BM&FBOVESPA
The New Exchange

Migration from Mega Bolsa to the PUMA Trading System

Customer Impact Document

Version: 1.8

Last modified: 6/11/2013

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All matters pertaining to rules and specifications herein are made subject to and are superseded by official BM&FBOVESPA rules. Current rules should be consulted in all cases concerning contract specifications.

Contents

Revision History

Date	Version	Description	Author
June/10/2013	1.8	- On section 5.1, specified the need for recertification when migrating to UMDF 2.0. - On section 3.2.3, added a note explaining not all instruments have statistics per venue. - Still on section 3.2.3 added a note explaining about the behavior change for tag 37-OrderID and tags 272-MDEntryDate and 273-MDEntryTime. - On section 3.2.4, added a note to indicate that the group phase may be inferred from the instrument state whenever it rejoins the group.	JLRM
March/22/2013	1.7	- Documented differences in the format of tag UniqueTradeID (6032) in section 2.3.22. - Described impact in MegaDirect message flow for iceberg orders (disclosed quantity) in section 2.1.15. - Described composition of fields DOmIni and NSeqOmIni in message SLE-0172 in sections 2.4.1.5 and 2.4.1.6. - Added section 3.3.3 documenting that RLC-39 message is no longer being disseminated on Legacy ProxyDiff. - Changed description of tag 1174-SecurityTradingEvent on sections 3.2.3 and 3.2.4 to property reflect that this tag always report a value to indicate if the security follows the group when the messages refer to a specific security (having tag 48).	EP/JLRM
March/04/2013	1.6	- Changed SenderLocation value for give-up agents in section 2.3.23. - Commented usage of tags Account (1) and AllocAccount (79) in Exercise and Blocking in section 2.2.4.2	EP
February/18/2013	1.5	- Described some characteristics of order type “On Close” in section 2.1.8. - Described meaning of MegaDirect “technical error” in section 2.1.14. - Described effect of order side modification in section 2.3.14. - Described the behavior of tag CumQty (14) in trade cancelation in section 2.3.20.	EP
December/26/2012	1.4	- Presence of tag DeliverToCompID (128) in all Execution Reports sent through MegaDirect V4 on section 2.1.11. - Described the price length limitation in MegaBolsa on section 2.1.12. - Order quantity value should be provided as integer on section 2.1.13. - Removed table on section 3.1 documenting IPs and ports for Production environment connectivity as they are available on a separate, more up-to-date document. - Added section 3.2.6.3 documenting changes to Channel Reset behavior. - Changed section 3.2.1.3 and added section 3.3.2 to explain restrictions to the processing of Trades when updating Last Trade Price for UMDF and RLC.	EP/JLRM

		- Removed duplicate tag 1174 in section 3.2.4 and also fixed the description for tag 1500. - Marked tag 336 as new on section 3.2.3. - Marked tag 980 as always required on 35=y (section 3.2.2)	
October/11/2012	1.3	- Modification of order validity, performed via surveillance tool is not reflected in the Execution Report - 'On Close' orders executed after the end of the auction will continue to be reported as order type 'On Close' (40=A). - Tag OrderQty (38) is recommended to be included in all order modification requests in MegaDirect V4 - Added remark on ClOrdID/OrigClOrdID size reduction - Added comment on Drop Copy in EntryPoint format from MegaDirect flow - Restriction on Blocking Specification overstatement	EP/AG
October/05/2012	1.2	- Added notice about tags of type UTCTimeStamp and UTCTimeOnly using milliseconds for market data. - Noted that the last trade quantity is also sent on trades marked with tag 277=U(Exchange Last). - Documented the impact for order modification message flow when there is order priority gain on ProxyDiff. - Added section 3.3.1 documenting impacts to Group Phases and Intrument states on ProxyDiff. - Added impacts to MegaDirect V4. - Described limitation of tag MsgSeqNum (34) in MBEP. - Described Termo Cross placed by Market Operations. - Described differences in Termo Vista Registered	EP/JLRM
Jul/16/2012	1.1.1	- Moved Account's data type impact to EntryPoint section.	EP
Jul/12/2012	1.1.0	- Changed section 3.2.4, adding a note about statistics reset and order cancellation impact. - Added a note on Section 3.3 about small changes in the message dynamic for Proxy Diff, because of daily statistics reset and order cancellation. - Added Contact information. - Described use of tag Memo. - Described use of PartyRole 76 (Desk ID). - Documented differences of behavior between platforms when acknowledging orders with MinQty. - Documented differences of behavior between platforms when modifying order validity to IOC/FOK. - Cancel On Disconnect does not include tag 378 in Execution Reports in MBEP. - Described use of On Close orders in MBEP. - Documented differences in the content of tag QuoteReqID (131). - Documented differences in the content of tag ExecRefID (19) in Equities and Derivatives segments. - Documented differences in the precedence of order	EP/JLRM

		identifiers in PUMA and MBEP.	
Apr/25/2012	1.0.1	- Deprecated tag 5767-AgressorSide. - News description for the changes on the message Snapshot Full Refresh (35=W) on section 3.2.3 - Added a remark about BTC book order on section 3.2.1.1 - Changed UDP packet size from 1420 to 1430 bytes to better depict the production configured values - Documented the change for tag 48-SecurityID and derivate tags from String to Integer.	JLRM
Mar/29/2012	1.0.0	- Initial version	JLRM/EP

1. Introduction

This document outlines the possible impact on client systems due to the rollout of BVMF's new trading and market data platform version for equities, the PUMA Trading System. It describes impacts on the messages which are transmitted for order entry and market data, as well as new functionalities.

1.1. Dependencies

It is assumed that the reader of this document has knowledge of the basic functioning of the FIX protocol, EntryPoint trading interface specification (order entry) and UMDF specification (market data). For more information regarding these protocols, please refer to:

http://www.bmfbovespa.com.br/entrypoint

http://www.bmfbovespa.com.br/marketdata

1.2. Abbreviations

Abbreviation	Description
BELL	BM&FBOVESPA Electronic Link
BVMF	Bolsa de Valores, Mercadorias & Futuros, or BM&FBOVESPA.
CCB	Centro de Controle BM&FBOVESPA – BM&FBOVESPA Control Center.
CFI Code	Classification of Financial Instruments Code.
CME	Chicago Mercantile Exchange
CMEG	CME Group – the holding that encompasses the CME, CBOT, NYMEX and other exchanges.
FAST	FIX Adapted for Streaming – a specification for data compression to reduce bandwidth usage, especially for market data feeds.
FIX	Financial Information Exchange Protocol
GSN	Gerência de Suporte à Negociação – BM&FBOVESPA Trading Support Team
IP	Internet Protocol
MBO	Market by Order
MBP	Market by Price
NTP	New Trading Platform
PUMA	PUMA Trading System
SSL	Secure Socket Layer
TCP	Transport Control Protocol
TOP	Top of the Book
UDP	User Datagram protocol
UMDF	Unified Market Data Feed

1.3. Glossary

Term	Definition
BM&FBOVESPA	Securities, Commodities and Futures Exchange, located in São Paulo, Brazil. For more information, visit http://www.bmfbovespa.com.br.
Broker	A broker is an individual or firm that acts as an intermediary between a buyer and a seller, usually charging a commission.
Brokerage	Used interchangeably with broker when referring to a firm rather than an individual. Also called brokerage house or brokerage firm.
Counterparty	Party to a trade.

Term	Definition
DMA	Direct Market Access – functionality that allows end-customers, such as hedge funds or investment banks, to directly access the exchange electronically without the need to go over physical broker firm infrastructure.
FIX Gateway	Service that provides connectivity to third-party clients and brokerages using the FIX protocol.
GLOBEX	CME Group's electronic trading platform.
Instrument	Financial capital in a readily tradable form.
IP Multicast	Method of forwarding IP datagrams to a group of interested receivers.
Market Data	A collective term for quotes, last sales, volume statistics and other information used by the market to evaluate trading opportunities.
Matching	The process by which two counter-parties that have engaged in a trade compare the settlement details of the trade provided by both. Matching is done to verify all aspects of a trade and ensure that all parties agree on the terms of the transaction.
MEGABOLSA	BM&FBOVESPA's trading platform for equities.
Security	A stock, bond or contract that has been authorized for trading on, and by, a registered exchange. Each exchange has different criteria to determine a security's eligibility for listing.
Vendor	Institution that sells services to its clients. In the context of this document, a vendor is an institution that sells access to market data feeds and order management interfaces to an Exchange.
Snapshot feed	The market data feed containing Market Data Snapshot (35=W) messages.

2. Order Entry

2.1. Continued Support for MegaDirect

To provide a smoother migration, client systems that have not developed for EntryPoint may continue to use the existing MegaDirect connection even after all the instruments are migrated to PUMA.

However, these connections will not provide support for EntryPoint-specific functionalities. Moreover, it also must be considered the added latency of MegaDirect → EntryPoint conversion.

BM&FBovespa has put in place a new version of the MegaDirect interface, known as MegaDirect V4, which provides a good level of the compatibility with the new EntryPoint protocol.

Despite all efforts to avoid any changes and minimize the impact to the customers, the continued use of MegaDirect interface is subjected to some variances regarding tags and system behavior. Observe below the differences your system may be prepared to support.

2.1.1. Field OrderID (tag 37)

Orders generated in Mega Bolsa are assigned with a sequence number that is guaranteed to be unique within a single trading day per instrument. In order to provide a strong key that would allow clients to uniquely identify their orders (GT orders inclusive) Mega Bolsa EntryPoint combines this sequence number with the session date and the instrument symbol in tag OrderID (37).

In the PUMA Trading System, the identifier generated is guaranteed to be globally unique across all parameters. As a result, the tag OrderID (37) in the PUMA EntryPoint is a plain value that does not include the date or the symbol in its composition.

This example reinforces the statement for clients to avoid undocumented parsing. Client systems should not parse the tag components since the current composition might change as the systems evolve. IDs must be treated as opaque identifiers which comply with a given uniqueness rule.

2.1.2. Field OrderStatus (tag 39)

In a trade bust scenario, for example, when an order is no longer in the book and the matching engine does not know the current status of the order to declare in the Execution Report, it was decided that the PUMA Trading system will inform the value “Z” (Previous Final State) in tag OrdStatus (39). As “Z” is not a valid domain value for the MegaDirect interface, in this scenario MegaDirect V4 will assign tag OrdStatus (39) with value “4” (Canceled).

2.1.3. Field SenderLocationID (tag 142)

Execution Reports returned by MegaDirect V3 used to contain tag SenderLocationID (142) with a fixed value “BR”. In messages sent by MegaDirect V4, this tag was removed.

2.1.4. Field ApplID (tag 1180)

As orders entered thru MegaDirect interface will be converted to the EntryPoint protocol, the respective response messages will also be available at the EntryPoint Drop Copy gateway.

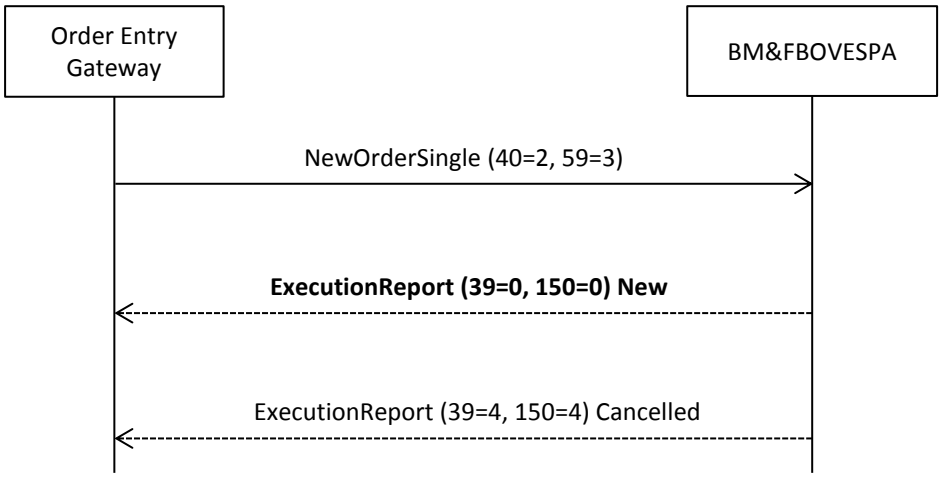
But, differently of messages entered thru EntryPoint, where tag ApplID (1180) indicates the FIX session thru which an order was originally sent, drop copy messages for orders entered thru

MegaDirect interface will convey this information in PartyRole (452) = “55” Session ID. Tag ApplID (1180), in this case, will contain the actual FIX session used by MegaDirect V4 to connect to the EntryPoint gateway.

2.1.5. **Immediate or Cancel**

In previous versions of MegaDirect, if an IOC – TimeInForce (59) = “3” (Immediate or Cancel) – is submitted but cannot be immediately executed, the order is canceled and a single Execution Report is sent with tag OrdStatus (39) = “4” (Canceled).

In both EntryPoint and MegaDirect V4 interfaces, an IOC that cannot be executed will return two Execution Reports: one message indicating that the order was accepted – OrdStatus (39) = “0” (New) – followed by another message indicating that the order was canceled – OrdStatus (39) = “4” (Canceled).



2.1.6. **Cancel On Disconnect**

The Cancel on Disconnect functionality, present in MegaDirect V3 and EntryPoint interfaces, will not be available in MegaDirect V4.

2.1.7. **Order Validity Modification**

Modification of order validity, performed by Market Operations (via surveillance tool) will not be perceived in the Execution Report sent to MegaDirect V4.

Although the modification will be effective and order will be handled by the matching engine accordingly to its new validity type, MegaDirect V4 interface will continue to present a stale value for tag TimeInForce (59).

2.1.8. On Close Orders

In MegaDirect V4 interface, 'On Close' orders executed after the end of the auction will continue to be reported as order type 'On Close' (40=A).

This behavior, observed in the MegaDirect V4 interface, differs from previous versions of MegaDirect, where the execution performed in this circumstance would be reported as the execution of a 'Limited' order (40=2) instead.

In addition, observe that independently of the order validity - tag TimeInForce (59) - informed in the order creation/modification, the acknowledgment message will always report validity equals "DAY".

This is caused by the conversion between the MegaDirect and EntryPoint protocols, where the "On Close" order type is translated to the "MOA - Market on Auction" order validity. Therefore, any order validity set on MegaDirect would be overwritten in this process.

2.1.9. Order Modification without OrderQty (tag 38)

During the migration of instruments from the MegaBolsa to PUMA Trading system, user may experience some differences for order modification requests that do not include tag OrderQty (38).

A divergence may occur because the MegaDirect interface allows an OrderCancelReplaceRequest (35=G) message to be sent without mentioning the original quantity of the order. In the absence of tag OrderQty (38), the MegaBolsa platform assumes that the value is unchanged and processes the update of the other characteristics of the message.

On the other hand, PUMA Trading system demands the order quantity to be declared in the modification request. That is why tag OrderQty (38) has become required in OrderCancelReplaceRequest (35=G) message of the EntryPoint protocol.

In case an order modification, lacking tag OrderQty (38), is entered by the MegaDirect interface and routed to be executed in the PUMA Trading system, the request will be rejected through a BusinessMessageReject (35=j) with the following text: Business Reject: Required Field Missing 'Quantity less than 1: '0' tag: 38'. However, this rejection may not reach the client and the request may hang without a response. Should your application be experiencing such situation, please contact the BM&FBOVESPA Trading Support Department (GSN) for further information.

To avoid any variance in the behavior of how order modifications will be handled by the trading platforms, BM&FBOVESPA recommends that tag OrderQty (38) be included in all order modification requests.

2.1.10. Fields ClOrdID (tag 11) and OrigClOrdID (tag 41)

In MegaDirect V4 interface, fields ClOrdID (11) and OrigClOrdID (41) have had their effective size reduced from 38 bytes to 29 bytes.

2.1.11. Field DeliverToCompID (tag 128)

The header of all Execution Reports returned by MegaDirect V4 will present tag DeliverToCompID (128), which contains the name of the FIX session targeted to receive the message.

2.1.12. Price length limitation

In the MegaBolsa platform, all price fields have a length restriction of 9 digits, including the decimal part. Messages sent to MegaBolsa using either EntryPoint or MegaDirect interfaces must conform to this limit. Even non-significant zeros such as in value 1.234500000, for example, will cause the message to be rejected.

2.1.13. Quantity Data Type

The order quantity should always be provided as an integer value. There is a situation in MegaDirect V4 where a request may hang without a response, in case the order quantity is provided as a float value. Even non-significant zeros, such as in value 2.00, for example, may cause the message to be rejected or, in some cases, just ignored.

2.1.14. Error Codes

EntryPoint has a more comprehensive variety of error messages when compared to MegaDirect. In order to keep the list of error messages issued by MegaDirect V4 as restrict as its previous versions and do not present the clients connected to the legacy system with a new collection of error codes, whenever possible, messages produced by the PUMA Trading system will be internally translated to an equivalent MegaDirect error message.

When this translation is not possible, due to lack of correspondent message in MegaDirect, a “technical error” message may be issued in place of the actual error.

Should your application be experiencing such situation, please contact the BM&FBOVESPA Trading Support Department (GSN) for further information.

2.1.15. Disclosed Quantity (Iceberg Orders)

Disclosed Quantity allows participants to trade a large lot of a given security without exposing the whole lot in the market at once. The MaxFloor (111) field determines the largest amount which is shown in the order book at a time, e.g. an order with OrderQty (38=10000) and MaxFloor (111=500) will be shown in the order book as a 500 contract (shares) order. After the order is filled for 500 contracts, the matching engine will replenish the quantity back to 500 contracts, until all of OrderQty is consumed.

In the PUMA Trading System, in order to preserve the hidden nature of Iceberg orders, the matching engine will assign a new order identifier – tag SecondaryOrderID (198) – each time the order is replenished. This is the actual order identifier published in the market data feed.

In the EntryPoint protocol, this automatic change in the order identification is communicated to the client systems through a *restatement* message, which is an ExecutionReport (35=8) with tag ExecType (150=D). The *restatement* message conveys the new value of SecondaryOrderID (198).

2.1.15.1. Impact to MegaDirect client systems

Since iceberg orders that were executed in the Megabolsa platform did not have its identification altered, MegaDirect users never had to account for new messages indicating the new value of tag OrderID (37). In fact, MegaDirect message specification does not support the *restatement* message (150=D).

This divergence in the behavior of iceberg orders executed in the PUMA Trading system, versus the ones executed in the Megabolsa platform, has a direct impact on the messages flow of the MegaDirect interface.

When executing in the PUMA Trading system, it is imperative ensure that the modification to the order identifier is correctly communicated, otherwise clients might lose the control over their orders.

In order to provide the new value of the OrderID (37) in a way that the client systems would be able to interpret it without the need of supporting the restatement message, each time an iceberg order is replenished, MegaDirect clients will receive a *replacement* notification.

This message takes the form of an already supported and well known ExecutionReport (35=8) with tag ExecType (150=5). As such, the message must be accepted by the client systems as an unsolicited modification and the new value of OrderID (37) must be used to update the reference to the order.

In both EntryPoint and MegaDirect interfaces, if an Iceberg Order is filled in a quantity greater than the disclosed quantity (which leads to a replenishment of the quantity), then the *restatement* message is not sent and the new Order ID is informed in the *trade* execution report.

The example below depicts the message flow of an iceberg order that is placed through a MegaDirect interface and rests in the order book.

During the time the order is in the book, it is hit by several counterparties which results in several trades. Note that, every time replenishment occurs, the order assumes a new identifier.

Msg sent	Msg received	ClOrdID	OrderID	Qty	Max Floor	Last Qty	Leaves Qty	Ord Status	Exec Type
D		ABC1		10000	500				
Iceberg order is accepted and rests in the order book									
	8	ABC1	ORD_1	10000	500		10000	New	New
Disclosed quantity of 500 shares is totally filled									
	8	ABC1	ORD_1	10000	500	500	9500	Partially Filled	Partial Fill
Order is replenished and a new Order ID is sent									
	8	ABC1	ORD_2	10000	500		9500	**Replaced**	**Replace**
Disclosed quantity of 500 shares is totally filled again									
	8	ABC1	ORD_2	10000	500	200	9300	Partially Filled	Partial Fill
	8	ABC1	ORD_2	10000	500	300	9000	Partially Filled	Partial Fill
Order is replenished and a new Order ID is sent									
	8	ABC1	ORD_3	10000	500		9000	**Replaced**	**Replace**
The disclosed quantity is partially filled and 300 shares remains unfilled in the current order book									
	8	ABC1	ORD_3	10000	500	200	8800	Partially Filled	Partial Fill
The order is automatically replenished to match the 400 shares issued by the counterparty In this case, the new Order ID is informed in the Trade execution report itself									
	8	ABC1	ORD_4	10000	500	400	8400	**Partially Filled**	**Partial Fill**

In any subsequent modification/cancelation, the order must be referenced by its latest OrderID (37) – or by the OrigClOrdID (41) and ClOrdID (11) fields.

In case an attempt to amend the order refers to an obsolete OrderID (37) value, the request will be rejected with the following reason: “002045 - This order is not in the book”.

MegaDirect client systems must be able to recognize the change in the Order ID provided by the unsolicited replacement Execution Report or the trade Execution Report and update the order identifier properly.

The next example shows an arriving iceberg order that is placed through a MegaDirect interface and executes with several orders that were already resting in the order book.

The following table depicts the state of the order book previous to the arrival of an iceberg order. For simplicity, we are not considering the prices in this example and we consider the iceberg order can potentially match with any order in this book:

Starting Order Book		
Bids	**Offers**	
Quantity	**Quantity**	**#**
	2800	1
	1500	2
	1500	3
	1000	4
	100	5
	8200	6

Upon entry, a bid iceberg order “sweeps” the order book generating multiple fills. Note that, while the iceberg order finds a counterparty to match with, there is no change in the order identifier.

Msg sent	Msg received	ClOrdID	OrderID	Qty	Max Floor	Last Qty	Leaves Qty	Ord Status	Exec Type
D		ABC1		25000	10000				
Iceberg order is accepted									
	8	ABC1	ORD_1	25000	10000			New	New
Iceberg order matches with order #1 in the book									
	8	ABC1	ORD_1	25000	10000	2800	22200	Partially Filled	Partial Fill
Iceberg order matches with order #2 in the book									
	8	ABC1	ORD_1	25000	10000	1500	20700	Partially Filled	Partial Fill
Iceberg order matches with order #3 in the book									
	8	ABC1	ORD_1	25000	10000	1500	19200	Partially Filled	Partial Fill
Iceberg order matches with order #4 in the book									
	8	ABC1	ORD_1	25000	10000	1000	18200	Partially Filled	Partial Fill
Iceberg order matches with order #5 in the book									
	8	ABC1	ORD_1	25000	10000	100	18100	Partially Filled	Partial Fill
Iceberg order matches with order #6 in the book.									
	8	ABC1	ORD_1	25000	10000	8200	9900	Partially Filled	Partial Fill
The iceberg order has swept all orders in the book. Now, the iceberg order rests in the order book with 9900 shares left.									
The iceberg order is hit by a new order									
	8	ABC1	ORD_1	25000	10000	4900	5000	Partially Filled	Partial Fill
Order is replenished and a new Order ID is sent									
	8	ABC1	ORD_2	25000	10000	4900	5000	**Replaced**	**Replace**

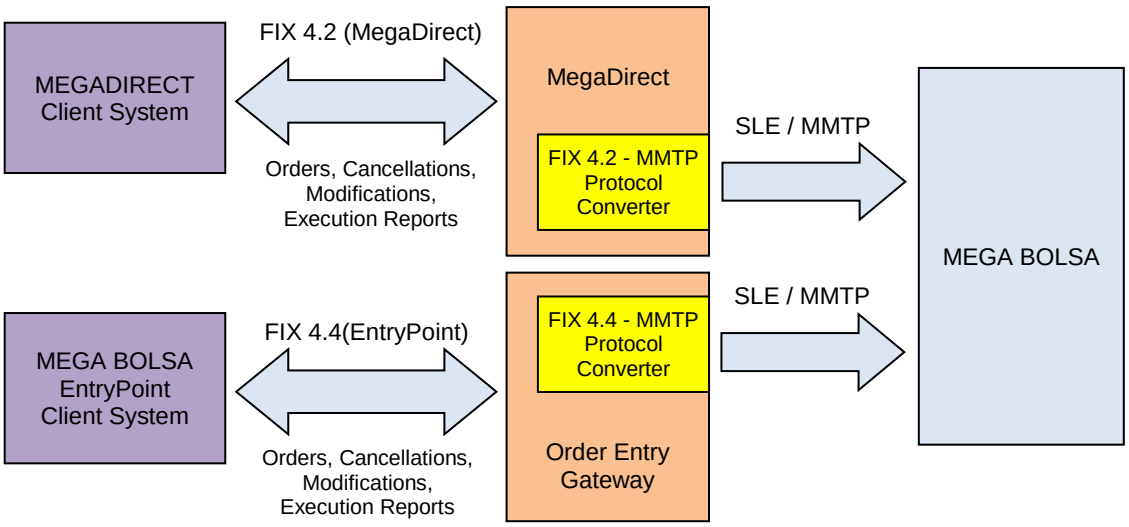
Note that at the time the iceberg order matches with the order #6 in the book, more than 10,000 shares have been traded. However, because the order is aggressor, the order identifier is kept the same. But, once it rests in the order book and becomes passive, any replenishment causes the change in the order identification, which is notified by either a *replacement* or *trade* execution report.

2.2. System Architecture

This section outlines the architecture of BM&FBOVESPA's trading platforms throughout the migration period.

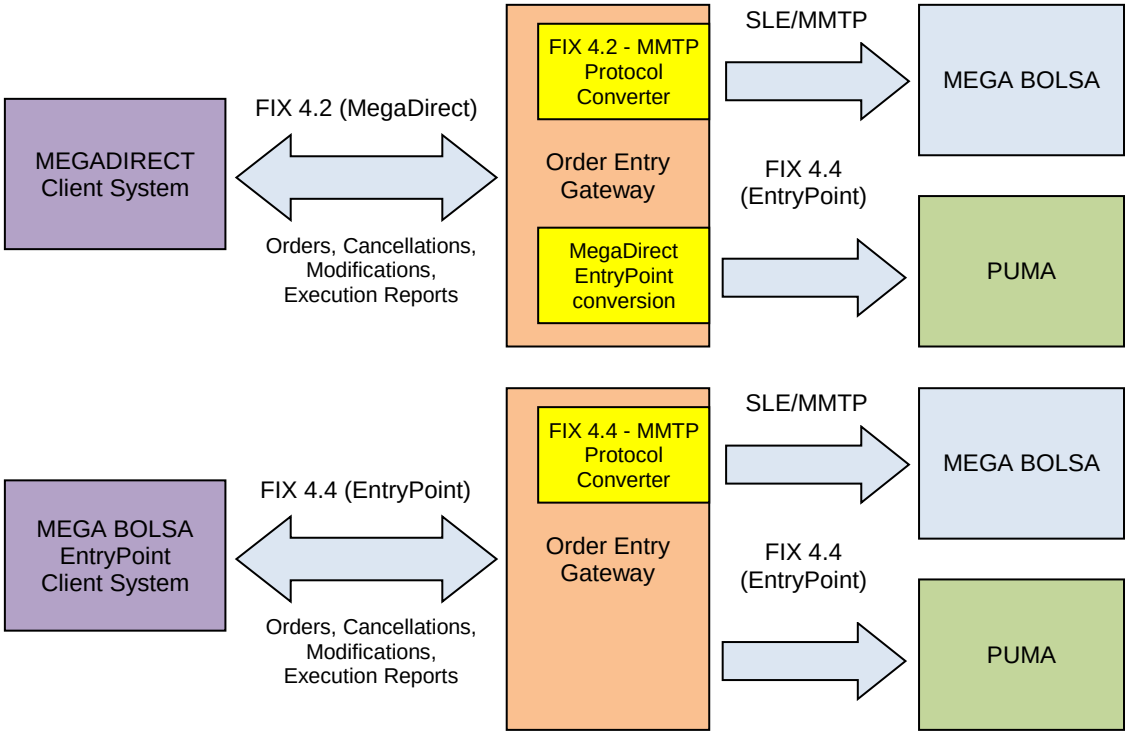
2.2.1. Current Mega Bolsa Order Entry Architecture

- All the products trade on the Mega Bolsa matching engine;
- Orders are entered into the system using the existing MegaDirect or Mega Bolsa EntryPoint FIX connections and converted into MMTP (Mega Bolsa's internal messaging protocol) by the Exchange for compatibility.



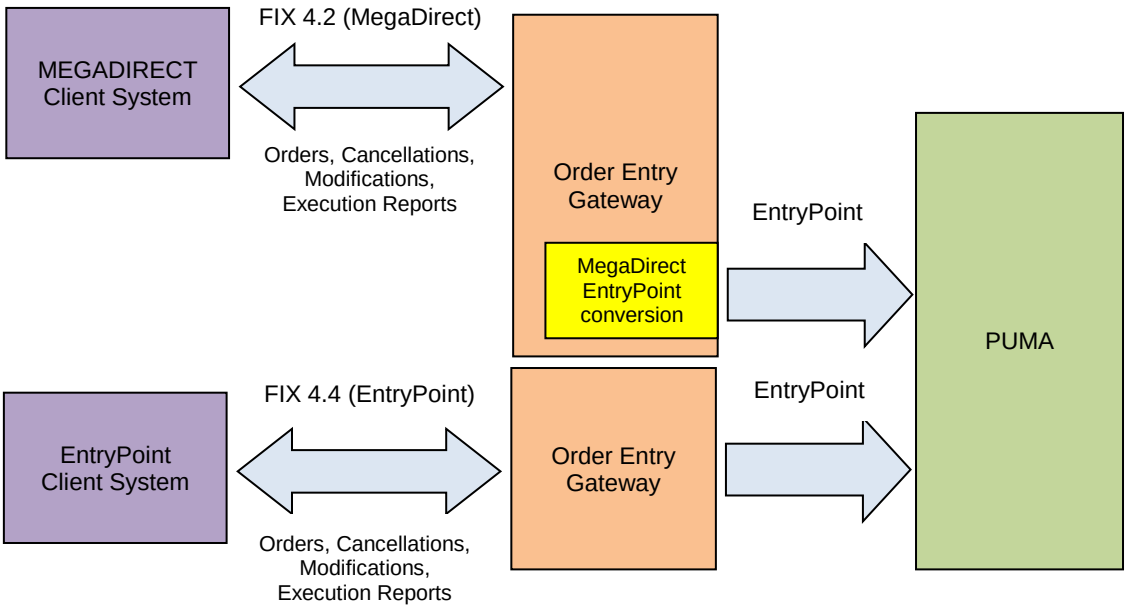
2.2.2. Mega Bolsa/PUMA Hybrid Order Entry Architecture

- Architecture valid during the migration period from Mega Bolsa to PUMA
- Set of products traded on the Mega Bolsa matching engine, another set in the PUMA matching engine;
- Orders are entered into the system using the existing MegaDirect or Mega Bolsa EntryPoint FIX connections;
- Orders entered for products that trade on the Mega Bolsa matching engine, have their messages converted into MMTP by the Exchange for compatibility.
- MegaDirect orders entered for products that trade on the PUMA matching engine, have their messages converted into EntryPoint by the Exchange for compatibility.
- During the migration period, customers connected to an EntryPoint FIX session may experience substantially lower latency times for products trading on PUMA versus products trading on Mega Bolsa.



2.2.3. Full PUMA Architecture with Legacy Support

- All the products trade on the PUMA matching engine
- Orders are entered into the system using the existing MegaDirect connections or the EntryPoint connections
- Orders entered using the existing MegaDirect connections have their messages converted into EntryPoint by the Exchange for compatibility;



2.2.4. New Functionalities for the EntryPoint Protocol in the PUMA Trading System

The EntryPoint interface provides a wider range of functionalities when compared to MegaDirect and the migration to the new protocol is highly recommended to all participants.

Some of the new functionalities available in the EntryPoint interface include:

- Creation of User-Defined Spreads;
- Exercise and Blocking of equities Option contracts;
- Self-Trade prevention at customer level;
- On-Behalf order management that allows a desk trader to operate on behalf of other clients;
- Declaration and Acceptance of Forward contracts;

For a complete view on the EntryPoint functionalities, please see the EntryPoint Message Specification at: http://www.bmfbovespa.com.br/entrypoint

Clients that have already developed for the Mega Bolsa EntryPoint interface will experience few changes when moving to PUMA EntryPoint. This section outlines the changes and increments available in the new platform.

2.2.4.1. User-Defined Spreads (UDS)

User-Defined Spreads provide users of the electronic trading platform the ability to create strategies composed by their choice of leg instruments, leg ratio and leg side.

This section will describe the differences between the creation of strategies in Mega Bolsa EntryPoint and PUMA EntryPoint.

2.2.4.1.1. Strategy Types

The first difference between the creation of strategies in Mega Bolsa EntryPoint and PUMA EntryPoint is that, with the rollout of the PUMA Trading Platform for the Equities segment, a larger list of spread types will be supported.

In the PUMA Trading System it is possible to create spreads up to 40 legs, whereas Mega Bolsa allows the maximum of 5 legs. Note in the table below the list of strategy types supported by PUMA:

Type	Spread
3W	3-Way
3C	3-Way: Straddle versus a Call
3P	3-Way: Straddle versus a Put
BX	Box
BO	Butterfly
XT	Christmas Tree (Xmas Tree)
CC	Conditional Curve
CO	Condor
DG	Diagonal
GT	Guts
HO	Horizontal
DB	Double
IB	Iron Butterfly
IC	Iron Condor
HS	Horizontal Straddle
JR	Jelly Roll
12	Ratio 1x2
13	Ratio 1x3
23	Ratio 2x3
RR	Risk Reversal
SS	Straddle Strips
ST	Straddle
SG	Strangle
SR	Strip
VT	Vertical
VV	Cash / Cash
VO	Cash / Option
FO	Single Stock Future / Option
FF	Single Stock Futures / Single Stock Future
FV	Cash / Single Stock Future
GN	Generic

2.2.4.1.2. UDS Naming Convention

The other difference regards the symbol used to identify the User-Defined Strategy. See below how the symbols are dynamically created in both platforms:

a) In Mega Bolsa EntryPoint:

This example depicts the UDS naming convention used in Mega Bolsa: suppose a UDS is composed by 2 legs. The symbol of the instrument on the first leg is ACME4 and all securities contained in the spread are Vista.

The symbol assigned to this strategy would be formatted as follows:

ACME	S	447	VV
Instrument Code	UDS (R-Z)	Sequence Number	Template

Note that the last 3 bytes in the Security Identification Code indicate the type of template used during the creation of the strategy. The possible values are:

Template	Security Type
VV	Vista - Vista
OO	Option - Option
VOO	Vista - Option - Option

b) In PUMA EntryPoint:

In PUMA, the UDS symbol will be 15 bytes long and it will be written in the following format:

U	D	:	X	X	X	X	X	X	N	N	N	N	N	N
Prefix			Instrument Code				Strategy Type		Sequential Number					

The following example shows the name of a UDS Vertical spread composed by 2 legs, in which the instrument on the first leg is ACME4. Below, it's possible to visualize the building blocks used to create the strategy's symbol according to this naming convention:

UD :	ACME	VT	123456
Prefix	Instrument Code	Strategy Type	Sequence Number

2.2.4.2. Exercise & Blocking

In PUMA, there has been an improvement in the Exercise functionality that allows the client to indicate the minimum earnings an options contract holder expects to profit by exercising his position.

In order to use this feature, participants need to use the tag ThresholdAmount (834), in the PositionMaintenanceRequest (35=AL) message, to indicate the minimum acceptable offset between the Strike Price and the Market Price. In case the earnings happen to be lower than the specified, the position will not be exercised.

Msg Sent	Msg received	NoPositions	Threshold Amount	PosMaint Status	PosMaint Result	Comment
AL		NoPositions= 1 PosType: EX; LongQty: 500	0.50			Position Maintenance Request with given Threshold Amount
	AM	Same as above	0.50	2 (Rejected)	8039	The Exercise request is rejected because the difference between the Strike Price and Market Price is lower than 0.50.

In the Exercise and Blocking functionality, the content of tags Account (1) and AllocAccount (79) provided in requests will be internally converted to numeric values.

Hence, the client account sent back in messages such as PositionMaintenanceReport (35=AM) and AllocationReport (35=AS) will have any left-padded zeros (if provided in the requests) removed.

It is worth reinforcing the recommendation that, in all order entry requests, any Exchange generated identifier, such as account information, should always be provided as assigned.

2.2.4.3. Self-Trading Prevention

The Self-Trading Prevention functionality, which is currently available in the Derivatives segment through the EntryPoint interface, will be also provided for Equities upon the migration to the PUMA Trading System.

Although Self-Trading Prevention at Customer level is an optional feature, order cancelations may still be issued by the Exchange due to Self-Trading Prevention at the Firm level. In this scenario, when a potential match involving orders from the same Firm is detected, the incoming order may be canceled if such feature is enabled at the Exchange.

Client applications must be prepared to process the cancelation notification message which includes the tag ExecRestatementReason (378), indicating the cancelation reason “Self-Trading Prevention (103)”.

For more information on the Self-Trade Prevention functionality, please see:

http://www.bmfbovespa.com.br/pt-br/servicos/download/Self-Trading-Prevention-Functionality-v100.pdf

2.2.4.4. Trading On-Behalf

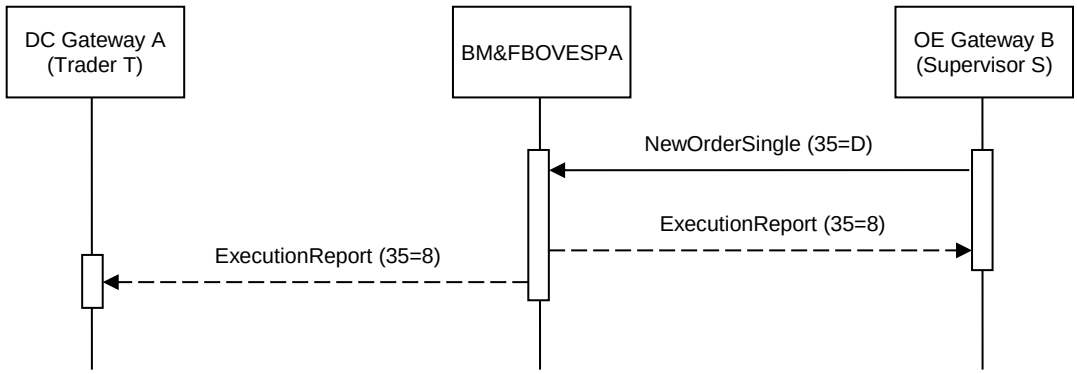
This new feature, available only through the PUMA EntryPoint interface, allows a desk trader (in the role of 'desk supervisor') to operate on behalf of other desk traders and DMA clients.

In order to do so, the supervisor must be registered at the Exchange along with a visibility configuration which determines the set of participants that he represents. Provided that all the previous conditions are met, the supervisor can send, modify, and cancel orders on behalf.

2.2.4.4.1. On-Behalf Order Creation

Whenever an on behalf operation is performed, the reply messages always go back to the order originator. Thus, if Supervisor S sent an order on behalf of trader T, the acknowledgment execution report is sent to S. T will not get a direct reply from the on behalf operation. However, if T has access to a drop copy session, T will receive the copy acknowledgment. Conversely, if the order was originally sent by T, all the on behalf replies will flow back to T. S may get them via drop copy, if enabled.

In the scenario below, supervisor S sends an order on behalf of trader T. T may receive the Execution Reports via Drop Copy session.

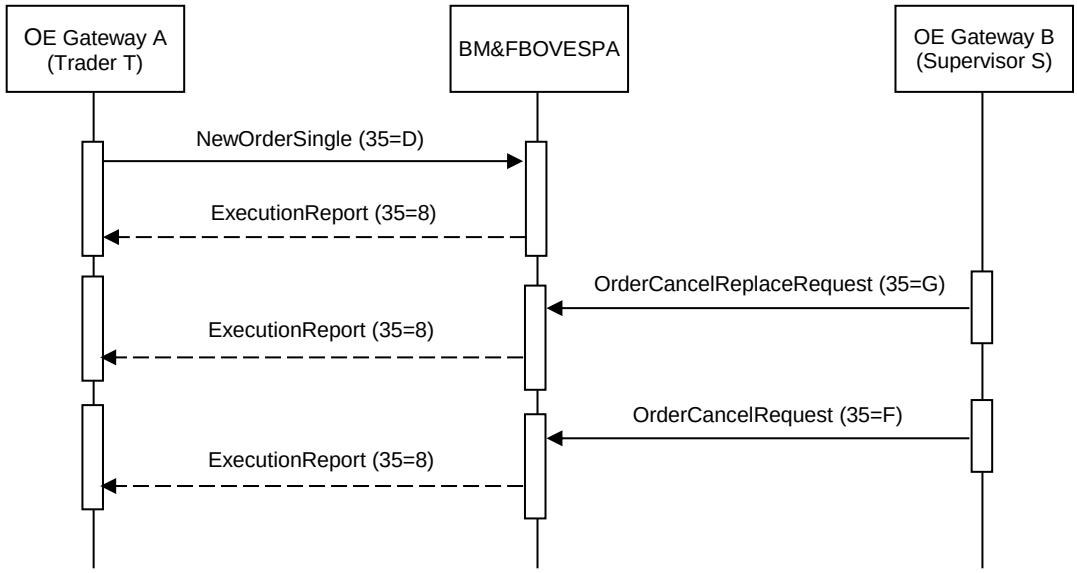


<table>
<tr><th>Msg Sent</th><th>Msg received</th><th>ClOrdID</th><th>Symbol</th><th>PartyIDs</th><th>Comment</th></tr>
<tr><td>D</td><td></td><td>ABC1</td><td></td><td>NoPartyIDs = 4
<table><tr><th>Party ID</th><th>PartyID Source</th><th>PartyRole</th></tr><tr><td>S</td><td>D</td><td>12 (Executing trader)</td></tr><tr><td>T</td><td>D</td><td>36 (Entering trader)</td></tr><tr><td>123</td><td>D</td><td>7 (Entering firm)</td></tr><tr><td>BVMF</td><td>D</td><td>54 (Sender Location)</td></tr></table></td><td>New Order from supervisor.</td></tr>
<tr><td></td><td>8</td><td>ABC1</td><td>ACME4</td><td>Same as above</td><td>Order confirmation is sent back to supervisor S and trader T may be notified via Drop Copy session.</td></tr>
</table>

Because the order was entered by the supervisor, the control remains with that supervisor and T cannot perform any operation upon the order. In the next example we describe a situation which the order is entered by the Trader.

2.2.4.4.2. On-Behalf Order Modification and Cancelation

Following is an example which trader T sends an order, and supervisor S modifies it later on.



Msg Sent	Msg Received	ClOrdID	Symbol	PartyIDs	Comment
D		ABC1		NoPartyIDs = 3 Party ID / PartyID Source / PartyRole T / D / 36 (Entering trader) 123 / D / 7 (Entering firm) BVMF / D / 54 (Sender Location)	New Order from trader.
	8	ABC1	ACME4	Same as above	Order confirmation is sent back to trader T.
G		ABC2	ACME4	NoPartyIDs = 4 Party ID / PartyID Source / PartyRole S / D / 12 (Executing trader) T / D / 36 (Entering trader) 123 / D / 7 (Entering firm) BVMF / D / 54 (Sender Location)	S modifies an order previously sent by T.
	8	ABC2	ACME4	Same as above	Execution report flows back to T and supervisor S may be notified via Drop Copy session.
F		ABC2	ACME4	Same as above	S cancels an order previously sent by T.

	8	ABC2	ACME4	Same as above	Execution report flows back to T and supervisor S may be notified via Drop Copy session.

In this case, trader T remains in control of the order, both S and T can modify or cancel the order in the following operations.

2.2.4.5. Message Replay

When using the Resend Request functionality, the maximum number of messages allowed in the request will be limited by the system. This limitation is configurable and intended to prevent any degradation in the system performance due to intensive use of the Resend Request feature.

The current configured limit is 10,000 messages. If the client should need the retransmission of a larger number of application messages it is highly recommended to use the Message Replay service.

If the range of the Resend Request exceeds the limit, the system will accept the request, however, only the limited number of messages will be retransmitted. In this case, the SequenceReset (35=4) message sent at the end of the retransmission will contain a custom tag PossMissingApplMsg (35033) = Y to indicate that some application messages are possibly missing.

Tag PossMissingApplMsg (35033) conveys important information regarding whether the Resend Request was completely satisfied or the client might connect to the Message Replay gateway in order to recover the complete set of messages.

The Application Sequence Control FIX component block will be assigned to all the application messages being resent to the client by the Message Replay service. The reason is to preserve the original values contained in the messages prior to the retransmission.

Tag ApplID (1180) will be used to convey the original TargetCompID (56) and tag ApplSeqNum (1181) the original MsgSeqNum (34).

Tag	Tag name	Req'd	Data Type	Comment
1180	ApplID	Y	String (50)	Original TargetCompID of message. Identifies the session which a message is associated with. Only returned in messages retransmitted by the Message Replay service.
1181	ApplSeqNum	Y	String (9)	Original MsgSeqNum of the message. Only returned in messages retransmitted by the Message Replay service.

For more information on the Message Replay service, please see the EntryPoint Message Specification at: http://www.bmfbovespa.com.br/entrypoint

2.3. Impact Assessment for PUMA EntryPoint x Mega Bolsa EntryPoint

2.3.1. New Fields

Tag	Tag Name	Req'd	Data Type	Message	Comment
35033	PossMissingApplMsg	N	Boolean	Sequence Reset (35=4)	If returned with value "Y", it indicates that the Resend Request was not fully delivered. In this case, the client system might connect to the Message Replay gateway in order to recover the complete set of messages.
1057	AggressorIndicator	N	Boolean	Execution Report (35=8)	Optionally returned to identify whether the order initiator is an aggressor or not in the trade. Valid values: Y = Order Is Aggressor N = Order Is Passive
35001	ProtectionPrice	N	Price	Execution Report (35=8)	Conditionally returned for Market and Stop orders with protection. This contains the final protection price limit, which any unmatched quantity will remain in the book.
378	ExecRestatementReason	N	Int	Execution Report (35=8)	Conditionally returned in Execution Reports (35=8). Added new domain value: 103 = Self-Trading Prevention
834	ThresholdAmount	N	PriceOffset	Position Maintenance Request (35=AL) Position Maintenance Report (35=AM)	Used to indicate the minimum acceptable offset between the Strike Price and the Market Price. Returned in the Position Maintenance Report (35=AM) when provided in the request.

2.3.2. Order Modification Behavior Changes

Scenario	Mega Bolsa	PUMA Trading system
Modifications of Limit orders with disclosed quantity of Limit orders without disclosed quantity	Rejected by means of an Execution Report (ExecType (150) = Rejected (8))	Accepted producing an Execution Report (ExecType (150) = Replaced (5))
Modification of an order to a quantity lower than the executed one	Modification is rejected with OrderCancelReject (35=9)	Modification returns an Execution Report (ExecType (150) = Canceled (4))
Client submits an OrderCancelReplace without changing any parameter of the order	Modification is rejected with OrderCancelReject (35=9)	Modification is accepted producing an Execution Report (ExecType (150) = Replaced (5))

2.3.3. Suspended Orders

The domain value “Suspended (9)” in the tags ExecType (150) and OrdStatus (39) will be discontinued in the PUMA Trading Platform.

In this new scenario, even if an auction is triggered, the instrument’s phase/state will automatically change and the order will be accepted with an Execution Report with the tags ExecType (150) and OrdStatus (39) indicating the value “New (0)”.

2.3.4. Unexecuted Orders Cancellation

The behavior in the Equities segment will be harmonized to match what already occurs in Derivatives and FX. At the end of the day, all the orders will be cancelled by the matching engine during the closing trading phase and customers who submitted the orders will receive Execution Reports expiring the orders (ExecType (150) = Expired (C)).

2.3.5. Cancel On Disconnect (CoD)

Execution Reports of orders canceled, in the PUMA Trading System due to a disconnection event, will contain tag ExecRestatementReason (378) to indicate the type of Cancel On Disconnect used.

The Execution Reports produced by Mega Bolsa EntryPoint in the same scenario will not provide this information.

2.3.6. Minimum Quantity

Orders with minimum quantity must execute at least the quantity stated in field MinQty (110) in every transaction.

In Mega Bolsa EntryPoint, orders whose minimum quantity may not be satisfied upon entry in the order book are immediately cancelled.

In the PUMA Trading System, the same order will be first acknowledged and then canceled.

The following tables present the difference of behavior in each platform:

Msg Sent	Msg Received	ClOrdID	OrderID	MinQty	OrdStatus	ExecType	CumQty	LeavesQty	Comment
D		ABC1		1000					New Order from trader.
	8	ABC1	ORD_1	1000	Cancelled	Cancelled	0	1000	Order is cancelled by exchange.

Order is immediately canceled in Mega Bolsa EntryPoint

Msg Sent	Msg Received	ClOrdID	OrderID	MinQty	OrdStatus	ExecType	CumQty	LeavesQty	Comment
D		ABC1		1000					New Order from trader.
	8	ABC1	ORD_1	1000	New	New	0	1000	Order is ack'ed by exchange.
	8	ABC1	ORD_1	1000	Cancelled	Cancelled	0	1000	Order is cancelled by exchange.

Order is accepted and then cancelled in PUMA Trade System

2.3.7. Forward ("Termo")

The Forward (also known as "Termo") Declaration/Acceptance model allows participants to record an out of band, pre-arranged deal, in the exchange environment. The negotiation starts with the Initiator sending a Quote Request (35=R) message to the exchange. BM&FBOVESPA then forwards the Quote Request (35=R) to the Counterparty's default FIX session.

In Mega Bolsa EntryPoint, due to technical limitations imposed by the current systems, the value of tag QuoteReqID (131) in the QuoteRequest (35=R) message sent to the Counterparty is not the same as the value entered by the Initiator. However, the exchange guarantee the uniqueness of the new value assigned and the change of IDs is totally transparent and does not affect the negotiation.

In the PUMA Trading platform, the value of tag QuoteReqID (131) in the QuoteRequest (35=R) message sent to the Counterparty will replicate the value entered by the Initiator.

2.3.8. Termo Vista Registered

In Mega Bolsa EntryPoint, during a Termo Vista Registered declaration, tag ExecuteUndelyingTrade (35004) in the QuoteRequest (35=R) message is not sent to the Counterparty. That means the Counterparty cannot distinguish a Termo Vista Registered declaration from a simple Termo declaration.

It is also advised that the Respondent must not include tag ExecuteUndelyingTrade (35004), in the Quote (35=S) message, when accepting a Termo Vista Registered in Mega Bolsa EntryPoint.

The limitations describe above are imposed only to Termo Vista Registered and do not affect the Termo Vista negotiation model.

In the PUMA Trading platform, tag ExecuteUndelyingTrade (35004) in the QuoteRequest (35=R) message is correctly forwarded to the Counterparty.

2.3.9. Termo Cross placed by Market Ops

Termo deals usually produce two trade notifications due to the relation between price and interests. However, for Termo Cross place by Market Ops in the Mega Bolsa platform, there will be sent the notification of the first trade only. Platform limitations inhibit the creation of the second Execution Report for Termo Cross entered by the surveillance tool. This problem does not affect Termo Cross placed by the participant directly.

2.3.10. Order Validity Modification

The Immediate or Cancel (IOC) and Fill or Kill (FOK) order validities indicate that the order requires immediate execution.

In a scenario where a Day order, for example, is modified to become an IOC or FOK and there is no counterparty to execute against, Mega Bolsa EntryPoint and PUMA Trading System platforms differ in the way they deal with the modification. The following tables present the difference of behavior in each platform:

Msg Sent	Msg Received	ClOrdID	Orig ClOrdID	OrderID	Qty	Leaves Qty	Ord Status	Exec Type	Time InForce	Comment
D		ABC1			1000				0 (Day)	New Order from trader.
	8	ABC1		ORD_1	1000	1000	New	New	0 (Day)	Order is ack'ed by exchange.
G		MOD1	ABC1	ORD_1	1000				3 (IOC)	Order validation is modified to Immediate or Cancel.
	8	MOD1	ABC1	ORD_1	1000	1000	Cancelled	Cancelled	3 (IOC)	Order is cancelled by exchange.

Order is immediately canceled in Mega Bolsa EntryPoint

Msg Sent	Msg Received	ClOrdID	Orig ClOrdID	OrderID	Qty	Leaves Qty	Ord Status	Exec Type	Time InForce	Comment
D		ABC1			1000				0 (Day)	New Order from trader.
	8	ABC1		ORD_1	1000	1000	New	New	0 (Day)	Order is ack'ed by exchange.
G		MOD1	ABC1	ORD_1	1000				3 (IOC)	Order validation is modified to Immediate or Cancel.
	8	MOD1	ABC1	ORD_1	1000	1000	Replace	Replace	3 (IOC)	Modification is ack'ed by exchange.
	8	MOD1	ABC1	ORD_1	1000	1000	Cancelled	Cancelled	3 (IOC)	Order is cancelled by exchange.

Order is replaced and then cancelled in PUMA Trade System

2.3.11. Trade Cancellation

For the Equities segment, in both Mega Bolsa EntryPoint and PUMA Trading platform, when a trade bust is performed an Execution Report is issued and tag ExecRefID (19) will reference the value of tag ExecID (17) in the original trade.

Currently, in the Derivatives segment, tag ExecRefID (19) in the cancellation report is incorrectly referencing the trade identifier instead of the ExecID (17). The update for the PUMA Trading system in the Derivatives segment, planned to Q2/2013, will promote the equalization of behavior in both segments.

2.3.12. On Close Orders

On Close orders are sent to be executed at the closing price of the pre-opening auction. Tag 44 (Price) must be filled with “0” (zero), or the order will be rejected. This order may only be modified to a larger quantity while the auction is in place (it cannot be cancelled while the auction is in place). When the auction ends, the order is executed.

When using the Mega Direct interface, On Close orders are identified by tag OrdType (40) = A.

In order to emulate this functionality in Mega Bolsa EntryPoint, it is necessary to combine tag OrdType (40) = 1 with TimeInForce (59) = A.

2.3.13. Blocking Specification

Megabolsa allows participants to send a blocking specification message which a greater quantity than the actual quantity of the associated options trade. Megabolsa ignores the overstated quantity and blocks the position up to the quantity available in the trade. PUMA Trading System does not allow overstating the block specification quantity – in this situation, the specification is rejected.

2.3.14. Order Side Modification

The side is one of the characteristics of an order that cannot be altered. Should an order modification be issued with a different side than the indicated in the original order, the request will be rejected.

In both Megabolsa and PUMA Trading systems the rejection message will indicate that “the order was not found in the book”. However, the order status indicated in the message may diverge. PUMA Trading system may present the order status as REJECTED, while Megabolsa would present the last known status of the original order (the one with the correct side), such as PARTIALLY_FILLED or NEW, for example.

2.3.15. Rule for precedence between Order Identifiers

EntryPoint supports a number of order identifiers which allows participants to keep track of order events during the whole order lifecycle.

The ClOrdID (11) field is the primary client side order identifier. It is initially assigned at order entry, and can be subsequently changed through the order lifecycle in modifications and cancelation requests. It must be unique among all active orders on a given instrument sent via a specific FIX session.

The OrigClOrdID (41) field is used in conjunction with the ClOrdID field and allows the client to implement client side order chaining, that is, to keep a history of client initiated order events. Each Modification/Cancellation request must have an associated OrigClOrdID.

The OrderID (37) field is one of the exchange issued order identifiers. It is assigned by the matching engine on successful order entry and it remains the same during the entire order lifecycle. Uniqueness is guaranteed for the combination of the order entry date (TradeDate (75) field), and Security.

In the PUMA Trading platform, when multiple identifiers are available in the message, OrderID (37) has the highest precedence.

In the Mega Bolsa EntryPoint, tags OrigClOrdID (41) and ClOrdID (11) take precedence over tag OrderID (37).

2.3.16. Field Account (tag 1)

In order to prevent the use of alphanumeric values in the field Account (1), its data type has been changed from STRING to INT in the FIX dictionary of the EntryPoint Border Gateways. Therefore, in both Mega Bolsa EntryPoint and PUMA Trading platforms, messages that don't comply with this definition will be rejected with a session Reject message (35=3).

Clients must be aware that any Exchange's provided identifiers (e.g. firm and trader codes, symbols, and account information) should be provided as assigned, without any padding: e.g. if the client account is "123", it should not be sent as "000123".

2.3.17. Field Memo (tag 5149)

In order to provide a field that participants can use to submit a comment or a description about the current request, most of the messages in EntryPoint have been equipped with a customized tag called Memo (5149).

This tag is defined as a free format text field (limited in up to 50 characters) that may be used to convey client's relevant information.

The use of the Memo (5149) field is convenient because its content is always echoed in the reports. Additionally, as the information might have meaning only to its publisher, the content entered on this field is not visible to the counterparty.

Observe that the scope of tag Memo (5149) is restricted to the Order Entry scenario, which means that the information may be available around the Order Entry and Drop Copy gateways only. There is no guarantee that the text entered in tag Memo (5149) will reach other systems, such as in the clearing or post-trading areas. In this aspect, it is not recommended to use tag Memo (5149) as a key to correlate messages from the trading with data collected in the post-trading systems, for example.

If the participant needs to have the information reflected outside the scope of the trading environment, it is advised to consider using the PartyRole "76 - Desk ID", that is also a free format text field, but which content can be used to add a description or comment to the client's account number and therefore offered to external systems.

2.3.18. Field PartyRole "76 - Desk ID"

There are scenarios where participants need to include an annotation in the order entry message exclusively to identify the client associated with a given account number. In most cases, this

information is also used to correlate the order entry messages with the data in the back-office and clearing systems.

Although, in EntryPoint, the Account (1) field cannot be used to convey any type of text information (only numeric values are accepted), it has been implemented an efficient alternative to support this functionality. In this context, users are advised to take advantage of PartyRole “76 - Desk ID” which provides a powerful and consistent method to allow participants to annotate the account. Observe the example below:

<table>
<tr><th>Msg</th><th>Account</th><th>ClOrdID</th><th>PartyIDs</th><th>Comment</th></tr>
<tr><td>D</td><td>1234</td><td>ABC1</td><td>NoPartyIDs = 4
<table><tr><th>Party ID</th><th>PartyID Source</th><th>PartyRole</th></tr><tr><td>123</td><td>D</td><td>7 (Entering firm)</td></tr><tr><td>T</td><td>D</td><td>36 (Entering trader)</td></tr><tr><td>BVMF</td><td>D</td><td>54 (Sender Location)</td></tr><tr><td>JOHN</td><td>D</td><td>76 (Desk ID)</td></tr></table></td><td>Field Account is numeric only.

PartyRole “Desk ID” is used as a label to the account number.</td></tr>
</table>

Note that, in Mega Bolsa Entry Point, the max length of fields Account and Desk ID concatenated is restricted to 16 characters. In the PUMA Trading platform the length of Desk ID is not restricted by the Account.

Differently from the information provided in the Memo (5149) field, which may also be used to enter specific client’s information, the PartyRole (452) “76 - Desk ID” is guaranteed to circulate from the trading through post-trading environments.

2.3.19. Field MsgSeqNum (tag 34)

The EntryPoint specification states that the max length of field MsgSeqNum (34) is 9. Although this value is supported by the PUMA Trading system, in the Mega Bolsa platform this field must be limited at 7 digits only. Consequently, participants trading in the Mega Bolsa platform should not add leading “zeros” to the message sequence number nor surpass the limit of 10 million messages a day.

2.3.20. Field CumQty (tag 14)

In the PUMA Trading System, if a given trade for a fully filled order is cancelled (trade bust), the CumQty (14) sent in the Execution Report message is set to zero. If a trade of a partially filled order is cancelled, the CumQty (14) will decrease in the same value of the busted quantity.

For the same scenario in Mega Bolsa EntryPoint, the CumQty (14) sent in the Execution Reports will always be zero, even if it is the trade is only partially canceled.

2.3.21. Drop Copy Sessions

BVMF will offer drop copy functionality for MegaDirect flow in EntryPoint format. Thus, it will be possible to capture the whole equities trading flow (MegaDirect, EntryPoint, and Megabolsa Station) in a single drop copy session. However, note that the ClOrdID and OrigClOrdID field of MegaDirect captured flow will be modified - prefixed with the MegaDirect session SenderCompID. Example:

- SenderCompID of MegaDirect session: FIX123300
- ClordID in order sent through MegaDirect: ABCD1234
- ClOrdID in the EntryPoint Drop Copy session: FIX123300ABCD1234

2.3.22. Field UniqueTradeID (tag 6032)

The trade identification represented by tag UniqueTradeID (6032) in EntryPoint and MegaDirect protocols differs in its format. In MegaDirect the value is formatted with zeros added to the left. This characteristic was inherited from the Megabolsa platform, where the trade identification is handled as a string of 7 positions.

In EntryPoint and the PUMA Trading system, tag UniqueTradeID (6032) is handled as a numeric value and the system does not include any zeros to the left of the trade identifier.

When comparing the trade identifier provided by the Megabolsa platform, such as STM or other, with the value in the EntryPoint protocol, one should perform a numeric comparison in order to equalize the parameters.

Tag UniqueTradeID (6032) sent in MegaDirect protocol contains zeros appended to the left of the number, for example: |6032=0000530|. **In the EntryPoint protocol, tag UniqueTradeID (6032) does not contain zeros at the left of the number**. Example of the trade identifier sent in the EntryPoint protocol: |6032=530|

2.3.23. Sender Location

Each access category available in the Equities and Derivatives segments has an alpha-numeric code which indicates that a given connection belongs to a specific category. This alpha-numeric code must be sent in every message as a Sender Location Party Role. The following table depicts all access categories:

Access Category	Market Segment	Sender Location
Desk traders	Equities	BVMF
	Derivatives	BVMF
Local	Equities	AUTO
	Derivatives	AUTO
Give up Agent	Equities	REPX
DMA1	Equities	DMA1
	Derivatives	DMA1
DMA2	Equities	Provider Code
	Derivatives	Provider Code
DMA3	Equities	DMA3
	Derivatives	DMA3
DMA4	Equities	COLO0/COLO1
	Derivatives	COLO0/COLO1

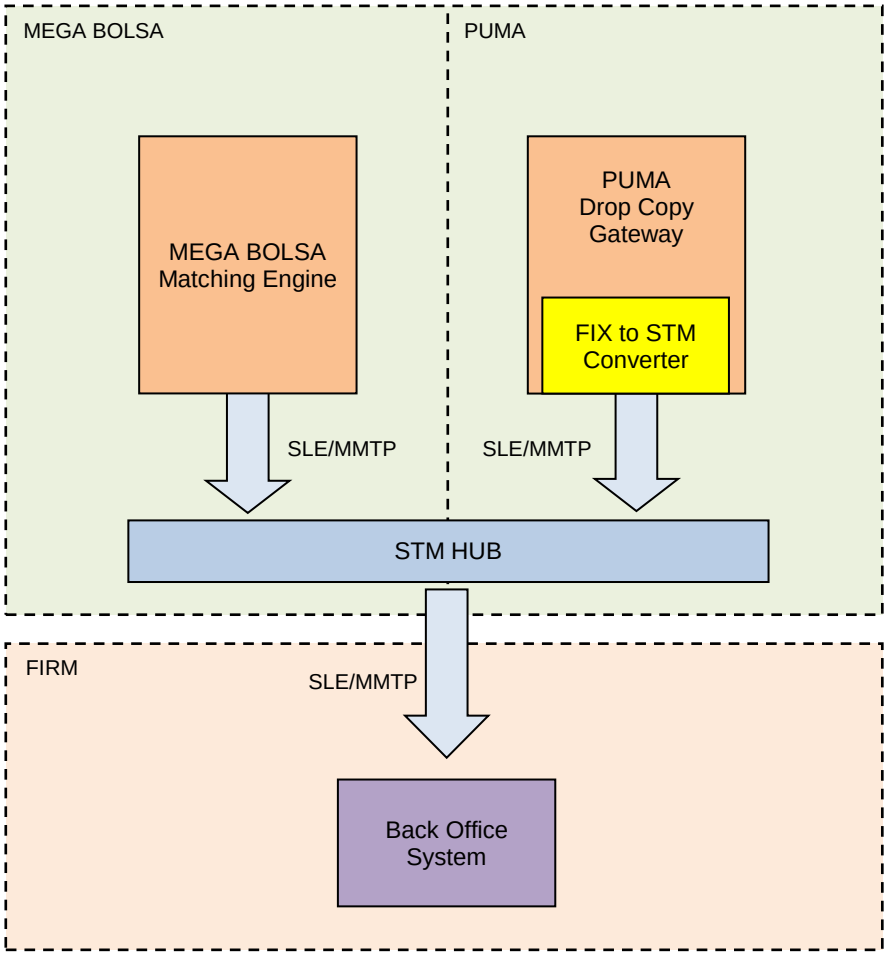
Note that **the Sender Location value used to identify the Give-up Agent access category has been changed to REPX**. The code must be sent in every message as a Sender Location Party Role.

2.4. STM

2.4.1. Origin PUMA Trading System

In order to allow back office systems to continue to consume Drop Copy messages in the SLE/MMTP format, even after the migration of equity instruments from Mega Bolsa to the PUMA Trading system, the Exchange will convert the FIX Drop Copy messages and inject them into the STM Hub, where Firms will be able to connect and get the information.

The following diagram shows the STM Hub being fed by both Mega Bolsa and PUMA Trading platforms and a client application consuming the information from a single point.



Whereas the instruments are moved from the old to the new Trading Platform, Firms may continue to receive the messages from the same source and in the same format as if they were still being produced by Mega Bolsa, with slight differences.

Due to differences between both platforms, some messages can't be produced exactly the same way and some changes in the message layout were required.

Please, refer to the "STM: Message Transference System - User's Guide" version 3.8 (http://www.bvmfnet.com.br/pt-br/manuais/download/Manual-STM-english-version8.pdf) in order to check the changes in the layout of the messages.

The list of messages that will continue to be provided in the STM Hub is shown in the following table:

Msg Type	Description
SLE 0100	Trade Cancellation Notice
SLE 0105	Execution Notice
SLE 0172	Confirmation of Order Creation, Modification or Cancelation
SLE 0411	Declaration Notice
SLE 0415	Matching Notice
SLE 0417	TCS Trade Cancellation

Table 1 - List of messages in the scope

Additionally, in order to simplify the process, some of the messages currently provided in the STM Hub will not be available after the transition to the PUMA Trading System. The list of messages that will be discontinued is shown in the table below:

Msg Type	Description
SLE 0103	Trade Creation Notice
SLE 0138	Order Elimination
SLE 0412	Notification of a Declaration Issued by the Counterpart
SLE 0413	Cancellation Notice
SLE 0414	Refusal Notice

Table 2 - Discontinued messages

It is important to note that the cancelling and changes in the flow and layout of the messages, as described herein this document, will only affect the instruments which have been migrated to PUMA. Messages for instruments which are still traded on Mega Bolsa will suffer no changes and will continue to be transmitted as is.

2.4.1.1. Execution Notice

Messages “SLE 0105 - Execution Notice” related to User-Defined Spreads (UDS) will not be reported. In case of a matching regarding UDS instruments, only the Execution Notice messages related to the trade of the legs will be sent.

2.4.1.2. Order Elimination

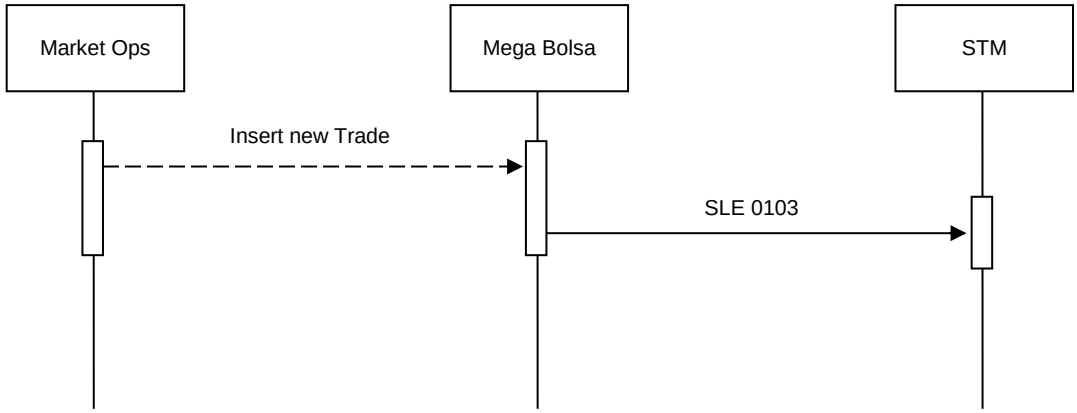
Message “SLE 0138 - Order Elimination” is distributed to communicate the elimination of orders due to corporate events, such as dividend, split, etc.

Although this message will not be produced for instruments migrated to the PUMA Trading System, clients may rely on the field “IPDRV”, in the message RLC 53 provided by market data, to identify the group of instruments with such corporate events planned for the day and proceed with the appropriate elimination of the orders.

2.4.1.3. Trade Creation Notice

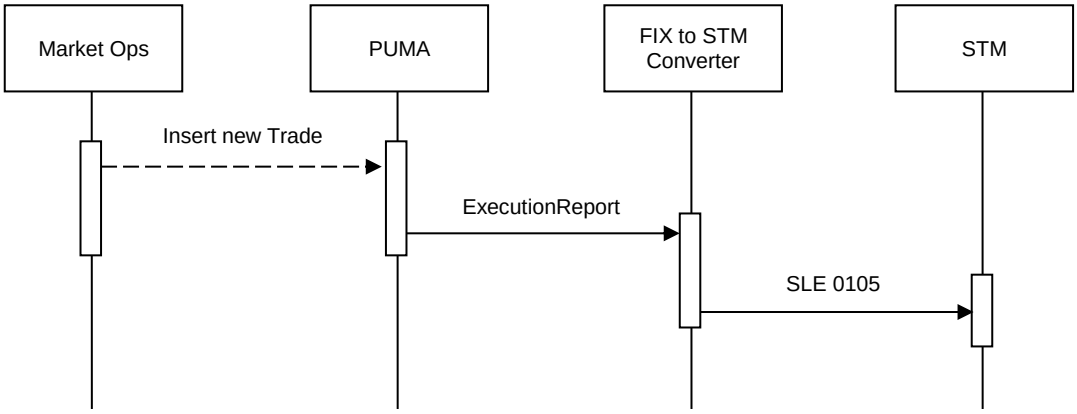
In this new scenario, the message “SLE 0103 - Trade Creation Notice” will be replaced by the “SLE 0105 - Execution Notice”. Whenever Market Ops create a trade on the PUMA Trading System, an Execution Notice will be issued.

Currently, when Market Ops insert a trade onto Mega Bolsa, a message of type “SLE 0103 - Trade Creation Notice” is produced and made available in the STM, as shown in the diagram below:



Trade Creation flow in Mega Bolsa

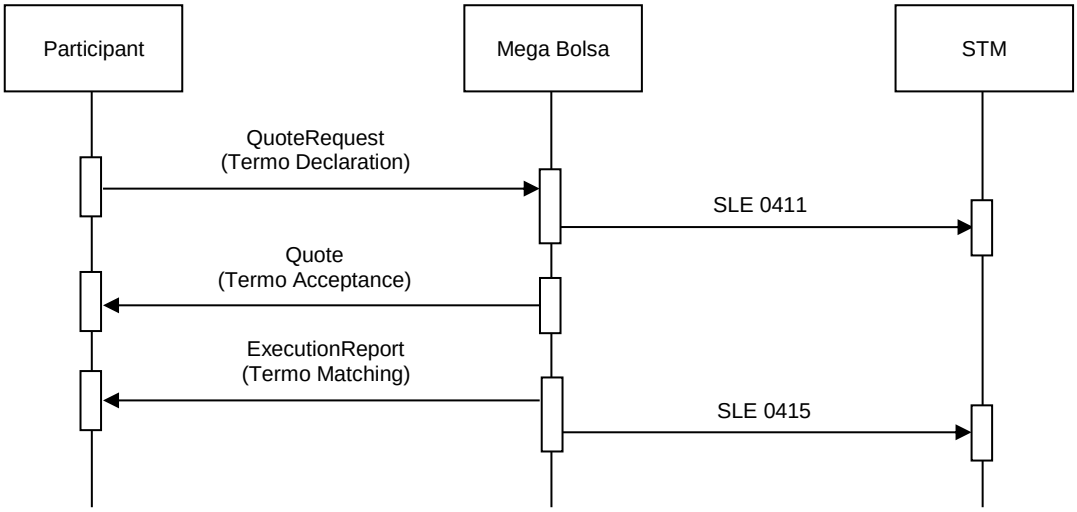
In PUMA, when a trade is inserted by Market Operations, the FIX to STM Converter will capture the Execution Report message resulted from the trade creation and inject a “SLE 0105 - Execution Notice” into the HUB.



Trade Creation flow in PUMA

2.4.1.4. Termo Declaration

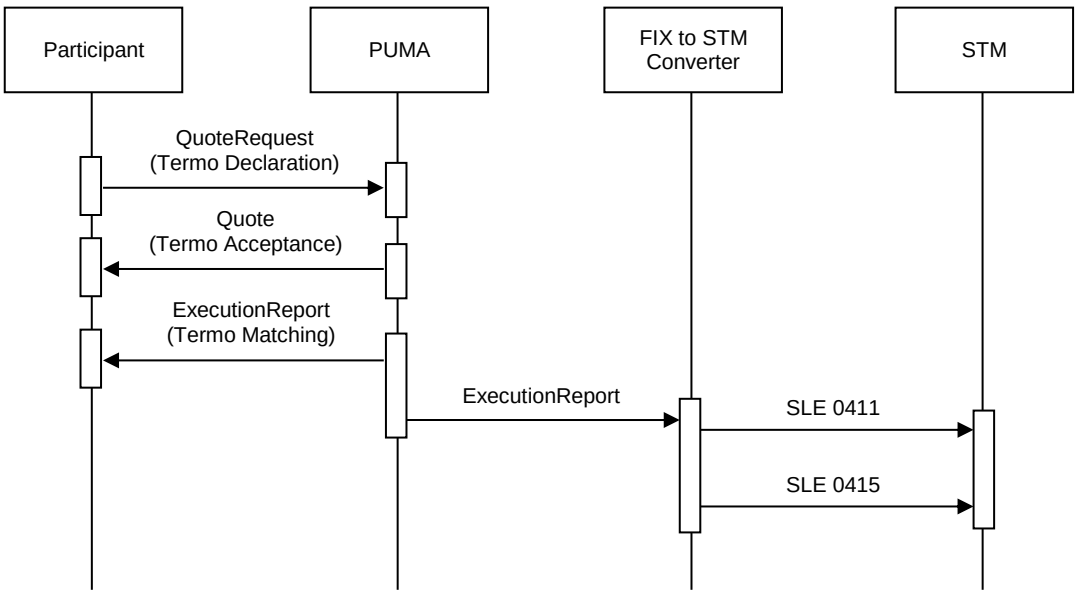
Message “SLE 0411 - Declaration Notice” will not be produced by the converter as soon as the Participant issues a Termo declaration as it currently happens in Mega Bolsa.



Termo Declaration flow in Mega Bolsa

Instead, the converter will produce this message just at the time it receives an event notifying the Termo matching. At this point, both messages the SLE 0411 and the SLE 0415 will be produced simultaneously. So, one should not expect to receive message SLE 0411 upon a Termo Declaration, but at the time of the match.

See in the diagram below the sequence of message notifications in PUMA.



Termo Declaration flow in PUMA

2.4.1.5. Order Identification

As the SLE message layout is based on the NSC trading system (current matching engine of the Mega Bolsa platform), it reserves a numeric field with only 6 digits to indicate the Order ID number. However, such length is not enough to store the order identification generated in the PUMA Trading System. PUMA's matching engine can produce identifiers such as Order ID and Secondary Order ID up to 17 digits.

In order to provide the complete Order ID (and Secondary Order ID), new fields will be appended to the end of the SLE messages. As a result, the length of these messages will be increased in 17 or 34 positions and an adjustment in the client applications may be required in order to adapt to this new length.

The following messages had their layout modified:

Msg Type	Description
SLE 0100	Trade Cancellation Notice
SLE 0105	Execution Notice
SLE 0172	Confirmation of Order Creation, Modification or Cancelation

Table 3 - List of messages with layout updated

For compatibility reasons, the current "NSeqOm" and "NSeqOmIni" fields will still be contained in the messages and will be filled with the 6 (six) least-significant digits of the data.

Field	Content
Sequential of the Order	~~0100078121~~123456
Complete Sequential of the Order	0100078121123456

Table 4 - Example of fields in the new message layout

With the purpose of reducing development effort, a client system may choose not to read these new fields and continue to rely only upon the old ones. However, in this case there is no guarantee that there will not be coincidences among identifiers of different orders, since only the 6 (six) least-significant digits will be considered.

Field "NSeqOmIni" will be provided also upon order confirmation creation in the "SLE 0172 - Confirmation of Order Creation, Modification or Cancelation" message.

2.4.1.6. Order Entry Date

The Field "DSaiOm" in the "SLE 0100 - Trade Cancellation Notice", "SLE 0105 - Execution Notice" and "SLE 0172 - Confirmation of Order Creation, Modification or Cancelation" messages will not convey the date an order was placed. Instead, in the SLE 0100 and SLE 0105 messages the trade date will be conveyed and in the SLE 0172 message the current system date will be conveyed.

This should not represent a problem. Since the new order identification is unique the date an order was placed is not required to identify GT orders.

In addition, field "DOmIni" in the "SLE 0172 - Confirmation of Order Creation, Modification or Cancelation" message will be provided in all three scenarios and it will convey the date an order was placed, amended or canceled accordingly.

2.4.2. Origin CBLC

2.4.2.1. <AN> Trade Confirmation

Due to the incompatibility between the order identification generated in Mega Bolsa and PUMA, a change in the layout of the <AN> Trade Confirmation message was also necessary.

However, differently from the STM SLE messages, the <AN> Trade Confirmation message size did not need to be changed, since its layout already reserved a field in the end of the message that can easily receive the new information.

In this new layout, once the orders start being processed in PUMA, the fields 48 and 49 of the Trade Confirmation message will contain the 7 (seven) least-significant digits of the buy and sell order numbers, respectively. And the complete 17-digit order numbers will be provided in the end of the message, in the fields 55 and 56.

Field	Content
48	~~0100078121~~1234567
49	~~0100041124~~3456789
55	01000781211234567
56	01000411243456789

Table 5 - Example of fields in message processed by PUMA

For orders that are still processed by Mega Bolsa, the fields 48 and 49 of the Trade Confirmation message will contain the 6-digit sequence numbers generated by NSC. Both fields 55 and 56 will contain an alphanumeric code that concatenates the order date (YYYMMDD), order number and instrument symbol.

Field	Content
48	123456
49	456789
55	20121120123456ACME4
56	20121120456789ACME4

Table 6 - Example of fields in message processed by Mega Bolsa

3. Market Data

This chapter describes the changes from Mega Bolsa UMDF 1.6 to PUMA UMDF 2.0 for Equities, highlighting the most important remarks for a customer migration perspective. This chapter also contains the description of impacts for legacy feeds such as ProxyDiff and for customers remaining in Mega Bolsa UMDF 1.6.

3.1. Migration Strategy from Mega Bolsa to PUMA

The instruments traded on Mega Bolsa will be migrated to PUMA in a phased approach. During the migration period, the client systems will continue to receive market data for all equities instruments using the existing ProxyDiff connections and the current Mega Bolsa UMDF feed.

The Exchange will issue official market communication establishing the date which client systems will be able to connect to new UMDF channels.

Market data will continue to be sent over the existing ProxyDiff / Mega Bolsa UMDF 1.6 feeds, as well as the PUMA UMDF derivatives feed. To allow this, BVMF will duplicate the number of market data channels for order depth book, as illustrated in the table below.

MBO produced by Mega Bolsa			
Channel	Products	Incrementals	
		UDP Address	Port
050	Cash markets – Symbols A-J	233.111.180.26	20050
051	Cash markets – Symbols K-T	233.111.180.28	20051
052	Cash markets – Symbols U-Z	233.111.180.30	20052
055	Stock Indexes and ETFs	233.111.180.36	20055
056	Options markets – Symbols A-J	233.111.180.38	20056
057	Options markets – Symbols K-T	233.111.180.40	20057
058	Options markets – Symbols U-Z	233.111.180.42	20058

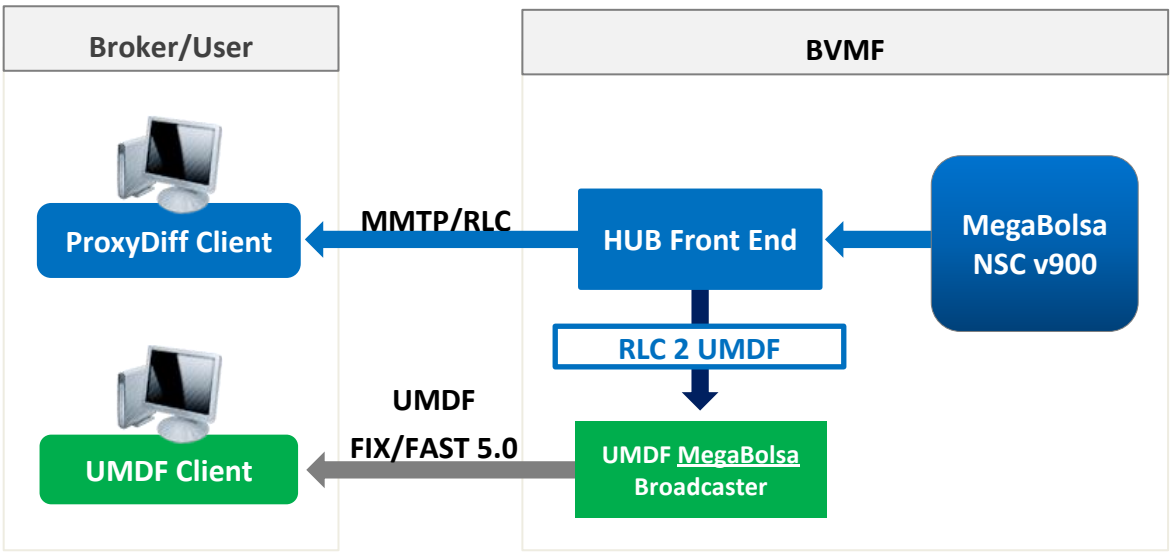
The full definitions for the multicast new release and production environments and the TCP recovery addresses will be available on the following website:

http://www.bmfbovespa.com.br/puma

3.1.1. System Architecture

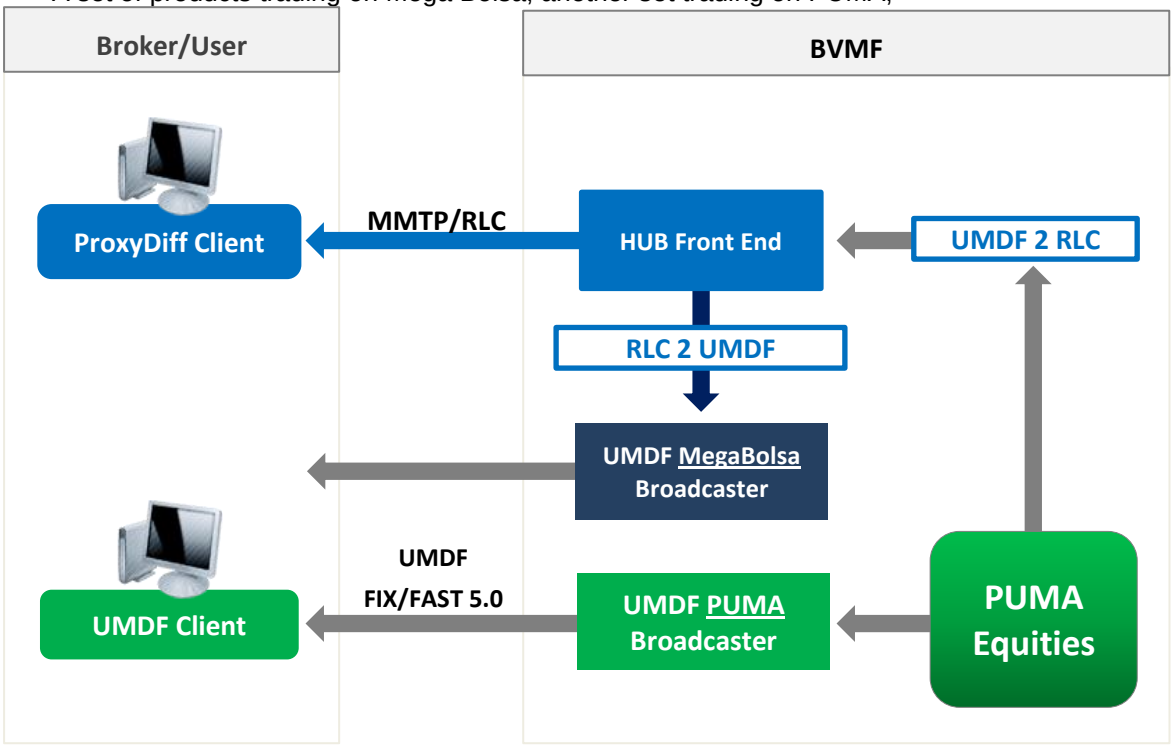
3.1.1.1. Current Mega Bolsa Market Data Architecture

- All equity products trading on Mega Bolsa (V900) via ProxyDiff or Mega Bolsa UMDF 1.6;



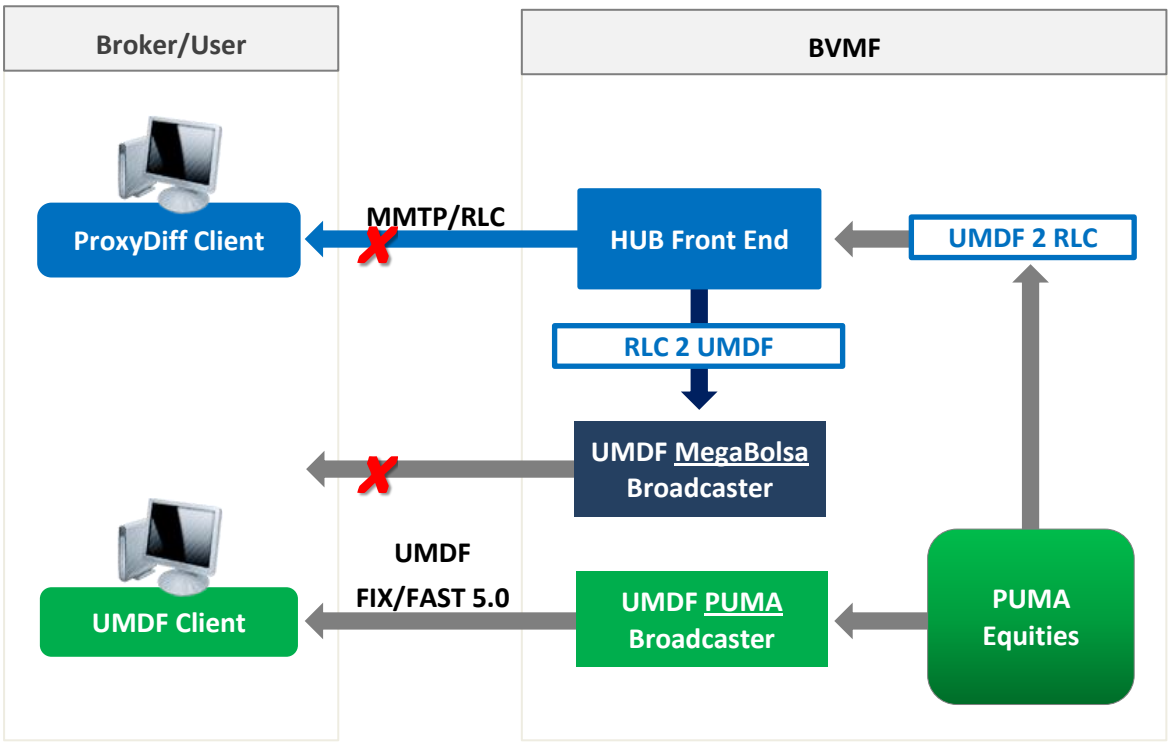
3.1.1.2. Mega Bolsa/PUMA Hybrid Market Data Architecture

- A set of products trading on Mega Bolsa, another set trading on PUMA;



3.1.1.3. PUMA Market Data Architecture

- All products trading on PUMA UMDF 2.0;
- Eventually ProxyDiff and Mega Bolsa UMDF 1.6 will be discontinued;



3.2. Impact Assessment from Mega Bolsa UMDF 1.6 to PUMA UMDF 2.0 for Equities

This section describes the expected messaging differences between the current Mega Bolsa UMDF 1.6 implementation and PUMA UMDF 2.0 for equities.

3.2.1. New and improved support for equity products

UMDF 2.0 now supports the following new products:

3.2.1.1. Security Lending contracts (BTC)

The following entry types are supported by Security Lending contracts:

MDEntry	Description
269=0,1,2	BTC Book Entries
269=J	BTC Book Reset
269=B	BTC Trade Volume
269=C	BTC Open Interest

Remarks:

- The BTC book order does not imply matching priority;
- All market data for BTC comes with the tag 1500-MDStreamID=L to differentiate the market data entries from other venues;
- Tag ***432-ExpireDate*** carries information on when the lending expires;
- Tag ***37019-EarlyTermination*** indicates if the lending can be terminated earlier

More details for the specific messages changed to accommodate this new product, please see sections 3.2.2 and 3.2.3.

3.2.1.2. Fixed Income products (BovespaFIX)

Supported by the new message 35=n (NonFixData), which has the following layout (header included):

Tag	Tag name	Req	Data type	Comment
35	MsgType	Y	String	Defines message type. Fixed value: **n** (NonFixData)
1128	AppVerID	Y	String	Specifies the service pack release being applied at message level. Fixed value: **9** (for FIX50SP2)
34	MsgSeqNum	Y	Int	Integer message sequence number.
52	SendingTime	Y	UTCTimestamp	UTC Date/ Time at message transmission.
212	DataLen	Y	Int	Integer field representing the length of the field Data (213) in bytes. Value must be positive.
213	Data	Y	Data	Actual message data stream (encoded Z5).
347	MessageEncoding	Y	String	Type of the encoded message inside the current message. Fixed value: **RLC-Z5**

This message (35=n) is used to carry a payload that is the unmodified RLC-Z5 message, from ProxyDiff, that can be extracted and processed as usual by customers and vendors already capable of processing this message.

3.2.1.3. Changes to other supported product types

Here is a comprehensible list for all the product support features that were changed. For more details, please see sections 3.2.2 and 3.2.3:

- New tag 37014-MDInterestRate for reporting the interest rate for Termo (Forward Market);
- Indicator for Non-tradable products and eligibility for GTD/GTC orders (using 870-NoInstrAttribs block);
- Support for multiple Lot Types (using 1234-NoLotTypeRules block);
- Indicator for User-defined spreads (UDS) versus Exchange-defined spreads (EDS) using tag 1377-MultiLegModel;
- Indicator for when strategy products legs contain individual prices (tag 1378-MultiLegPriceMethod);
- Index sequence (tag 37100) and Composite Underlying Prices (block 269=D and group 711-NoUnderlyings in incremental messages) ***please note this will only become available when the index channel migrates to PUMA 2.0***;
- Corporate Action Event identification (tag 37010-CorporateActionEventID);
- Market segment indicator (tag 1300-MarketSegmentID);
- Date when the instrument last had a trade (tag 9325-LastTradeDate);
- Indicator of previous day´s closing price adjustment (tag 37013-PriceAdjustmentMethod);
- Governance level indicator (tag 37011-GovernanceIndicator);
- Special Auctions indicator (tag 37015-SecurityMatchType);
- Reviewed and enhanced security classification (tags 460-Product, 167-SecurityType and 762-SecuritySubType);
- Option Exercise and Blocking (change tag 167 domain from OPTEXC to OPTEXER, a more compatible value with FIX5.0SP2);
- All tags of the type UTCTimeOnly and UTCTimestamp now includes milliseconds;

- Trades marked with 277-TradeCondition=U (Exchange Last) will only be generated at the beginning of the weekly session or after intraweek platform restart;
- On trades with 277-TradeCondition=U (Exchange Last), besides sending the last trade price(tag 270-MDEntryPx), the last trade quantity is also sent on tag 271-MDEntrySize;
- When processing leg trades (with tag 277=1), the trade price should not be used to infer the Last Trade Price;

3.2.2. Instrument definition changes

Most of the changes in this section bring more instrument details, in special for equity contracts, so there are changes to the FAST template. However, in terms of functionality, the instrument definition message remains the same.

The following changes to **Instrument Identification Block** apply to all Market Data messages that refer to an instrument (in **blue**):

Tag	Tag name	Req	Data type	Comment
48	SecurityID	Y	**Integer**	Unique instrument identifier for a given qualifier (*SecurityIDSource*). **All IDs will be numerical on PUMA.**
22	SecurityIDSource	Y	String(1)	SecurityID qualifier. Value issued by BVMF: 8 = Exchange Symbol (BVMF security identification).
207	SecurityExchange	Y	String(4)	Market to which the instrument belongs to. If it is not present the default value is "**BVMF**". Valid Values: BVMF: BM&FBovespa (equities, derivatives, FX)

Changes to SecurityList (35=y) message (in **blue**):

Tag	Tag name	Req	Data type	Comment
[**Standard message header**] ***no changes to this block***				
393	TotNoRelatedSym	Y	Integer	Total number of securities available in the channel.
893	LastFragment	N	Boolean	Indicates whether this message is the last in the sequence of messages. Valid values: Y = Last message N = Not last message (default)
146	NoRelatedSym	Y	NumInGroup	Specifies the number of repeating instruments
→ 55	Symbol	Y	String(32)	Instrument's ticker symbol.
→	[**Instrument identification block**]			
→ 1351	NoApplIDs	Y	NumInGroup	Specifies the number of the application ID occurrences (number of channels).
→ → 1180	ApplID	Y	String	Identifies the channel. It follows the convention: type + number. Type may have the following values: MBO, MBP and TOB. Example: MBP101.
→ → 1141	NoMDFeedTypes	C	NumInGroup	Number of MD Feed Types. Relates to tag 1180. Not sent if the only feed type available is MBO.
→ → → 1022	MDFeedType	N	String(3)	Indicates feed type as standard or implied. Not sent for MBO. Valid values: STD = Standard MBP IMP = Implied MBP
→ → 264	MarketDepth	Y	Integer	Identifies depth of book. Not sent for MBO (use default value).

Tag	Tag name	Req	Data type	Comment
				Valid values: 0=full book depth (MBO) (default) 1=top of book 2 and above = book depth (number of levels)
→ 454	NoSecurityAltID	N	NumInGroup	Number of alternate security identifiers.
→ → 455	SecurityAltID	Y	String(50)	Alternate identifiers for this security (e.g. ISIN).
→ → 456	SecurityAltIDSource	Y	String(1)	Identifies class or source of the SecurityAltID (455) value. Required if SecurityAltID is specified. Valid values: 4 = ISIN number H = Clearing house/organization
→ 711	NoUnderlyings	N	NumInGroup	Number of underlying instruments.
→ → 311	UnderlyingSymbol	Y	String(32)	Underlying instrument's ticker symbol.
→ → 309	UnderlyingSecurityID	Y	**Integer**	Underlying instrument's security identifier.
→ → 305	UnderlyingSecurityID Source	Y	String(1)	Qualifier for underlying instrument's security identifier. Value issued by BVMF: 4 = ISIN code 8 = Exchange Symbol (BVMF security identification).
→ → 308	UnderlyingSecurity Exchange	N	String(4)	Exchange code the underlying security belongs to. Value issued by BVMF: BVMF: BVMF (equities, derivatives, FX) The default value is "BVMF".
→ → 6919	IndexPct	C	Percentage	Indicates the percentage that this underlying composes the index. Only used for equity indexes.
→ **1144**	**ImpliedMarketIndicator**	**N**	**Integer**	**Indicates that an implied market should be created for either the legs of a multi-leg instrument (Implied-in) or for the multi-leg instrument based on the existence of the legs (Implied-out). This tag is reserved for future use. Valid values: 0 = Not implied (default)**
→ **870**	**NoInstrAttribs**	**C**	**Integer**	**Number of repeating InstrAttribType entries.**
→ → **871**	**InstrAttribType**	**C**	**Integer**	**Code to represent the type of instrument attributes. Valid values: 24 = Trade type eligibility details for security. 34 = Eligibility for GTD/GTC**
→ → **872**	**InstrAttribValue**	**V**	**Integer**	**Attribute value appropriate to the InstrAttribType (871) field. Valid values for 871=24: 1 = Electronic Match Eligible 3 = Block Trade Eligible 17 = Negotiated Quote Eligible Valid values for 871=34: 1 = GTD/GTC Eligible**
→ **1205**	**NoTickRules**	**N**	**Integer**	**Number of tick rules. This block specifies the rules for determining how a security ticks, i.e. the price increments which it can be quoted and traded, depending on the current price of the security For future use.**
→ → **1206**	**StartTickPriceRange**	**N**	**Price**	**Starting price range for specified tick increment For future use.**
→ → **1207**	**EndTickPriceRange**	**N**	**Price**	**Ending price range for the specified tick increment For future use.**
→ → **1208**	**TickIncrement**	**N**	**Price**	**Tick increment for stated price range. Specifies the valid price increments which a security can be quoted and**

Tag			Tag name	Req	Data type	Comment
						traded **For future use.**
→	→	**1209**	**TickRuleType**	**N**	**Integer**	**Specifies the type of tick rule which is being described** **For future use.**
→	555		NoLegs	N	NumInGroup	Number of instrument legs.
→	→	600	LegSymbol	Y	String(32)	Leg symbol.
→	→	602	LegSecurityID	Y	**Integer**	Unique identifier for instrument leg as per tag *LegSecurityIDSource*.
→	→	603	LegSecurityIDSource	Y	String(1)	Qualifier for leg identifier (*LegSecurityID*). Value issued by BVMF: 8 = Exchange Symbol (BVMF security identification).
→	→	616	LegSecurityExchange	N	String(4)	Exchange code the leg security belongs to. Value issued by BVMF: BVMF: BVMF (equities, derivatives, FX) The default value is "BVMF".
→	→	**609**	**LegSecurityType**	**Y**	**String**	**Indicates the type of the individual leg** **Valid values (derivatives):** **- FUT (Futures)** **- SPOT (Spot Market)** **- SOPT (Spot Options)** **- FOPT (Future Options)** **- DTERM (Derivative Forward markets, or "Termo")** **Valid values (equities):** **- CS (Common Stock)** **- PS (Preferred Stock)** **- CASH (rights, etc)** **- FORWARD (Equity Forward or "Termo")** **- ETF (Exchange Traded Fund)** **- OPT (Option)** **- INDEX (Non Tradeable index)** **- OPTEXER (Option Exercise)** **- MLEG (Multileg Instrument)** **- SECLOAN (Security loan, or BTC)** **- INDEXOPT (Option on Index)**
→	→	623	LegRatioQty	Y	Double	The quantity ratio for this individual leg relative to the entire multileg security.
→	→	**37009**	**LegType**	**Y**	**Char**	**This tag has been deprecated; Only used for UMDF 1.6 derivatives.**
→	→	**37010**	**BuyersPerspective**	**Y**	**Char**	**This tag has been deprecated; Only used for UMDF 1.6 derivatives. For equities, use tag LegSide(624) instead.**
→	→	624	LegSide	Y	Integer	The side of this individual leg (multileg security). Valid values: 1 – Buy 2 – Sell
→	980		SecurityUpdateAction	**Y**	Char	Indicates the action used when updating the security. Valid values: A=Add D=Delete M=Modify
→	**1234**		**NoLotTypeRules**	**C**	**Integer**	**Number of Lot Type Rules for the instrument** **Only one rule can be defined (this tag is always set to 1).** **This group is only used for equities segment.**
→	→	**1093**	**LotType**	**C**	**Integer**	**Defines the lot type for the instruments.** **Used for the equities segment.** **Valid values:** **1 = Odd Lot** **2 = Round Lot** **3 = Block Lot**
→	→	**1231**	**MinLotSize**	**C**	**Qty**	**Minimum lot size allowed based on lot type specified in LotType(1093).**

Tag		Tag name	Req	Data type	Comment
					Used for the equities segment.
→	561	RoundLot	N	Qty	The trading lot size of the security. **This tag is only used for the derivatives segment.**
→	562	MinTradeVol	N	Qty	The minimum trading volume for the security.
→	969	MinPriceIncrement	N	Price	Number of minimum tick increments.
→	5151	TickSizeDenominator	N	Integer	Number of decimals used for pricing this instrument, e.g. for price increment of 0.001, the number of decimals is 3.
→	9749	MinOrderQty	N	Qty	Minimum quantity of an order for the security.
→	9748	MaxOrderQty	N	Qty	Maximum quantity of an order for the security.
→	**9219**	**InstrumentId**	**N**	**Integer**	**This tag has been deprecated; Only used for UMDF 1.6 derivatives.**
→	**1377**	**MultiLegModel**	**C**	**Integer**	**Defines whether the security is pre-defined or user-defined. Used for multileg security only.** **Valid values:** **0 = Predefined Multileg Security** **1 = User-Defined Multileg Security**
→	**1378**	**MultiLegPriceMethod**	**N**	**Integer**	**Defines the method used when applying the multileg price to the legs. When this tag is set, it indicates spreads that have leg prices generated by the trading engine.** **Valid values:** **3 = Individual**
→	15	Currency	N	Currency	Currency used for the price.
→	**460**	**Product**	**Y**	**Integer**	**Indicates the type of product the security is associated with.** **Valid values:** **2 = COMMODITY** **3 = CORPORATE** **4 = CURRENCY** **5 = EQUITY** **6 = GOVERNMENT** **7 = INDEX** **15 = ECONOMIC INDICATOR** **16 = MULTILEG**
→	167	SecurityType	N	String(32)	Indicates the type of the security. Valid Values (derivatives and FX): - FUT (Futures) - SPOT (Spot Market) - SOPT (Spot Options) - FOPT (Future Options) - DTERM (Derivative Forward or “Termo”) Valid Values (equities): - CASH (rights, etc) - OPT (Option) - FORWARD (Equity Forward or “Termo”) - ETF (Exchange Traded Fund) - INDEX (Non Tradeable index) **- OPTEXER (Option Exercise)** - MLEG (Multileg Instrument, UDS) **- CS (Common Stock)** **- PS (Preferred Stock)** **- SECLOAN (Security loan, or BTC)** **- INDEXOPT (Option on Index)**
→	762	SecuritySubType	N	String(32)	The sub type of the instrument. Values for derivatives/FX: 4 - FX spot 10 - Gold 20 - Index 30 - Interest rate 40 - FX rate 50 - Foreign debt 60 - Agricultural

Tag		Tag name	Req	Data type	Comment
					70 - Energy 80 - Economic Indicator 90 - Strategy 100 - Future-style Option 110 - Volatility 120 - Swap 130 - MiniContract 140 - Financial RollOver 141 - Agricultural RollOver 190 - Carbon credit **Values for equities:** **1001 - Ordinary Rights (DO)** **1002 - Preferred Rights (DP)** **1003 - Common Shares (ON)** **1004 - Preferred Shares (PN)** **1005 - Class A preferred shares (PNA)** **1006 - Class B preferred shares (PNB)** **1007 - Class C preferred shares (PNC)** **1008 - Class D preferred shares (PND)** **1009 - Ordinary Receipts (ON REC)** **1010 - Preferred Receipts (PN REC)** **1100 - Common Forward** **1101 - Flexible Forward** **1102 - Dollar Forward** **1103 - Index Points Forward** **1104 - Non-tradeable ETF Index** **1105 - Predefined Covered Spread** **1106 - Traceable ETF** **1107 - Non-tradeable Index** **1108 - User defined spread** **1109 - Exchange defined spread (not currently in use)** **1110 - Security Loan** **1111 - Tradeable Index** **1999 - Others**
→	**7534**	**SecurityStrategyType**	**C**	**String**	**Strategy type definition. Required for strategy instruments.**
→	6937	Asset	N	String(10)	Asset associated with the security , such as DOL, BGI, OZ1, WDL, CNI, etc.
→	107	SecurityDesc	N	String(1000)	Descriptive string of the security (e.g. “dollar futures” or “gold futures”).
→	541	MaturityDate	N	LocalMktDate	Date of instrument maturity.
→	200	MaturityMonthYear	N	MonthYear	Month and year of the maturity (for futures and options).
→	202	StrikePrice	N	Price	Strike price of option.
→	947	StrikeCurrency	N	Currency	Currency of option’s strike price.
→	1194	ExcerciseStyle	N	Integer	Type of exercise of a derivatives security. Valid values: 0 – European 1 – American
→	201	PutOrCall	N	Integer	Indicates whether an option contract is a put or call. Valid values: 0 – Put 1 – Call
→	231	ContractMultiplier	N	Double	Specifies the ratio or multiply factor to convert from “nominal” units (e.g. contracts) to total units (e.g. shares) (e.g. 1.0, 100, 1000, etc). Deprecated for equities.
→	37012	PriceDivisor	N	Integer	Value that divides the Price field to produce the actual order price (based on Step of Quotation). (e.g. 1, 100, 1000, etc). Can also be interpreted as the Index Reducer for indexes.
→	667	ContractSettlMonth	N	MonthYear	Specifies when the contract will settle.
→	461	CFICode	N	String(6)	Classification of Financial Instruments (CFI code) values, which indicate the type of security using the ISO 10962 standard.
→	470	CountryOfIssue	N	Country	ISO country code of instrument issue.
→	225	IssueDate	N	LocalMktDate	The date on which the security is issued/activated.
→	873	DatedDate	N	LocalMktDate	The date of the security activation, if different from the IssueDate.
→	916	StartDate	N	LocalMktDate	Start date of a financing deal, i.e. the date the buyer pays the seller cash and takes control of the collateral

Tag		Tag name	Req	Data type	Comment
→	917	EndDate	N	LocalMktDate	End date of a financing deal, i.e. the date the seller reimburses the buyer and takes back control of the collateral.
→	63	SettlType	N	String(4)	Indicates order settlement period . (e.g. 0, D1, D2, D3, D60, D120 etc.) If present, SettlDate (64) overrides this field. The default value SettlType (63) is 0 (Regular).
→	64	SettlDate	N	LocalMktDate	Specific date for trade settlement (SettlementDate) in YYYYMMDD format.
→	120	SettlCurrency	Y	Currency	Currency used for the settlement
→	423	PriceType	N	Integer	Code that represents the price type of the instrument. Valid values: 12 – Product ticks in full ticks 13 – Product ticks in halves 14 – Product ticks in fourths 15 – Product ticks in eights 16 – Product ticks in sixteenths 17 – Product ticks in thirty-seconds 18 – Product ticks in sixty-fourths 20 – Product ticks in half thirty-seconds 21 – Product ticks in quarter thirty-seconds 22 – Product ticks in half sixty-fourths *Absence of this field denotes that the instrument trades in decimals.*
→	6938	SecurityValidity Timestamp	N	UTCTimestamp	Indicates the UTC timestamp when trading for this security expires, i.e. when it is not eligible to trade anymore. Different from MaturityDate.
→	1151	SecurityGroup	N	String(15)	Indicates the group this instrument belongs to.
→	**7595**	**NoSharesIssued**	**N**	**Integer**	**Social Capital – Total number of shares issued for Cash Equity Instrument**
→	**1300**	**MarketSegmentID**	**C**	**String**	**Identifies the market segment. Required for all tradable instruments. Not present in equity indexes, ETF indexes, BTC and option exercise.**
→	**37011**	**GovernanceIndicator**	**C**	**String**	**Corporative governance level indicator. Required cash equities.** **Valid values:** **N1 = Level 1** **N2 = Level 2** **N3 = Level 3** **NM = New Market** **MA = MAIS Market** **MB = SOMA Market**
→	**37010**	**CorporateActionEventID**	**C**	**Integer**	**Unique numeric identifier for a corporate action event associated with the security. The identifier is unique within the security.** **Note. This tag does not represent the type of the Corporate Action. Required for cash equities.**
→	**37015**	**SecurityMatchType**	**C**	**Integer**	**Type of matching that occurred.** **Required for Special Auctions** **Valid values:** **8 = Issuing/Buy Back Auction**

3.2.3. **Book and statistics changes**

The changes for statistics and books are minor, in special for equity contracts, thus there are changes for the FAST template.

Changes to the MarketDataIncrementalRefresh (35=X) message (in **blue**):

Tag	Tag name	Req	Data type	Comment
[Standard message header] ***no changes to this block***				

	Tag	Tag name	Req	Data type	Comment
	75	TradeDate	N	LocalMktDate	Used to specify the trading date which a set of market data applies, in YYYYMMDD format. Absence of this field indicates current day (expressed in local time at place of trade).
	268	NoMDEntries	Y	NumInGroup	Number of following entries.
→	269	MDEntryType	Y	Char	Type Market Data entry. Valid values: 0 = Bid 1 = Offer 2 = Trade 3 = Index Value 4 = Opening Price 5 = Closing Price 6 = Settlement Price 7 = Trading Session High Price 8 = Trading Session Low Price 9 = Trading Session VWAP Price A = Imbalance B = Trade Volume C = Open Interest J = Empty Book g = Price band **h = Quantity band** **D = Composite Underlying Price**
→	279	MDUpdateAction	Y	Char	Types of Market Data update action. Valid values: 0 = New 1 = Change 2 = Delete 3 = Delete Thru 4 = Delete From 5 = Overlay
→	83	RptSeq	N	Integer	Sequence number per Instrument update, which contains the same data as the corresponding RptSeq in the Market Data Incremental Refresh (tag 35-MsgType=X).
→	**37100**	**IndexSeq**	**C**	**Integer**	**Index Value sequence number. Used only for index instruments.**
→	6939	PriceBandType	**C**	Integer	Indicates the type of price banding (tunnel): Used for Price Banding when MDEntryType (269) = g and when tags 1148 and 1149 are sent. Valid values: ~~**0 = oscillation tunnel (default)**~~ ~~**1 = rejection tunnel (for future use)**~~ ~~**2 = auction tunnel (for future use)**~~ **1= Hard Limit** **2= Auction Limits** **3= Rejection Band** **4= Static Limits**
→	**[Instrument identification block]**				
→	1500	MDStreamID	N	String(2)	The identifier or name of the price stream. The default value is “E” (Electronic). Valid values: E - Electronic X - Ex-pit ~~**S - Surveillance**~~ O - Option Exercise ~~**C - Over-the-counter (OTC)**~~ **T - Termo** **N - Index** **L - Lending (BTC)** **A - All**
→	270	MDEntryPx	C	Price	Price of the Market Data Entry. Required when this market data entry involves a price. Represents the notional value for trade volume (B). Other entry types that do not involve price do not require this tag.

	Tag	Tag name	Req	Data type	Comment
→	271	MDEntrySize	C	Qty	Quantity or volume represented by the Market Data Entry. Required when MDUpdateAction = New (0) and MDEntryType = Bid (0), Offer (1), Trade (2), Trade Volume (B) or Opening Price (4).
→	272	MDEntryDate	Y	UTCDateOnly	Date of Market Data Entry.
→	273	MDEntryTime	Y	UTCTimeOnly	Time of Market Data Entry. **This tag now includes up to milliseconds (hhmmssSSS).**
→	37016	MDInsertDate	C	UTCDateOnly	Date when the order was inserted or re-inserted into the order book (used for GTD/GTC orders, only for equities market). For PUMA: In Trade (269=2 - New or Delete) – original trade date or manually entered by MktOps
→	37017	MDInsertTime	Y	UTCTimeOnly	The time when the order was inserted or re-inserted into the order book or manually altered by MktOps. **This tag includes up to milliseconds (hhmmssSSS).**
→	**37014**	**MDEntryInterestRate**	**C**	**Percentage**	**Interest Rate of the Termo Trade.** **Expressed in decimal form. For example, 1% points is expressed and sent as 0.01. One basis point is represented as 0.0001.**
→	274	TickDirection	C	Char	Direction of the "tick". Required when MDEntryType=2 (Trade) or 4 (Opening Price). Valid values: 0 = Plus Tick 1 = Zero-Plus Tick 2 = Minus Tick 3 = Zero-Minus Tick
→	276	QuoteCondition	N	MultipleString Value	Space-delimited list of conditions describing a quote. Valid values: "R" = Retransmission of the order "K" = Implied Price
→	277	TradeCondition	N	MultipleString Value	For optional use in reporting Trades/Imbalance. Space delimited list of conditions describing a trade/imbalance. Valid values: R = Opening Price X = Crossed L = Last Trade at the Same Price Indicator P = Imbalance more buyers Q = Imbalance more sellers U = Exchange Last 3 = Multi Asset Trade (Termo Vista) **1 = Leg trade** **2 = Marketplace entered trade (trade on behalf)**
→	**336**	**TradingSessionID**	**C**	**Integer**	**Used to mark Non-Regular Session trades.**
→	286	OpenCloseSettlFlag	N	MultipleString Value	Identifies if the opening price in field MDEntryPx represents a theoretical opening price and applicable to describe when the settlement data are related to. Valid values: 1 = Session settlement entry 4 = Entry from previous business day 5 = Theoretical price **3 = Expected entry (Preliminary price)**
→	15	Currency	N	Currency	Identifies currency used for financial volume. Absence of this field is interpreted as the default currency for the security.
→	**9325**	**LastTradeDate**	**C**	**UTCDateOnly**	**Date the instrument last traded.** **Used as an input in the calculation of the MaxTradeVol and used to trigger an Auction. Not published if the product has never been traded.** **Published as part of Adjusted Closing Price block 269=5 286=4.**
→	**37013**	**PriceAdjustmentMethod**	**C**	**Integer**	**Indicator of previous day´s closing price.** **Used for Closing price adjustments related to**

	Tag	Tag name	Req	Data type	Comment
					Corporate Actions. **Valid values:** **0 = No adjustment (default)** **1 = Theoretical price of EX share.** **2 = Theoretical price of EX share when greater than WITH price.** **3 = Theoretical price of EX share, resulting from dividends in different types of stocks/companies.** **4 = Price arbitrated by Market Authority**
→	37	OrderID	C	String(50)	Unique identifier for Order as assigned by the exchange, maps to the *SecondaryOrderID* field in the *Execution Report* message for the derivatives market (for the FX market, it is the actual *OrderID*). Required for Bids or Offers for market by order.
→	1003	TradeID	C	String(32)	Contains the unique identifier for this trade per instrument + trading date, as assigned by the exchange. Required if reporting a Trade.
→	288	MDEntryBuyer	N	String(50)	For optional use in reporting trades (buying party) or indicating a new bid entry. Note: not sent in FX messages (blind screen).
→	289	MDEntrySeller	N	String(50)	For optional use in reporting trades (selling party) or indicating a new offer entry. Note: not sent in FX messages (blind screen).
→	346	NumberOfOrders	C	Integer	Contains the number of orders that make up the aggregate quantity at the price point. Required if this is a price-depth book entry.
→	290	MDEntryPositionNo	C	Integer	Displays the position of a bid or offer, numbered from most the competitive to the least competitive, per market side, beginning with 1. Required when MDEntryType=0 or 1.
→	~~5767~~	~~AgressorSide~~	N	Char	Indicates which side is the aggressor of the trade. If there is no existing value, then there is no aggressor. Reserved for future use. **Deprecated.** Valid values are: 1 = Buy 2 = Sell
→	423	PriceType	N	Integer	Code to represent the price type (applicable to settlement data). The default value is “2” (Per unit). Valid values: 1 – Percentage 2 – Per unit (i.e. per share or contract) 3 – Fixed amount (absolute value)
→	451	NetChgPrevDay	N	PriceOffset	Net change from previous trading day’s closing price vs. last traded price.
→	287	SellerDays	N	Integer	Specifies the number of days that may elapse before the delivery of the security. Only used for some types of trades in the forward market.
→	731	SettlPriceType	C	Integer	Required only for MDEntryType=6 (Settlement Price). Valid values: 1 = Final 2 = Theoretical/Preview 3 = Updated
→	1020	TradeVolume	N	Qty	Total traded quantity (shares/contracts) of the trading day. It will be present only in the Trade Volume (269=B) or Trade (269=2) blocks.
→	1306	PriceLimitType	N	Integer	Describes how the prices are expressed. The default value is “0” (Price Unit). Valid values: 0 = Price Unit 1= Ticks 2 = Percentage
→	1148	LowLimitPrice	N	Price	Allowable low limit price for the trading day. A key parameter in validating order price. Used as the lower band for validating order prices. Orders submitted with

	Tag	Tag name	Req	Data type	Comment
					prices below the lower limit will be rejected.
→	1149	HighLimitPrice	N	Price	Allowable high limit price for the trading day. A key parameter in validating order price. Used as the upper band for validating order prices. Orders submitted with prices above the upper limit will be rejected.
→	1150	TradingReferencePrice	N	Price	Reference price for the current trading price range usually representing the mid price between the *HighLimitPrice* and *LowLimitPrice*. The value may be the settlement price or closing price of the prior trading day. **Sent to Price bands and Economic Indicators.**
→	**37008**	**PriceBandMidpointPriceType**	**C**	**Integer**	**Band Midpoint Type** **Complementary Last Price (CLAST) follows special rules described in 3BR6.2.3.1** **Used with Auction Price Banding.** **Valid values:** **0 = Last Traded Price (default)** **1 = Complementary Last Price** **2 = Theoretical Price**
→	**37003**	**AvgDailyTradedQty**	**C**	**Integer**	**Daily average shares traded within 30 days – equity market only. Previously known as DailyAvgShares30D.**
→	**432**	**ExpireDate**	**C**	**LocalMktDate**	**Date of order expiration (last day the order can trade), always expressed in terms of the local market date. Used in BTC contracts only.**
→	**37019**	**EarlyTermination**	**C**	**Integer**	**Indicates if the deal is subject to anticipated liquidation (early termination of the borrowing/lending)** **Used in BTC contracts only.** **Valid values:** **0 = Normal termination (default)** **1 = Early termination**
→	**1140**	**MaxTradeVol**	**C**	**Integer**	**The maximum order quantity that can be submitted for a security.** **The value is the minimum between % of shares issued and % of average traded quantity within 30 days.**
→	**711**	**NoUnderlyings**	**C**	**NumInGroup**	**Number of repeating groups is based on Index Composition. Only used when representing Index Composite Underlying Price (269=D).**
→ →	**309**	**UnderlyingSecurityID**	**Y**	**Integer**	**Underlying instrument's security identifier.**
→ →	**305**	**UnderlyingSecurityIDSource**	**Y**	**Integer**	**Qualifier for underlying instrument's security ID.** **Valid value: 8**
→ →	**308**	**UnderlyingSecurityExchange**	**Y**	**String**	**Underlying instrument's exchange.** **Valid value: BVMF**
→ →	**810**	**UnderlyingPx**	**Y**	**Price**	**Underlying instrument price reflected in Index value**
→ →	**37018**	**UnderlyingPxType**	**Y**	**Integer**	**Indicates the Underlying Instrument price type reflected in Index value** **Valid values:** **0 = Trade (default)** **1 = Average of TOB**
→	~~7687~~	~~PercentageVar~~	N	Percentage	Index variation in percentage, from the beginning of day. **Deprecated.**
→	~~9343~~	~~NoUnchangedSecurities~~	N	Integer	Number of index underlying securities with no variation. **Deprecated.**
→	~~9344~~	~~NoNotTradedSecurities~~	N	Integer	Number of index underlying securities that are not quoted. **Deprecated.**
→	~~9989~~	~~TotTradedSecurities~~	N	Integer	Number of quoted securities in the index. **Deprecated.**
→	~~9990~~	~~CapitalPct~~	N	Percentage	Capitalization percentage of active securities in the index. **Deprecated.**
→	~~9993~~	~~PrevYearVariation~~	N	Percentage	Index variation in percentage, compared to previous year last index. **Deprecated.**
→	~~9996~~	~~NoFallingSecurities~~	N	Integer	Number of index underlying securities falling in price. **Deprecated.**
→	~~9997~~	~~NoRisingSecurities~~	N	Integer	Number of index underlying securities rising in price. **Deprecated.**
→	~~37001~~	~~PercThresholdNormalTrade~~	N	Percentage	Percentage threshold normal trade. **Deprecated.**
→	~~37002~~	~~PercThresholdCrossTrade~~	N	Percentage	Percentage threshold cross trade. **Deprecated.**
→	~~37003~~	~~DailyAvgShares30D~~	N	Qty	Daily average shares traded within 30 days. **Deprecated.**

	Tag	Tag name	Req	Data type	Comment
→	~~37004~~	~~MaxinumNormalSharesPerDaily AvgShares30DRatio~~	N	Float	Ratio maximum shares traded normal trade / Daily average shares traded within 30 days. **Deprecated.**
→	~~37005~~	~~MaxinumCrossSharesPerDaily AvgShares30DRatio~~	N	Float	Ratio maximum shares traded cross trade / Daily average shares traded within 30 days. **Deprecated.**
→	~~37006~~	~~NormalSharesPerOutstanding SharesRatio~~	N	Float	Ratio maximum shares traded normal trade / Outstanding number of shares. **Deprecated.**
→	~~37007~~	~~CrossSharesPerOutstanding SharesRatio~~	N	Float	Ratio maximum shares traded cross trade / Outstanding number of shares. **Deprecated.**

Changes to the MarketDataSnapshotFullRefresh (35=W) message (in **blue**):

	Tag	Tag name	Req	Data type	Comment
		[Standard message header] ***no changes to this block***			
	911	TotNoReports	Y	Integer	Total number of snapshots to be returned in a replay loop.
	75	TradeDate	N	LocalMktDate	Used to specify the trading date which a set of market data applies, in YYYYMMDD format. Absence of this field indicates current day (expressed in local time at place of trade).
	451	NetChgPrevDay	N	PriceOffset	Net change from previous trading day's closing price vs. last traded price.
	264	MarketDepth	N	Integer	Indicates the depth of the aggregate book (order depth book is always full depth), if applicable. If value = "0" or the tag is not present, it indicates Market by Order.
		[Instrument identification block]			
	268	NoMDEntries	Y	NumInGroup	Number of following entries.
→	269	MDEntryType	Y	Char	Type Market Data entry. Valid values: 0 = Bid 1 = Offer 2 = Trade 3 = Index Value 4 = Opening Price 5 = Closing Price 6 = Settlement Price 7 = Trading Session High Price 8 = Trading Session Low Price 9 = Trading Session VWAP Price A = Imbalance B = Trade Volume C = Open Interest c = Security trading state/phase J = Empty Book g = Price band **h = Quantity band** **D = Composite Underlying Price**
→	83	RptSeq	N	Integer	Sequence number per Instrument update, which contains the same data as the corresponding RptSeq in the Market Data Incremental Refresh (tag 35-MsgType=X).
→	**37100**	**IndexSeq**	**C**	**Integer**	**Index Value sequence number. Used only for index instruments.**
→	6939	PriceBandType	**C**	Integer	Indicates the type of price banding (tunnel): Used for Price Banding when MDEntryType (269) = g and when tags 1148 and 1149 are sent. Valid values: ~~**0 = oscillation tunnel (default)**~~ ~~**1 = rejection tunnel (for future use)**~~ ~~**2 = auction tunnel (for future use)**~~ **1= Hard Limit** **2= Auction Limits**

	Tag	Tag name	Req	Data type	Comment
					3= Rejection Band **4= Static Limits**
→	1500	MDStreamID	N	String(2)	The identifier or name of the price stream. The default value is “E” (Electronic). Valid values: E - Electronic X - Ex-pit ~~**S - Surveillance**~~ O - Option Exercise ~~**C - Over-the-counter (OTC)**~~ **T - Termo** **N - Index** **L - Lending (BTC)** **A - All**
→	270	MDEntryPx	C	Price	Price of the Market Data Entry. Required when this market data entry involves a price. Represents the notional value for trade volume (B). Other entry types that do not involve price do not require this tag.
→	271	MDEntrySize	C	Qty	Quantity or volume represented by the Market Data Entry. Required when MDUpdateAction = New (0) and MDEntryType = Bid (0), Offer (1), Trade (2), Trade Volume (B) or Opening Price (4).
→	272	MDEntryDate	Y	UTCDateOnly	Date of Market Data Entry.
→	273	MDEntryTime	Y	UTCTimeOnly	Time of Market Data Entry. **This tag now includes up to milliseconds (hhmmssSSS).**
→	37016	MDInsertDate	C	UTCDateOnly	Date when the order was inserted or re-inserted into the order book (used for GTD/GTC orders, only for equities market). For PUMA: In Trade (269=2 - New or Delete) – original trade date or manually entered by MktOps
→	37017	MDInsertTime	Y	UTCTimeOnly	The time when the order was inserted or re-inserted into the order book or manually altered by MktOps. **This tag includes up to milliseconds (hhmmssSSS).**
→	**37014**	**MDEntryInterestRate**	**C**	**Percentage**	**Interest Rate of the Termo Trade.** **Expressed in decimal form. For example, 1% points is expressed and sent as 0.01. One basis point is represented as 0.0001.**
→	274	TickDirection	C	Char	Direction of the “tick”. Required when MDEntryType=2 (Trade) or 4 (Opening Price). Valid values: 0 = Plus Tick 1 = Zero-Plus Tick 2 = Minus Tick 3 = Zero-Minus Tick
→	326	SecurityTradingStatus	N	Integer	Status related to a given instrument. Valid values: 02 = Trading halt (Pause) 04 = No-Open (Close) 17 = Ready to trade (Open) 18 = Not available for trading (Forbidden) 20 = Unknown or invalid 21 = Pre-Open (Reserved) **101 = Final Closing Call**
→	625	TradingSessionSubID	N	Integer	Phase related to a given *SecurityGroup*. Valid values: 02 = Trading halt (Pause) 04 = No-Open (Close) 17 = Ready to trade (Open) 18 = Not available for trading (Pre-close) 21 = Pre-Open **101 = Final Closing Call**
→	342	TradSesOpenTime	C	UTCTimestamp	Indicates the time the auction is scheduled to end. Required when MDEntryType=’c’ and SecurityTradingStatus=21 (Reserved) without random ending.

	Tag	Tag name	Req	Data type	Comment
→	276	QuoteCondition	N	MultipleString Value	Space-delimited list of conditions describing a quote. Valid values: “R” = Retransmission of the order “K” = Implied Price
→	277	TradeCondition	N	MultipleString Value	For optional use in reporting Trades/Imbalance. Space delimited list of conditions describing a trade/imbalance. Valid values: R = Opening Price X = Crossed L = Last Trade at the Same Price Indicator P = Imbalance more buyers Q = Imbalance more sellers U = Exchange Last 3 = Multi Asset Trade (Termo Vista) **1 = Leg trade** **2 = Marketplace entered trade (trade on behalf)**
→	**336**	**TradingSessionID**	**C**	**Integer**	**Used to mark Non-Regular Session trades.**
→	**1174**	**SecurityTradingEvent**	**C**	**Integer**	**Identifies an event related to a *TradingSessionSubID*. Always sent on MDEntryType=’c’, when field 326 is filled.** **Possible values:** **101 = Security Status separated from Group Phase** **102 = Security Status following Group Phase**
→	286	OpenCloseSettlFlag	N	MultipleString Value	Identifies if the opening price in field MDEntryPx represents a theoretical opening price and applicable to describe when the settlement data are related to. Valid values: 1 = Session settlement entry 4 = Entry from previous business day 5 = Theoretical price **3 = Expected entry (Preliminary price)**
→	15	Currency	N	Currency	Identifies currency used for financial volume. Absence of this field is interpreted as the default currency for the security.
→	**9325**	**LastTradeDate**	**C**	**UTCDateOnly**	**Date the instrument last traded.** **Used as an input in the calculation of the MaxTradeVol and used to trigger an Auction. Not published if the product has never been traded.** **Published as part of Adjusted Closing Price block 269=5 286=4.**
→	**37013**	**PriceAdjustmentMethod**	**C**	**Integer**	**Indicator of previous day´s closing price.** **Used for Closing price adjustments related to Corporate Actions.** **Valid values:** **0 = No adjustment (default)** **1 = Theoretical price of EX share.** **2 = Theoretical price of EX share when greater than WITH price.** **3 = Theoretical price of EX share, resulting from dividends in different types of stocks/companies.** **4 = Price arbitrated by Market Authority**
→	37	OrderID	C	String(50)	Unique identifier for Order as assigned by the exchange, maps to the *SecondaryOrderID* field in the *Execution Report* message for the derivatives market (for the FX market, it is the actual *OrderID*). Required for Bids or Offers for market by order.
→	1003	TradeID	C	String(32)	Contains the unique identifier for this trade per instrument + trading date, as assigned by the exchange. Required if reporting a Trade.
→	288	MDEntryBuyer	N	String(50)	For optional use in reporting trades (buying party) or indicating a new bid entry. Note: not sent in FX messages (blind screen).

	Tag	Tag name	Req	Data type	Comment
→	289	MDEntrySeller	N	String(50)	For optional use in reporting trades (selling party) or indicating a new offer entry. Note: not sent in FX messages (blind screen).
→	346	NumberOfOrders	C	Integer	Contains the number of orders that make up the aggregate quantity at the price point. Required if this is a price-depth book entry.
→	290	MDEntryPositionNo	C	Integer	Displays the position of a bid or offer, numbered from most the competitive to the least competitive, per market side, beginning with 1. Required when MDEntryType=0 or 1.
→	~~5767~~	~~AgressorSide~~	N	Char	Indicates which side is the aggressor of the trade. If there is no existing value, then there is no aggressor. Reserved for future use. **Deprecated.** Valid values are: 1 = Buy 2 = Sell
→	423	PriceType	N	Integer	Code to represent the price type (applicable to settlement data). The default value is “2” (Per unit). Valid values: 1 – Percentage 2 – Per unit (i.e. per share or contract) 3 – Fixed amount (absolute value)
→	451	NetChgPrevDay	N	PriceOffset	Net change from previous trading day’s closing price vs. last traded price.
→	287	SellerDays	N	Integer	Specifies the number of days that may elapse before the delivery of the security. Only used for some types of trades in the forward market.
→	731	SettlPriceType	C	Integer	Required only for MDEntryType=6 (Settlement Price). Valid values: 1 = Final 2 = Theoretical/Preview 3 = Updated
→	1020	TradeVolume	N	Qty	Total traded quantity (shares/contracts) of the trading day. It will be present only in the Trade Volume (269=B) or Trade (269=2) blocks.
→	1306	PriceLimitType	N	Integer	Describes how the prices are expressed. The default value is “0” (Price Unit). Valid values: 0 = Price Unit 1= Ticks 2 = Percentage
→	1148	LowLimitPrice	N	Price	Allowable low limit price for the trading day. A key parameter in validating order price. Used as the lower band for validating order prices. Orders submitted with prices below the lower limit will be rejected.
→	1149	HighLimitPrice	N	Price	Allowable high limit price for the trading day. A key parameter in validating order price. Used as the upper band for validating order prices. Orders submitted with prices above the upper limit will be rejected.
→	1150	TradingReferencePrice	N	Price	Reference price for the current trading price range usually representing the mid price between the *HighLimitPrice* and *LowLimitPrice*. The value may be the settlement price or closing price of the prior trading day. **Sent to Price bands and Economic Indicators.**
→	**37008**	**PriceBandMidpointPriceType**	**C**	**Integer**	**Band Midpoint Type** **Complementary Last Price (CLAST) follows special rules described in 3BR6.2.3.1** **Used with Auction Price Banding.** **Valid values:** **0 = Last Traded Price (default)** **1 = Complementary Last Price** **2 = Theoretical Price**
→	**37003**	**AvgDailyTradedQty**	**C**	**Integer**	**Daily average shares traded within 30 days – equity market only. Previously known as DailyAvgShares30D.**

	Tag	Tag name	Req	Data type	Comment
→	432	ExpireDate	C	LocalMktDate	Date of order expiration (last day the order can trade), always expressed in terms of the local market date. Used in BTC contracts only.
→	37019	EarlyTermination	C	Integer	Indicates if the deal is subject to anticipated liquidation (early termination of the borrowing/lending) Used in BTC contracts only. Valid values: 0 = Normal termination (default) 1 = Early termination
→	1140	MaxTradeVol	C	Integer	The maximum order quantity that can be submitted for a security. The value is the minimum between % of shares issued and % of average traded quantity within 30 days.
→	711	NoUnderlyings	C	NumInGroup	Number of repeating groups is based on Index Composition. Only used when representing Index Composite Underlying Price (269=D).
→ →	309	UnderlyingSecurityID	Y	Integer	Underlying instrument's security identifier.
→ →	305	UnderlyingSecurityIDSource	Y	Integer	Qualifier for underlying instrument's security ID. Valid value: 8
→ →	308	UnderlyingSecurityExchange	Y	String	Underlying instrument's exchange. Valid value: BVMF
→ →	810	UnderlyingPx	Y	Price	Underlying instrument price reflected in Index value
→ →	37018	UnderlyingPxType	Y	Integer	Indicates the Underlying Instrument price type reflected in Index value. Valid values: 0 = Trade (default) 1 = Average of TOB

Other remarkable changes:

1) Statistics by venue are enhanced and each set of statistics must be stored separately by the customer application based on the tag 1500-MDStreamID;

e.g.: when receiving two Incremental messages (35=X) with Trade Volume blocks (269=B) for different venue types (tag 1500-MDStreamID) as follows below, their trade volumes (tag 1020) should be kept separate in memory:

MDEntryType	269=B (trade volume)
SecurityID	48=1234
SecurityIDSource	22=8
SecurityExchange	207=BVMF
MDUpdateAction	279=0 (New)
MDStreamID	**1500=E (Electronic)**
MDEntryPx	270=65100
MDEntrySize	271=300
MDEntryDate	272=20111217
MDEntryTime	273=210840901
TradeVolume	1020=45498300

MDEntryType	269=B (trade volume)
SecurityID	48=1234
SecurityIDSource	22=8
SecurityExchange	207=BVMF
MDUpdateAction	279=0 (New)
MDStreamID	**1500=X (Ex-pit)**
MDEntryPx	270=65100
MDEntrySize	271=100
MDEntryDate	272=20111217
MDEntryTime	273=240145901
TradeVolume	1020=7300

NOTE: Although statistics can be specified by venue, some instruments may have statistics for a single venue only, however the customer application must be ready to receive statistics from multiple venue for all instruments.

2) New "Adjusted closing price" block (269=5 when 286=4)

3) Changed the behavior for tag **37-OrderID**. Whenever an order loses priority in the book, the order gets deleted and added again (279=2 followed by 279=0), with the OrderID tag being different. Also in the case of Iceberg orders, when the order is refilled, the OrderID tag will be different, making them impossible to track and differentiate from regular orders.

4) Tags **272-MDEntryDate** and **273-MDEntryTime** behave differently in UMDF 2.0. On the improved version these tags always carry the date and time when the marked data message was generated at engine level rather than informing the date and time where the order entered the book (as was the behavior in Legacy UMDF). For book insertion date and time, refer to tags **37016-MDInsertDate** and **37017-MDInsertTime**.

3.2.4. Phases and states changes

The remarkable changes for phase and state handling are:

– New tag 336-TradingSessionID informing when entering non-regular trading sessions;

– New "Final Closing Call" phase and state to indicate when the group/instrument is on the final closing call for the trading day;

– New tag 1174-SecurityTradingEvent to indicate when an instrument state is separating or rejoining its group phase, facilitating the handling of instruments that behave differently from the group they are in;

– These changes are also reflected on the Snapshot message (35=W);

The full changes to the Security Status (35=f) messages are (in **blue**):

Tag	Tag name	Req	Data type	Comment
[**Standard message header**] ***no changes to this block***				
1151	SecurityGroup	N	String(15)	The instrument group that is changing the trading phase.
[**Instrument identification block**]				
75	TradeDate	Y	LocalMktDate	Trade date of the Market Data messages.
625	TradingSessionSubID	C	Integer	Phase related to a given *SecurityGroup*. Valid values: 02 = Trading halt (Pause) 04 = No-Open (Close) 17 = Ready to trade (Open) 18 = Not available for trading (Pre-close) 21 = Pre-Open

Tag	Tag name	Req	Data type	Comment
				101 = Final Closing Call
326	SecurityTradingStatus	C	Integer	Status related to a given instrument. Valid values: 02 = Trading halt (Pause) 04 = No-Open (Close) 17 = Ready to trade (Open) 18 = Not available for trading (Forbidden) 20 = Unknown or invalid 21 = Pre-Open (Reserved) **101 = Final Closing Call**
336	**TradingSessionID**	**C**	**Integer**	**Identifier for Trading Session.** **Valid values:** **1 = Regular Day Session (Default)** **6 = Non Regular Session (After Hours)**
342	TradSesOpenTime	N	UTCTimestamp	Estimated end of the current auction. Included only if *SecurityTradingStatus*=21 (Reserved).
60	TransactTime	Y	UTCTimestamp	Timestamp when the business transaction represented by the message occurred.
1500	MDStreamID	Y	String	The identifier or the name of the market data stream. If missing, default=E. Valid values: E - Electronic X - Ex-pit ~~**S - Surveillance**~~ O - Option Exercise ~~**C - Over-the-counter (OTC)**~~ **T - Termo** **N - Index** **L - Lending (BTC)** **A - All**
1174	**SecurityTradingEvent**	**C**	**Integer**	**Identifies an event related to a Trading** **This tag is also used to mark when an instrument state is kept separate from the group phase, or when the instrument state follows the default group phase (stops having a separate, defined state). Always sent when tag 48 is present.** **Valid values:** **4 = Change of Trading Session (clears statistics)** **101 = Security Status maintained separately from Group Status** **102 = Security Status following Group Status**

NOTE
On PUMA UMDF 2.0 orders resting in the book and previous day statistics are **explicitly reset** every day, just after the first group phase change after the trade date changes.

NOTE
Either tag 625 or 326 are sent at once per 35=f message. Whenever an instrument state rejoins the group phase (1174=102), it´s safe to infer the group phase (tag 625) from the current instrument state (tag 326).

On Mega Bolsa UMDF, there were no explicit daily statistics reset and the cancellation of the orders resting in the book. This procedure wasn´t needed because the market data sequence number restarted to 1 every day. However, um PUMA UMDF 2.0 there is an explicit statistics reset message (35=f, 1174=4) just after the first group phase change for that given trade date. All pending orders are also cancelled (with the exception of GTD/GTC orders) at the same time.

3.2.5. **Bands and limits changes**

This new installment of the PUMA Trading System has numerous enhancements regarding the reporting of bands and limits on the market data feed. The following types of bands and limits are now supported:

- Hard limits
- Rejection band
- Auction band
- Static limits
- Quantity limit

The bands are reported on the incremental refresh message (35=X) using the following tags:

Tag	Name	Hard Limits (non-tradeable)	Hard Limits	Rejection Band	Auction Band	Static Limits	Quantity Limits
279	MDUpdateAction	0	0	0	0	0	0
269	MDEntryType	g	g	g	g	g	h
48	SecurityID	X	X	X	X	X	X
22	SecurityIDSource	X	X	X	X	X	X
207	SecurityExchange	X	X	X	X	X	X
83	RptSeq	X	X	X	X	X	X
272	MDEntryDate	X	X	X	X	X	X
273	MDEntryTime	X	X	X	X	X	X
6939	PriceBandType	-	1 (Hard Limit)	3 (Rejection Band)	2 (Auction Limit)	4 (Static Limit)	-
1306	PriceLimitType	-	0 (Price)	2 (in %)	2 (in %)	0 (Price)	-
1148	LowLimitPrice	-	X	X	X	X	-
1149	HighLimitPrice	-	X	X	X	X	-
1150	TradingReferencePrice	X	X	-	-	-	-
37008	PriceBandMidpointPriceType	-	-	0,1,2	0, 1, 2	-	-
37003	AvgDailyTradedQty	-	-	-	-	-	X
1140	MaxTradeVol	-	-	-	-	-	X

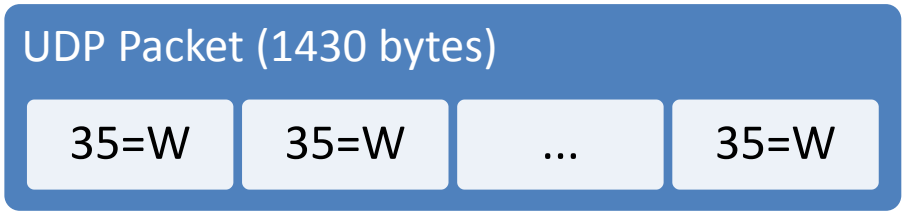
(tags marked with an “X” are required, those marked with “-“ are not sent, otherwise they have the specified values)

3.2.6. **Recovery changes**

Another important update for this release of PUMA Trading System is comprised by a series of enhancements for both recovery mechanisms, Snapshot Market Recovery and TCP Recovery.

3.2.6.1. Snapshot Market Recovery

The Snapshot Market Recovery feed now supports multiple Snapshot messages (35=W) per packet, greatly improving the recovery speed for channels that contain small Snapshot messages that can be bundled into a single UDP datagram (1430 bytes each).



If the customer application is designed to process a single message per UDP packet, this impact can lead to considerable functional changes.

3.2.6.2. TCP Recovery

The TCP Recovery feed can now be used to recover up to 10,000 messages missed in both Incremental feeds A and B. The response time in these circumstances should be below the millisecond range. However, it is **mandatory** to note that customers should only request messages on the TCP Recovery 20ms later, after the message being considered got lost in the incremental feeds.

Another important remark for TCP Recovery is that there is a single IP/port centralizing the recovery for all channels. The customer application should be able to connect a single time using a single session for all channels.

Another feature available in this release of PUMA Trading System is the **TCP Historical Replay** feed that allows querying messages up to 24 hours in the past, for charting purposes. The response time for this feed is considerably slower than TCP Recovery, as it should not be used for any other purpose than charting.

NOTE
Customer applications must be capable of arbitrating between both incremental feeds A and B, to be able to recover missing packages more efficiently and avoid using the TCP Recovery feed.

IMPORTANT
Co-location customers will not be able to arbitrate between feeds A and B as the secondary feed is not available to them. This should not be a problem since such customers have access to local network interfaces much less prone to lose packets.

3.2.6.3. Book and Channel Reset

Just after a channel reset (35=X, 269=J), the PUMA trading engine will now also resend Security Status messages (35=f) informing Phases and States for all instruments in the channel. These messages should arrive right alter the book resend (using tag 276=R) is finished.

Another important remark is that the tag 272-MDEntryDate is not sent for Channel Reset messages.

3.2.7. **News message changes**

There are some changes to the News messages (35=B) to augment the following:

- A new Unified News Channel reserved for global news broadcast that is able to send encoded headlines and text with special characters (accented letters for instance);
- Revised news sources (tag 6940-NewsSource);
- Cross-news referencing (using tag 1472-NewsID);
- Deprecated News routing;

The specific changes to the News message are below (in **blue**):

Tag	Tag name	Req	Data type	Comment
[**Standard message header**] ***no changes to this block***				
42	OrigTime	**Y**	UTCTimestamp	Time of message origination (always expressed in UTC - Universal Time Coordinated, also known as "GMT")
6940	NewsSource	**Y**	String(3)	Indicates the source of the news. Valid values for derivatives market: "1" – DCM "2" – BBMNet "3" – MarketSurveillance "4" – Internet "5" – DPR-VE **"19" – Mkt Ops FX Agency** **"20" – Mkt Ops Derivatives Agency** Valid values for equities market: "11" – Over-the-counter news agency "13" – Electronic Purchase Exchange "14" – CBLC News Agency "15" – BOVESPA – Index Agency "16" – BOVESPA – Institutional Agency **"17" – Mkt Ops Equites Agency** **"18" – BOVESPA – Companies Agency**
1472	**NewsID**	**N**	**String(7)**	**Unique identifier for News message.** **Included in the News messages sent in the Unified News Channel.** **Not sent for trading engine News messages.**
1474	LanguageCode	N	Language	Indicates the language the news is in. Represented by the two-letter ISO 639-1 standard identification. Absence of this field defaults to "pt" – Portuguese.
148	Headline	Y	String	The headline of a News message.
358	**EncodedHeadlineLen**	**N**	**Integer**	**Must be set if EncodedHeadline field is specified and must immediately precede it.** **Can only be published in the Unified News Channel.**
359	**EncodedHeadling**	**N**	**Data(512)**	**Encoded (non-ASCII characters) representation of the Headline field in the encoded format specified via the MessageEncoding field.** **Can only be published in the Unified News Channel.**
146	NoRelatedSym	N	NumInGroup	Specifies the number of repeating symbols (instruments) specified.
→	[**Instrument identification block**] ***no changes to this block***			
~~215~~	**~~NoRoutingIDs~~**	**N**	**NumInGroup**	**Deprecated. Indicates the number of destinations of this message.**
→ **~~216~~**	**~~RoutingType~~**	**Y**	**Integer**	**Deprecated. Indicates the type of RoutingID (217) specified.**

	Tag	Tag name	Req	Data type	Comment
					Valid values: **2 = Target List.**
→	**~~217~~**	**~~RoutingID~~**	**N**	**String(2)**	**Deprecated. Assigned value used to identify a specific routing destination.** **Valid values:** **"1" = Vendors** **"2" = Traders** **"3" = BM&FBOVESPA RSS feed** **"4" = BBMNet** **"5" = GLOBEX**
33		NoLinesOfText	Y	NumInGroup	Identifies number of lines of text body.
→	58	Text	Y	String(8192)	Free format text string.
→	354	EncodedTextLen	N	Length	Length of EncodedText field. **Can only be published in the Unified News Channel.**
→	355	EncodedText	N	Data	Encoded (non-ASCII characters) representation of the Text (58) field in the encoded format specified via the *MessageEncoding* (347) field. **Can only be published in the Unified News Channel.**
149		URLLink	N	String(1024)	A full URL (Uniform Resource Locator) link to additional information.

3.3. Impact Assessment for Legacy ProxyDiff (RLC/MMTP) Applications

Taking into account that the Legacy ProxyDiff feed will be kept online after the migration, the market data it disseminates will actually be converted from PUMA UMDF 2.0 to RLC by the UMDF2RLC component.

However since the source data have some structural changes, it is impossible to avoid impacts.

The outstanding changes are listed below:

– **Functional Header** (Information Signal 5.8, section II, chapter 2.1): the field "Quotation Group" has been changed from numeric (N) to alphanumeric (X);

– **S3 and S4 messages** (Information Signal 5.8, section II, chapter 2.2.15 and 2.2.16): a new field "Order Identification Extended" was added to the end of both messages, incrementing the total message length by 17 for each.

The details pertaining this changes can be found on the latest version of the Information Signal specs (version 5.8), available on BM&FBOVESPA website at: Services > Market Data > Available packages > ProxyDiff 5.8.

Another minor impact is related to the procedure used to cancel all the orders resting in the book and market statistics every day (since PUMA UMDF 2.0 is only restarted on a weekly basis). Because of this procedure, customers might see extra 03 and S4 messages every day, just after the first group phase change for that trade date. This behavior should not impact applications that are able to handle these messages correctly; however a change in message dynamics is expected.

Also, for the specific case of order modification where there is no change in order priority, the dynamic behavior changed. Now, instead of the order being removed and reinserted by means of two messages (of type S4 and S3 respectively), a single S3 message is generated, with the field "Type of share" equals to "M", representing an order alteration.

3.3.1. Group Phase and Instrument State handling

Since the phase and state information is being converted from PUMA UMDF 2.0, which has fewer phases and states, not all values can be represented on Legacy ProxyDiff. The following messages have impacts:

RLC-16 Alteration of Quotation Group status

The values for the **Quotation Group Condition** field have been changed as follows:

Value	Description
C	Preparatory Phase
P	Pre-opening / pre-closing phase
O	Opening Phase
E	Promoter Intervention Phase
S	Trading Phase (session)
R	After-Market Trading Phase (session)
F	End-Day Consultation Phase
I	Forbidden
~~N~~	~~Market Control Intervention Phase~~
~~B~~	~~Night Processing Phase~~
~~Z~~	~~Interrupted~~

RLC-05 Change of Stock Status

The values for the following fields have been changed:

Trading status of stock	Status of stock	Stock type	Description
-	S	-	Suspended
~~-~~	~~G~~	~~-~~	~~Frozen~~
-	-	I	Inhibited (Forbidden)
H, B, P, R	R		Stock reserved for auction or auction extension
-	(space)	Other than “I”	Opening of stock
-	-	R,P	Scheduled or rescheduled time for stock opening

3.3.2. Last Trade Price Modification

When receiving trades originated as a result from UDS trades, on message RLC-02 (Trade) marked with the field “Origin of Trade” equal to “E”, the customer application should not use this trade price to alter the Last Trade Price.

3.3.3. Session Schedule by Quotation Group

After conversion from PUMA UMDF 2.0, the information used to generate message RLC-39 (Session Schedule by Quotation Group) is no longer available, hence this message is no longer disseminated on the Legacy ProxyDiff feed.

4. Key dates

All relevant dates around the migration process from Mega Bolsa to PUMA Trading System will be available at http://www.bmfbovespa.com.br/puma.

5. Certification Guidelines

5.1. PUMA UMDF 2.0

Customers are called to retest their current implementations of Mega Bolsa UMDF 1.6 against the PUMA UMDF 2.0. In order to consume UMDF 2.0 feed, applications must undergo a certification process guided by BVMF Solution Team, at bvmfsolution@bvmf.com.br.

Below is a table containing the New Release Certification environment network connectivity table on PUMA web stite:

http://www.bmfbovespa.com.br/puma

5.2. EntryPoint

The customer applications already certified for Mega Bolsa EntryPoint are not required to undergo a new certification against PUMA EntryPoint.