

Minimum Stream Quantity, Allocation, and Price Discovery

Single point-in-time trade execution logic:

During regular trading hours, when two orders eligible for a single point match are matched (e.g., LS-LS), they will execute a single point-in-time trade for the largest quantity possible (i.e., the smaller quantity of the two orders matched; no order will receive a fill exceeding its residual quantity). Note that given the minimum order size requirements for orders on PURE ATS, minimum stream quantity is not applicable to single point-in-time trades.

The price of the single point-in-time trade will be set in accordance with the referenced market data as dictated by the matched Order Types (e.g., NBBO), the limit price, and peg instructions, if applicable, for the two relevant orders (executions will not violate an order's limit price). Peg instructions (see Part III, Item 11c under "Peg Order Instructions for LS Orders") are applicable only to LS orders and are used (with limit prices) to determine compatibility for an LS-LS match and the price of any resulting single point-in-time trade.

For single point-in-time trade execution logic in the Post-Close Trading Session, see Part III, Item 18.

Example 9 - LS / Compatible LS:

Order 1 is a buy order for 40,000 shares in the LS Order Type.

Order 2 is a sell order for 50,000 shares in the LS Order Type.

Orders 1 and 2 will be matched and execute a single point-in-time trade at the then-current NBBO midpoint (for illustrative purposes, the examples assume that the two LS orders are compatible at the midpoint of the prevailing NBBO).

Order 2 will have a residual 10,000 shares return to resting on the ATS order book.

Streaming match execution logic (during regular trading hours; there are no streams in the Post-Close Trading Session):

Once a streaming match has occurred, the ATS will use each observed SIP-reported trade in the relevant security as reference trades to execute "child fills" in accordance with PURE ATS execution (see under "Order Types") and Minimum Stream Quantity ("MSQ") logic.

The MSQ is a PURE-set threshold that represents the smallest quantity trade (i.e., a child fill) that the ATS will effect in a particular symbol (e.g., 10 shares, 50 shares, 100 shares). For example, if the MSQ for a symbol is 20 shares, the ATS will only execute trades that yield 20 or more shares to each matched order (but for the exception described below).

The MSQ for each symbol is as follows:

- 1: Symbols with a 5-day rolling median daily volume ("MDV") equal to or greater than 20 million shares are assigned an MSQ of 50.
- 2: Symbols with a 5-day rolling MDV less than 20 million shares are assigned an MSQ of 20.

Each stock's 5-day rolling MDV is calculated daily. If the stock's 5-day rolling MDV changes such that the stock falls into a different MDV range, the stock's MSQ will be updated accordingly (MSQ updates occur daily, i.e., not intraday).

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For example, if a stock had the following MDV by day:

- Trade Date 1: 9 million shares;
- Trade Date 2: 8 million shares;
- Trade Date 3: 12 million shares;
- Trade Date 4: 23 million shares;
- Trade Date 5: 25 million shares;
- Trade Date 6: 21 million shares.

Following Trade Date 5, the stock's 5-day rolling MDV is 12 million shares and the MSQ for trading the stock on Trade Date 6 would be 20. Following trading on Trade Date 6, the stock's 5-day rolling MDV is 21 million shares and the MSQ for trading on Trade Date 7 is 50 shares.

MDV for each stock is publicly available and therefore available to be calculated by all Subscribers and potential market participants.

In the ordinary course, PURE ATS will evaluate the appropriateness of the MDV ranges and applicable MSQs described above on at least a quarterly basis. PURE will notify Subscribers prior to modifying said ranges and MSQs.

The MSQ is applied as follows:

1. When the LTR of a match multiplied against the quantity of a single reference trade meets or exceeds the relevant MSQ, PURE ATS executes a child fill at the printed price of the reference trade. For example: (i) a 600-share reference trade; (ii) for a 10% LTR match; (iii) in a symbol with MSQ=50; (iv) results in PURE ATS executing a 60-share ($600s \cdot .10$) child fill for the match ($60 > \text{the } 50 \text{ MSQ}$) at the printed price.
2. When the LTR of a match multiplied against the quantity of a single reference trade does not meet or exceed the relevant MSQ, no child fill is executed. PURE ATS tracks the shares derived from multiplying the LTR against the quantity of the reference trade ("Derived Shares") and consecutive subsequent trades. When the running sum of Derived Shares is equal to or greater than the relevant MSQ, PURE ATS executes a single child fill. The price of the child fill is the volume weighted average price of the underlying reference trades.

For example: (i) a 600-share reference trade; (ii) for a 5% LTR match; (iii) in a symbol with MSQ=50; (iv) results in PURE ATS tracking 30 Derived Shares ($600s \cdot .05$), but no child fill. If the next relevant SIP-reported trade is 1,000 shares, PURE ATS would execute a child fill of 80 shares ($30 \text{ Derived Shares} + (1,000s \cdot .05)$). The price would be the volume weighted average price of the two reference trades.

Derived Shares are an internal concept used by the ATS for tracking purposes only, akin to a trajectory marketplace tracking reference trades that contribute to an average price. Prior to an executed child fill, Derived Shares are not decremented against any order, and do not result in trade booking or reporting.

3. If a match is terminated, no further child fills are generated. Matches are terminated when matched orders become incompatible (e.g., when one or both orders become unmarketable, exhaust all quantity, or are cancelled). Any Derived Shares being tracked at the time of termination are ignored for all purposes.

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Exception to the MSQ: PURE ATS will generate a fill in a match that is lower than the relevant MSQ to complete one of the matched orders (i.e., when at least one of the two paired orders has a remaining quantity that is less than the relevant MSQ). This is intended to allow an order in a stream to be fully satisfied as its residual quantity nears zero. Note that this last fill may occur as part of a new match (and would be the only fill effected in that match).

To illustrate: For a match where the MSQ for the relevant symbol is 20 shares:

- A match is comprised of two orders. Order 1 has 10,000 shares remaining, Order 2 has 1,212 shares remaining. In this circumstance, PURE ATS will only execute trades between the two orders that yield 20 or more shares to each matched order.
- MSQ Exception Scenario 1: Order 1 and Order 2 (in the initial example) exchange 1,200 shares in multiple fills during the course of a streaming match, decrementing Order 1 to 8,800 shares remaining and Order 2 to 12 shares remaining. In this circumstance, the ATS will execute a trade between the two orders that yields 12 shares to each matched order (thereby satisfying the residual of the smaller paired order). PURE ATS will not generate a fill less than 12 shares in this scenario.
- MSQ Exception Scenario 2: Order 1 and Order 2 (in the initial example) exchange 1,200 shares in multiple fills during the course of a streaming match, decrementing Order 1 to 8,800 shares remaining and Order 2 to 12 shares remaining. Order 1 is cancelled by the Subscriber, terminating the streaming match. Order 2 is returned to rest on the ATS order book with 12 shares and is eligible for a final fill of 12 shares with another contra order.

A series of reference trades can create a series or “stream” of “child fills.” Note that each SIP-reported trade is only referenced once in each stream (and all concurrent streams in the ATS reference each SIP-reported trade once). The ATS references SIP-reported trades in real-time as they are reported in succession (subject to the filtering logic described in Part III, Item 23, below). (To the extent that there are malfunctions or other issues with the SIP that result in time gaps, the procedures set forth in Part III, Item 20, below will be applied). In the event that there is no SIP-reported trade after the match is formed, the orders will remain matched but there will be no child fills, and therefore no stream (i.e., a match can exist without a stream).

A stream will continue uninterrupted providing "child fills" as long as both orders remain marketable (i.e., the orders' limit prices are priced at or through the contra-side NBBO), have quantity remaining, and have not been cancelled.

The following example illustrates the application of the MSQ:

MSQ for the relevant symbol is 100 shares.

PURE ATS observes the following SIP-reported trades:

Reference Trade 1: 750 shares @ \$36

Reference Trade 2: 1000 shares @ \$35.90

PURE ATS generates fills for the following matches as follows (matches are bilateral and each order in the match receives a fill):

(1) Match 1 (30% LTR):

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- a. Following Reference Trade 1: Child Fill 1 of 225 shares @ \$36 reported to FINRA Trade Reporting Facility (“TRF”)
 - b. Following Reference Trade 2: Child Fill 2 of 300 shares @ \$35.90 reported to TRF
- (2) Match 2 (10% LTR):
- a. Following Reference Trade 1: No child fill (75 Derived Shares; no decrementing or TRF reports)
 - b. Following Reference Trade 2: Child Fill 1 of 175 shares @ \$35.94 reported to TRF
- (3) Match 3 (10% LTR):
- a. Following Reference Trade 1: No child fill (75 Derived Shares; no decrementing or TRF reports)
 - b. Match terminated prior to Reference Trade 2: No child fills and match is ended (75 Derived Shares ignored; no decrementing or TRF reports)
- (4) Match 4 (any LTR):
- a. Match terminated prior to Reference Trade 1: No child fills and match is ended (no Derived Shares, decrementing, or TRF reports)

Streaming matches involving one LS order may also be impacted when a second LS order on the contra-side of the first LS order enters the ATS. The two examples below show the impact. For illustrative purposes, the examples assume that the two LS orders are compatible at the midpoint of the prevailing NBBO.

In the first scenario (Example 11), a stream involving an LS order and a Streaming Block order is broken by an incoming contra-side LS order with a size greater than or equal to the remaining quantity of the first LS order. In no other circumstances would a stream be broken by an incoming order. In the second scenario (Example 12), the stream involving the LS order and Streaming Block order continues even after the second LS order matches and executes a single point-in-time trade against the first LS order, because the first LS order has residual quantity after the single point-in-time trade.

Example 11 - LS / Compatible LTR / LS Contra completes the LS:
Order 1 is a buy order for 40,000 shares in the LS Order Type.
Order 2 is a sell order for 50,000 shares in the 15% Streaming Block Order Type.
Orders 1 and 2 will be matched at 15% to participate in Stream 1, and Order 1 will have a residual LTR of Infinite% in the order book resting simultaneously.
Order 3 is an incoming sell order for 50,000 shares in the LS Order Type.
Order 1 and Order 3 will be matched to participate in Stream 2. Stream 2 will be comprised of a single point-in-time trade for the residual of Order 1's size at the then-current NBBO midpoint.
Stream 1 (Order 1 & Order 2) will end (because Order 1 is completed by Order 3) and Order 3's and Order 2's residual quantities will return to the ATS order book.

Example 12 - LS / Compatible LTR / LS Contra does not complete the LS:
Order 1 is a buy order for 100,000 shares in the LS Order Type.
Order 2 is a sell order for 50,000 shares in the 15% Streaming Block Order Type.
Orders 1 and 2 will be matched at 15% to participate in Stream 1, and Order 1 will have a residual LTR of Infinite% in the order book resting simultaneously.
Order 3 is a sell order for 50,000 shares in the LS Order Type.
Order 1 and Order 3 will execute a single point-in-time trade for Order 3's size of 50,000 shares at the then-current midpoint NBBO.
Stream 1 (Order 1 & Order 2) will continue referencing SIP-reported trades.

Order Modifications and Cancellations

All firm and conditional orders can be modified or canceled at any time until the PSC.

For a firm or conditional order resting on the ATS order book, modifications to order instructions, including the Order Type, an increase in size, and limit price (which impacts marketability) will result in a new timestamp for prioritization purposes and may impact the order's priority status based on the modified parameters (in accord with the logic set forth in the Prioritization section).

For an order in a match, modifications will not impact the match or stream unless: (i) the limit price is changed and renders the order unmarketable (i.e., the order is no longer priced to at least the contra-side NBBO); or (ii) the LTR is changed (i.e., Order Type changes or changes to the LTR rate for Custom orders) such that the new LTR range does not overlap with the contra-side order's LTR range.

In the event of a PURE ATS trading halt (as described in Part III, Item 20, PURE ATS may implement a trading halt in response to internal issues impacting the ATS, including for technological issues), all orders will be cancelled back to Subscribers.

TIF/Order Instructions

The ATS does not support post-only orders or route to other trade centers.

Day, Immediate or Cancel (IOC), and the ATS's streaming analog Stream or Kill (SOK) are the only TIF order instructions supported by the ATS.

The IOC TIF can only be applied to the LS Order Type, and any other Order Type using the IOC TIF is rejected. The Day TIF may be applied to any Order Type.

SOK represents a specific PURE ATS TIF order instruction for Streaming Block Order Types where a Stream or Kill ("SOK") order is accepted if a contra-side order is resting on the order book and is compatible with the SOK order. If the contra order to the SOK order is not resting on the ATS order book, the SOK order will be cancelled immediately. If accepted, the SOK order is immediately matched with its compatible contra-side order. If the order is not completed for any reason, it will be cancelled back to the Subscriber rather than rest in the order book.

Note that on PURE ATS, orders with an IOC or SOK instruction are eligible to interact with conditional orders (subject to Subscriber instructions); please see Part III, Item 14 for further information on restrictions on contra-side trading interest and interaction between IOC or SOK orders and conditional orders.

Example 13 - SOK / Contra is resting and meets the LTR:

Order 1 is a resting sell order in the 15% Streaming Block Order Type (min. of 5%, max. of 15%) for 10,000 shares.

Order 2 is a SOK buy order in the 15% Streaming Block Order Type (min. of 5%, max. of 15%) for 10,000 shares.

Because Order 1 and Order 2 have overlapping LTR ranges, Order 2 will be matched with Order 1.

Example 14 - SOK / Contra is resting and does not meet the LTR:

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Order 1 is a resting sell order in the Custom Streaming Block Order Type, 1-4% LTR for 10,000 shares.

Order 2 is a SOK buy order in the 15% Streaming Block Order Type (min. of 5%, max. of 15%) for 10,000 shares.

Because Order 1 and Order 2 do not have overlapping LTR ranges, Order 2 will be cancelled back and Order 1 will continue to rest.

Example 15 - SOK / Contra is resting and meets the LTR, but Quantity cannot complete:

Order 1 is a resting sell order in the 15% Streaming Block Order Type (min. of 5%, max. of 15%) for 10,000 shares.

Order 2 is a SOK buy order in the 15% Streaming Block Order Type (min. of 5%, max. of 15%) for 50,000 shares.

Because Order 1 and Order 2 have overlapping LTR ranges, Order 2 will be matched with Order 1.

After Order 1 is completed, if there is a contra-side order on the ATS order book that is compatible with Order 2, the two orders will be matched. If there is no compatible contra-side order resting on the ATS order book, the remaining 40,000 shares of Order 2 will be cancelled back to the Subscriber.