

MDP 3.0 - Implied Book

CME Group provides a 2-deep best bid and ask in the market for each implied-eligible futures contract. **Implied book updates are denoted by tag 269-MDEntryType=E (implied bid) and F (implied offer).** Implied eligible instruments are designated on the [Security Definition Message](#) (tag 35-MsgType=d) via tag 1022-MDFeedType=GBI. When a trade occurs, CME Globex sends Delete (all available quantity at given level matched) and Change (update remaining quantity at given level) data blocks to update the Market by Price (MBP) book accordingly. The Trade data block itself is not used to update the MBP order book.

CME Globex maintains the Aggregate Depth view with the following data blocks:

- **Add** - to create/insert a new price at a specified price level (tag 279-MDUpdateAction=0). CME Globex sends an add data block if there is a new price level. Client systems should shift current price levels down, and delete any price levels past 2-deep.
- **Change** - change quantity of a price at a specified price level (tag 279-MDUpdateAction=1). The change data block is sent to update the order quantity for a price level.
- **Delete** - remove a price at a specified price level (tag 279-MDUpdateAction=2). CME Globex sends a delete data block to remove a price level in the book. Client systems should shift prices up to the deleted price level. If all levels in the book are full, an Add data block will be sent to fill in the last price level.



- Implied Book changes are the last update of an event.
- Multiple instruments can be updated in one message.
- If an event creates implied updates and the implied updates are not included in the initial packet, that packet will contain no End of Event Indicator. Meaning implied updates are included in a subsequent packet which will contain the End of Event indicator.

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Implied Book Update Examples

This example shows how an implied book is updated. The Market by Price (MBP) book shows bid prices and ask prices, in which bids are descending and asks are ascending. The quantity is provided at each price level. For implied futures, a two-deep book is available.

The following examples of implied market book updates begin with the initial 2-deep book:

Bid		Ask	
Quantity	Price	Price	Quantity
100	9427.50	9428.00	40
200	9427.00	9428.50	100

Implied Bid - Quantity Modified

In this example, a Change data block is sent to update the implied bid quantity from 200 to 90 at price level 2 resulting in the updated book shown below.

Tag Number	Tag Name	Value	Description
279	MDUpdateAction	1	1 = Change. Type of Market Data update action.
269	MDEntryType	E	E = Implied bid. Type of Market Data entry.
48	SecurityID		Unique instrument ID as qualified by the exchange per tag 22-SecurityIDSource.
83	RptSeq		Sequence number per Instrument update.
1023	MDPriceLevel	2	Price Level 2. Position in the book.
271	MDEntrySize	90	Quantity or volume represented by the Market Data Entry.
270	MDEntryPx	9427.00	Price of the Market Data Entry.

Updated Book

Bid		Ask	

Quantity	Price	Price	Quantity
100	9427.50	9428.00	40
90	9427.00	9428.50	100

Implied Bid - Delete Price Level and New Price Level

This example shows a scenario in which a single Bid providing the total quantity at the given price level is canceled. Resulting market data includes a Delete instruction to remove the price level, and a New update to populate the price level with the subsequent best price and quantity.

Delete

Tag Number	Tag Name	Value	Description
279	MDUpdateAction	2	2 = Delete. Type of Market Data update action.
269	MDEntryType	E	E = Implied bid. Type of Market Data entry.
48	SecurityID		Unique instrument ID as qualified by the exchange per tag 22-SecurityIDSource.
83	RptSeq		Sequence number per Instrument update.
1023	MDPriceLevel	1	Price Level 1. Position in the book.
271	MDEntrySize	100	Quantity or volume represented by the Market Data Entry.
270	MDEntryPx	9427.50	Price of the Market Data Entry.

New

Tag Number	Tag Name	Value	Description
279	MDUpdateAction	0	0 = New. Type of Market Data update action.
269	MDEntryType	E	E = Implied Bid. Type of Market Data entry.
48	SecurityID		Unique instrument ID as qualified by the exchange per tag 22-SecurityIDSource.
83	RptSeq		Sequence number per Instrument update.
1023	MDPriceLevel	2	Price Level 2. Position in the book.
271	MDEntrySize	80	Quantity or volume represented by the Market Data Entry.
270	MDEntryPx	9426.50	Price of the Market Data Entry.

Updated Book

Bid		Ask	
Quantity	Price	Price	Quantity
90	9427.00	9428.00	40
80	9426.50	9428.50	100

Implied Bid - New Bid at Existing Price Level

When a new order Bid is entered in the book at an existing price level, a Change data block is sent to update the implied bid quantity from 90 to 93 at price level 1, resulting in the updated book shown below.

Change

Tag Number	Tag Name	Value	Description
279	MDUpdateAction	1	1 = Change. Type of Market Data update action.
269	MDEntryType	E	E = Implied Bid. Type of Market Data entry.
48	SecurityID		Unique instrument ID as qualified by the exchange per tag 22-SecurityIDSource.
83	RptSeq		Sequence number per Instrument update.
1023	MDPriceLevel	1	Price Level 1. Position in the book.
271	MDEntrySize	93	Quantity or volume represented by the Market Data Entry.
270	MDEntryPx	9427.00	Price of the Market Data Entry

Updated Book

Bid		Ask	
Quantity	Price	Price	Quantity
93	9427.00	9428.00	40
80	9426.50	9428.50	100