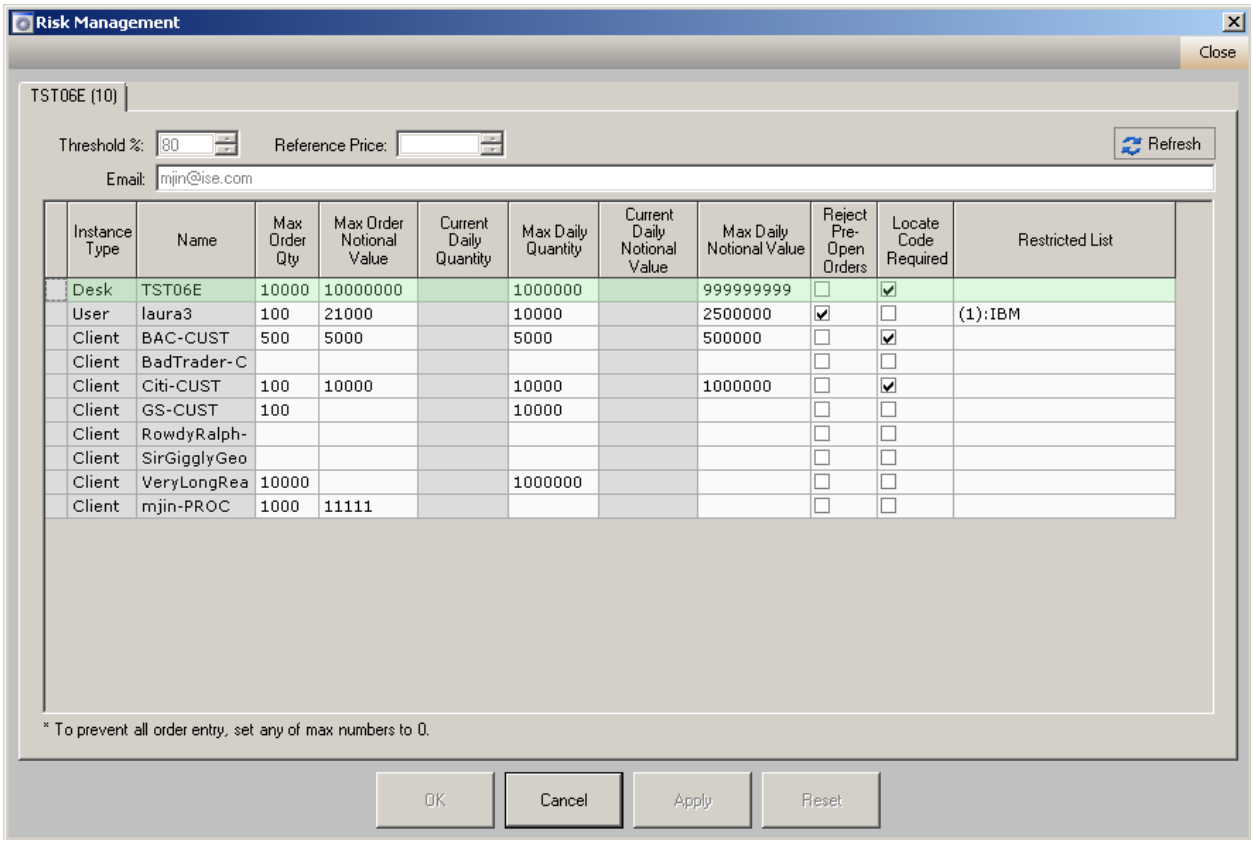


**Figure 5 Risk Management: PrecISE User View**

## 3.5 Master User View with No Risk Admin Entitlement

Three buttons are active in this view:

- CLOSE
- REFRESH
- Cancel

All fields are view-only.

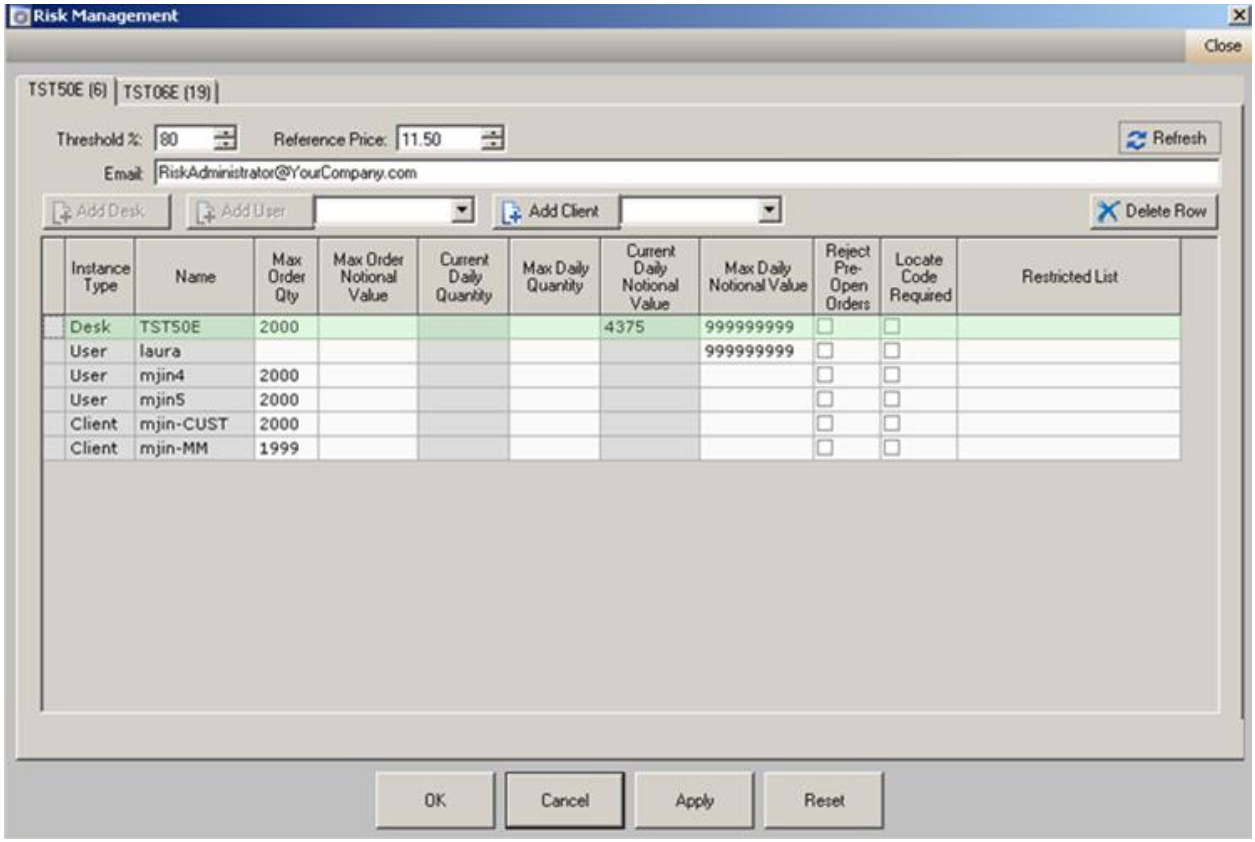


**Figure 6 Master User /No Risk Admin Entitlement**

## 3.6 Cumulative Running Totals

Two new columns will be added and displayed on all views.

- Current Daily Quantity
- Current Daily Notional Value

Running Totals for each PrecISE user are viewable by all users who have access to the screen. Running Totals are NOT updateable by any user.

If a PrecISE user clicks refresh, these columns are updated with fresh data.

Current running totals will only be displayed if a value has been entered as follows:

- Current Daily Quantity displays if a value was entered in Max Daily Quantity for that instance
- Current Daily Notional Value displays if a value was entered in Max Daily Notional Value for that instance

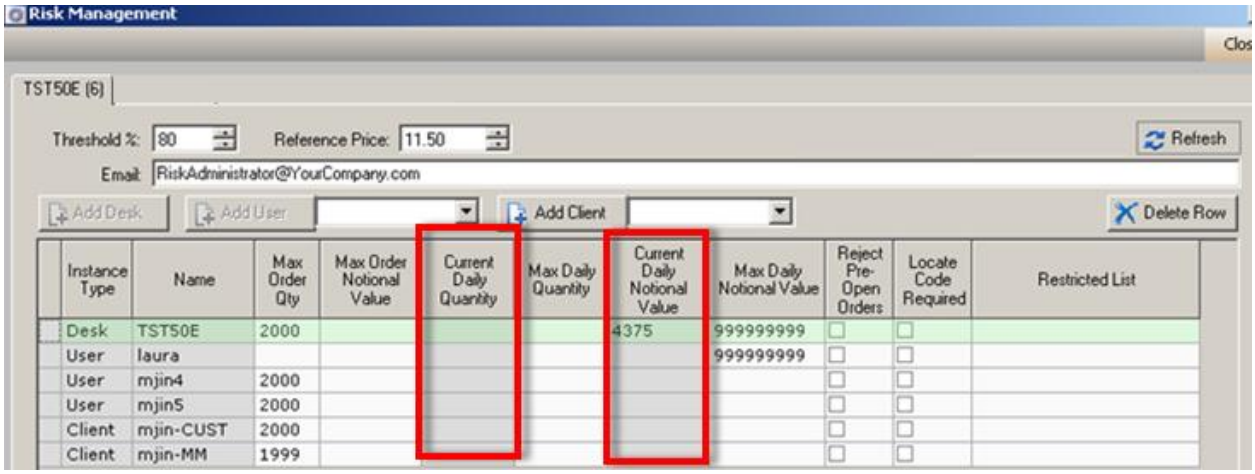


**Figure 7 Current Daily Qty and NV Columns**

### *3.6.1 Future Enhancements*

The following two columns are planned as future enhancements:

- Current daily quantity value displayed as a percentage of the Max Daily Quantity
- Current daily notional value displayed as a percentage of the Max Daily Notional Value

# Chapter 4 List of Use Cases

Common processing is described in the "Common Requirements" sections earlier in this document. The following use cases describe processing that is additional to the common rules and is specific to the described activity.

The use cases include detailed business rules and one or several functional flows. The detailed rules are numbered for easier reference, but are not sequential. The functional flow represents in which order processing occurs and therefore is sequential.

## 4.1 Risk Management Use Cases

This section describes the process of adding, modifying, validating, and deleting Risk instances for PrecISE.

1.1 Update BU thresholds
1.2 Update Email List
1.3 Create New Risk Instance
1.4 Edit a Risk Instance
1.5 Delete a CCC with an Associated Risk Instance

# Chapter 5 Use Cases

## 5.1 Populating Risk Management Views

### *5.1.1 Update BU Threshold*

| **Use Case** | **Update BU Threshold** |
|---|---|
| **Description** | Updating BU Threshold establishes the default threshold percentage (Max Daily Qty/Max Daily NV) not only for the BU but also across user/CCC perspectives. |
| **User(s)/ Actor(s)** | 1. Risk Admin.<br>2. PrecISE users |
| **Detailed Business Rule(s)** | 1. Only one percentage threshold for both DNV/DNQ is supported per BU/desk<br>2. Entered threshold value is interpreted as a percentage. Value cannot be greater than 99 or less than 1. Value must be a whole number.<br>3. If Threshold values are not set, NO warning is emailed to Risk Admin advising that threshold warnings cannot be sent. NO warning is emailed if a threshold value is deleted.<br>4. All PrecISE users are permitted by default to view Risk Threshold fields associated with their desk. PrecISE users who are not Risk Admins are not permitted to add/modify or delete the values in these fields.<br>5. Entry of any Threshold value takes effect immediately.<br>6. Upon failure, the field should be left unaltered and a rejection message should be shown to the user who entered the transaction. NO email alert is generated. |
| **Basic Flow (sequential)** | 1. RA clicks on the File menu and selects Risk Management from the dropdown menu.<br>2. RA selects a BU and updates threshold field. |
| **Alternate Flows** | N/A |
| **Pre-conditions** | 1. Must have access to the PrecISE front-end trading application. |
| **Post-conditions** | Upon successful creation,<br>• The risk thresholds will be saved and used immediately. |
| **Non-Functional Requirements** | n/a |
| **Open Issues** | |

Go back to List of Use Cases

### *5.1.2 Update Email List*

| **Use Case** | **Update Email List** |
|---|---|
| **Description** | Email list identifies all email recipients who will receive risk alerts for a specified BU. |
| **User(s)/ Actor(s)** | Risk Admin |
| **Detailed Business Rule(s)** | 1. Entry of any email addresses takes effect immediately<br>2. Email addresses are entered sequentially. They can be delimited by a comma, semi-colon, space, or "\|". Once accepted all delimiters will be converted and displayed as a semi-colon.<br>3. NO email validation is performed.<br>4. Access for entering email addresses is controlled by the table in Section 2.2 Administrative Roles (Anyone with a Risk Admin entitlement can update the email list. MOPs role will include ability to update Email List no matter how the entitlements are to be defined. .<br>5. NO FE warning alert is generated to RA if no email addresses have been entered for a BU. The email line can be blank. |
| **Basic Flow (sequential)** | 1. RA clicks on the File menu and selects Risk Management from the dropdown menu.<br>2. RA selects a BU and updates email field. |
| **Alternate Flows** | N/A |
| **Pre-conditions** | Must have access to the PrecISE front-end trading application. |
| **Post-conditions** | • The email addresses should be saved for future use. |
| **Non-Functional Requirements** | n/a |
| **Open Issues** | |

Go back to List of Use Cases

### *5.1.3 Create New Risk Instance*

| **Use Case** | **Create New Risk Instance** |
|---|---|
| **Description** | Create and Associate a risk instance for any of the following perspectives:<br>• PrecISE user<br>• BU (Desk)<br>• CCC |
| **User(s)/ Actor(s)** | Risk Admin. |
| **Detailed Business Rule(s)** | 1. Risk attributes are listed in 3.2 Risk Management Screen. Risk attributes are defined in the glossary, Key Definitions, Acronyms, and Abbreviations, at the beginning of this document.<br>2. PrecISE will load active BU users upon startup to be used to create user instances. However upon creating user risk instance, it is not required to validate if user account is still active.<br>3. PrecISE will validate that CCC is active before creating an associated risk instance.<br>4. No validation is performed to ensure that the maximum limits entered by the risk admin fall inside any specified numeric range.<br>5. Newly entered risk instances take effect immediately.<br>6. When a risk instance is entered, at least one of the parameters must contain a value. For example, a risk instance that contains ALL blanks will be rejected.<br>7. Entered values in fields defined as numeric must be whole unsigned numbers. No decimals are permitted.<br>**Threshold Validation Max Notional Value/Max Qty**<br>8. See 5.1 Update BU Thresholds. |
| **Basic Flow (sequential)** | 1. RA clicks on the File menu and selects Risk Management from the dropdown menu.<br>2. RA selects a BU, then the user, CCC, or BU instance and updates one or more values in the row. |
| **Alternate Flows** | N/A |
| **Pre-conditions** | 1. Must have access to the PrecISE front-end trading application. |
| **Post-conditions** | Upon successful creation,<br>• The risk instance will be saved for future use.<br>• There is no dynamic update for other user's Risk Management views. Other users must explicitly refresh the risk view to display latest values. |

| | |
|---|---|
| | • New values are visible to every user associated with the desk and to Master Users associated with this desk.<br>• NO new Email notification/popup sent to user on desk that has new risk instance.<br>• Upon failure, the state should be left unaltered. The new instance will not be created, and the entering RA will be sent a reject message. |
| **Non-Functional Requirements** | n/a |
| **Future improvements** | A future improvement may be necessary to validate if the user account is still active when associated risk instances are processed by the risk engine. |

Go back to List of Use Cases

### *5.1.4 Delete a CCC with an Associated Risk Instance*

| **Use Case** | **Delete a CCC that has an Associated Risk Instance** |
|---|---|
| **Description** | User deletes a CCC that is associated with a CCC Risk Instance |
| **User(s)/ Actor(s)** | • Any Same-desk PrecISE User<br>• MU<br>• Risk Admin |
| **Detailed Business Rule(s)** | 1. Any Same desk user, Risk Admn, or MU can delete any CCC even if it has an associated Risk Instance. No special authorization is required.<br>2. When the CCC is deleted, the associated risk instance is also deleted.<br>3. There is NO requirement to warn the user deleting the CCC that the CCC has an attached, active risk instance.<br>4. There is no requirement to explicitly notify other same desk users of the CCC deletion via the front-end (via a popup, for example).<br>5. An email is sent to RA and MOPs advising them that a risk instance has been deleted. |
| **Basic Flow (sequential)** | 1. On the PrecISE front end, user accesses File -> Preferences -> Custom Client Categories.<br>2. The user chooses CCCs to be deleted, confirms the prompt and submits deletion. |
| **Alternate Flows** | N/A |
| **Pre-conditions** | Users must have access to the PrecISE front-end trading application. |
| **Post-conditions** | |
| **Non-Functional Requirements** | n/a |
| **Open Issues** | |

Go back to List of Use Cases

### *5.1.5 Edit a Risk Instance*

| **Use Case** | **Edit Risk Instance** |
|---|---|
| **Description** | Risk Admin edits risk instance for a PrecISE user/BU/CCC |
| **User(s)/ Actor(s)** | Risk Admin |
| **Detailed Business Rule(s)** | 1. Modified risk instance becomes immediately effective once saved.<br>2. Alerts are sent to RA, MOPs when a USER/BU/CCC risk instance is edited.<br>3. The restriction specifying that a value must be present in at least one column when creating a risk instance does not apply when editing a risk instance. Once a risk instance exists, any column may be blanked out. |
| **Basic Flow (sequential)** | Risk Admin launches Risk Management window, selects a BU, then modifies some or all of the BU/User/CCC risk instances. Then saves and closes. |
| **Alternate Flows** | N/A |
| **Pre-conditions** | Users must have access to the PrecISE front-end trading application.<br>Risk instance must exist. |
| **Post-conditions** | Upon successful editing, the updated risk instance is immediately available to be viewed by other users.<br>Upon successful editing, the risk instance is immediately effective and available for use in risk evaluation<br>Upon failure, the state should be left unaltered. |
| **Non-Functional Requirements** | n/a |
| **Open Issues** | |

Go back to List of Use Cases

# Chapter 6 Appendix

## 6.1 Samples for Calculation of Running Totals at Startup

Consider a BU named XYZ01E, with users John and Jane and CCCs A-Cust and B-Cust. In each of the samples below, the scenario is described and the calculations are shown using the formulas in Section 2.5.5. The totals at the end of each table are for that order and all these totals are aggregated to come up with the final running total value for each risk instance.

In this section, we have assumed the contract size is 1.

1. Standalone exchange order (qty 100), trades partially (qty 10, qty 20) and gets busted (qty 5). User: Jane. CCC: B-Cust

| ER type | Ord Qty | DelQty | NotSent Qty | Open Qty | Trade Qty | RefPx or TrdPx | DOQ | | | DNV | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | | | | | | BU | User | CCC | BU | User | CCC |
| Status | 100 | 5 | NA | 70 | NA | 11.5 | 70 | 70 | 70 | 70*11.5 | 70*11.5 | 70*11.5 |
| Trade1 | 100 | NA | NA | NA | 10 | 11.4 | 10 | 10 | 10 | 10*11.4 | 10*11.4 | 10*11.4 |
| Trade2 | 100 | NA | NA | NA | 15 | 11.3 | 15 | 15 | 15 | 10*11.3 | 10*11.3 | 15*11.3 |
| **Totals1** | | | | | | | **95** | **Jane: 95** | **B-Cust:95** | **1032** | **Jane: 1032** | **B-Cust: 1032** |

2. Standalone exchange order (qty 100) with CCC A-Cust, trades partially (qty 30), gets altered (new qty: 120) with a different CCC B-Cust. User: John

| ER type | OrdQty | DelQty | NotSentQty | Open Qty | Trade Qty | RefPx or TrdPx | DOQ | | | DNV | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | | | | | | BU | User | CCC | BU | User | CCC |
| Status | 120 | 0 | NA | 90 | NA | 11.5 | 90 | 90 | B-Cust: 90 | 90*11.5 | 90*11.5 | B-Cust: 90*11.5 |
| Trade1 | 120 | NA | NA | NA | 30 | 11.6 | 30 | 30 | A-Cust: 30 | 30*11.6 | 30*11.6 | A-Cust: 30*11.6 |
| **Totals2** | | | | | | | **120** | **John: 120** | **A-Cust: 90** **B-Cust: 30** | **1383** | **John: 1383** | **A-Cust: 1035** **B-Cust: 348** |

3. Parent order routed to different BU, trades partially and gets partially busted. User: Jane. CCC: A-Cust

| ER type | OrdQty | DelQty | NotSentQty | Open Qty | Trade Qty | RefPx or TrdPx | DOQ | | | DNV | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | | | | | | BU | User | CCC | BU | User | CCC |
| Parent Status | 1000 | 20 | 900 | 960 | NA | 12.0 | 900 | 1000-20 | 900 | 900*12.0 | (1000-20)*12.0 | 900*12.0 |
| Child Status | 100 | 20 | NA | 60 | NA | 11.5 | 100-20 | NA | 60 | (100-20)* 11.5 | NA | 60*11.5 |
| Child Trade1 | 100 | NA | NA | NA | 20 | 11.45 | NA | NA | 20 | NA | NA | 20*11.45 |
| **Totals3** | | | | | | | **980** | **Jane: 980** | **A-Cust: 980** | **11720** | **Jane: 11760** | **A-Cust: 11719** |

4. Parent order (of Jane) routed to different BU (by John), trades partially and gets partially busted. Users: Jane and John. CCC: B-Cust.

| ER type | OrdQty | DelQty | NotSentQty | Open Qty | Trade Qty | RefPx or TrdPx | DOQ | | | DNV | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | | | | | | BU | User | CCC | BU | User | CCC |
| Parent Status | 1000 | 20 | 900 | NA | NA | 12.0 | 900 | Jane: 1000-20 | 900 | 900*12.0 | Jane: (1000-20)*12.0 | 900*12.0 |
| Child Status | 100 | 20 | NA | 60 | NA | 11.5 | 100-20 | John: 100-20 | 60 | (100-20)*11.5 | John: (100-20)*11.5 | 60*11.5 |
| Child Trade1 | 100 | NA | NA | NA | 20 | 11.5 | NA | NA | 20 | NA | NA | 20*11.5 |
| **Totals4** | | | | | | | **980** | **Jane: 980** **John: 80** | **B-Cust: 980** | **11720** | **Jane: 11760** **John: 920** | **B-Cust: 11720** |

5. A routed order from another BU is accepted. John accepts the routed order creates an exchange order (qty 30) under the Routed order. Jane creates a done away order (qty 20) under the Routed order, but uses a different CCC for the Done Away trade. Users: John and Jane. CCC: None and A-Cust, B-Cust.

| ER type | OrdQty | DelQty | NotSentQty | Open Qty | Trade Qty | RefPx or TrdPx | DOQ | | | DNV | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | | | | | | BU | User | CCC | BU | User | CCC |
| Routed Status | 100 | 0 | 50 | NA | NA | 12.0 | 50 | John: 100-0 | NA | 50*12.0 | John: (100-0)*12.0 | NA |
| Exchange Status | 30 | 0 | NA | 20 | NA | 11.5 | 30 - 0 | NA | NA | (30-0)*11.5 | NA | NA |
| Exchange Trade1 | 30 | NA | NA | NA | 10 | 11.5 | NA | NA | NA | NA | NA | NA |
| DA Status | 20 | 0 | NA | 15 | NA | 11.7 | 20 - 0 | Jane: 20-0 | A-Cust: 15 | (20-0)*11.7 | Jane: (20-0)*11.7 | A-Cust: 15*11.7 |
| DA Trade1 | 20 | NA | NA | NA | 5 | 11.4 | NA | NA | B-Cust: 5 | NA | NA | B-Cust: 5*11.4 |
| **Totals5** | | | | | | | **100** | **John: 100** **Jane: 20** | **A-Cust: 15** **B-Cust: 5** | **1179** | **John: 1200** **Jane: 234** | **A-Cust: 175.5** **B-Cust: 57** |

6. Exchange cross order is created under Parent order. User: John. CCC: None

| ER type | Ord Qty | DelQty | NotSentQty | Open Qty | Trade Qty | RefPx or TrdPx | DOQ | | | DNV | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | | | | | | BU | User | CCC | BU | User | CCC |
| Parent Status | 500 | 0 | 350 | NA | NA | 12.0 | 350 | 500-0 | NA | 350*12.0 | (500-0)*12.0 | NA |
| Exchange (Orig) Status | 150 | 0 | NA | 0 | NA | 11.5 | 150-0 | NA | NA | (150-0)*11.5 | NA | NA |
| Exchange (Orig) Trade1 | 150 | NA | NA | NA | 150 | 11.5 | NA | NA | NA | NA | NA | NA |
| Exchange (Counter) Status | 150 | 0 | NA | 0 | NA | 11.5 | 150-0 | 150-0 | NA | (150-0)*11.5 | (150-0)*11.5 | NA |
| Exchange (Counter) Trade1 | 150 | NA | NA | NA | 150 | 11.5 | NA | NA | NA | NA | NA | NA |
| **Totals6** | | | | | | | **650** | **John: 650** | **NA** | **7650** | **John: 7725** | **NA** |

The aggregate running totals for each of the risk instances are shown in table below (adding totals from scenario 1 through 6):

| | BU: XYZ01E | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|
| | BU level | | User: John | | User: Jane | | CCC: A-Cust | | CCC: B-Cust | |
| | DOQ | DNV | DOQ | DNV | DOQ | DNV | DOQ | DNV | DOQ | DNV |
| Totals1 | 95 | 1032 | | | 95 | 1032 | | | 95 | 1032 |
| Totals2 | 120 | 1383 | 120 | 1383 | | | 90 | 1035 | 30 | 348 |
| Totals3 | 980 | 11720 | | | 980 | 11760 | 980 | 11719 | | |
| Totals4 | 980 | 11720 | 80 | 920 | 980 | 11760 | | | 980 | 11720 |
| Totals5 | 100 | 1179 | 100 | 1200 | 20 | 234 | 15 | 175.5 | 5 | 57 |
| Totals6 | 650 | 7650 | 650 | 7725 | | | | | | |
| **Total** | **2925** | **34684** | **950** | **11228** | **2075** | **24786** | **1085** | **12929.5** | **1110** | **13157** |

## 6.2 Intraday Running Total Examples

For the following scenarios, starting values have been set to zero only to make adjustments to RT easier to illustrate. These scenarios reflect adjustments that would be taking place intraday, so the starting values generally would not be zero.

LCV= Last Contributing Value

NCV= New Contributing Value

- **Scenario 1:** New Parent Order Entered, Routed to Another User (Same BU), Traded
- **Scenario 2:** New Parent Order Entered, Routed to Another BU, Traded
- **Scenario 3:** New Parent Order Entered, Routed to Different BU, Traded, Busted
- **Scenario 4:** New Parent Order, Order Routed to Different BU, Partial Trade, PTA
- **Scenario 5:** New Exchange Order, Order Altered to Different CCC, Partial Trade, Order Balance Altered Back to Original CCC

**Scenario 1: New Order Entered, Routed to Another User (Same BU), Traded**

1. New Parent Order entered: 100 entered using Customer CCC GS, User Mike (M)
2. Entire Order routed to User **Ed (E)** in **same BU** (BU1)
3. 40 Trades

When a parent order is entered, running totals are incremented to reflect the new order. When the order is routed to another user in the same BU, RT are incremented again for the new user and for the BU, even if the order is routed within the same BU. RT are also incremented again for GS Client.

| **Execution Report values** | | | | **LCV** | | **NCV** | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|
| **FIXML ER** | **Open Qty** | **Last Qty** | **Ref Px** | **LCV DOQ** | **LCV DNV** | **BU DOQ** | **BU DNV** | **User DOQ** | **User DNV** | **CCC DOQ** | **CCC DNV** |
| START | MOO=0<br>EOO=0 | 0 | 9.1 | 0 | 0 | 0 | 0 | Mike = 0<br>Ed = 0 | Mike = 0<br>Ed = 0 | CCC-GS=0 | CCC-GS=0 |
| Whole Order | MOO=100 | 0 | 9.1 | 0 | 0 | 100 | 100 x 9.1 | 100 | 100 x 9.1 | CCC-GS =100 | CCC-GS =100x 9.1 |
| Whole Order Routed (and accepted) | MOO=100<br>**EOO=100** | 0 | 9.1 | M=100<br>BU1=**100**<br>CCC-GS=100 | M=100 x 9.1<br>BU1=**100 x 9.1**<br>CCC-GS =100x 9.1 | **200** | **200** | M=100<br>**E=100** | M=100x9.1<br>**E=100x9.1** | CCC-GS=**200** | CCC-GS=**200x9.1** |
| Exchange Order submitted from routed order | MOO=100<br>**EOO=100** | 0 | 9.1 | M=100<br>BU1=**100**<br>CCC-GS=100<br>**E=100** | M=100 x 9.1<br>BU1=**100 x 9.1**<br>CCC-GS =100x 9.1<br>**E=100x9.1** | No Change | No Change | No Change | No Change | No Change | No Change |
| Trade (No Adjust-ment) | MOO=100<br>**EOO=60** | 40 | 9.1 | No Change | No Change | No Change | No Change | No Change | No Change | No Change | No Change |
| Trade (Parent) | MOO=60<br>**EOO=60** | 40 | 9.1 | No Change | No Change | No Change | No Change | No Change | No Change | No Change | No Change |

- MOO = Mike's Open Order Qty
- M= RT for User Mike
- BU1= RT for BU1 (Mike and Ed's BU)
- CCC-GS = RT for Client GS

- EOO = Ed's Open Order Qty,
- E=RT for User Ed

**SCENARIO 2: New Order Entered, Routed to Another BU, Traded**

1. New Parent Order entered in BU1: 100 entered using Customer CCC-GS, User Mike (M)
2. Parent Order routed to User **Steve (S)** in **different BU** (**BU2** )
3. 40 Trades

| | | | | LCV | | NCV | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|
| **FIXML ER** | **Open Qty** | **Last Qty** | **Ref Px** | **LCV DOQ** | **LCV DNV** | **BU DOQ** | **BU DNV** | **User DOQ** | **User DNV** | **CCC DOQ** | **CCC DNV** |
| START | MOO=0 | O | 9.1 | O | O | BU1=0 | BU1=0 | M=0 | M=0 | CCC-GS=0 | CCC-GS=0 |
| Whole Order | MOO=100 | 0 | 9.1 | 0 | 0 | BU1=100 | BU1=100 x 9.1 | M=100 | M=100 x 9.1 | CCC-GS (BU1)=100 | CCC-GS(BU1) =100x 9.1 |
| Whole Order Routed(and accepted) | MOO=100<br>**SOO=100** | 0 | 9.1 | BU1=100<br>M=100<br>CCC-GS(BU1) =100 | BU1=100 x 9.1<br>M=100x9.1<br>CCC-GS(BU1) =100x 9.1 | BU1=100<br>**BU2=100** | BU1=100 x 9.1<br>**BU2=100 x 9.1** | M=100<br>**S=100** | M=100x9.1<br>**S=100x9.1** | CCC-GS(BU1) =100<br>**CC (BU2) = N/A** | CCC-GS(BU1) =100x 9.1<br>**CC (BU2) = N/A** |
| Exchange Order Submitted from routed order | MOO=100<br>**SOO=100** | 0 | 9.1 | BU1=100<br>M=100<br>CCC-GS(BU1) =100<br>**BU2=100**<br>**S=100** | BU1=100 x 9.1<br>M=100x9.1<br>CCC-GS(BU1) =100x 9.1<br>**BU2=100 x 9.1**<br>**S=100x9.1** | No Change | No Change | No Change | No Change | No Change | No Change |
| Trade | MOO=100<br>**SOO=60** | **40** | 9.1 | No Change | No Change | No Change | No Change | No Change | No Change | No Change | No Change |
| Trade (Parent) | MOO=60<br>**SOO=60** | **40** | 9.1 | No Change | No Change | No Change | No Change | No Change | No Change | No Change | No Change |

MOO= Mike's Open Order Qty
SOO= Steve's Open Order Qty

**Scenario 3: New Order Entered, Routed to Different BU, Traded, Busted**

1. New Parent Order entered in BU1: 100 entered using Customer CCC GS, User Mike (**M**)
2. Parent Order routed to User Steve (**S**) in **different BU ( BU2 )**
3. 40 Trades
4. Bust 40

| | | | | LCV | | NCV | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|
| **FIXML ER** | **Open Qty** | **Last Qty** | **Ref Px** | **LCV DOQ** | **LCV DNV** | **BU DOQ** | **BU DNV** | **User DOQ** | **User DNV** | **CCC DOQ** | **CCC DNV** |
| START | MOO=0<br>SOO=0 | 0 | 9.1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Whole Order | MOO=100 | 0 | 9.1 | 0 | 0 | BU1=100 | BU1=100 x 9.1 | M=100 | M=100 x 9.1 | CCC-GS (BU1)=100 | CCC-GS(BU1) =100x 9.1 |
| Whole Order Routed(and accepted) | MOO=100<br>**SOO=100** | 0 | 9.1 | BU1=100 M=100<br>CCC-GS(BU1) =100 | BU1=100 x 9.1<br>M=100x9.1<br>CCC-GS(BU1) =100x 9.1 | BU1=100<br>**BU2=100** | BU1=100 x 9.1<br>**BU2=100 x 9.1** | M=100<br>**S=100** | M=100x9.1<br>**S=100x9.1** | CCC-GS(BU1) =100<br>**CC (BU2) = N/A** | CCC-GS(BU1) =100x 9.1<br>**CC (BU2) = N/A** |
| Order Sent as Exch Order | MOO=100<br>**SOO=100** | 0 | 9.1 | BU1=100 M=100<br>CCC-GS(BU1) =100<br>**BU2=100**<br>**S=100** | BU1=100 x 9.1<br>M=100x9.1<br>CCC-GS(BU1) =100x 9.1<br>**BU2=100 x 9.1**<br>**S=100x9.1** | No Change | No Change | No Change | No Change | No Change | No Change |
| Trade | MOO=100<br>**SOO=60** | **40** | 9.1 | No Change | No Change | No change | No Change | No Change | No Change | No Change | No Change |
| Trade<br>(parent) | MOO=60<br>**SOO=60** | **40** | 9.1 | No Change | No Change | No change | No Change | No Change | No Change | No Change | No Change |
| Bust | MOO=60<br>**SOO=60** | **-40** | 9.1 | No Change | No Change | BU1=NoChange<br>**BU2 =LCV(100) + (-40)** | BU1=NoChange<br>**BU2 =LCV(100*9.1) + NewERLastQty(-40*9..1)** | M=No change<br>**S= LCV(100) + (-40)** | M=No change<br>**S= LCV(100x9.1) + (-40x9.1)** | No change | No Change |

| | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|
| Bust (parent) | MOO=60<br>**SOO=60** | **-40** | 9.1 | No Change | No Change | **BU1 =LCV(100) + (-40)**<br>BU2=NoChange | **BU1 =LCV(100*9.1) + NewERLastQty(-40*9..1)**<br>BU2=NoChange | M**= LCV(100) + (-40)**<br>S=No change | M**= LCV(100x9.1) + (-40x9.1)**<br>S=No change | No change | No Change |

**Scenario 4: New Order, Order Routed to Different BU, Partial Trade, PTA**

1. New Parent Order entered in **BU1**: 100 entered using Customer CCC GS, User Mike (M)
2. Order routed to User **Steve (S**) in **BU2**
3. 40 Trades
4. Steve performs PTA on 40 changing **CC** to **CCC-BAC**

| | | | | LCV | | NCV | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|
| **FIXML ER** | **Open Qty** | **Last Qty** | **Ref Px** | **LCV DOQ** | **LCV DNV** | **BU DOQ** | **BU DNV** | **User DOQ** | **User DNV** | **CCC DOQ** | **CCC DNV** |
| START | 0 | 0 | 9.1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Whole Order | MOO=100 | 0 | 9.1 | 0 | 0 | BU1=100 | BU1=100 x 9.1 | M=100 | M=100 x 9.1 | CCC-GS (BU1)=100 | CCC-GS(BU1) =100x 9.1 |
| Whole Order Routed(and accepted) | MOO=100<br>**SOO=100** | 0 | 9.1 | BU1=100<br>M=100<br>CCC-GS(BU1) =100<br>**BU2=100**<br>**S=100** | BU1=100 x 9.1<br>M=100x9.1<br>CCC-GS(BU1) =100x 9.1<br>**BU2=100 x 9.1**<br>**S=100x9.** | BU1=100<br>**BU2=100** | BU1=100 x 9.1<br>**BU2=100 x 9.1** | M=100<br>**S=100** | M=100x9.1<br>**S=100x9.1** | CCC-GS(BU1) =100<br>**CC (BU2) = N/A** | CCC-GS(BU1) =100x 9.1<br>**CC (BU2) = N/A** |
| Exchange Order Sent | MOO=0<br>**SOO=100** | 0 | 9.1 | No Change | No Change | No Change | No Change | No Change | No Change | No Change | No Change |
| Trade | MOO=100<br>**SOO=60** | 40 | 9.1 | No Change | No Change | No Change | No Change | No Change | No Change | No Change | No Change |
| Trade (parent) | MOO=60<br>**SOO=60** | 40 | 9.1 | No Change | No Change | No Change | No Change | No Change | No Change | No Change | No Change |
| PTA | MOO=60<br>**SOO=60** | 40 | 9.1 | No Change | No Change | No Change | No Change | No Change | No Change | CCC-GS(BU1) =100<br>---<br>**CCC-BAC=**<br>**LCV (0) -+ lastER.LastQty(40)**<br>**CCC-BAC : 40** | CCC-GS(BU1) =100x 9.1<br>---<br>**CCC-BAC= LVC (0)+ lastER.LastQty (40)*RefPx = 364**<br>**CCC-BAC: 364** |

**Scenario5: New Order, Order Altered to Different CCC, Partial Trade, Order Balance Altered Back to Original CCC**

1 New Standalone Exchange Order entered: 100 entered by **Steve (S)** in BU1 using Customer CCC-GS
2. Order changed to **CCC-MS** Customer **same BU**
3. 40 Traded
4. Order altered back to Customer **CCC GS** same BU

| | | | | LCV Calculation | | NCV Calculation | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|
| **FIXML ER** | **Open Qty (curr lvs qty)** | **Last Qty** | **Ref Px** | **LCV DOQ** | **LCV DNV** | **BU DOQ** | **BU DNV** | **User DOQ** | **User DNV** | **CCC DOQ** | **CCC DNV** |
| START | 0 | 0 | 9.1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Exchange Order | SOO=100 | 0 | 9.1 | 0 | 0 | 100 | 100 x 9.1 | 100 | 100 x 9.1 | CCC-GS=100 | CCC-GS=100x 9.1 |
| Order Altered (Cancel/ Replace) | SOO=100 | 0 | 9.1 | S=100<br>BU=100<br>CCC-GS=100<br>**CCC-MS=0** | S=<br>100 x 9.1<br>BU=100 x 9.1<br>CCC-GS=100 x 9.1<br>**CCC-MS=0** | No Change | No Chge | No Chge | No Chge | CANCEL:<br>LCV (100) – lastER.OpenQty (100)<br>RT of CCC-GS =0<br><br>**REPLACE:**<br>**LCV (0) + newER.OpenQty (100)**<br>**RT of CCC-MS: 100** | CANCEL:<br>LCV (100* 9.1) – lastER.OpenQty (100)* 9.1 + RT of CCC-GS =0<br><br>**REPLACE:**<br>**LCV (0) + newER.OpenQty * 9.1**<br><br>**RT of CCC-MS : 910 (9.1 x 100)** |
| Trade (No Adjust-ment) | SOO=60 | **40** | 9.1 | S=100<br>BU=100<br>CCC-GS=0<br>**CCC-MS=100** | S=<br>100 x 9.1<br>BU=100 x 9.1<br>CCC-GS=0<br>**CCC-MS=100 x 9.1** | No Change | No Change | No Change | No Change | No Change | No Change |
| Order Altered<br>(Cancel/ Replace) | SOO=60 | **0** | 9.1 | No Change | No Change | No Change | No Change | No Change | No Change | **CANCEL:**<br>**LCV (100) – lastER.OpenQty (60)**<br>**RT of CCC-MS =40**<br>REPLACE:<br>LCV (0) + newER.OpenQty (60)<br>RT of CCC-GS: 60 | **CANCEL:**<br>**LCV (100*9.1) – lastER.OpenQty (60)* 9.1**<br>**RT of CCC-MS =364**<br>REPLACE:<br>LCV (0) + newER.OpenQty (60)* 9.1<br>RT of CCC-GS :546 |

## 6.3 Enhanced Firm/User Report

| Acronym | User ID | User Name | Last Login Date | Access | Sponsored | Subscribes to | Password | PrecISE Version | Installation | Max Order | Max Day | Max Order Notional | Max Day Notional | Reject | Restricted | Admin | Kill Swtich Entitled |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | | Since 10/21/2014 | | Customer | Market Data | Expiration Date | Number | Type | Qty | Qty | Value | Value | Pre-Open | List | | |
| | | | | | | | | | | | | | | | | | |
| BAM01E | ppresentbam | Phil Present | | ViewOnly | No | Yes | ######## | 5.6.0 | Unknown | | | | | No | | | No |
| BAM01E | sstillobam | Shannon Stillo | | ViewOnly | No | Yes | ######## | 5.3.0 | Unknown | | | | | No | | | No |
| BAM01E | anav2bam | Ana Velazquez | | ViewOnly | No | Yes | ######## | 5.3.0 | Unknown | | | | | No | | | No |
| BAM01E | marthaa2bam | Martha Aguilar | | ViewOnly | No | Yes | ######## | 5.3.0 | Unknown | | | | | No | | | No |
| BAM01E | akwitbam | Andrew Kwit | | ViewOnly | No | Yes | 1/4/2012 | 5.3.0 | Unknown | | | | | No | | | No |
| BAM01E | mhuynhbam | Mike Huynh | | ViewOnly | No | Yes | ######## | 5.3.0 | Unknown | | | | | No | | | No |
| BAM01E | hkasprzykbam | Harry Kasprzyk | | ViewOnly | No | Yes | 3/9/2012 | 5.3.0 | Unknown | | | | | No | | | No |
| BAM01E | rbeanbam | Rose Bean | | ViewOnly | No | Yes | ######## | 5.3.0 | Unknown | | | | | No | | | No |
| BAM01E | ASHAHBAM | Archana Shah | | ViewOnly | No | Yes | ######## | 5.3.0 | Unknown | | | | | No | | | No |
| BAM01E | djonesbam | Debbie Jones | | ViewOnly | No | Yes | 3/3/2012 | 5.3.0 | Unknown | | | | | No | | | No |
| BAM01E | dcoleman2bam | Dee Coleman | | ViewOnly | No | Yes | ######## | 5.3.0 | Unknown | | | | | No | | | No |
| BAM01E | ywilkesbam | Yolanda Wilkes | | ViewOnly | No | Yes | 3/3/2012 | 5.3.0 | Unknown | | | | | No | | | No |
| BAM01E | dramseybam | David Ramsey | | ViewOnly | No | Yes | ######## | 5.3.0 | Unknown | | | | | No | | | No |
| BAM01E | MGS-BD-F | | | | | | | | | | 500000 | | 10000000 | No | | | No |
| BAM01E | JDoe-CUST | | | | | | | | | 10000 | | 9999999 | | Yes | YHOO, IBM | | No |
| BAM01E | HFJD-CUST | | | | | | | | | 75000 | | 9999999 | | No | | | No |
| BAM01E | | | | | | | | | | | 99999999 | | 99999999 | No | | | No |

Client perspective by BU is now represented by including the Custom Client Category name in the User ID column. CCC Names contain a hyphen, so they should be distinguishable from User Names. Data columns that apply only to users are greyed out for CCC rows.

The BU perspective is represented last, after users and CCC Names for the BU. Data columns that apply only to Users and CCCs are greyed out for the BU perspective

# Chapter 7 Open Issues Tracking

This table is to be deleted upon final release of document.

| | SIR if Known | Issue | Entered by | Date | Resolved? |
|---|---|---|---|---|---|
| 1 | | Clarification about entitlements that are included in the MOPs role | Laura | 03/30/2015 | Open |
| | | | | | |