Electronic Trading

DRECT Guidebook

Crossing Engine and Smart Order Routing

Version 11.0

Daiwa Securities

INTRODUCTION

This document aims to answer questions about Daiwa's SOR and dark pool so that investors may make better informed trading decisions. We believe our Daiwa Routing and Execution Crossing Technology (DRECT) platform offers unique advantages through our venue design that puts fairness and transparency at the forefront.

DRECT differentiates itself through:

1) A unique price-quantity priority (or real-time auction) matching logic
2) Employing best practices to protect the confidentiality of our clients' orders
3) Options and parameters to ensure protection and safety of client orders
4) Transparency on the workings of our technology and operational policies

Crossing Engine (Dark Pool)

Universe

- Japan only - JPX primary listed equities as defined in our best execution policy (excepting ADRs).

Hours

- Continuous Crossing (Auctions are excluded)
- Trading hours of the Tokyo Stock Exchange (9-11:30am and 12:30-3:25pm JST) on business days.

Order Types

- Market or Limit orders
- Time In Force (TIF)：DAY、IOC、FOK
- Algorithm: Dark Peg、Dark Iceberg (not for transient FOK)

Matching Rules

- Pricing: Orders may be placed at 1/10 of the bid-ask spread quoted by the primary exchange.
- Price Improvement: Orders are matched at the mid-point of the limits on the buy and sell orders when possible.
- Priority: Order are matched in priority of price and executions are allocated (per trade) on a pro-rata basis according to quantity. Time priority is applied for orders at the same price and quantity.
- Method: Orders are matched in a continuous auction methodology.
- Reporting: All crossed executions are exchange-reported and subject to confirmation from the reporting venue.

Counterparty Categories and Opt-Out

- All DRECT participants are currently categorized into one of the 6 following categories:
    - Retail: Orders placed by Daiwa retail clients
    - Agency: All agency client orders fall into this category
    - Principal: Unwinding of client-facing facilitation positions by firm accounts. Non-risk-taking only.
    - Liquidity Providers: Clients that supply liquidity on DRECT

- Dark Pool Aggregators: 3rd-party dark pool algo orders

- By default, all counterparty types will be enabled.
- Clients may opt-out of crossing with any combination of counterparty categories
- Darkpool aggregators cannot interact with Daiwa retail client flow.

Cross Suspension / Restriction

DRECT may suspend or restrict crossing in the following cases:

- During auction ("itayose") phases of the exchange. This includes, but is not limited to, the opening auction, closing auction, resumption of continuous trading following trading suspension.
- During special quotation ("tokubetsu kehai") and continuous execution quote ("renzoku yakujyo kehai") state of the exchange.
- When we detect an abnormality with the exchange or reporting venue.
- Other cases where Daiwa deem necessary to protect our clients' interests.
- Matching will be re-started as soon as the exchange resumes continuous trading.
- Clients will be notified in cases where we deem it improbable that matching will be resumed in a reasonable timeframe.

Miscellaneous

- Decimals: Restrictions on the decimal precision (for execution price) can lead to exclusion from crossing opportunities. Default precision is 4dp.
- DRECT accepts prices which are within the designated price band set by the primary exchange to 4 decimal points.
- Prices are automatically rounded (up for sells, down for buys) to the nearest price point on the relevant venue when routed.
- Minimum Quantity: Setting a minimum quantity constraint can lead to exclusion from crossing opportunities.
- Self-Crossing: By default, orders from the same client will not be crossed. Multiple accounts can be made into groups so that orders do not cross between any 2 accounts within the group
- Crossing Points: Restricting crossing points can lead to exclusion from price-improvement logic and reduce crossing opportunities.
- Pegged orders will follow the market data quotes published by the exchange.

Routing Rule and Darkpool Algorithms

- Routing Rule: Orders enabled for crossing will be preferentially matched on DRECT before routing out to the exchange and other external venues. Unmatched resting orders on the exchange will be mirror posted back on DRECT for queue-jumping.
- Dark: Combined strategy with Resident, Transient, Dark Peg, Dark Iceberg.
- Resident: A Limit or Market order which is posted solely on the order book of the crossing engine. A resident order at market will peg to the exchange far touch in the dark pool.
- Transient: A non-resting order type for the darkpool. IOC orders will execute what it can and expire the unexecuted share quantity. FOK orders will expire if the entire quantity cannot be executed within the given limit price.
- Dark Peg: A resident order that tracks the primary market quote selected by the PegTo parameter.
- Dark Iceberg: Works like an iceberg order on the darkpool.

Short Selling

- DRECT accepts resident short-sell orders at any price. Short-sell orders are subject to exchange validation unless the DarkLimit or PegTo parameter is specified.

Anonymity

- DRECT's orderbook can only be viewed by designated IT and electronic trading support staff.

Note

- All DRECT crosses will occur within the most current BBO received from the Tokyo Stock Exchange. However DRECT does not guarantee that the executed price is always better than the price of the exchange. Also DRECT will not intentionally cross orders that may disadvantage its user.

Schedule/Trajectory Crosser

Universe

- JPX primary listed equities as defined in our best execution policy (excepting ADRs)

Hours

- Continuous trading hours of the Tokyo Stock Exchange (9-11:30am and 12:30-3:25pm JST)
- Auctions are excluded

Scope of Orders

- Orders using Daiwa's VWAP, TWAP, Active(Arrival), or Spectrum algo
- Custom and wheel algos may also be in scope depending on the underlying algo
- Orders with limit prices and volume caps are in scope

Matching Logic

- Algo orders that have opted in for schedule crossing will be sent into a "negotiation" where buy and sell orders are matched off in 5-minute windows
- Matched orders will be crossed and reported at the interval VWAP of the overlapping execution schedules
- If one side of the order is canceled or amended in such a way to necessitate a breaking of the cross, then a cross will be reported for the concomitant schedule quantity at the interval VWAP up until the time of the cancel or amend.
- Orders with limit prices will trigger a break when the limit price is touched. The inverval vwap used will not include any volume traded at the limit price or worse.

Counterparty Categories and Opt-Out

- Only Agency and internal (principal) algo users have access to schedule crossing
- Clients may opt out of crossing with principal accounts

Smart Order Routing (SOR)

Execution Venues

- JPX (Tokyo Stock Exchange)
- Daiwa “DRECT” Crossing Engine
- SBIJapanNext PTS
- CBOE Japan PTS
- ODX PTS

Universe

- JPX primary listed equities as defined in our best execution policy will be available for smart order routing. Non-PTS-listed securities will not be subject to smart order routing.

Hours

- SOR: 9am to 3:25pm JST (Primary Market Hours)
- SOR is not available after market at JPX, Opening and Closing auction period and during special quotation

Short Selling

- Short-sell orders are accepted but they have to be covered/located.

Trade Reporting

- PTS trades are classified as OTC transactions, but cleared on JSCC.
- DRECT trades are exchange-reported on ToSTNeT.

Routing Rules and SOR Strategies

- **Sequential:** New orders will be routed in order of best marketable price, followed by quantity, and venue priority. Remaining non-marketable quantity will route out to the primary exchange at the supplied limit price.
- **Fast Sweep:** Takes a snapshot of the aggregated order book and aim to remove all marketable liquidity simultaneously across multiple venues. Any remaining unmarketable quantity will route out to the primary exchange at the supplied limit price.
- **BBO Sweep:** Applies the Fast Sweep logic only within the primary BBO levels and routes any remaining unmarketable quantity the primary exchange at the supplied limit price
- SOR strategies are triggered on new orders and order amendments.
- There is no matching priority given to any participant category (Agency, principal etc).

Anonymity

- SOR orders can only be viewed by designated IT and electronic trading support staff.

FAQ

Best Execution

1. Q: how do you prove the best execution
   A: We believe DRECT offers a truly value-added service through provision of non-displayed liquidity, anonymity and opportunity for price-improvement within the primary bid-ask spread. DRECT keeps detailed records of the market state at each decision point and a detailed best execution report is available on request.

2. Q: how do you prove price improvement?
   A: DRECT stores a snapshot of the aggregated venue orderbook at each decision point in the engine and a detailed best execution report can be provided at the client's request.

Order Routing

1. Do you use a single smart order router to access both lit and dark destinations or do you use separate routers?
   A: We use a single router for all destinations.

2. Q: Are you directly connected to all the exchanges or do you use other exchanges or broker-dealers to access certain exchanges?
   A: We are connected to JPX, DRECT, ODX, SBIJapanNext, and CBOE Japan PTSs.

3. Q: Can we opt out of trading with specific external destinations? Can we preference a specific destination?
   A: Our trading Out trading counterparties are categorized as Agency, Principal (client-facing firm accounts), and Liquidity Providers. You can opt out of crossing with any of these categories. Venue preferences are configurable, but that will only prioritize venues in the SOR when displayed prices are identical. It is possible to opt out of any of the above venues as well.

4. Q: Does your firm allow re - routing of orders, including client orders (*i.e.*, do you send routable orders)? If so, what percentage of your orders are sent as routable orders? Are our orders sent to destinations as routable orders? If so, which ones, and can I opt out of this practice?
   A: We do not allow re-routing of orders or send re-routable orders and do not have the option to do so.

5. Q: How is crossing handled during opening and closing auction?
   A: there is no crossing during auction periods. Orders with time-in-force of open, close, and funari will not be crossed.

6. Q: Do you provide the actual execution venue back in real time on fills? Do you offer/provide liquidity tags to indicate whether orders took or provided liquidity? Do you use MIC codes and pass them back?
   A: We provide the actual execution venue back in real-time on FIX tag30 (LastMkt). We also provide tag851 (LastLiquidityInd) on executions from venues that support the tag. Our dark pool does not populate this field. We can send back MIC, Reuters, or customized codes.

7. Q: Can we opt out of trading with specific external destinations? Can we preference a specific destination?
   A: Our trading counterparties are categorized as Agency, Principal (client-facing firm accounts), and Liquidity Providers. You can opt out of crossing with any of these categories.

8. Q: Do you access to other dark pool or aggregators?
   A: No we don't access to other dark pool and aggregators.

9. Q: What exchange dark/hidden books do you access? Have you asked the exchanges to scramble/mask Order ID information on their direct market data feed?
   A: we do not access any exchange dark/hidden books as there are none in Japan.

10. Q: How do you evaluate new venues for addition to your dark pool aggregator? How do you ensure that they are handling the orders that you route to them appropriately per your instructions?
    A: We do not have a dark pool aggregator.

11. Q: Do cash orders go through your crossing engine?
    A: All the order types (cash, DMA, Algo, basket etc.) which is confirmed to access to our crossing engine, can be routed to DRECT.

12. Q: How does affect to the crossing opportunities if we set Minimum Qty?
    A. Setting a minimum quantity constraint can lead to exclusion from crossing opportunities in DRECT.

13. Q: What is the expected latency of DRECT?
    A: Our benchmarks indicate latency is less than 3ms under high order and market data throughput conditions.

14. Q: What will happen to orders with limit prices which are not that the exchange or DRECT-defined price tick?
    A: Limit prices which are not integer multiples of the target venue's tick increment will be rounded on the fly to the nearest price point on the relevant venue. The rounding methodology depends on the side of the order and maximum acceptable decimal precision of the client. Default price precision is 4dp.

15. Q: Where will Peg orders be pegged to during special quotation states?
    A: Peg orders will be pegged to the relevant quote provided by the market data feed. Matching will commence once the special quotation state has cleared and continuous trading has resumed.

Anonymity

1. Q: Does your platform send out electronic outbound IOIs or anything similar to an IOI, including an RFQ, RFL, SOI, SOQ or SOL?
   A: None of our electronic trading platforms (DMA, Algo , crossing engine, SOR) send out any such IOI, RFQ, RFL, SOI, SOQ, SOL or any other such electronic message disclosing information about the state of an order.

2. Q: Do you send blind IOCs in the absence of quote or IOI type information? Please indicate whether you send them to register trading venues and/or any other market participants? If so, which ones and how?
   A: We do not send any blind IOCs to any exchange, venue, participants, user, or system regardless of whether they may be lit or dark.

3. Q: Is your volume advertised on Autex, Bloomberg and/or on other venues? Please describe. Can we opt our order flow out of advertisement?
   A: Our volumes are not advertised anywhere.

4. Q: Who is allowed to see electronic order flow information? Intraday and/or after trade date? Can cash sales traders, research sales and/or proprietary traders see the order flow information under any circumstances? What do you have in place to maintain the confidentiality of my order flow?
   A: we have firewalls to ensure that only electronic trading personnel can see order flow information on trade date. Cash sales traders can see what was executed for historical orders, but these figures are aggregated by client. It is possible to exclude historical ET executions from cash desk perusal. Principal traders do not have any access whatsoever (except for gross

aggregates) to client order flow information at any time. We have strict systems firewalls and access controls to ensure confidentiality.

5. Q: what is the proximity of your cash desks to the electronic desk?
   A: our Electronic Trading desk is 3 rows away and oriented perpendicularly to the cash desk.

6. Q: to what extent is client order flow utilized for internal studies? How is client anonymity protected? Can we opt out our information?
   A: Naturally, client identity must be disclose in order for management and coverage staff to track business metrics. For general, broader-range studies, client identities are usually not disclosed. It is possible to opt out of trader accessible historical data, but it is not possible to opt out of middle/back-office data tables for obvious reasons.

Anti-gaming Logic and Controls

1. Q: What anti-gaming logic do you have in place for the external destinations (lit, gray and dark) that you send orders to?
   A: Our algorithms use market analytics intelligently to minimize footprint, impact, and signaling. Our placement patters (time and size) are suitably randomized to avoid pattern recognition. We always use our own market data to assign limit prices on orders rather than rely on the native market/mid peg order type offered by the venues. Our algos are equipped with fair-value logic that can be configured to pause/cancel trading on adverse market moves. Our dark pool will not print new highs/lows relative to the primary.

2. Q: What type of surveillance do you perform on your dark pool and algorithms to prevent anti-gaming or reverse engineering? How do you identify and deal with routine cancellations of orders within our dark pool?
   A: We run a daily cross-check on all dark pool trades with an external reference to monitor adverse selection. We have message throughput restrictions on certain flows.

3. Q: What destination have you found need for certain order types/constraints to avoid adverse selection?
   A: We have had to be mindful of latency and signaling risk when sweeping PTS venues as we have found instances where orders to the PTS can lead to primary exchange liquidity to disappear.

4. Q: Please describe all anti-gaming parameters that you offer to clients. Can these be set by default or are they available for customer configuration?
   A: For the dark pool we offer a MinQty parameter to avoid pinging and we offer a price band (X %) from last price beyond which orders will be excluded from crossing. MinQty cannot be set by default, but the

price band can. The Dark Iceberg strategy can also be used to specify a maximum cross quantity as well. Tactical strategies such as Pegging, Striker, Iceberg, come with a randomization factor that allows the user to select what percentage of the displayed quantity is to be randomized.

5. Q: Do you offer minimum cross size for orders sent directly to dark pools or to the marketplace via your algorithms?
   A: Minimum cross quantity is offered for our dark pool, but not supported by any of the exchanges.

6. Q: Do your routers and algorithms have the ability to monitor fill rates in real time to exclude destinations not providing fills? Have you ever shut off destinations for low fill rates?
   A: Our routers and algos are able to monitor fill rates in real time, but cannot exclude destinations in real time. By our calculations, all venues we connect to offer over 95% fill rates.

7. Q: Do you conduct toxicity checks on destinations? What types of parameters do you use? How often do you evaluate destinations for toxicity? Have you ever shut off destinations for toxicity concerns?
   A: Currently, we do not conduct toxicity checks on the venues we connect to as they offer high fill rates and good visibility. Moreover, the PTS venues only comprise a small fraction of the overall displayed liquidity in Japan.

8. Q: How do you monitor the performance of your algorithmic tools? What type of real-time monitoring and other risk controls do you have in place to prevent any run-away algorithms?
   A: Our algos are equipped with fair-value logic to prevent trading at adverse prices. Our algos pop up alerts when the market is in an induced auction phase due when there are large order balances. We have limits in place for looping and child-order resubmission. We also have a kill switch to prevent algos from further trading and the dark pool and SOR can be switched off at any time without impacting the ability for orders to be routed to the primary exchange.

Others

1. Q: How can I request the access to your crossing engine and SOR service?
   A: Please contact you're your coverage trader if you are qualified professional investors and no paperwork is required. Others will be required to sign an agreement.

2. Q: Do you consider to access to aggregators or other alternative trading venues?
   A: We plan to respond appropriately while constantly grasping and considering the diversification of customer investment needs and changes in trading methods.

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10.0	September 1, 2020	ODX destination added