CBOE Application Programming Interface

CBOE FIX 4.2 Version 5.0 - Release Notes

Provides an overview of the updates and changes to the FIX 4.2 with this version release.

CBOE PROPRIETARY INFORMATION

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Document #[FIX-00]

Front Matter

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Questions regarding this document can be directed to The Chicago Board Options Exchange at 312.786.7300 or via e-mail: api@cboe.com.

The latest version of this document can be found at the CBOE web site http://systems.cboe.com.

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Overview

Release notes for the FIX 4.2 API, Version 5.0, were initially published on February 29, 2008. Since the initial publication, details have been added to this document for the AIM Solicitation Mechanism (AIM AON). Additionally, on April 24, 2008, the documentation was updated to include additional functionality for Too Late To Cancel non-working orders (Express orders). Documentation changes are detailed in the sections below. Your feedback or questions regarding this document should be sent to API@cboe.com

FIX 4.2, V5.0 Highlights

Internalization and Automated Auction for Strategy Orders

Firms will use the FIX *New Order - List Message (MsgType=E)* to submit paired strategy orders for internalization. To facilitate the creation and submission of paired strategy orders for internalization, two methods have been provided. These methods are very much analogous to the creation and submission of single strategy orders through the *New Order - Single Message (MsgType=D)*.

Paired Strategy Order Entry Method 1:

The current method for entering paired strategy orders involves the user defining (creating) the strategy product (see document FIX-03b). CBOE then returns the SecurityID [48], which the CBOE also calls the product key. The user then enters a paired order using the *New Order - List Message (MsgType=E)*, with the SecurityID [48] in the *New Strategy Order—Single Message (MsgType=D)* populated for each order on the *New Order - List Message (MsgType=E).*

New Order - List Message using the "Disclosed" convention

Tag	Field Name	FIX Req'd	CBOE Req'd	FIX 4.2 usage
	Standard Header	Y	Y	*MsgType[35]* = E
66	ListID	Y	N	Must be unique, by customer, for the day
394	BidType	Y	Y	2=Disclosed
68	TotNoOrders	Y	Y	Used to support fragmentation. Sum of NoOrders across all messages with the same ListID. Value=2
9382	MatchType	N	Y	Internalizing Firm can set the price for its side of the order. 1=guaranteed price (not currently supported), 2=limit price, 3=auto match Values from cmiOrder::MatchType.
73	NoOrders	Y	Y	Number of orders in this message Value=2
Begin Repeating Group for NoOrders				
INSERT NEW STRATEGY ORDER SINGLE TAGS HERE. USE SAME TAGS AS YOU WOULD FOR A STRATEGY ORDER.				
67	ListSeqNo	Y	Y	Order number within the list.

Tag	Field Name	FIX Req'd	CBOE Req'd	FIX 4.2 usage
End Repeating Group for NoOrders				
	Standard Trailer	Y	Y	

Paired Strategy Order Entry Method 2:

The second method for entering strategy orders is a one-step process. The user will enter an order using the *New Order - List Message (MsgType=E)*. The user will specify in that message what the legs are for the strategy product. This will be done for each order on that Order List.

New Order - List Message using the "Disclosed" convention

Tag	Field Name	FIX Req'd	CBOE Req'd	FIX 4.2 usage
	Standard Header	Y	Y	*MsgType[35]* = E
66	ListID	Y	N	Must be unique, by customer, for the day
394	BidType	Y	Y	2=Disclosed
68	TotNoOrders	Y	Y	Used to support fragmentation. Sum of NoOrders across all messages with the same ListID. Value=2
9382	MatchType	N	Y	Internalizing Firm can set the price for its side of the order. 1=guaranteed price (not currently supported), 2=limit price, 3=auto match Values from cmiOrder::MatchType.
73	NoOrders	Y	Y	Number of orders in this message Value=2
Begin Repeating Group for NoOrders				
INSERT NEW STRATEGY ORDER SINGLE TAGS HERE. USE SAME TAGS AS YOU WOULD FOR A STRATEGY ORDER.				
67	ListSeqNo	Y	Y	Order number within the list.
End Repeating Group for NoOrders				
	Standard Trailer	Y	Y	

The following tags must be used in addition to the other required tags on each order of the *New Order - List Message (MsgType=E)* to support the Leg details on the FIX one-step strategy new order entry. The message flow considerations are the same as in the case of the *New Strategy Order—Single Message (MsgType=D)*.

Please note that the tags used to define the legs are different than those on the One Step Method for *New Strategy Order—Single Message (MsgType=D)*.

New Tags for Paired Strategy Order Entry Using One Step Method

TAG	Field Name	FIX Req'd	CBOE Req'd	FIX 4.2 Usage
6706	NoOfLegsList	N	Y	Required for options, futures, the common stock leg of buy_writes.
Begin Repeating Group for NoLegs				
6711	LegSecurityTypeList	N	Y	Required for options, futures, the common stock leg of buy_writes.
6712	LegSymbolList	N	Y	This is the reporting class of the leg (IBM, IBJ, IBW, MSFT1C, etc.) For Buy writes it would be stock symbol. Required for options, futures, the common stock leg of buy_writes.
6713	LegSecurityIdList	N	Y	Optional for options, futures, the common stock leg of buy_writes.
6714	LegSideList	N	Y	Required for options, futures, the common stock leg of buy_writes.
6715	LegRatioQtyList	N	Y	Required for options, futures, the common stock leg of buy_writes.
6716	LegPriceList	N	Y	Optional for options, futures, the common stock leg of buy_writes.
6717	LegMaturityMonthYearList	N	Y	Required for options, futures, the common stock leg of buy_writes.
6718	LegStrikePriceList	N	Y	Required for options.
6719	LegOptAttributeList	N	Y	For LegPutOrCall. Required for options.
6720	LegCoveredUncoveredList	N	Y	Optional for options and futures. N/A for the common stock leg of buy_writes.
6721	LegPositionEffectList	N	Y	Optional for options and futures. N/A for the common stock leg of buy_writes.
6722	LegRefIdList	N	Y	Optional for options, futures, the common stock leg of buy_writes
6707	NestedPartyIdList	N	Y	For MultiLegStockClearingFirm. Optional for all product types.
End Repeating Group for NoLegs				

Additional Behavior in Too Late to Cancel Scenarios

With this release there is additional behavior to consider in response to requests to cancel an order which has been completely filled or cancelled (an attempt to cancel a non-working order). Specifically, with this release, most order query activities have moved from the back end processes to be the FIX layer itself in the interest of improved performance. Order Cancel Requests and Order Cancel Replace Requests now query a local maintained repository of

working orders. This local repository keeps track of quantities filled or cancelled for the orders. When no working volume for an order remains, it remains in the local repository for a short period of time, and then it is removed. During the period of time that the non-working order is in the local repository, the CBOE FIX will respond to a cancel request, with a Cancel Reject Message with the details of the order. After the order has been removed from the local repository, a Cancel Reject Message, CxlRejReason [tag102], will be produced indicating that the requested order is not found.

The cancel execution reports for non-working orders are no longer GMD. If a user logs out before receiving one or more cancel execution reports, they will not be re-published as poss-resend when the user logs in again.

There is an important consequence to be noted with regard to order entry. If the original order has not been accepted by the system, the cancel request for that order will be rejected with CxlRejReason [tag102]. So, it is important to wait for the order ACK before issuing a cancel request. Since a non-working order will be cancelled or filled, they do not warrant any cancel requests. Any cancel replace request on non-working orders will be rejected.

Cancel Reject for a Non-Working Order (from Order Cancel Request)

8=FIX.4.2^A9=0158^A35=9^A34=81^A49=DFIX201^A56=TEST101^A52=20080421-18:50:20^A37=65028:196700043^A11=KVY0002-20080421^A41=KVY0001-20080421^A39=2^A76=549^A60=20080421-18:50:20^A434=1^A102=0^A10=097^A

This behavior is consistent with the prior “Too Late to Cancel” behavior.

Cancel Reject for a Not Found Order (from Order Cancel Request)

8=FIX.4.2^A9=0147^A35=9^A34=98^A49=DFIX201^A56=TEST101^A52=20080421-18:57:14^A37=NONE^A11=JZN0002-20080421^A41=JZN0001-20080421^A39=8^A76=549^A60=20080421-18:57:13^A434=1^A102=1^A10=148^A

The primary differences are the values found in tags 37 (OrderID), 39 (OrderStatus), and 102 (CxlRejReason).

The time during which a non-working order may remain in the local repository is configurable. The current value is between 30-60 seconds

AIM Solicitation Mechanism (AIM AON)

AIM AON allows agents to electronically execute orders they represent against solicited orders.

The mechanics for entering orders into AIM AON is the same as for the existing AIM process with two main differences; 1) Both orders entered must have the contingency AON. 2) The orders must have a contract size of at least 500.

In AIM AON, the agency order will trade with the solicited order at the proposed price unless there are auction responses that improve the price of the auction for the total size of the agency order.

This process is available for simple, complex and cross product orders.

New Auction Type Value

Users subscribe for auctions using the *Quote Status Request Message MsgType[35] = a*. This release supports a new AuctionType[9383], STOCK_ODD_LOT=7. Below is an example of its usage.

Example:

Odd lot Subscription Request

REQUEST:8=FIX.4.2^35=a^49=TEST302^50=SUN:SUN^56=DFIX301^57=TEST^55=C^167=CS^336=W_STOCK^9463=500^**9383=7^**

Odd lot Response

RESPONSE:8=FIX.4.2^9=0203^35=R^34=53^49=DFIX301^56=TEST302^52=20080131-17:20:22^131=65036:41022211^146=1^55=C^48=69208659^22=8^167=CS^201=0^202=0^207=W^336=W_STOCK^54=1^38=10^60=00270731-17:20:21^9384=1^9302=1.2000^9743=1^9383=7^10=180^

New Auction Contingency Type Value

This release supports a new value for AuctionContingency [9384], STOCK_ODD_LOT_NBBO_ONLY=24. Users specify auction contingencey types using the *New Order—Single Message MsgType[35] = D.*

Example:

New Single Order Request

```
low information 2008/02/01 13:52:52:491: FIXPump: Received data
on connection {TEST302}
[8=FIX.4.2^A9=0202^A35=D^A50=SUN:SUN^A57=TEST^A34=2^A49=TEST302^A
56=DFI
X301^A52=20080201-19:52:52^A11=TMX0001-
20080201^A76=CBOE:690^A21=1^A55=C^A167=CS^A207=W^A54=1^A60=200802
01-10:01:42^A38=30^A40=2^A44=1.2^A47=C^A386=1^A336=W_ST
OCK^A9384=24^A10=068^A]
```

New Report

```
low information 2008/02/01 13:52:53:223: FIXConnectionData:
Sending data on connection {TEST302}
[8=FIX.4.2^A9=0332^A35=8^A57=SUN:SUN^A34=2^A49=DFIX301^A56=TES
T302^A52=20080201-19:52:53^A6=0^A11=TMX0001-
20080201^A14=0^A84=0^A426=0^A425=0^A424=30^A389=0^A76=CBOE:690^A1
7=65036:603590023.0:0.1^A20=0^A150=0^A22=8^A31=0^A
32=0^A151=30^A37=65036:603590023^A38=30^A39=0^A40=2^A44=1.2^A201=
0^A47=C^A207=W^A48=69208659^A167=CS^A54=1^A202=0^A55=C^A59=0^A336
=W_STOCK^A60=20080201-19:52:5
3^A9369=2^A10=045^A]
```

Cancel Report

```
low information 2008/02/01 13:53:03:274: FIXConnectionData:
Sending data on connection {TEST302}
[8=FIX.4.2^A9=0350^A35=8^A57=SUN:SUN^A34=3^A49=DFIX301^A56=TES
T302^A52=20080201-19:53:03^A6=0^A11=TMX0001-
20080201^A14=0^A84=30^A426=0^A425=0^A424=0^A389=0^A76=CBOE:690^A1
7=65036:603590023.49959697.3^A20=0^A150=4^A22=8^A3
1=0^A32=0^A151=0^A442=1^A37=65036:603590023^A38=30^A39=4^A40=2^A4
4=1.2^A201=0^A47=C^A207=W^A48=69208659^A167=CS^A54=1^A202=0^A55=C
^A58=USER^A59=0^A336=W_STOCK^
A60=20080201-19:53:03^A9369=2^A10=016^A]
```

Fill Report

```
low information 2008/02/01 14:18:04:842: FIXConnectionData:
Sending data on connection {TEST302}
[8=FIX.4.2^A9=0432^A35=8^A57=SUN:SUN^A34=57^A49=DFIX301^A56=TE
ST302^A52=20080201-20:18:04^A6=1.2^A11=IFT0001-
20080201^A14=30^A84=0^A426=1.2^A425=30^A424=30^A389=0^A76=CBOE:69
0^A17=65036:603590030.65036:409532231.0^A20=0^A
150=2^A22=8^A31=1.2^A32=30^A151=0^A442=1^A382=1^A375=CBOEW:000^A3
37=XXW^A437=30^A438=20080201-
20:18:04^A37=65036:603590030^A38=30^A39=2^A40=2^A44=1.2^A201=0^A4
7=C^A207=W^A48=69208659^A167=CS^A54=1^A202=0^A55=C^A59=0^A336=W_S
TOCK^A60=20080201-20:18:04^A9369=2^A9433=XXW^A9730=N^A10=053^A]
```

Document Changes

FIX-01

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FIX-03a

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FIX-03b (Including Tag Dictionary)

- Included new definitions for the tags introduced in this release.
- Updated the definition of RatioQty [tag 319] to read:

  > Quantity of particular leg in a strategy product. This is the multiplier, which is multiplied by the order quantity to determine the quantity of a particular product that will be bought or sold as part of the strategy product.
  >
  > Only used for strategy products (SecurityType[167]="MLEG")
  >
  > Note: The RatioQty values of all the legs for a strategy product are reduced to their lowest common denominator before being used as a multiplier.

FIX-03c

- Added a new section for AIM Solicitation Mechanism (AIM AON)
- Added a new section “Internalization and Automated Auction for Strategy Orders”
- Updated the “Notes” section of the “Strategy Order Entry Method 2” to include note #6, which reads:

  The values submitted using [tag 623] are reduced to the lowest common denominator before being used to look up or create a strategy product. Strategy products are only available in a lowest common denominator formulation. This should be taken into account in determining what OrderQty to specify. LegRatioQty values that are not in lowest common denominator form will cause the Strategy order submission to be rejected.

- Included two examples for the one-step strategy order method with reducable ratios

  One-Step Order with Reducable Ratios - and its Reject

  low information 2008/02/05 13:24:07:481: FIXConnectionData: Sending data on connection {TEST101}
  [8=FIX.4.2^A9=0287^A**35=D**^A34=15^A49=TEST101^A56=DFIX101^A52=20080205-19:24:07^A11=OCB0007-20080205^A76=549^A21=1^A40=2^A44=1.00^A55=AMG^A167=MLEG^A54=1^A38=10^A47=C^A60=20040903-12:00:00^A386=1^A336=W_MAIN^A555=2^A609=OPT^A600=AMG^A610=200803^A624=1^A612=150.00^A613=1^A**623=6**^A609=OPT^A600=AMG^A610=200802^A624=1^A612=125.00^A613=1^A**623=3**^A10=232^A]low information 2008/02/05 13:24:07:629: FIXPump: Received data on connection {TEST101}
  [8=FIX.4.2^A9=0372^A35=8^A34=111^A49=DFIX101^A56=TEST101^A52=20080205-19:24:07^A6=0^A11=OCB0007-20080205^A14=0^A84=0^A17=0:0.47965722.0^A20=0^A150=8^A31=0^A32=0^A151=0^A37=NONE^A38=10^A103=0^A39=8^A40=2^A44=1^A48=1^A167=MLEG^A54=1^A55=AMG^A58=Strategy Ratios Not Expressed in fully reduced LCD form^A555=2^A609=OPT^A600=AMG^A610=200803^A624=1^A612=150.00^A613=1^A623=6^A609=OPT^A600=AMG^A610=200802^A624=1^A612=125.00^A613=1^A623=3^A10=074^A]

  One-Step Cxl/Re with Reducable Ratios - and its Reject

  low information 2008/02/05 13:25:36:460: FIXConnectionData: Sending data on connection {TEST101}
  [8=FIX.4.2^A9=0307^A**35=G**^A34=19^A49=TEST101^A56=DFIX101^A52=20080205-19:25:36^A11=OCB0009-20080205^A41=OCB0008-20080205^A76=549^A21=1^A40=2^A44=1.00^A55=AMG^A167=MLEG^A54=1^A38=25^A47=C^A60=20040903-12:00:00^A386=1^A336=W_MAIN^A555=2^A609=OPT^A600=AMG^A610=200803^A624=1^A612=150.00^A613=1^A**623=6**^A609=OPT^A600=AMG^A610=200802^A624=1^A612=125.00^A613=1^A**623=3**^A10=240^A]

  low information 2008/02/05 13:25:36:539: FIXPump: Received data on connection {TEST101}
  [8=FIX.4.2^A9=0336^A35=9^A34=117^A49=DFIX101^A56=TEST101^A52=20080205-19:25:36^A37=65010:122000090^A11=OCB0009-20080205^A41=OCB0008-

20080205^A39=4^A76=549^A60=20080205-19:25:36^A434=2^A102=2^A**58=Strategy Ratios Not Expressed in fully reduced LCD form**^A555=2^A609=OPT^A600=AMG^A610=200803^A624=1^A612=150.00^A613=1^A623=6^A609=OPT^A600=AMG^A610=200802^A624=1^A612=125.00^A613=1^A623=3^A10=073^A]

- Added an example of a Fill Report using TradeLiquidityIndicator [tag9730] for ODD_LOT_FLASH=N

```
RESPONSE:8=FIX.4.2^9=0433^35=8^57=SUN:SUN^34=288^49=DFIX301^56
=TEST302^52=20080131-19:20:50^6=1.2^11=PGP0001-
20080131^14=30^84=0^426=1.2^425=30^424=30^389=0^76=CBOE:690^17
=65036:247660053.65036:257710068.0^20=0^150=2^22=8^31=1.2^32=3
0^151=0^442=1^382=1^375=CBOEW:000^337=XXW^437=30^438=20080131-
19:20:49^37=65036:247660053^38=30^39=2^40=2^44=1.2^201=0^47=C^
207=W^48=69208659^167=CS^54=1^202=0^55=C^59=0^336=W_STOCK^60=2
0080131-19:20:50^9369=2^9433=XXW^9730=N^10=155^
```

- Included a new AuctionContingency [9384], STOCK_ODD_LOT_NBBO_ONLY=24.

  Example

  New Single Order Request

```
low information 2008/02/01 13:52:52:491: FIXPump: Received
data on connection {TEST302}
[8=FIX.4.2^A9=0202^A35=D^A50=SUN:SUN^A57=TEST^A34=2^A49=TEST30
2^A56=DFI
X301^A52=20080201-19:52:52^A11=TMX0001-
20080201^A76=CBOE:690^A21=1^A55=C^A167=CS^A207=W^A54=1^A60=200
80201-10:01:42^A38=30^A40=2^A44=1.2^A47=C^A386=1^A336=W_ST
OCK^A9384=24^A10=068^A]
```

  New Report

```
low information 2008/02/01 13:52:53:223: FIXConnectionData:
Sending data on connection {TEST302}
[8=FIX.4.2^A9=0332^A35=8^A57=SUN:SUN^A34=2^A49=DFIX301^A56=TES
T302^A52=20080201-19:52:53^A6=0^A11=TMX0001-
20080201^A14=0^A84=0^A426=0^A425=0^A424=30^A389=0^A76=CBOE:690
^A17=65036:603590023.0:0.1^A20=0^A150=0^A22=8^A31=0^A
32=0^A151=30^A37=65036:603590023^A38=30^A39=0^A40=2^A44=1.2^A2
01=0^A47=C^A207=W^A48=69208659^A167=CS^A54=1^A202=0^A55=C^A59=
0^A336=W_STOCK^A60=20080201-19:52:5
3^A9369=2^A10=045^A]
```

  Cancel Report

```
low information 2008/02/01 13:53:03:274: FIXConnectionData:
Sending data on connection {TEST302}
[8=FIX.4.2^A9=0350^A35=8^A57=SUN:SUN^A34=3^A49=DFIX301^A56=TES
```

```
T302^A52=20080201-19:53:03^A6=0^A11=TMX0001-
20080201^A14=0^A84=30^A426=0^A425=0^A424=0^A389=0^A76=CBOE:690
^A17=65036:603590023.49959697.3^A20=0^A150=4^A22=8^A3
1=0^A32=0^A151=0^A442=1^A37=65036:603590023^A38=30^A39=4^A40=2
^A44=1.2^A201=0^A47=C^A207=W^A48=69208659^A167=CS^A54=1^A202=0
^A55=C^A58=USER^A59=0^A336=W_STOCK^
A60=20080201-19:53:03^A9369=2^A10=016^A]
```

Fill Report

```
low information 2008/02/01 14:18:04:842: FIXConnectionData:
Sending data on connection {TEST302}
[8=FIX.4.2^A9=0432^A35=8^A57=SUN:SUN^A34=57^A49=DFIX301^A56=TE
ST302^A52=20080201-20:18:04^A6=1.2^A11=IFT0001-
20080201^A14=30^A84=0^A426=1.2^A425=30^A424=30^A389=0^A76=CBOE
:690^A17=65036:603590030.65036:409532231.0^A20=0^A
150=2^A22=8^A31=1.2^A32=30^A151=0^A442=1^A382=1^A375=CBOEW:000
^A337=XXW^A437=30^A438=20080201-
20:18:04^A37=65036:603590030^A38=30^A39=2^A40=2^A44=1.2^A201=0
^A4
7=C^A207=W^A48=69208659^A167=CS^A54=1^A202=0^A55=C^A59=0^A336=
W_STOCK^A60=20080201-20:18:04^A9369=2^A9433=XXW^A9730=N^A10=053^A]
```

FIX-03d

- Added a new AuctionType[9383], STOCK_ODD_LOT=7

  STOCK_ODD_LOT Example

  Odd lot Subscription Request

```
REQUEST:8=FIX.4.2^35=a^49=TEST302^50=SUN:SUN^56=DFIX301^57=TES
T^55=C^167=CS^336=W_STOCK^9463=500^9383=7^
```

  Odd lot Response

```
RESPONSE:8=FIX.4.2^9=0203^35=R^34=53^49=DFIX301^56=TEST302^52=
20080131-
17:20:22^131=65036:41022211^146=1^55=C^48=69208659^22=8^167=CS
^201=0^202=0^207=W^336=W_STOCK^54=1^38=10^60=00270731-
17:20:21^9384=1^9302=1.2000^9743=1^9383=7^10=180^
```

FIX-06

-

FIX-07

-

Test Plan Changes

FIX Phase 2 Test Plans

3a, Security Definition Test Plan

- No changes

3b, Market Data Test Plan

- No changes

3c, Quote Test Plan - Hybrid-ONE-CFE (includes 3j, Hybrid Sections and 3L, CFE Supplemental Tests)

- No changes

3e, W_MAIN-ONE-CFE Order Test Plan (includes 3k, CFE Supplemental Tests)

- No changes

3f, Clearing Firm, Duplicate Message Test Plan

- No changes

3g, Strategy Quote Test Plan - ONE-CFE

- No changes

3i, W_MAIN-ONE-CFE Strategy Order Test Plan

- No changes

3m, Stock Trading On CBOEdirect (STOC) Order Test Plan

- No changes

3n, Stock Trading On CBOEdirect (STOC) Quote Test Plan

- No changes

3o, Stock Trading On CBOEdirect (STOC) DPM Administrative Test Plan

- No changes

Phase 4 Test Plan

- No changes