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NASDAQ OMX[®] NORDIC ORDER ROUTING V1.9

NORDIC ORDER ROUTING



1. Introduction

2. Order routing service offering

3. Pricing Model

4. Legal and Technical

NASDAQ OMX[®] INTRODUCTION

NORDIC ORDER ROUTING



NASDAQ OMX Nordic's Smart Order routing service is a new, cost-efficient solution for routing orders to away markets, enabling access to the fragmented liquidity in Europe via one single gateway. This new service will make it easier for our customers to provide best execution to their clients.

When submitting a routable order, NASDAQ OMX routing logics will safeguard that the order will not be matched in the first step if the Nordic order book or for certain strategies our dark pool Nordic@Mid does not have the best price. The order will then be sent to the away markets in order to seek best execution.

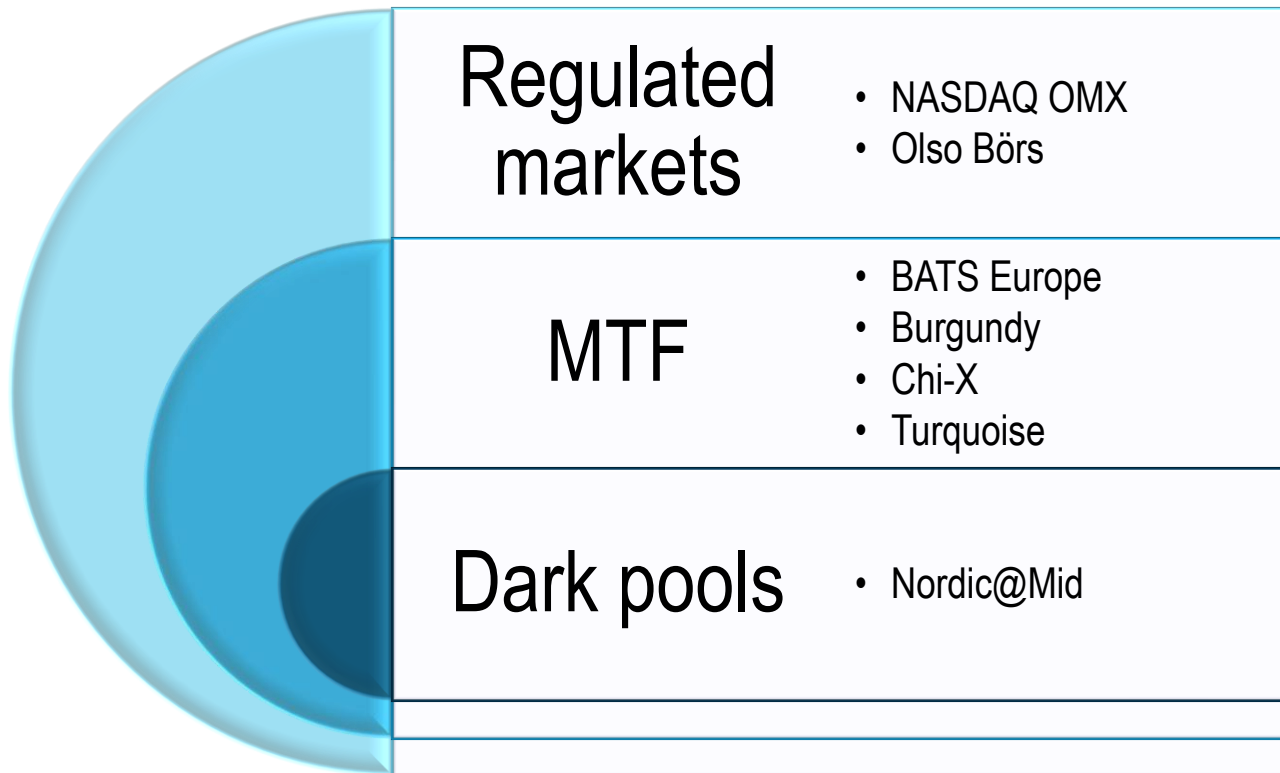
NASDAQ OMX Nordic's Smart Order Router is integrated with the core matching engine.

THE FRAGMENTATION CHALLENGE

- **NASDAQ OMX Nordic is the primary marketplace for Nordic securities!**
- **Approximately 85-90% of time NASDAQ OMX Nordic define or offer EBBO.**
- Exchange members not already into order routing, directly or indirectly are now considering the best way forward in order to achieve best execution towards their end clients.
- NASDAQ OMX Nordic offers a central exchange provided fully integrated order router which will make it possible to engage in order routing without having to invest in expensive technology and market data services.



SUPPORTED MARKETS



NASDAQ OMX[®] NORDIC ORDER ROUTING SERVICE OFFERING

NASDAQ OMX NORDIC ORDER ROUTING OVERVIEW

- The Order router is uniquely integrated with the core matching engine.
- Routing decisions are based on EBBO* from the away markets; BATS Europe, Burgundy, Turquoise, Chi-x and Oslo Börs.
- Routable securities are the CCP cleared stocks also traded at away markets (Stockholm, Helsinki and Copenhagen).
- All routing logics are based on guaranteeing the best price based on EBBO.
 - Routable “SCAN” orders will, if needed, be re-priced to reflect EBBO and try to match on the Nordic book first before being routed out.
 - Remaining volume, after routing attempts among away markets, will always be posted in the Nordic book unless reactive “STGY” strategy chosen. Posting orders on away markets will not be supported.
 - Multiple strategies interacting with the dark pool Nordic@Mid available
- Routable order can be entered via FIX or Nordic workstation. The routing flag is entered on the order. Default setting is no-routing - “BOOK”.

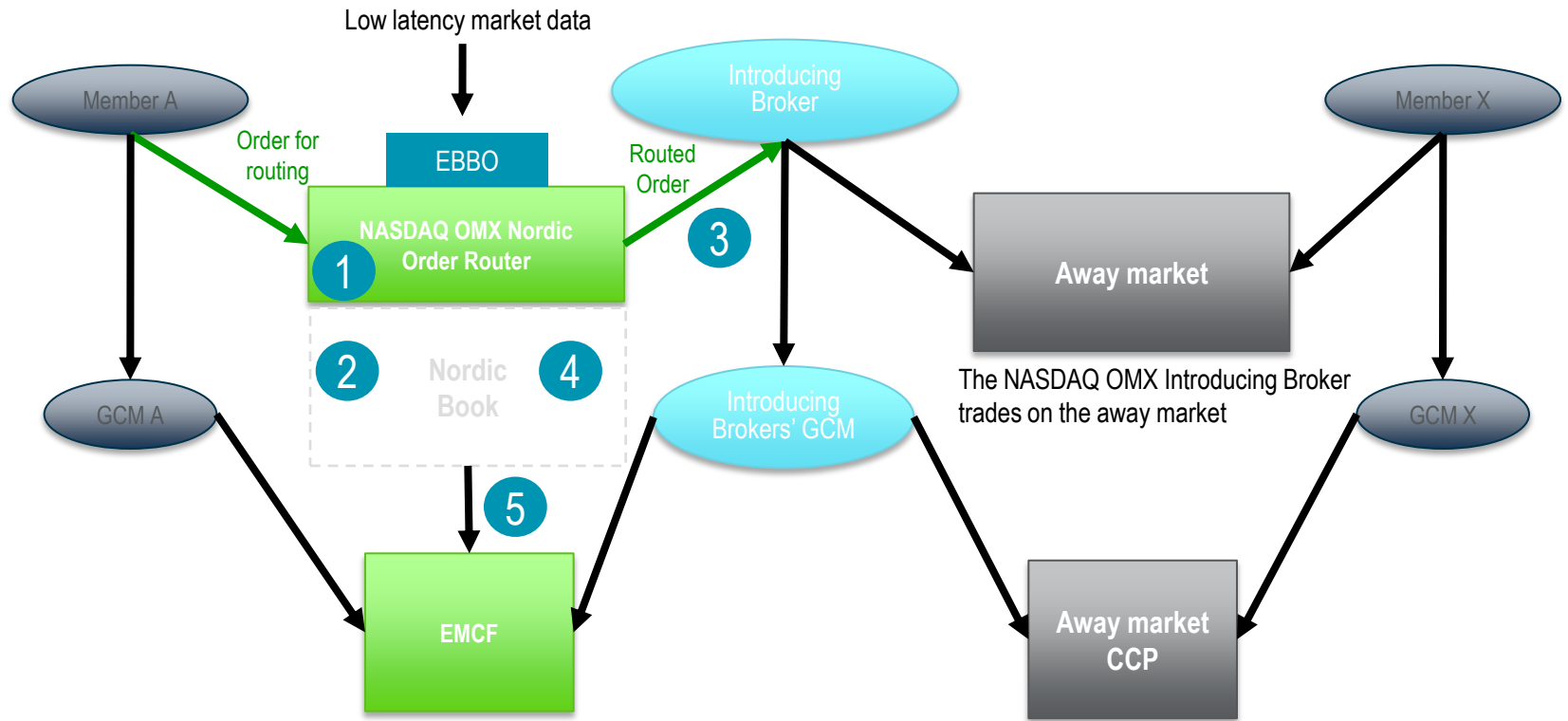


* EBBO (European Best Bid and Offer) defined by NASDAQ OMX Nordic. EBBO is constituted by best bid offer from ; BATS Europe, Burgundy, Turquoise, Chi-x and Oslo Börs and the primary NASDAQ OMX exchanges..

OVERVIEW OF STRATEGIES SUPPORTED

Code	Routing logics	Markets	Comment
BOOK	-	NOMX	Default value
SCAN	Passive	All markets	
STGY	Reactive	All markets. Routes out again if change in EBBO	
DCAN	Passive	Like SCAN , all markets, including Nordic@Mid	
DNGY	Reactive	Like STGY, all markets, including Nordic@Mid	
STGV	Reactive	Like STGY, all markets but reactive only if a minimum quantity is available for execution (25%)	
DIVE	Passive	Non-displayed midpoint pegged LIS orders to interact with Nordic@Mid	To achieve lit => dark interaction
DMID	-	Nordic@Mid order routed to lit Nordic book at closing auction	To achieve dark => lit interaction

NASDAQ OMX NORDIC ROUTING MODEL IN DETAIL



The Introducing Broker's away market position is transferred over to Member A when one on-exchange transaction A against NOMX Introducing Broker is created and sent to EMCF for clearing in real-time.

The Introducing Broker clears and settles its away market trade at the away market's CCP

EXPLANATION OF THE WORKFLOW (A DETAILED EXAMPLE OF A “SCAN” ORDER IS PRESENTED IN APPENDIX)

1. Any order eligible for order routing (“SCAN”-attribute) is sent through the Routing Engine and will automatically check the Nordic order book for best execution before being routed to an away market. Routable orders will, if needed, be re-priced to reflect EBBO* and in all strategies hit the Nordic book first before being routed out.
2. If the Nordic Book has the best price or a price that is equal to the best price, the order will execute in the Nordic Book. If the Nordic Book does not have the best price, or a portion of the order is still outstanding, the system uses EBBO to determine which away market has the best price. The order is then sent via the Introducing Broker to the away market. The current EBBO and Nordic book will always be checked before any new routing attempt to the next away market.
3. Unfilled volume will be routed to the respective MTF/RM according to the chosen routing strategy. The order will be introduced in the name of the Introducing Broker on the away market. Trades made on away markets will be executed in the name of the Introducing Broker.
4. After routing amongst all markets, remaining volume will always be posted in the Nordic book depending on Time In Force unless a reactive (“STGY”-attribute) strategy has been chosen. Posting on away markets will not be supported.
5. An on-exchange trade will automatically be created between the Nordic Member and the Introducing Broker to be sent to EMCF for CCP clearing, following the same logics as any other on-exchange trade.

* EBBO (European Best Bid and Offer) defined by NASDAQ OMX Nordic. EBBO is constituted by best bid offer from ; BATS Europe, Burgundy, Turquoise, Chi-x and Oslo Börs and the primary exchanges..

ROUTABLE ORDER TYPES AND TIME IN FORCE

Order types

- Limit orders
- Market order
- Reserve orders (Iceberg) with their whole volume
- Non-display orders
- Nordic@Mid strategies

Time in force

- All time in force conditions are allowed except FOK orders.
- GTC order support. Reactive orders like “STGY” will route out again.
- All orders will automatically be treated as limit immediate or cancel (Limit IOC) when routed to away markets.
- Any remaining volume for non-IOC orders will always be posted in the NASDAQ OMX Nordic order book with the original order conditions.

NASDAQ OMX[®] PRICING MODEL

PRICING MODEL

Revenues	Current trade price + basis points (bps)
Initial startup fee	0
Fixed monthly fee	0
Per trade fee (Away market including Olso)	
Routed trades per month < 25 000 000 EUR	Current Trade price* + 2,0 bps
Routed trades per month 25 000 000 – 50 000 000 EUR	Current Trade price* + 1,0 bps
Routed trades per month > 50 000 000 EUR	Current Trade price* + 0,5 bps

* Included in fee cap. The additional 0,5-2,0 bps are not included in the fee cap.

- 1. No startup fee, no fixed fees, no fees for market data!**
- 2. Away market trades will be priced according to the logics: NASDAQ OMX current trade price + addendum in bps**
- 3. If matched in Nordic book, current trade price will apply (nothing additional).**
- 4. Detailed pricing information can be found in the ” NASDAQ OMX Nordic Cash Market Pricelist”**

NASDAQ OMX[®] LEGAL AND TECHNICAL

LEGAL



- NMR regulated
- The Market Model details the offering
- Agreement between NASDAQ OMX Nordic exchanges and member
 - Terms and Conditions will apply
 - Member do not have agreement with Introducing Broker.
 - NASDAQ OMX Nordic will have the agreement with the Introducing Broker
- On-exchange trade between member and Introducing Broker
 - On-exchange trades will be created and published over public feeds
 - The member shall see this trade as any other on-exchange trade (i.e. subject for transaction reporting obligations to FSAs etc)
- The service is approved by Nordic regulators.

TECHNICAL

Item	Order routing support	Comment
FIX	Yes	Specifications are available here: http://nordic.nasdaqomxtrader.com/memberextranet/inetnordic/Connectivity_and_Protocols/
Nordic Workstation	Yes	
OUCH	No	
Nordic Equity - ITCH for Reported Trades	Yes	Trades created between Member and Introducing broker to be published with trade type "Standard Routed Trade". Updates trading statistics as any other Standard trade.
GCF-TIP	Yes	Trades created between Member and Introducing broker to be published with trade type "Standard Routed trade". Reference data provided on routable order books.

FIX/FIX Drop	Order routing support	Comment
New Order – Single Tag 76 ExecBroker	"SCAN" and additional routing strategies	"BOOK" is default.
Execution report Tag 9882 LiquidityFlag	1 Chi-X 2 Turquoise 3 BATS 4 Burgundy 5 Oslo Börs	When trade on away market.

HOW TO GET STARTED

1. Sign agreement with NASDAQ OMX Nordic Exchanges. Terms and Conditions will apply. The documents are available on Member web.
2. Secure that your trading application supports order routing, or use the Nordic Workstation. Talk to in-house development team or your ISV.
3. Verify setup in our test facility INET NORDIC OTF.
4. Get going and submit Routable orders by adding the routing flags to the orders.

NASDAQ OMX[®] APPENDIX

PASSIVE VS REACTIVE ROUTING STRATEGY



A **passive** strategy first attempts to execute against orders in the NASDAQ OMX Nordic book at a price equal to or better than the relevant EBBO, and then routes to other markets. If shares remain unexecuted after routing, they are posted on the NASDAQ OMX Nordic book, and will be subject to no further routing.

SCAN

DCAN (includes routing to Nordic@Mid)

DIVE (includes routing to Nordic@Mid)

A **reactive** strategy behaves similarly to a passive strategy, but it may re-route after posting if the relevant EBBO locks/crosses the order:

STGY

STGV

DNGY (reactive strategy that will include routing to Nordic@Mid)

NORDIC@MID INTERACTION ROUTING STRATEGIES

Routing Code	Routing logics	Markets	Workflow
DCAN	Passive	All markets, including Nordic@Mid	A regular SCAN order that tries to match Nordic@Mid and then NOMX lit and then before being routed out as any other SCAN. Order will always try to match Nordic@Mid if (remaining) order value >= minimum value. Otherwise not. Any remaining volume will be posted in the lit book as any regular SCAN.
DNGY	Reactive	All markets including, including Dark pools (Nordic@Mid included)	As a DCAN but a change in EBBO market data can put the order on route again, according to the logics for the DCAN.
DIVE	-	Nordic@Mid and lit order book	Non-displayed LIS midpoint pegged orders to interact with Nordic@Mid orders. The Routable Order shall first try to be executed against Nordic@Mid orders before being posted in the relevant NASDAQ OMX Nordic Order Book. To be able to match against Nordic@Mid orders the Routable order must fulfill the minimum order value requirements .
DMID	-	Nordic@Mid and lit order book	Routing is triggered by the Market segment moving into the closing auction, and results in the order being routed from Nordic@Mid to the normal NASDAQ OMX Nordic Order Book as a regular LOC (Limit On Close) with the original given limit price. If the Nordic@Mid order has been submitted without limit price the order will be routed as a MOC (Market On Close). These orders would not appear individually in ITCH but would affect ITCH in aggregate as they could modify the NOILs.

PRICE IMPROVEMENT IN BASIS POINTS - EXAMPLE

Eric B	NASDAQ OMX Stockholm	Chi-x
Bid/Ask	71,00 -71,10 kr	71,00 -71,05 kr
Price improvement		0,05 kr
Order volume:		100 000,00 kr
Shares (buy):		1407
Price improvement on (buy) trade:		70,35 kr
Price improvement in %:		0,07%
Price improvement in bps:		7

Price improvement in bps!

ROUTING EXAMPLE (SCAN)

Order routing Scenario (A) - SCAN

A. NOMX is at EBBO and whole volume is matched

Limit Day Buy10000@105 is entered with an routed flag (SCAN)

- In the example below only two away markets are shown for sake of simplicity
- Route out once means that order keeps routing until total volume is exhausted, or posted in Nordic book (safeguarding the limit price)
- This example shows the standard SCAN routing scenario

A.1. Current market data in Router (including BBO from Away markets)

	EBBO:	100	102			
Venue	B Quantity	Bid	Ask	A Quantity	Order	Venue
NOMX	1000	100	102	1000	1	NOMX
CHIX	100	100	102	100	5	CHIX
TRQS	50	100	102	50	8	TRQS
NOMX	2000	99	103	2000	2	NOMX
NOMX	10000	98	104	10000	3	NOMX

A.2 Order is re-priced to EBBO

Buy IOC 10000@102

A.3. Order is sent to NOMX order book

Matches order #1 (1000) leaves 9000 unmatched

A.4. Order is sent to Chi-x

Buy IOC 9000@102

Matches order #5 (100) leaves 8900 unmatched (mirror trade created)

A.5 Current market data in Router (including BBO from Away markets)

	EBBO:	100	102			
Venue	B Quantity	Bid	Ask	A Quantity	Order	Venue
NOMX	1000	100	102	50	8	TRQS
CHIX	100	100	103	2000	2	NOMX
TRQS	50	100	103	500	6	CHIX
NOMX	2000	99	104	10000	3	NOMX
NOMX	10000	98	105	200000	4	NOMX

A.6 Order is re-priced to EBBO

Buy IOC 8900@102

A.7. Order is sent to NOMX order book

No match

A.8. Order is sent to Turquoise

Buy IOC 8900@102

Matches order #8 (50) leaves 8850 unmatched (mirror trade created)

A.9 Current market data in Router (including BBO from Away markets)

	EBBO:	100	103			
Venue	B Quantity	Bid	Ask	A Quantity	Order	Venue
NOMX	1000	100	103	2000	2	NOMX
CHIX	100	100	103	500	6	CHIX
TRQS	50	100	103	200	9	TRQS
NOMX	2000	99	104	10000	3	NOMX
NOMX	10000	98	105	200000	4	NOMX

ROUTING EXAMPLE (SCAN)

A.10 Order is re-priced to EBBO

Buy IOC 8850@103

A.11. Order is sent to NOMX order book

Matches order #2 (2000) leaves 6850 unmatched

A.12. Order is sent to Chi-x

Buy IOC 6850@103

Matches order #6 (500) leaves 6350 unmatched (mirror trade created)

A.13. Current market data in Router (including BBO from Away markets)

	EBBO:		100	103		
Venue	B Quantity	Bid	Ask	A Quantity	Order	Venue
NOMX	1000	100	103	200	9	TRQS
CHIX	100	100	104	10000	3	NOMX
TRQS	50	100	104	1000	7	CHIX
NOMX	2000	99	105	200000	4	NOMX
NOMX	10000	98				

A.14 Order is re-priced to EBBO

Buy IOC 6350@103

A.15. Order is sent to NOMX order book

No match.

A.16. Order is sent to Turquoise

Buy IOC 6350@103

Matches order #9 (200) leaves 6150 unmatched (mirror trade created)

A.17. Current market data in Router (including BBO from Away markets)

	EBBO:		100	104		
Venue	B Quantity	Bid	Ask	A Quantity	Order	Venue
NOMX	1000	100	104	10000	3	NOMX
CHIX	100	100	104	1000	7	CHIX
TRQS	50	100	104	500	10	TRQS
NOMX	2000	99	105	200000	4	NOMX
NOMX	10000	98				

A.18 Order is re-priced to EBBO

Buy IOC 6150@104

A.19. Order is sent to NOMX order book

Matches order #3 (6150) leaves 0 unmatched (mirror trade created)

A.20. Current market data in Router (including BBO from Away markets)

	EBBO:		100	104		
Venue	B Quantity	Bid	Ask	A Quantity	Order	Venue
NOMX	1000	100	104	3850	3	NOMX
CHIX	100	100	104	1000	7	CHIX
TRQS	50	100	104	500	10	TRQS
NOMX	2000	99	105	200000	4	NOMX
NOMX	10000	98				

A.21 Summary of trades

	Volume	Price	Venue	Comment
	1000	102	NOMX	
	100	102	CHIX	
	50	102	TRQS	
	2000	103	NOMX	
	500	103	CHIX	
	200	103	TRQS	
	6150	104	NOMX	
Summary:	10000			
Weighted:		103,5		103,60 without routing
Price improvement:		0,00097	%	(9,7 basis points)