



EURONEXT CASH MARKETS - OPTIQ[®] SELF-TRADE PREVENTION (STP)

FUNCTIONAL OVERVIEW

January 2018

v1.3

CONTENTS

CONTENTS	2
1. INTRODUCTION	3
1.1 Related documents	3
1.2 Document history	3
2. FUNCTIONAL OVERVIEW	4
2.1 Self-trade prevention (STP) mechanism	4
2.1.1 STP Type	5
2.1.2 STP ID (FOR FUTURE USE)	5
2.2 Scope where STP is applicable	5
2.2.1 Trading Phase	5
2.2.2 Instruments	5
2.2.3 Member and Account Type (origin)	5
2.2.4 Order Types and Order Side	6
2.2.5 Internal Matching Service (IMS)	6
2.2.6 Partial Match of an Order with STP	6
3. TECHNICAL OVERVIEW & RULES APPLIED	7
3.1 Incoming order & Modification messages	7
3.1.1 SBE Message, Field and Value details:	7
3.1.2 FIX Message, Field and Value details:	8
3.2 Behavior when Triggered & messages for order cancellation	9
3.2.1 STP – Cancel Resting Order	10
3.2.2 STP – Cancel Incoming Order	10
3.3 Behaviour in case of Modification of an Existing (Resting) order	11
3.3.1 Modification without changing Price of the order:	11
3.3.2 Modification of Price of the order:	11
3.4 Error Codes, Rejection messages & Cases where STP is ignored	11
4. APPENDIX A: STP ORDER MECHANISM: EXAMPLES	14
4.1 STP Resting order (Position 1)	14
4.1.1 Simple case with one match (trade) and one cancellation due to STP	14
4.1.2 Several orders cancelled and matched	15
4.2 STP Incoming order (Position 2)	16
4.3 Cancellation by STP with Internal Matching System activated	17

1. INTRODUCTION

Self-Trade Prevention (STP) has been introduced on Euronext's Cash Markets to allow Member Firms acting as Liquidity Providers to avoid trading with themselves.

The STP mechanism allows customers to avoid unintentional self-trading that results from the matching of two opposite orders on the same instrument, of the same Member Firm (i.e. with the same Member Code). The mechanism applies to orders that are submitted via private messages (SBE or FIX) with the Account Type of Liquidity Provider (LP).

In the event that two opposite LP orders belonging to the same Member Firm would match against each other, the mechanism cancels either the resting or the incoming order (depending on the STP Type chosen). If STP Type chosen is "Cancel Resting", then the system enters the incoming order of the possible match, into the central order book. If STP Type chosen is "Cancel Incoming", then no changes occur in the central order book and the incoming order is rejected.

1.1 RELATED DOCUMENTS

The following list identifies the documents, which either should be read in conjunction with this document, or which provide other relevant information for the user:

- Euronext Cash Markets - Optiq OEG Client Specifications - SBE Binary Interface
- Euronext Cash Markets - Optiq OEG Client Specifications - FIX 5.0 Interface
- Euronext Cash Markets - Optiq Kinematics Specifications
- Euronext Cash Markets - Optiq & TCS Error List
- OEG SBE XML message templates

Clients are advised to also refer to the Euronext Rules and Regulations documents for more details.

For the latest version of documentation please visit www.euronext.com/optiq.

Note

This document is for informational purposes only and should be consulted alongside its related documents outlined above.

1.2 DOCUMENT HISTORY

The following lists only the most recent modification made to this revision/version. Please see the [Appendix](#) for the document revision history.

DOCUMENT VERSION	DATE	CHANGE DESCRIPTION
1.3	January 2018	<ul style="list-style-type: none"> ■ Added clarification on behaviour in case of Order modification, in case of partial matching, and for STP – Cancel Incoming Order done in sections "3.2.2 STP – Cancel Incoming Order" and "3.3.2 Modification of Price of the order" ■ Added section "Appendix A Document Revision History"

2. FUNCTIONAL OVERVIEW

2.1 SELF-TRADE PREVENTION (STP) MECHANISM

The Self-Trade Prevention (STP) functionality is an optional functionality, which in Optiq works as follows:

- It prevents the matching of two opposite orders that are eligible to the STP mechanism,
- Cancels the resting or incoming order, depending on the STP Type chosen by the client,
- In case the chosen STP Type is “Cancel Resting”, Optiq simultaneously enters the other order from the possible match into the order book, and;
- Triggers sending of appropriate private and public messages to inform clients of the occurred events

In order to be eligible for the STP mechanism, both opposite orders must satisfy the following criteria:

- Firm ID: Both orders come from the same member firm, which means that the values in the *Firm ID* (SBE) / *OnBehalfOfCompID* (FIX) of the incoming order equals the one provided of the resting order
- Liquidity Provider: Both orders have the *Account Type* set to 6 - Liquidity Provider (LP), i.e. field *Account type* set to value “6” (Liquidity Provider); and field *LP Role* set to any of the allowed values associated with the Cash markets.
- Instrument: Both orders are sent on the same instrument, represented by a combination of Symbol Index and EMM¹
- STP Type²: Both orders have the same value set in the field *Execution Instruction* (SBE) / *STP Aggressor Indicator* (FIX) to indicate whether client would like to cancel the incoming or resting order.
- STP ID³: FOR FUTURE USE
 - *Field present in the SBE / FIX specifications as for future use, but not available in Optiq Step 2 day 1 Prod go live.*
 - *If included, the values of this optional client populated field in both orders must match*

If any of the criteria above are not satisfied STP mechanism will not be triggered.

- Use of STP functionality does not require any additional setup for the client’s connections, and uses the characteristics of orders and firms as described in this document.
- STP functionality is applied to incoming orders sent within a single Optiq segment, on the same instrument, during the Continuous and Continuous Trading-at-Last (TAL) phases of trading cycle.
- To ensure fairness STP check will be done on all orders within each Optiq segment, for all market participants.
- Internal Matching Facility service (IMS)⁴: The STP functionality is compatible with the Internal Matching Service.

¹ EMM – Exchange Market Mechanism represents the platform to which the order sent by the client must be routed.

² For more details about the STP Type please review section 2.1.1 within this document

³ STP ID is at this time flagged for future use. More details about it will be provided in section 0 of this document

⁴ Internal Matching Facility service (IMS) is a service for a member which implies that an order in respect of an Eligible Financial Instrument entering the order book already containing an order by that member at the best limit will be executed against this latter order without regard to its entry time;

☞ Please see the appendix for various examples of STP handling

2.1.1 STP Type

STP Type allows clients to choose whether to use Cancel resting (existing) or Incoming (new, or aggressive) order. It is specified by the clients in the *Execution Instruction* field of the SBE **New Order** (01) message and in field *STPAggressorIndicator* in FIX **NewOrderSingle** (D) message.

This field is optional, and if not specified will exclude the order from scope of STP.

The STP Type may be updated by the client using **Cancel Replace** (06) (FIX G).

If a client submits an **OpenOrderRequest** (15) (FIX AF) message the indicator is communicated back to them, for information purposes, in the **Extended Response** (16) (FIX 8) and **Extended Fill** (29) (FIX 8) messages.

2.1.2 STP ID (FOR FUTURE USE)

Field STP ID is present in the SBE / FIX specifications, however it is not available for functional use in Optiq Step 2 implementation. For this reason the field in the specifications, and the associated mentions in this document, are identified as *for future use*.

2.2 SCOPE WHERE STP IS APPLICABLE

2.2.1 Trading Phase

The STP mechanism is only available during the Continuous and Continuous Trading-at-Last (TAL) phases of trading cycle.

Outside these two trading phases, orders entered with the correct STP fields set with “activated” values are not rejected, but the STP mechanism would not be triggered.

Note that orders with STP values activated and entered outside of the two eligible trading phases are still eligible for the STP mechanism once the instrument’s status returns to the Continuous Core or TAL trading phase & mode.

2.2.2 Instruments

The STP mechanism is only applicable for instruments trading within the order driven model and hosted within Optiq segments where STP is enabled.

Note that all orders with STP values activated entered for instruments setup with LP quote driven model are not rejected; however as the STP mechanism is not applicable for them the associated STP fields and values are ignored.

STP mechanism is disabled on the Warrants & Certificates Optiq segment.

2.2.3 Member and Account Type (origin)

The STP mechanism is triggered when the opposite orders have the same member code in field *Firm ID* (SBE) / *OnBehalfOfCompID* tag: 115 (FIX) and are submitted with the field *Account type* set to value 6 – “Liquidity Provider”; and field *LP Role* set to any of the allowed values associated with the Cash markets.

Note that in the cases where STP values are set as activated, but the opposite orders do not have the same member code and/or an account type (origin) is not equal to Liquidity Provider, the orders will not trigger the STP mechanism (i.e. the STP fields and values are ignored).

2.2.4 Order Types and Order Side

STP mechanism applies to Order messages only, within the Optiq Segments where STP is enabled. LP Quote messages are not in scope of the STP mechanism and do not have any fields to enable STP.

Order messages, all order types, order sides and validity types, except for Market to Limit and Cross orders are in scope of the STP mechanism.

The order messages for Market to Limit orders or Cross orders are rejected when they have the STP Type set as activated [positions 1 or 2 of the field *Execution Instruction* (SBE) is set with “enabled” value of one (1) / *STPAggressorIndicator* (tag: 21015) (FIX) is filled in], AND they originate from the LP account (field *Account Type* is set to “6” [Liquidity Provider] with the field *LP Role* set to any of the allowed values associated with the Cash markets [1 or 3]).

Market to Limit or Cross order messages are identified by the following:

- Market to Limit order - field Order Type is set to “6” [Market to limit]
- Cross order - field Order Side is set to “3” [Cross]

2.2.5 Internal Matching Service (IMS)⁵

The STP functionality is compatible with the Internal Matching Service (IMS). If activated, IMS rules are applied and STP is also checked for every potential match, including those in scope of IMS.

☞ See appendix for specific examples where both the IMS and STP are activated.

2.2.6 Partial Match of an Order with STP

In case STP is enabled with STP Type of cancelling the Incoming order, if the incoming order meets multiple orders, these orders on the opposite side of the book will be evaluated and treated in the time-price priority. If the first order met doesn't meet the STP criteria, and results in a partial match with the incoming order, then the remainder of the incoming order meets an order that does meet the STP criteria, then this will result in (1) a fill of the first order and (2) cancellation of the remaining quantity of the incoming order.

⁵ The IMS service uses a trading algorithm privileging a Price-Member-Time priority, which allows buy and sell orders at the best price originated by the same member firm subscribing to this service to be matched in Euronext's central order book.

3. TECHNICAL OVERVIEW & RULES APPLIED

In order to benefit from the Self-Trade Prevention mechanism, a Euronext member acting as a Liquidity Provider has to fill the relevant dedicated STP values in the fields listed below in the **New Order** (01) (FIX D) or **Cancel / Replace** (06) (FIX G) messages.

STP instructions should be possible to submit in any **New Order** (01) (FIX D) or **Cancel/Replace** (06) (FIX G) message is accepted on all the Optiq segments, however, the STP mechanism is only applied on the instruments setup with order driven model, and is disabled on the Warrants & Certificates segment.

When the STP type “Cancel the Resting Order” is applied, the STP mechanism cancels the resting order and sends back a cancellation notice to the member as the private **Kill** (05) (FIX 8) message, with the value “7 = Cancelled by STP”, this is specified in the field *Kill Reason*. The cancellation will also trigger the sending of the associated public messages.

When the STP type of “Cancel the Incoming Order” is applied, the STP mechanism cancels the incoming order and sends back a private **Reject** (07) (FIX 9) message, with the error code “2179” specified in the field *Error Code*, which stands for “Incoming order cancelled due to STP type of Cancel Incoming order”. In this case, as the incoming order never enters the book, no **Ack** is sent to the client, and no public messages are sent either.

If the STP Type is either not filled with one of the expected values, is set incorrectly in the fields / positions providing the STP type or when used in an incompatible order type, the order message is rejected with the appropriate error code. More details on rejections and error codes are provided in the dedicated section within this document.

3.1 INCOMING ORDER & MODIFICATION MESSAGES

The sections below provide more information about the messages and fields used for matching of orders and triggering of STP mechanism in SBE and FIX protocols.

Note that, unless specifically identified in this document, the order modification process is unchanged by the use of the STP process.

3.1.1 SBE Message, Field and Value details:

For SBE field *Execution Instruction* in positions 1 or 2 are used to indicate the type of STP to use. Please note that only one of the positions should be set with values indicating an activation of the type (i.e. either STP resting order, **or** STP incoming order)

Incoming Messages:

Message Code	Message Name	Characteristic	Field	Values	Notes
01 / 06	New Order / Cancel Replace	Firm ID	Firm ID	From 0 to 2 ⁶⁴ -2	
		Account Type (origin)	Account Type	6	Value 6 represents account type Liquidity Provider
		LP Role	LP Role	1, 3	One of the values listed must be provided
		STP Type	Execution Instruction (bitfield)	0: STP Resting Order deactivated	

Message Code	Message Name	Characteristic	Field	Values	Notes
			Position 1 - STP resting order	1: Cancel Resting Order	
			Execution Instruction (bitfield) Position 2 - STP incoming order	0: STP Incoming Order deactivated 1: Cancel Incoming Order	
			STP ID (For Future Use)	STP ID (For Future Use)	For Future Use

Outgoing Messages:

Message Code	Message Name	Characteristic	Field	Values	Notes
16 / 29	Extended Response / Extended Fill	Firm ID	Firm ID	From 0 to 2 ⁶⁴ -2	
		Account Type (origin)	Account Type	6	Value 6 represents account type Liquidity Provider
		LP Role	LP Role	1, 3	One of the values listed must be provided
		STP Type	Execution Instruction (bitfield) Position 1 - STP resting order	0: STP Resting Order deactivated 1: Cancel Resting Order	
			Execution Instruction (bitfield) Position 2 - STP incoming order	0: STP Incoming Order deactivated 1: Cancel Incoming Order	
			STP ID (For Future Use)	STP ID (For Future Use)	For Future Use

3.1.2 FIX Message, Field and Value details:Incoming Messages:

Message Code	Message Name	Characteristic	Field	Values	Notes
D / G	NewOrderSingle / OrderCancelReplaceRequest	Firm ID	OnBehalfOfCompID Tag: 115	From 0 to 2 ⁶⁴ -2	
		Account Type (origin)	AccountCode Tag: 6399	6	Value 6 represents account type Liquidity Provider
		LP Role	LPRole Tag: 20021	1, 3	One of the values listed must be provided
		STP Type	STP Aggressor Indicator Tag: 21015	0 = STP resting order	If selected, and matches another order, this will trigger cancellation of the Resting order
				1 = STP incoming order	If selected, and matches another order, this will trigger cancellation of the

Message Code	Message Name	Characteristic	Field	Values	Notes
					Incoming order
				9 = Disable STP	Default values used to specify "Null" or that STP is not enabled
		STP ID (For Future Use)	STPID Tag: 21012 (For Future Use)	For Future Use	For Future Use

Outgoing Messages:

Message Code	Message Name	Characteristic	Field	Values	Notes
8	ExecutionReport	Firm ID	OnBehalfOfCompID Tag: 115	From 0 to 2 ⁶⁴ -2	
		Account Type (origin)	AccountCode Tag: 6399	6	Value 6 represents account type Liquidity Provider
		LP Role	LPRole Tag: 20021	1, 3	One of the values listed must be provided
		STP Type	STPAggressorIndicator Tag: 21015	0 = STP resting order	If selected, and matches another order, this will trigger cancellation of the Resting order
				1 = STP incoming order	If selected, and matches another order, this will trigger cancellation of the Incoming order
				9 = Disable STP	Default values used to specify "Null" or that STP is not enabled
		STP ID (For Future Use)	STPID Tag: 21012 (For Future Use)	For Future Use	For Future Use

3.2 BEHAVIOR WHEN TRIGGERED & MESSAGES FOR ORDER CANCELLATION

Upon entry, every incoming order message is checked for STP settings. This check is done for all market participants, within each Optiq segment and where the STP mechanism is enabled.

If an order message is set with STP enabled, but where the Account Type is not equal to Liquidity Provider, the orders will not trigger the STP mechanism (i.e. the STP fields and values are ignored).

Orders with STP Type set are treated as any other order, and the checking of any STP characteristics is performed when there is a potential of matching between two orders to determine if the STP mechanism should be applied or not.

If activated, IMS rules are applied and STP is also checked for every potential match, including those in scope of IMS.

3.2.1 STP – Cancel Resting Order

When a resting order in the order book is cancelled by the matching engine as a result of the STP mechanism, the following messages are sent by the system:

In Private messages back to the Liquidity Provider:

- **Kill** (05) (FIX 8) message is sent to indicate cancellation of the resting order
 - For SBE with the value "7" = Cancelled by STP specified in the field *Kill Reason*
 - For FIX Fields are:
 - *ExecType* (tag: 150) specified with value "4" = Cancelled
 - *OrdStatus* (tag: 39) specified with value "P" = Cancelled by STP
- **Ack** (03) (FIX 8) message is sent to indicate entry of the incoming order into the order book

In Public message feed:

- An **OrderUpdate** (1002) message is sent to indicate cancellation of the resting order, followed by the **MarketUpdate** (1001) message
- An **OrderUpdate** (1002) message is sent to indicate entry of the incoming order into the central order book, followed by the **MarketUpdate** (1001) message to update the limits

3.2.2 STP – Cancel Incoming Order

Simple case of Immediate STP Trigger

When an incoming order is "cancelled" before it enters the order book as a result of the STP mechanism, the following messages are sent by the system:

In Private messages back to the Liquidity Provider:

- A **Reject** (07) (FIX 9) message is sent to indicate that the incoming order was rejected
 - For both SBE & FIX the error code "2179" is specified in the field *Error Code / ErrorCode* (tag: 9955), which stands for "Incoming request rejected due to STP type of Cancel Incoming order"
 - In FIX the field *OrdStatus* (tag: 39) is specified with value "8" Rejected

For Modification of an Existing Order

In case of modification, the order that was already in the book remains unchanged.

In Public message feed:

- No messages are issued, as
 - in case of a new order the resting order remains unchanged in the book and the incoming order never entered the book, and
 - in case of modification of a resting order, the orders are not modified

Case of STP Trigger after a Partial Match

When an incoming order first matches against an order that has higher price-time priority, and then the remainder of the order meets an order that matches its STP criteria, the first order results in a partial match

while the second order results in the cancellation of the remaining quantity. In this case the following messages are sent by the system:

In Private messages back to the Liquidity Provider:

- An **Ack** (03) (FIX 8) message is sent to indicate that the incoming order was accepted
- Two **Fill** (04) (FIX 8) messages are sent for the partial quantity that was matched, to both participants
- A **Kill** (05) (FIX 8) message is sent for the remaining quantity to the client that sent the incoming order

In Public message feed:

- A **MarketUpdate** (1001) message is sent to indicate the execution of the trade, followed by the **OrderUpdate** (1002) message to remove passive matched order, followed by another **MarketUpdate** (1001) message to update the limits
- As in any other case similar to this, as aggressive order never enters the book, no additional MDG messages are sent

3.3 BEHAVIOUR IN CASE OF MODIFICATION OF AN EXISTING (RESTING) ORDER

3.3.1 Modification without changing Price of the order:

If any value in an order -except Price - is modified in an existing “resting” order, this change would not trigger a re-evaluation of this resting order. As such, the modification won’t trigger STP mechanism check, as no matching of STP is possible

Please note: Characteristics of cross order can’t be modified

3.3.2 Modification of Price of the order:

If an order modification contains an update of the Price, it is treated as a new incoming order. As such this update triggers the review of the STP matching conditions against other orders already in the book, this is true of any other new incoming order.

The STP check in this case will take the STP value set in the modification message, no matter what was identified for STP Type in the original resting order before the modification. If during this re-evaluation of the order it is identified that it matches STP conditions with another resting order, the STP mechanism would be triggered and it would follow the behaviour as described (depending on the STP type selected).

Both behaviours may occur after a modification with an update of the price,

- the rejection of an order, if the order immediately matches against another STP eligible order, in which case the order remains in the book unchanged, as if modification was never sent. *For more details please review section on STP - Cancel Incoming Order*
- the partial fill, and then cancellation of the remaining quantity, if the modified order first matches partially against a non-STP eligible order, and after attempts to match against an STP eligible order. *For more details please review section on Partial Match*

3.4 ERROR CODES, REJECTION MESSAGES & CASES WHERE STP IS IGNORED

In the specific cases identified in this section, orders submitted with information that doesn’t follow the STP rules, or when STP is triggered, may result in error messages or rejections being sent to a member. When STP is not applicable or disabled STP information is ignored by the system completely.

STP mechanism is disabled on the Warrants & Certificates Optiq segment.

The tables below identify various behaviours, related error codes and their associated error text issued in answer to the incoming messages for STP.

Cases for New Orders messages (01 / D):

Case	Behavior	Message(s) Issued (SBE / FIX)	Error Code	Comments
In SBE - Both STP Type positions are filled in SBE field Execution Instruction	Order message rejected, as for any other functionally or technically incorrectly filled incoming order or quote message	Reject (07) (FIX 9)	1144	Error Text: "Invalid value in Execution Instruction for STP Type" Error Condition: "In the field Execution Instruction for identification of STP Type only one of the positions (1 or 2) should be set with values indicating an activation of the STP mechanism" Functional rejection of type: "1 – Inconsistent"
In SBE - STP values badly specified	In SBE – it is technically not feasible to provide any value other than zero (0) or one (1) within a single bitfield position.	N/A	N/A	
In FIX - STP values badly specified	In FIX – if the field STP aggressor indicator (tag 21015) is populated with any value other than zero (0) or one (1) it is treated as any other enumerated value, and the message is rejected with a specific error code	Reject (07) (FIX 9)	3618	Error Text: "Invalid value in field STP aggressor indicator" Conditions: "In the field STP aggressor indicator only specified possible values could be populated" Functional rejection of type: "3 – Invalid"
STP set on the wrong order type: Market to Limit	Order message rejected, with a specific error code indicating inconsistency of the selected feature (STP) with the Market to Limit order	Reject (07) (FIX 9)	2043	Error Text: STP not authorized for Order Type MTL. Functional rejection of type: "2 – Forbidden"
STP set on the wrong order type: Cross	Order message rejected, with a specific error code indicating inconsistency of the selected feature (STP) with the Cross orders	Reject (07) (FIX 9)	1036	Error Text: STP not authorized for Cross Orders. Functional rejection of type: "1 – Inconsistent"
Incoming order cancelled due to STP mechanism (STP Type set to "STP incoming order")	Order message is rejected, with a specific error code indicating that the incoming order is rejected, due to STP mechanism matching a resting order	Reject (07) (FIX 9)	2179	Error Text: Incoming order cancelled due to STP type of Cancel Incoming order
STP sent on the order on the LP quote driven market	No rejection, quote processed as usual and STP value is ignored	N/A	N/A	
STP during a phase where no STP possible	No rejection occurs or sent to the client, order is kept in the book until the allowed phase, where it may trigger STP with another incoming order.	N/A	N/A	

Cases for Modification of Order messages (06 / G):

Case	Behavior	Message(s) Issued (SBE / FIX)	Error Code	Comments
In SBE Both STP Type positions are filled in SBE field Execution Instruction (if modified from previously set value was not set on a resting order)	Order message rejected, as for any other functionally or technically incorrectly filled incoming order or quote message	Reject (07) (FIX 9)	1144	Error Text: "Invalid value in Execution Instruction for STP Type" Condition: "In the field Execution Instruction for identification of STP Type only one of the positions (1 or 2) should be set with values indicating an activation of the STP mechanism" Functional rejection of type: "1 – Inconsistent"
In SBE STP values badly specified (if modified from previously set value was not set on a resting order)	In SBE – it is technically not feasible to provide any value other than zero (0) or one (1) within a single bitfield position.	N/A	N/A	
In FIX STP values badly specified (if modified from previously set value was not set on a resting order)	In FIX – if populated with any value other than zero (0) or one (1) it is treated as any other enumerated value, and the message is rejected with a specific error code	Reject (07) (FIX 9)	3618	Error Text: "Invalid value in field STPAggressorIndicator" Conditions: "In the field STPAggressorIndicator only specified possible values could be populated" Functional rejection of type: "3 – Invalid"
STP set on the wrong order type: Market to Limit (if previously was not set on a resting order)	Order message rejected, with a specific error code indicating inconsistency of the selected feature (STP) with the Market to Limit order	Reject (07) (FIX 9)	2043	Error Text: STP not authorized for Order Type MTL. Functional rejection of type: "2 – Forbidden"
Incoming Modified order with the Price modification, cancelled due to STP mechanism (STP Type set to "STP incoming order" in the modification message)	Order message is rejected, with a specific error code indicating that the incoming order is rejected, due to STP mechanism matching a resting order	Reject (07) (FIX 9)	2179	Error Text: Incoming order cancelled due to STP type of Cancel Incoming order
STP set on quotes message	No rejection, quote processed as usual and STP value is ignored	N/A	N/A	
STP during a phase where no STP possible	No rejection occurs or sent to the client, order is kept in the book until the allowed phase, where it may trigger STP with another incoming order.	N/A	N/A	

4. APPENDIX A: STP ORDER MECHANISM: EXAMPLES

In the following examples, if positions 1 or 2 of the field *Execution Instruction* (SBE) are set to “enabled” with a value of one (1) / *STPAggressorIndicator* (tag: 21015) (FIX) is filled in, indicating that the STP mechanism is enabled for the incoming order which is triggering the event and associated STP check. If these values are not set to an “activated” state, then the STP mechanism is not enabled and won’t be triggered.

To improve readability only SBE fields and values are used in the below examples.

4.1 STP RESTING ORDER (POSITION 1)

For all examples in this section where values in the incoming order messages that trigger the STP mechanism are set to one (1) in the position 1 of the field *Execution Instruction*, indicating that STP type of “Cancellation of the Resting Order” (REST) is selected by the client, IMS is **not** activated, and when matched the Incoming order will be entered into the central order book and the resting order is cancelled.

4.1.1 Simple case with one match (trade) and one cancellation due to STP

- Consider the following order book as the starting state, during the continuous trading phase:

Bid (Buy)							Ask (Sell)						
Account Type	STP Type	Firm	Order number	STP ID ⁱ	Qty	Price	Price	Qty	STP ID	Order Number	Firm	STP Type	Account Type
6	REST	MBR1	1	-	100	70.77	70.97	300	-	2	MBR6	-	2
6	INC	MBR1	6	-	500	70.76	70.97	100	-	3	MBR7	-	1
4	-	MBR4	4	-	300	70.75	70.98	500	-	5	MBR5	-	4
2	-	MBR3	7	-	500	70.75	70.99	500	-	8	MBR10	-	2
1	-	MBR8	11	-	600	70.72	71.00	2000	-	9	MBR11	-	4

- MBR1 enters a sell Order #12 (*order number = 12*) at 70.70 for 100 lots.

The *Account Type* is set to 6 (Liquidity Provider), *LP role* is set to one of the allowed values for Cash markets and the *Execution Instruction* in position 1 is set to 1 “Yes” for STP of Resting order

Ask (Sell)						
Price	Qty	STP ID	Order Number	Firm	STP Type	Account Type
70.70	100	-	12	MBR1	REST	6

↩ new

- Processing Steps:

- In order of Price / Time priority - Order #12 has the potential of matching against resting Order #1, at quantity of 100, and price 70.77
- As STP is activated for Order #12, these orders are checked for matching STP conditions, and as all the STP conditions between these two orders match (same Firm ID, STP type, LP account and LP role are set), and as STP Type is “Cancel Resting order” the resting Order #1 is cancelled. Order #12 is unchanged and continues with processing steps.
- Then the next order in Price / Time priority – resting Order #6 has the potential of matching against Order #12, also for quantity of 100 lots, at price 70.76
- STP is checked, however while in this case STP is also set on Order #6, the mechanism is not triggered as Order #6 has a different STP type of “Incoming order” and a match (trade) could occur.

- Incoming Order #12 is matched with Order #6 and generates a transaction at 70.76 for 100 lots. As a result:
 - Order #12 is fully matched
 - Order #6 has remaining quantity of 400 lots, which stays in the book
- As the incoming Order #12 has fully matched no other matches occur, no other STP condition checks are done and processing is completed

■ The order book after order processing is as following:

Bid (Buy)							Ask (Sell)						
Account Type	STP Type	Firm	Order number	STP ID	Qty	Price	Price	Qty	STP ID	Order Number	Firm	STP Type	Account Type
6	INC	MBR1	6	-	400	70.76	70.97	300	-	2	MBR6	-	2
4	-	MBR4	4	-	300	70.75	70.97	100	-	3	MBR7	-	1
2	-	MBR3	7	-	500	70.75	70.98	500	-	5	MBR5	-	4
1	-	MBR8	11	-	600	70.72	70.99	500	-	8	MBR10	-	2
							71.00	2000	-	9	MBR11	-	4

4.1.2 Several orders cancelled and matched

■ Consider the following order book as the starting state, during the continuous trading phase:

Bid (Buy)							Ask (Sell)						
Account Type	STP Type	Firm	Order number	STP ID	Qty	Price	Price	Qty	STP ID	Order Number	Firm	STP Type	Account Type
6	REST	MBR1	1	-	100	70.77	70.97	300	-	2	MBR6	-	1
6	REST	MBR1	6	-	500	70.76	70.97	100	-	3	MBR7	-	2
2	-	MBR4	4	-	300	70.75	70.98	500	-	5	MBR5	-	6
6	REST	MBR1	7	-	500	70.75	70.99	500	-	8	MBR10	-	2
4	-	MBR8	11	-	600	70.72	71.00	2000	-	9	MBR11	-	2
4	REST	MBR4	12	-	600	69.20							

■ **MBR1** enters a sell Order #13 at 70.70 for 700 lots.

The *Account Type* is set to 6 (Liquidity Provider), *LP role* is set to 1 (Liquidity Provider) and the *Execution Instruction* in position 1 is set to 1 “Yes” for STP of Resting order

Ask (Sell)						
Price	Qty	STP ID	Order Number	Firm	STP Type	Account Type
70.70	700	-	13	MBR1	REST	6

← new

■ Processing Steps:

- In order of Price / Time priority - Order #13 has the potential of matching against resting Order #1, at quantity of 100, and price 70.77
- As STP is activated for Order #13, these orders are checked for matching STP conditions, and as all the STP conditions between these two orders match (same Firm ID, STP type, LP account and LP role are set), and as STP Type is “Cancel Resting order” the resting Order #1 is cancelled. Order #13 is unchanged, and continues with processing steps.
- The next order in Price / Time priority – resting Order #6 has the potential of matching against Order #13, for quantity of 500 lots, at price 70.76

- STP is checked, and as all the STP conditions between these two orders match (same Firm ID, STP type, LP account and LP role are set), and as STP Type is “Cancel Resting order” the resting Order #6 is cancelled. Order #13 is unchanged, and continues with processing steps.
- Next potential match is Order #13 and Order #4, for quantity of 300 lots, at price 70.75
STP conditions between Order #13 and #4 do not match (Order #4 has no STP set). Incoming Order #13 is matched with Order #4 and generates a transaction at 70.75 for 300 lots. As a result:
 - Order #14 is fully matched
 - Order #13 has remaining quantity of 400 lots, and continues with processing steps
- Next potential match is Order #13 and Order #7, for quantity of 400 lots (remaining quantity of Order #13), at price 70.75
- STP is checked, all the STP conditions match (same Firm ID, STP type, LP account and LP role are set), and as STP Type is “Cancel Resting order” the resting Order #7 is cancelled. Order #13 is unchanged, and continues with processing steps.
- Next potential match is Order #13 and Order #11, for quantity of 400 lots (remaining quantity of Order #13), at price 70.72
- STP conditions between Order #13 and #11 do not match (Order #11 has no STP set). Incoming Order #13 is matched with Order #11 and generates a transaction at 70.72 for 400 lots. As a result:
 - Order #14 is partially matched, and its remaining quantity (200) stays in the book
 - Order #13 is fully matched
- As the incoming Order #13 has fully matched no other matches occur, no other STP condition checks are done and processing is completed

- The Order book after order processing is as following:

Bid (Buy)							Ask (Sell)						
Account Type	STP Type	Firm	Order number	STP ID	Qty	Price	Price	Qty	STP ID	Order Number	Firm	STP Type	Account Type
4	-	MBR8	11	-	200	70.72	70.97	300	-	2	MBR6	-	1
4	REST	MBR4	12	-	600	69.20	70.97	100	-	3	MBR7	-	2
							70.98	500	-	5	MBR5	-	6
							70.99	500	-	8	MBR10	-	2
							71.00	2000	-	9	MBR11	-	2

4.2 STP INCOMING ORDER (POSITION 2)

For all examples in this section, the values in the incoming order messages that are triggering the STP mechanism are set to one (1) in the position 2 of the field *Execution Instruction*, IMS is **not** activated, indicating that STP type of “Cancellation of the Incoming Order” (INC) is selected by the client, and when matched the incoming order is cancelled and the resting order remains unchanged in the central order book.

- Consider the following order book as the starting state, during the continuous trading phase:

Bid (Buy)							Ask (Sell)						
Account Type	STP Type	Firm	Order number	STP ID	Qty	Price	Price	Qty	STP ID	Order Number	Firm	STP Type	Account Type
6	INC	MBR1	1	-	100	70.77	70.97	300	-	2	MBR6	-	2
6	REST	MBR1	6	-	500	70.76	70.97	100	-	3	MBR7	-	1

4	-	MBR4	4	-	300	70.75	70.98	500	-	5	MBR5	-	4
2	-	MBR3	7	-	500	70.75	70.99	500	-	8	MBR10	-	2
1	-	MBR8	11	-	600	70.72	71.00	2000	-	9	MBR11	-	4

- **MBR1** enters a sell Order #12 (order number = 12) at 70.70 for 100 lots.

The *Account Type* is set to 6 (Liquidity Provider), *LP role* is set to 1 (Liquidity Provider) and the *Execution Instruction* in position 2 is set to 1 “Yes” for STP of Incoming order

Ask (Sell)						
Price	Qty	STP ID	Order Number	Firm	STP Type	Account Type
70.70	100	-	12	MBR1	INC	6

- Processing Steps:

- In order of Price / Time priority - Order #12 has the potential of matching against resting Order #1, at quantity of 100, and price 70.77
- As STP is activated for Order #12, these orders are checked for matching STP conditions, and as all the STP conditions between these two orders match (same Firm ID, STP type, LP account and LP role are set), and as STP Type is “Cancel Incoming order” the incoming Order #12 is Rejected.
- As Order #12 is rejected, without entering the book, no other matches are possible, no other STP condition checks are done and processing is completed

- The order book after order processing is as following:

Bid (Buy)							Ask (Sell)						
Account Type	STP Type	Firm	Order number	STP ID	Qty	Price	Price	Qty	STP ID	Order Number	Firm	STP Type	Account Type
6	INC	MBR1	1	-	100	70.77	70.97	300	-	2	MBR6	-	2
6	REST	MBR1	6	-	500	70.76	70.97	100	-	3	MBR7	-	1
4	-	MBR4	4	-	300	70.75	70.98	500	-	5	MBR5	-	4
2	-	MBR3	7	-	500	70.75	70.99	500	-	8	MBR10	-	2
1	-	MBR8	11	-	600	70.72	71.00	2000	-	9	MBR11	-	4

4.3 CANCELLATION BY STP WITH INTERNAL MATCHING SYSTEM ACTIVATED

- **MBR1** and **MBR2** are part of the same internalising pool and IMS (Internal Matching System) is activated on this instrument (highlighted with yellow cells) and IMS is activated.
- Consider the order book in the table below as the starting state, during the continuous trading:

Bid (Buy)							Ask (Sell)						
Account Type	STP Type	Firm	Order number	STP ID	Qty	Price	Price	Qty	STP ID	Order Number	Firm	STP Type	Account Type
6	REST	MBR1	1	-	100	70.77	70.97	300	-	2	MBR6	-	1
2	REST	MBR2	6	-	500	70.76	70.97	100	-	3	MBR7	-	2
6	INC	MBR4	4	-	300	70.75	70.98	500	-	5	MBR5	-	6
6	REST	MBR1	7	-	500	70.75	70.99	500	-	8	MBR10	-	2
1	-	MBR8	11	-	600	70.72	71.00	2000	-	9	MBR11	-	2
2	REST	MBR4	12	-	600	69.20							

- **MBR1** enters a sell Order #13 at 70.75 for 700 lots

The *Account Type* is set to 6 (Liquidity Provider), *LP role* is set to 1 (Liquidity Provider) and the *Execution Instruction* in position 1 is set to 1 “Yes” for STP of Resting order

Ask (Sell)						
Price	Qty	STP ID	Order Number	Firm	STP Type	Account Type
70.75	700	-	13	MBR1	REST	6

■ Processing Steps:

- In order of Price / Member / Time priority - Order #13 has the potential of matching against resting Order #1, at quantity of 100, and price 70.77
- As STP is activated for Order #13, these orders are checked for matching STP conditions, and as all the STP conditions between these two orders match (same Firm ID, STP type, LP account and LP role are set), and as STP Type is “Cancel Resting order” the resting Order #1 is cancelled. Order #13 is unchanged, and continues with processing steps.
- The next order check is if the resting Order #6 has the potential of matching against Order #13, for quantity of 500 lots, at price 70.76. Order #13 and Order #6 belong to two Firms that are participants in the same IMS pool and have priority in matching, however no other orders are present at this limit, and no additional prioritization due to IMS is done.
- STP conditions between Order #13 and #6 do not match (Order #11 has a different Firm). Incoming Order #13 is matched with Order #6 and generates a transaction at 70.76 for 500 lots. As a result:
 - Order #6 is fully matched
 - Order #13 has remaining quantity of 200 lots, and continues with processing steps
- As IMS is enabled, the next potential match is between Order #13 against Order #7, for quantity of 200 lots, at price 70.75 – because participants of the same pool have priority in matching, and Orders #7 and #4 are at the same limit.
- STP is checked, all the STP conditions match (same Firm ID, STP type, LP account and LP role are set), and as STP Type is “Cancel Resting order” the resting Order #7 is cancelled. Order #13 is unchanged, and continues with processing steps. If IMS wasn’t enabled, the priority for matching would be given to Order #4, and as the quantity would be fully filled, Order #7 wouldn’t have been cancelled due to STP.
- Next potential match is Order #13 and Order #4, for quantity of 200 lots, at price 70.75
- STP is not triggered against Order #4 as it belongs to a different Firm ID AND has a different STP type of “Incoming order” set. Order #13 and Order #4 generate a trade at 70.75 for 200 lots. As a result:
 - Order #4 has remaining quantity of 100 lots, and stays in the book
 - Order #13 is fully matched
- As the incoming Order #13 has fully matched no other matches occur, no other STP condition checks are done and processing is completed

■ The order book after order processing is as following:

Bid (Buy)							Ask (Sell)						
Account Type	STP Type	Firm	Order number	STP ID	Qty	Price	Price	Qty	STP ID	Order Number	Firm	STP Type	Account Type
6	INC	MBR4	4	-	100	70.75	70.97	300	-	2	MBR6	-	1
1	-	MBR8	11	-	600	70.72	70.97	100	-	3	MBR7	-	2
2	REST	MBR4	12	-	600	69.20	70.98	500	-	5	MBR5	-	6
							70.99	500	-	8	MBR10	-	2
							71.00	2000	-	9	MBR11	-	2

APPENDIX A: DOCUMENT REVISION HISTORY

REVISION HISTORY

Version	Change Description
1.3	<ul style="list-style-type: none"> ▪ Added clarification on behavior in case of Order modification, in case of partial matching, and for STP – Cancel Incoming Order done in sections “3.2.2 STP Cancel Incoming Order” and “3.3.2 Modification of Price of the order” ▪ Added section “Appendix A: Document Revision History”
1.2	<ul style="list-style-type: none"> ▪ Modified sections listed below to clarify STP being disabled for Warrants & Certificates segments: (i) 2.2.2 Instruments; (ii) 2.2.4 Order Types and Order Side; (iii) 3. TECHNICAL OVERVIEW & RULES APPLIED ; (iv) 3.4 ERROR CODES, REJECTION MESSAGES & CASES WHERE STP IS IGNORED ▪ Corrected matching order in the Processing steps described in section “4.1.2 Several orders cancelled and matched” ▪ Added description of behavior in case of partial matching of an incoming order with STP cancel incoming is enabled (in sections 2.2.6 & 3.2.2)
1.1	New version describing the service as it functions in Optiq
1.0	Initial version

DOCUMENT HISTORY

DOCUMENT VERSION	DATE	CHANGE DESCRIPTION
1.3	January 2018	Clarifications for the fourth software delivery of Optiq
1.2	September 2017	Update of Optiq version for delivery
1.1	July 2017	New version describing the service as it functions in Optiq
1.0	May 2014	Initial version

ⁱ For Future Use