



## Spot Market technical overview N2EX – the UK energy market

A UK power market offering from NASDAQ OMX Commodities and Nord Pool Spot

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# 1 Introduction

This document provides a technical overview of the Spot market at the UK Power exchange platform and key functionalities in support of the market, with references to more detailed documentation.

## 1.1 N2 – UK ENERGY EXCHANGE

Following an extensive tender process, NASDAQ OMX Commodities (NOMXC) and Nord Pool Spot AS (NPS) have been selected by The Futures & Options Association (FOA) to provide Market and Clearing services for the UK Wholesale Power Market. This joint venture operates under the name N2EX.

N2 operates a physical power exchange providing platforms for the trading of UK Power contracts. The two product areas offered are the Prompt Market and the Day Ahead Auction Market (DAM). Next also The Spot Market, a continuous market for intraday and short-term contracts is to be launched.

**The launch of the Spot market will give Members the possibility to trade Auction, Spot, Prompt and OTRs in:**

- **ONE Exchange**
- **ONE Trading Platform**
- **with ONE Margin Call**

## 1.2 Document version handling

Version	Date	Comment
1.0	June 2, 2010	HMB First version
1.1	June 11, 2010	HMB Several deletions, additions and rearrangements
1.2	June 17, 2010	Some additions
1.3	November 2010	Clean up

## 2 Spot product description

The Spot market includes continuous trading 7 days a week for products from 2 clear weekdays before delivery until 15 minutes before Gate Closure (75 minutes before delivery). The spot market will include the following products:

Type	Length	
Half Hour	½ Hrs	} Unique Spot market products
1 Hour	1 Hrs	
2 Hour Blocks	2 Hrs	
4 Hour Blocks	4 Hrs	} Products transferred from the Prompt market
Day block 3+4	8 Hrs	
Day overnight	8 Hrs	
Day Peak	12 Hrs	
Day Off-Peak	12 Hrs	
Day Extended Peak	16 Hrs	
Day Base	24 Hrs	
Weekend 5	8 Hrs	
Weekend 6	8 Hrs	
Weekend 3+4	16 Hrs	
Weekend Overnight	16 Hrs	
Weekend Peak	24 Hrs	
Weekend Off-Peak	24 Hrs	
Weekend Extended Peak	32 Hrs	
Weekend Base	48 Hrs	

The Half Hour, 1 Hour and 2 Hour Block contracts will be made available in the trading system on a rolling contract basis (one on, one off) covering the nearest 48 hours. The Block contracts, the day and weekend contracts will roll over from the Prompt Market to the Spot Market at the Prompt Market close (19:00) two full clear Business Days before the corresponding EFA day starts or on the Prompt Market close on Fridays for contracts with Delivery Day Monday, Tuesday and Wednesday.

Roll-over schedule from the Prompt market to the Spot market	
Trading Day	EFA Day for Delivery corresponding to
<b>Monday</b>	Thursday
<b>Tuesday</b>	Friday
<b>Wednesday</b>	Saturday
<b>Thursday</b>	Sunday
<b>Friday</b>	Monday, Tuesday, Wednesday
<b>Saturday</b>	(no roll-over)
<b>Sunday</b>	(no roll-over)

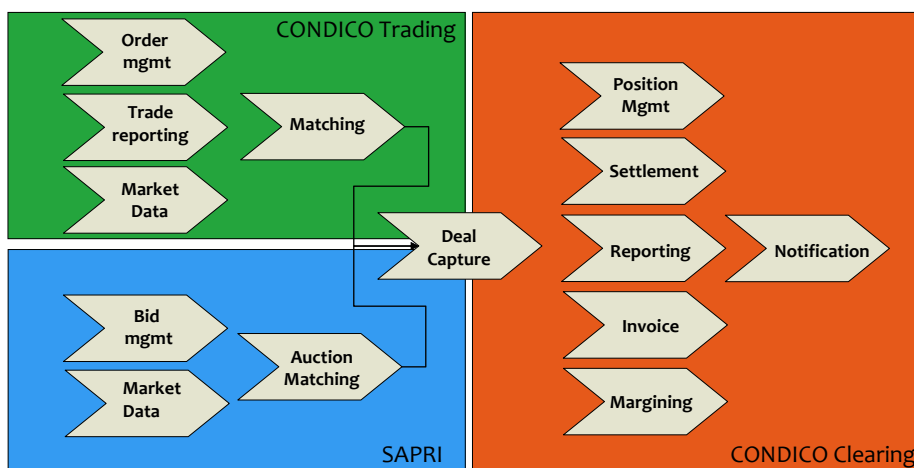
Half Hour and 1 Hour contracts are specified as calendar day, all other contracts are specified as EFA Day contracts, starting at 23:00 the preceding calendar day.

A detailed description of the N2EX Physical Market products can be found in the N2EX Product overview including Spot Products.

### 3 Integrated trading and clearing

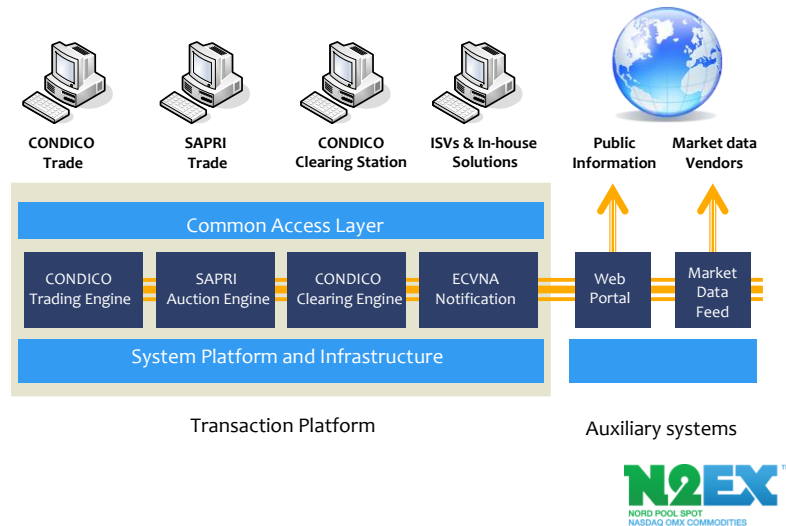
As for today’s prompt market and OTC trade reporting, the *CONDICO Trading* solution is also to be used for the continuous spot market. The post-trade processing including clearing, settlement and notification will as for the prompt market be done using the *CONDICO Clearing* platform (NASDAQ OMX acts as the counterparty to all trades and as Energy Contract Volume Notification Agent (ECVNA) for all UK power contracts cleared on the exchange).

Spot and Prompt instruments will be available side by side in both CONDICO Trading and Clearing. Instruments rolling over from Prompt to Spot will keep the same Instrument codes, but the instruments will be open during nighttime, week-ends and holidays. This means for example that it is possible to trade spot and prompt products to the same trading account or the same Physical Delivery Account), which is the basis for notification to Elexon (see also chapter 10 N2EX platform – account and user model).



The trading and the clearing parts of the solution are tightly integrated which allows for straight through processing of all trades and the provisioning of position and margining information based on latest position and price information intra-day.

The diagram below depicts the main building blocks employed and the interfaces to members.



### 3.1 Trading session transitions

The CONDICO Trading system is based on a session oriented design. This implies that the system will close down during a short time during midnight each day in order to launch a new trading session. Depending on order type and order expiry bids will be moved from one session to another.

The steps of the rolling into the new trading session are outlined below:

Event
1. Information message send to market as a heads-up
2. Market is temporarily HALTED. No order mgmt activities can be performed (23:45 UK local time)
3. Current session state is changed to CLOSED (CLSD)
4. END OF DAY is executed
5. Shut-down of Trading Engine, users are logged out. Based on user settings, orders might be preserved between sessions
6. Re-start of Trading Engine
7. Users can re-connect to market, session state is PRE-OPEN (PROP)
8. Market opens, transition to state CONTINUOUS TRADING (COTR) for the Spot Contracts (00:05 UK local time).

During this time Members can login to both systems and follow the data in the market , but it is not possible to put in new bids. Only during restart of TE it is not possible login to systems. The time between closing a trading session and opening a new trading session will be set to 20 minutes.

## 3.2 Access to the platform

The exchange platform provides secure access and easy to use interfaces by which the market participants have access to all relevant business functionalities and information. Members will be able to access the exchange platform in two ways:

- Via the easy to use proprietary trade and back-office applications provided by N2EX
- Using the Open APIs for integration in their local member trading environment.

The user applications provided by N2EX for access to the Spot market are as for Prompt market:

- CONDICO Trade, for access to the continuous trading (See also chapter
- CONDICO Clearing Station, for access to clearing and settlement information

The application is available either through browser launch utilizing the Microsoft Click Once technology, or through standard installation of the clients. The N2Ex clients are available for download from [www.n2ex.com](http://www.n2ex.com) -> Quick Links and N2EX FTP site – [ftp.n2ex.com](ftp://ftp.n2ex.com) (user credentials can be requested from N2EX service desk).

To run the applications, Microsoft .Net Framework 2.0.50727 is needed. A distributable version is also available through the FTP site.



Please refer to the User guidelines for further details on each of the applications.

Furthermore, the solution is designed for easy extension and integration with external trading and back-office systems, using published APIs (see chapter 12).

## 4 CONDICO Trading

All continuous trading activities plus OTC trade registration are done in the CONDICO Trading system. CONDICO includes an easy to use trade application designed to support the needs of different traders and markets.

All core parts of the CONDICO Trading platform are centrally hosted and no particular hardware equipment has to be placed at the member premises.

It is supported by Microsoft's zero deployment framework which implies that new versions of the client is downloaded automatically to the end-user.

The application supports a number of options for the trader to customize look and feel based on individual preferences.

In summary, the main functional trading characteristics of the CONDICO Trading System are:

- Manage, receive and process orders and quotes from clients connected to the system.
- Keep and maintain order books for the defined instruments.
- Validate orders based on member or instrument specific limitations
- Match orders in strict time priority order.
- Receive, process, and match OTC trades registered on the platform
- Safe storing of trades in deal capture database for export to CONDICO Clearing system.
- Inform clients about executions taking place in the matching engine.
- Disseminate information to connected clients about new, amended and cancelled orders and related market data changes. Information is transparent to all clients but orders are anonymous.
- Disseminate information

The CONDICO Trade consists of five main windows:

- Main window
- Order book window
- News window
- Trade ticker
- Administration

The main window is normally used to display market information, but can also be used to display orders and trades. Multiple copies of the main window can be open at the same time. The market view supports in-lined order depth and in order to facilitate quick and efficient trading, a number of order management actions can be taken directly from the market view including:

- For example, it allows for order entry directly in the market view. By entering price and quantity values in the bid or ask columns an order of the default order type (Fill and store, Good for day) is entered. Order entry needs to be confirmed

by a Control-Enter key sequence. Multiple orders can be prepared and confirmed with a single Control-Enter sequence.

- Own orders can also be modified from the in-line order depth. By changing the price and/or volume for an own order (indicated by green italics) and confirming by Control-Enter, the order is modified without bringing up the order modify dialogue.
- Own orders can also be cancelled or suspended from the main window. Selecting an own order and pressing the Delete key will suspend the order and pressing Shift-Delete will cancel the order. If an instrument name (rather than an own order) is selected, all own order in the instrument will be impacted by the operation.

For more information, please refer to Condico Trade User Guide also found on [www.n2ex.com](http://www.n2ex.com) -> Quick Links.

#### 4.1 CONDICO 4.0 (in production since 9/2010)

The Condico 4 includes a number of new functionalities to facilitate trading. In the following sections important existing and new 4.0 functionalities are listed. Please see also Condico Trade Userguide for more information.

Overview of functionalities in CONDICO	
Function	Description
<b>Settings</b>	Personalized Settings, filtering, defaults, window layout, colour gridlines, price alerts, price change size
<b>Entering Orders</b>	Auto suspend, choose instrument, Modify order, All or None and other order types like Stop-loss orders, smart copying from excel
<b>Market View</b>	Improved sorting, expiry date & time for instruments, grayed-out closed instruments, price movement arrows, company orders + information about orders,
<b>Order Book</b>	Time stamp, inactivate, reactivate multiple orders.
<b>User Management</b>	Trading Safeguards, Order size maintenance, User restrictions
<b>Reports</b>	Intraday day and historical trade reports

#### 4.2 Settings

Condico Trade supports a number of options for the trader to customize look and feel based on individual preferences.

##### General options:

- Save current window layout (saves window layout for next time you log in)
- Display of vertical and horizontal grid lines

Always expand order entry windows  
 Show filter bar in Order Book  
 Show expiry time filter in market view  
 Show modify order menu instead of hit order  
 Price and quantity change size. (choose your tick size for entering orders)

**Market View options:**

Customize market view (columns) - Volume Weighted Average Price added  
 Order/Price depth

**Order Entry:**

Set default trading accounts for Bid, Ask and OTC trades  
 Auto suspend orders at log out (puts orders off the market to local in order book, where you can reactivate them after re-login)

**Order limits:**

Ask/Bid Price and quantity limits for product series

**Price alerts:**

Define price alerts for particular instruments with regards to Bid, Ask and last prices

**Font**

5 sizes of fonts are introduced

**Colors:**

Choose colours for grid lines, closed products, News etc...

**4.3 Entering Orders:**

- New bid type All-or-None. It is an additional attribute to a single order which states a restriction that the whole order volume needs to be transacted in one event. An All-or-none order has the same time priority function as a standard order. All-or-None restriction can be applied in conjunction with any limit order and could thus have different expiry types (rest of day, good til cancelled, timed orders).
- Several other order types, ex. Stop-loss orders
- Auto suspend functionality from Settings menu and from Enter Order window
- Possibility to choose different instrument in Enter Order window is added
- Punch in Bid or Ask quantity and price right in Market View and commit to trades by selecting and hitting Ctrl + Enter
- Copy from Excel to easily paste in trades. Format for excel:
  - column 1 - Instrument code (ex: DB-20100605),
  - column 2 - Bid Quantity,
  - column 3 - Bid Price,
  - column 4 - Ask Price,
  - column 5 - Ask Quantity.

	Bid Q	Bid P	Ask P	Ask Q
DB-20100605	50	25	27	50

- Copy your trades from excel and simply paste them (Ctrl + V) in Market View. CONDICO will find correct instruments and place orders accordingly. Before committing to trades you will need to verify them.

#### 4.4 Market View:

- Sort by Instrument name, expiry time
- Possibility to view multiple markets in one window (use Ctrl + Mark or Shift + Mark to select wanted instrument series).
- Create and manage Watch lists (select particular instruments to be displayed in one window)
- Export Data to excel
- Closed products are greyed-out
- Price movement arrow in Market View is introduced
- Easy way to distinguish between own, company and other orders from Order depth:

<p><i>55,00 - Own Orders</i></p> <p><i>55,00 - Company Orders</i></p> <p>55,00 - Market Orders</p>
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- Move mouse cursor over the order in order depth to see more information
- Expiry time filter to sort instruments according to hours until expiry

#### 4.5 Order Book:

- Sorting possibility in order to distinguish between orders
- Order time stamp is added to Order Book
- Select multiple orders by using: Ctrl + Mark, Ctrl + Shift, Ctrl + A and suspend, cancel or modify orders.

#### 4.6 User Management:

- Should be communicated with Trading desk in order to set restrictions for users, accounts or instruments.

#### 4.7 Reports:

- Reports for intraday trading
- Reports for previous days

## 5 Trade execution and deal transfer

### 5.1 Trade execution

Orders and quotes are normally submitted to the marketplace by a trader via the CONDICO Trade application or an external trading application. If order validations are passed and the current session/instrument state allows order entry, the order will be accepted and considered in the market.

All orders entering the system is assigned a unique order ID that follows the order through its life cycle. Each trade executed on the platform is given a unique ID and each trade also refers to a unique order ID. In addition, a trade is assigned a deal source which allows for separation between the origins of the deal. This is further described in a latter section of the document.

### 5.2 Transfer of deals to CONDICO Clearing

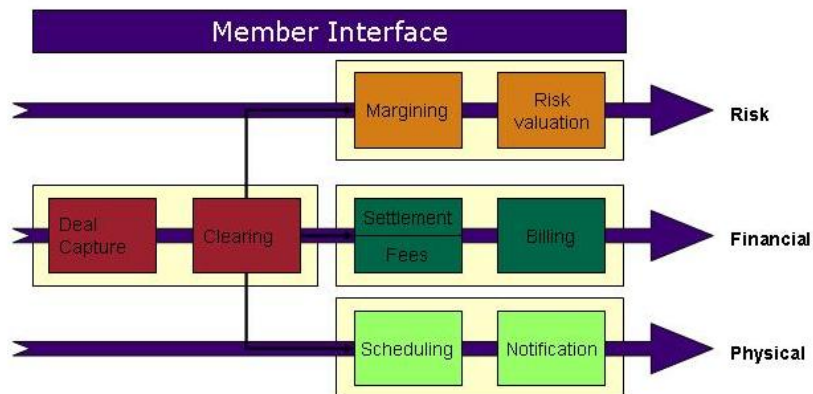
As soon as a deal has taken place, the deal is immediately transferred over to the clearing solution for management of trades, positions, margins, and deliveries. All deals entering the Clearing system are stored in the deal capture database of the Clearing system. The deal capture database is a master database for all deals and trades, and thereby the base for all calculations in the clearing system including positions, settlement, and notifications. Each trade is identified through a unique trade ID assigned in the CONDICO Trading system. Changes are done with documented history and version handling.

The information exchange mechanism between the trading system and the clearing system is based on XML file transfer. In case that a file is not properly transferred, an alarm will be triggered in the NASDAQ OMX surveillance center.

## 6 CONDICO Clearing

All deals (Spot and Prompt) entering the Clearing system are stored in the deal capture database of the Clearing system. The deal capture database is a master database for all deals and trades, and thereby the base for all calculations in the clearing system including positions, settlement, and notifications. Changes are done with documented history and version handling and market participants will be able to retrieve historic trade and clearing information through the CONDICO Clearing Station or through the clearing system API. Clearing participants can also use the Clearing System to adjust the positions in the different accounts held by them.

The supported business flows are illustrated in the Diagram below.



Please refer to the CONDICO Clearing Station user guideline for additional information. Furthermore, CONDICO Clearing Station provides an on-line help facility describing the information presented in the report.

## 7 N2EX ECVNA Service

NASDAQ OMX as the clearing house for the N2EX market is the counterparty all trades (prompt ad spot trades) and thus the counterparty in all notifications to be done for the UK market. NASDAQ OMX is authorized by ELEXON to act as nomination agent or ECVNA. An ECVNA is a Party Agent who submits Energy Contract Volume Notifications on the behalf of two Contract Trading Parties to the ECVA.

All members on the N2EX market needs to complete the BSCP71/01, Party Agent registration with NASDAQ OMX as counterparty and NASDAQ OMX as single notification agent.

NASDAQ OMX is responsible for notifications and, in case of failures in notifying a members positions, take the cost for the members unbalance. ELEXON will settle each ½ hour and notifications for delivery within a ½ hour shall be received before gate closure.

Each member may have one or two electricity accounts registered at ELEXON. One a production account and/or one a consumption account.

NASDAQ OMX will nominate the members net positions. Contracts can be traded up to 15 minutes before gate closure on the spot market. NASDAQ OMX will send notifications every ½ hour, ECVA-I004 files. In case a member's net position has been changed, a new notification will be sent to ELEXON.

ELEXON will send a file to each company with the notifications registered by ELEXON. A ECVA-I022 file will be sent from ELEXON at 09:00, 14:30, 18:30 and 22:00 to the parties.

In addition to the notifications for actual day and next day NASDAQ OMX will notify 7 days ahead at four occasions matching the ECVA-I022 messages. This means the members can verify their net traded positions seven days ahead four times a day.

The N2EX notification process is a continuous process with costly implications for NASDAQ OMX in case of failures in notifications. The system solution and has been designed to be a very robust solution operating continuously without manual interaction.

Please refer to N2EX ECVNAA Notification description document for further information.

## 7.1 MID index

NasdaqOMX will act as a Market Index Provider (MIDP) in the N2 – UK Energy Exchange.

All relevant Nord Pool Products are for delivery via an Energy Contract Volume Notification to the ECVA. Each qualifying contract's contribution to the Market Index price is weighted. The weighting varies both according to product and to time of trade.

Market Index Prices are calculated on a Settlement Period basis, the Time band is calculated by reference to the difference in time between the time the contract was traded and Gate Closure for the Settlement Period for which the price is being calculated.

Any queries on the Market Index Data, should be directed to the BSC Service Desk and not to NasdaqOMX Stockholm

## 8 Banking and settlement

The spot trades are as the prompt trades subsequently cleared with NASDAQ OMX Stockholm AB as the central counterparty.

All listed products at N2EX have a delivery period consisting of date and time in a First Delivery Day and a Last Delivery Day as identified in the Product Specification. In the settlement cycle, the Last Delivery Day will determine how this plays out. All contracts in delivery are settled daily. This means that volumes delivered during a certain Delivery Day are invoiced after the End of Day cycle. All intraday products will in other words also be settled and invoiced at the end of the delivery day.

N2EX runs an End of Day (EoD) process at the end of each Clearing Day. The EoD process will calculate settlement and generate Invoices and Self Billing Invoices for contracts in their Last Delivery day. Invoices are sent out to members who during the day held a position of contracts in delivery with a net sell amount. The due date of the Invoice is set to the following Clearing Day (D+1). The member is thus required to pay N2EX.

On the contrary, members who held a position of contracts in delivery with a net purchase amount will be issued a Self Billing Invoice. The due date for the Self Billing Invoice is set to the third day following the Delivery Day (D+3). N2EX is thus required to pay the member.

There are no changes to the N2EX fee list, so the fee for trades will follow the following as stated in the Fees Schedule as Appendix 7 in the Trading and Clearing Rulebooks:

## VARIABLE FEES

### **Spot/Prompt Market –before 19:00 D-1**

Combined Trading & Clearing 0.024 GBP/MWh

Notification (net fee) 0.0007 GBP/MWh

OTC Clearing 0.024 GBP/MWh

### **Spot/Prompt Market – after 19:00 D-1**

Combined Trading & Clearing 0.050 GBP/MWh

Notification (net fee) 0.0007 GBP/MWh

OTC Clearing 0.050 GBP/MWh

*D-1 means the calendar day before Delivery Commences.*

For more information please refer to

<http://www.n2ex.com/Clearing/bankingandsettlement/>.

## 9 Trade limit check during night time

Opening for trading 24/7 increases N2EX' risk exposure during night-time and will require automatic supervision over the members' trading with scheduled post trade checks at regular intervals. These checks will find the members' available limits. The limit is a combination of surplus/deficit collateral and base collateral multiplied with a percentage factor depending on the members' positions, eg long or short according to the daily overnight position limit report. In case a member passes a warning limit a message will be sent to the member informing about the current status. In case a member breaks its limit a message will again be sent and the member will be halted for trading and clearing in the spot market until it again meets the given requirements or is opened for trading and clearing by the clearinghouse. At all times are the members able to verify their status of their limit, surplus/deficit collateral and base collateral in the margin reports.

The limit for a member is given by the member's 'surplus/deficit collateral' + 'base collateral' \* 'percentage factor'. The percentage factor depends on whether the member is long or short. As long as the member has surplus collateral everything is OK. If the member makes a trade so that it will be in a deficit when it comes to collateral, but the deficit is less than its base collateral multiplied with the percentage factor, i.e. the sum is larger than 0, then the member is given a red warning and will receive a warning by email. If the member continues to trade so that the sum of deficit collateral and base collateral multiplied with the percentage factor is less than 0, then the member is halted for trading will receive a notice by email. Below is an example which illustrates this with two members trading and increasing their daily margin call. Note that the percentages are taken out of the blue.

	BC percentage value
Long	50 %
Short	30 %

CompanyA	
BC	-1 000 000
Position	Long
DMC	-200 000
Collaterals	2 000 000

Trade	DMC	Surplus collateral	Limit	
0	-200 000	800 000	1 300 000	OK
1	-1 200 000	-200 000	300 000	Red warning
2	-1 600 000	-600 000	-100 000	<b>BREACH</b>

CompanyB	
BC	-1 000 000
Position	Short
DMC	-200 000
Collaterals	2 000 000

Trade	DMC	Surplus collateral	Limit	
0	-200 000	800 000	1 100 000	OK
1	-1 200 000	-200 000	100 000	Red warning
2	-1 600 000	-600 000	-300 000	<b>BREACH</b>

When a limit breach occurs the member is halted for trading and clearing until it again has enough collateral and is within its limit or until it is opened up for trading and clearing manually by the clearinghouse. All trades done before the breach are of course cleared as normal and it is impossible for the member in question to make any new trades after it is halted for trading. The member will be opened up for trading and clearing when its limit is again above 0 or by the clearinghouse the next morning.

Condico Clearing Station 4.8 and After Trade Member API will include New columns will be added into the margin summary and margin summary exchange reports:

- Temporary surplus collateral
- Position (MWh)
- One column named (BC) % Long
- One column named (BC) % Short

- One column named Actual Limit (GBP)
- One column named Actual Status

## 10 Connectivity to the platform

The primary connectivity solution is via an encrypted Public Internet Access. All communication is TCP/IP based and any communication to the N2EX platform utilizes encrypted Secure Sockets Layer (standard SSL, 128 bit encryption accessed over Port 443 only.) As an alternative, private leased line or VPN will be available through Verizon; NASDAQ OMX preferred supplier, which offers access via its Verizon Financial Network.

In addition to the encryption via SSL, there is an additional security mechanism applied. The mechanisms differ between client access and API access using third party software or proprietary member solutions. Please note that the same authentication mechanisms are applied independently of means of access (leased lines or Internet).

### 10.1 Access via N2EX applications

For access via CONDICO Trade and CONDICO Clearing Station, there will be a two-factor authentication based on RSA SecurID technology. This implies that a correct time-synchronized random number generated by a user unique digipass must be provided along with a valid username and 4 digit password.



The 4 digit password combined with the digipass generated token (6 digits) will form the password as basis for the login.

### 10.2 Access via third party software

For external software solutions accessing via the API, user name and password will be used for authentication. In addition, IP checks will be applied as an additional level of security. Thus, there will be no need for providing dynamic secure tokens or certificates.

Please note that for server login using IP checks for CONDICO Trading, the API call *APILogin* should be used for gaining access to the platform. Please refer to the API specification for the CONDICO Trading XML API for further details.

For access to CONDICO Clearing, the current API will be used also for the IP check.

## 11 Access to market information, trades and orders

All execution related data including prices, trades and orders can be retrieved from the CONDOICO Trading system. Historic private data will be available for at least 1 month in the trading systems.

In addition, the CONDOICO Clearing System safe stores all trades done on the exchange as basis for clearing and settlement calculation plus notification. These will be at least 1 year of historic data available. The table below illustrates the type of data available in clients and APIs.

		Clients		API	
		CONDICO Trade	CONDICO Clear	CONDICO Trading	CONDICO Clearing
Spot Exchange	Execute on spot market	✓		✓	
	Download spot trades	✓	✓	✓	✓
	Validate spot trades	✓	✓	✓	✓
	Settle spot trades		✓		✓
	Trade history ≤ 1 month	✓	✓	✓	✓
	Trade history 1 year		✓		✓
	Public trade data	✓		✓	

Historical trades without CP info and market info (1 year)

### 11.1 Trade capture by external systems

The concept of real time novation in the prompt and spot markets allows for trade capture by external systems to be done either through the CONDOICO trading API or through the CONDOICO clearing API.

#### 11.1.1 Spot/prompt Order and Trade representation in CONDOICO Trading

Each order entering the CONDOICO solution is assigned a unique *Order ID*. The *Order ID* is connected to the order through its whole life cycle. This implies that the order can be inactivated and later activated and keep the *Order ID*.

Each trade executed on the CONDOICO platform is assigned a unique sequence number that is constructed based on:

- Side of deal B/S: B
- Trading Session ID (1 trading session per day): 150
- Deal sequence number: 78

**Example Sequence number: B:150:78**

In addition to the sequence number, an Exchange Trade ID is assigned and this Trade ID is then also transferred over to the Clearing System. The unique exchange trade ID is constructed based on:

- Session ID: 150
- Deal sequence number: 78
- Order sequence number: 457

**Example Exchange Trade ID: 150-78-457**

**11.1.2 Spot/prompt Trade representation in CONDICO Clearing**

All deals entering the Clearing system are stored in the deal capture database of the Clearing system. The deal capture database is a master database for all deals and trades.

Each trade has a unique trade ID inherited from the CONDICO trading system. The representation is as follows:

- Session ID: 150
- Trade sequence number: 78
- Order sequence number: 457

**Example Exchange Trade ID: 150-78-457**

In case of trade management activities on a trade in the clearing system, the original trade will be overtaken by a new trade with the previous trade ID with an additional sequence number to allow for full traceability.

Currently, the status of a trade in CONDICO Clearing is based on two parameters:

- Trade activation type
- Status

The *Trade Activation Type* indicates whereas a trade is actively part in any calculations in the system. Trades with status ACTIVE is considered by the system, INACTIVE is not.

Regarding *Status* indication for a trade, there are a number of different statuses available. In the case of N2EX, the following are applicable:

Status	Description
ORIGINAL	This is the original trade done; the trade has not been affected by any change
OVERTAKING	This trade is replacing a previous trade. Is applicable in the case when 1) a comment is changed, 2) a transfer of the trade is done between accounts
RECTIFIED	The price or volume of a trade is changed
CANCELLED	The trade is cancelled by the clearinghouse

In case that a trade has been moved between accounts, the following events will happen in the clearing system:

- The Original Trade will get Trade activation type = INACTIVE and keep Status = ORIGINAL. Trade ID will remain. **Example Exchange Trade ID: 150-78-457**
- The transferred trade will get Trade activation type = ACTIVE and get Status = OVERTAKING. The Trade ID will add a additional versioning number in the end: **Example Exchange Trade ID: 150-78-457-1**

Please refer to separate document for additional details around trade status in CONDICO Clearing.

## 12 Exchange Interfaces (Application Programming Interfaces)

The common access layer of the exchange platform consists of three APIs structured in a similar way to be used for access to the spot and prompt or clearing solution respectively. All functions and information displayed in the proprietary applications are provided in the API which allows members to develop their own trading or clearing software. The available APIs are:

- Spot and prompt market access: *CONDICO Trading XML API* or *CONDICO FIX API*
- Clearing and settlement access: *CONDICO Clearing API*

All functions and information displayed in the proprietary applications are provided in the API which allows members to develop their own trading or clearing software.

### 12.1 CONDICO Trading XML API

#### 12.1.1 Trading session information

CONDICO ensures transparency of the marketplace by providing real-time information to the market participants. Orders and quotes received by CONDICO will be processed real-time and the information will be sent to the respective members/traders.

The following information is disseminated by CONDICO to all connected traders:

- Order confirmation/rejection messages (private)
- Optional trade confirmation messages to counter parties (private)
- Real-time instrument market information e.g. best buy quantity and price, best sell quantity and price, trend, last traded price, traded volume, open interest (public).
- Real-time instrument order depth, price depth, and optional market trades information (public)
- Real-time status information of the trading session including instrument and session state changes (public)

- Market messages from marketplace operation (public)

The CONDICO trading system is based on a session oriented design. A trading session in the UK market spans 00.15 to 23.45 (BST). The orderbook and trade book view in CONDICO Trade and the API provides market information, trades and orders from the current session. In addition, private information about historical trades and orders can be retrieved through the report part of the CONDICO Trade application or via the API. Public market information is also available through the API.

### **12.1.2 Historic information**

Apart from real-time information, CONDICO provides access to historical information; both general market information as well as and proprietary member information.

#### Instrument Statistics (Public)

CONDICO maintains the historical trading details of all instruments traded on a particular trading day. The information provided includes for a selected market or instrument:

- High, Low, Last, Opening price
- Settlement price
- Number of trades
- Total traded volume
- Total traded value
- Open Interest

It is possible to view this information over a specified time period.

#### Market trades (Public)

All trades within an instrument over a specified period. In this report for a selected market or instrument all trades are displayed with the following information:

- Trade price
- Traded volume

#### Order transactions (Private)

The order transaction view provides information on all orders active for a specific date and the events that have happen to an order.

At least data for the last month will be available for query.

#### Trade information (Private)

The trade view provides information on all trades that have been executed within a specific date.

At least data for the last month will be available for query.

Please refer to the CONDICO XML API specification for details on the API.

### **12.1.3 API access and structure**

To receive information the developers requests the information from CONDICO over HTTPS. The result is sent as XML that easily can be transformed into an appropriate format.

The CONDICO XML API is structured through a number of so called SubSystems where each SubSystem can have one or more Actions. An Action identifies a request related to input or output.

- User
- Meta data
- Alarm
- Prices
- Monitor
- Order
- News
- History
- Push
- Watchlist

The access to private data is controlled by the privileges by each individual user. The access is structured based on trading account associations. A user associated to a trading account has access to information about orders and trades associated to that particular trading account.

In addition, access to functionality in the API is managed through privileges assigned to each individual user. Please refer to separate document describing alternatives for user configuration.

## **12.2 CONDICO Trading FIX API**

In addition to the proprietary XML based API, the Trading solution also provides support for FIX 4.4

The Financial Information Exchange protocol (FIX) is an open specification intended to streamline electronic communications in the financial securities industry.

The CONDICO FIX protocol solution will minimize latency issues caused by API access and protocol conversions in the information transfer from the proprietary API to the access layer in the FIX solution since the CONDICO FIX solution is based on a design where the FIX engine is integrated into the information distribution engine of the CONDICO solution

The initial FIX solution for CONDICO supports FIX messages for:

- Session
- Order entry and management, including Execution reports

Please refer to the CONDICO FIX API specification for details on the API.

### 12.3 CONDICO Clearing API

The CONDICO Clearing API is an easy way to access the information in the Clearing system (trade history, positions, margining, settlement, invoicing, delivery).

The API is a Java/JAX-WS implementation and the available web service can be viewed by connecting to the hosting application server ([http://<server\\_location>:8080/jbossws/services](http://<server_location>:8080/jbossws/services)).

The WSDL describing the web service functions can be used to generate clients of the web service. Furthermore, the .Net framework has build in tools for this and for java clients the Axis library or the JBoss JAX implementation provides similar tools.

For most requests, both an intra-day version and an end of day version of the reports are available. The intra-day version provides real-time updated information whereas the end of day report reflects the official information from closing of the business day. All end of day reports are stored in database for latter retrieval.

		Intra-day	End of day	
Public	Market information	✓	✓	High, low, last, settlement price, traded volume
	Instrument series information	✓	✓	Information about e.g. trading period, delivery period, lot size
Private	Trade history	✓		Intra-day and search for historical trades
	Account position	✓	✓	Position information per instrument
	Delivery settlement		✓	
	Billing details		✓	
	Fee details		✓	
	Margin summary	✓	✓	Includes information on collateral pledged
	Margin details	✓	✓	Available for each margin component
	Delivery notifications	✓		1/2 hour schedule per delivery account

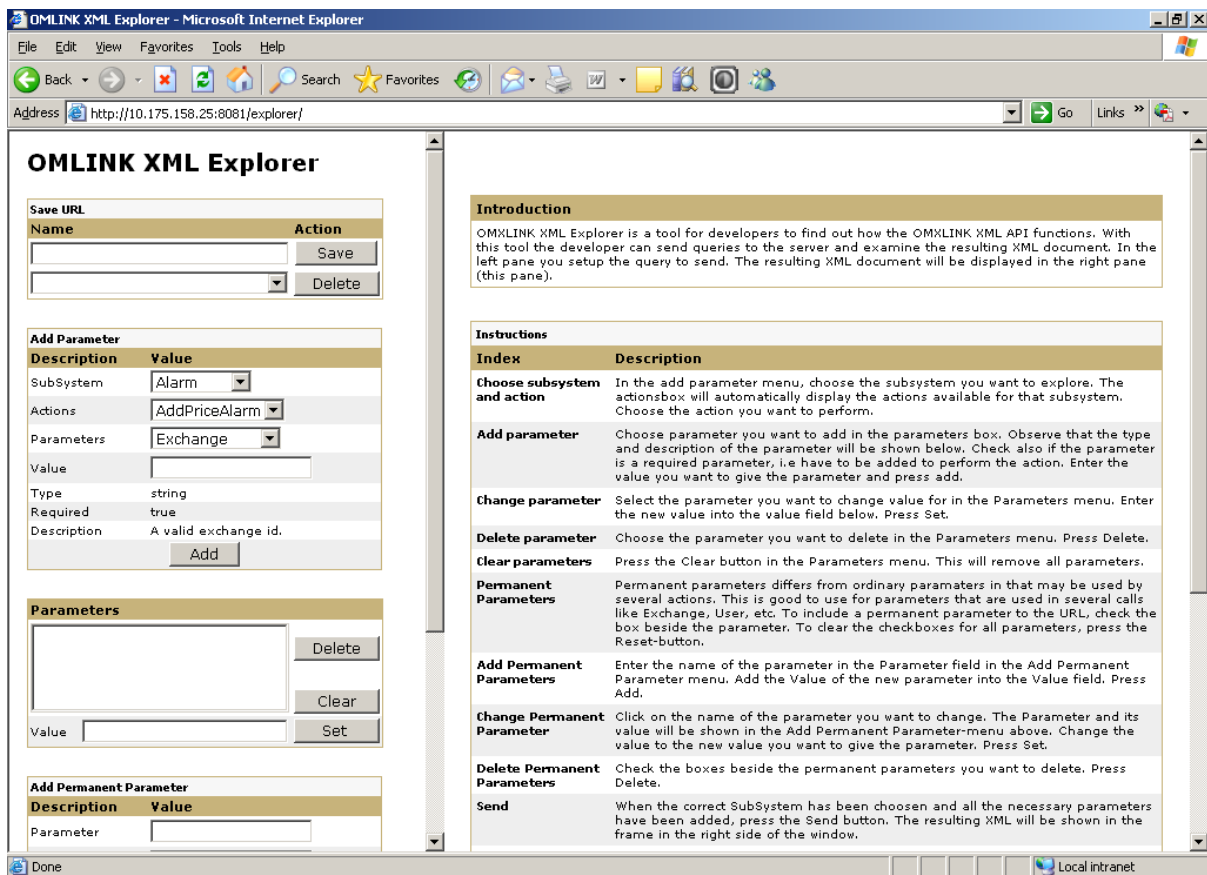
Please refer to the CONDICO ATE API specification for details on the API (Quick Links - API).

### 12.4 XML explorer tool

The proprietary APIs of CONDICO and SAPRI are XML based and come with good development support tools. The XML explorer tool allows programmers to find out how the XML API functions by sending queries to the server and examine the resulting XML document (the XML explorer tool is currently available for the CONDICO Trading AML API and SAPRI XML API).

It can be accessed via the web using the following extension to the address of the test system:

**<http://test.trading.n2ex.com/explorer>**

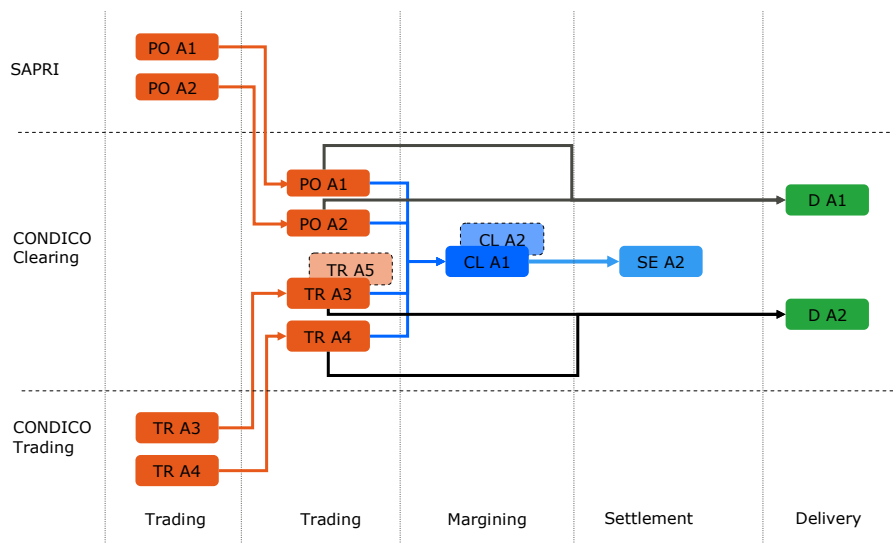


## 13N2EX platform – account and user model

The N2EX relational model allows a participant to have different forms of membership arrangements with N2EX, for example:

- Direct clearing member, DCM (member with both trading and clearing membership).
- Non-clearing member, NCM (trading but not clearing membership, clearing must be arranged via a GCM)
- General clearing member, GCM (clearing for both their own and other members' trades). A GCM can also have a trading membership

A key concept in the relational model is account. *Accounts* are used for storage of trade related information through-out the life-cycle of a trade – from order entry, via execution to delivery and settlement. Accounts serve different purposes and can be grouped in different account types accordingly.



**Trading Account.** The *Trading Account* holds trades for a certain participant or client and is the basis for calculation of positions and settlements. For risk management purposes, obligations are propagated to a clearing account and the holder of the clearing account is the party responsible for pledging collaterals.

A member can have several trading accounts in CONDICO Trading. A member can choose to e.g. have one for intraday and day ahead contracts and one for contracts further out.

All trading account and portfolio in CONDICO Trading and SAPRI are also configured in the Clearing system. In addition, a member can request more trading accounts in the clearing system in order to allow for more granular portfolio handling in the clearing system.

**Clearing Account.** The *Clearing Account* is the basis for margining calculation. Each member must have at least one *Clearing Account*. Based on the associations between the *Clearing account* and the *Trading accounts*, the system allows for propagation for margining purposes. The margining calculations are done based on net positions propagated from the associated Trading Accounts.

**Settlement Account.** In order to allow for flexible settlement arrangements regarding the actual cash-settlements following deliveries, each *Clearing Account* is associated to a Settlement Account. A member typically has one Settlement Account and all financial obligations following settlements are stored on the account.

**Physical Delivery Account.** In order to manage certain arrangements regarding the actual delivery following a physical settlement, a *Trading Account* is associated to a *Physical Delivery Account*. The *Physical Delivery Account* is the basis for notification to ELEXON. A member can have one or two *Physical Delivery Accounts*.

For more information please refer to N2EX User and Account Configuration Guideline.

## 14 System infrastructure

In order to support the operation of the N2EX markets, a comprehensive system infrastructure and business operation procedures are deployed to ensure market availability and data integrity.

### 14.1 System environments

NASDAQ OMX maintains a number of system environments:

- Primary Production system hosted at the primary data centre.
- Secondary Production system (Disaster Recovery) hosted at the secondary data centre. Site will be available in case of site failover and initiation.

Primary		Secondary
Production	Test	Disaster
<b>URL Address</b>		
<a href="https://uktrading.n2ex.com">https://uktrading.n2ex.com</a> <a href="https://ukauction.n2ex.com">https://ukauction.n2ex.com</a> <a href="https://ukclearing.n2ex.com">https://ukclearing.n2ex.com</a>	<a href="https://test.uktrading.n2ex.com">https://test.uktrading.n2ex.com</a> <a href="https://test.ukauction.n2ex.com">https://test.ukauction.n2ex.com</a> <a href="https://test.ukclearing.n2ex.com">https://test.ukclearing.n2ex.com</a>	<a href="https://dr.uktrading.n2ex.com">https://dr.uktrading.n2ex.com</a> <a href="https://dr.ukauction.n2ex.com">https://dr.ukauction.n2ex.com</a> <a href="https://dr.ukclearing.n2ex.com">https://dr.ukclearing.n2ex.com</a>
<b>Verizon Financial Network (Private IP / Secure VPN)</b>		
194.130.55.82 (Trading) 194.130.55.81 (Auction) 194.130.55.83 (Clearing)	194.130.55.86 (Trading) 194.130.55.85 (Auction) 194.130.55.87 (Clearing)	194.130.55.98 (Trading) 194.130.55.97 (Auction) 194.130.55.99 (Clearing)
194.130.55.88 (FTP)		194.130.55.104 (FTP)
<b>Internet Access</b>		
217.73.13.2 (Trading) 217.73.13.1 (Auction) 217.73.13.3 (Clearing)	217.73.13.6 (Trading) 217.73.13.5 (Auction) 217.73.13.7 (Clearing)	217.73.13.18 (Trading) 217.73.13.17 (Auction) 217.73.13.19 (Clearing)
217.73.13.8 (FTP)		217.73.13.24 (FTP)

### 14.2 Software Prerequisites

The minimum requirements to run N2EX member applications are:

- Microsoft Windows 2000/XP
- Microsoft Internet Explorer 6.0 or later
- Microsoft .NET Framework

### **14.3 Trading, Clearing and System operation and support**

N2EX provides 24x7 operational support services. Network, system infrastructure as well as applications are monitored by the Operations department on a 24/7 basis, and various procedures and checks are regularly performed to ensure system integrity.

The technical service desk is also staffed 24 hours a day for every day of the year and provides a full and comprehensive helpdesk service. Any calls made by members are logged and given a unique reference number, progress is monitored, giving updates to the call originator wherever relevant, until its resolution and the issue is closed.

### **14.4 Member Test system is running 24/7 including Spot Products**

In the Member test system environment the Spot Market is running 24/7 side by side with the Prompt Market 24/7 as it will in production. So please do not hesitate to login to Member Test and get familiar with the Spot Market products, daily Schedule, trading through Condico Trade, Trade limit check during nighttime and interfaces.

To access the exchange applications enter the address to the test system in a web browser. Use the account details provided by N2EX (after submitting access form).

In order to gain access to the test environment, please contact the N2EX trading desk and fill in the form as attachments 1 and 2 to the Clearing Agreement.

### **14.5 Order process**

If you are an applying member and you do not have access to the N2EX test environment please go through the following ordering steps:

- Submit Clearing Agreement Annex 1 and 2 (*ACCOUNT OVERVIEW and CONTACT DETAILS AND AUTHORISATIONS*) (agreement itself does not need to be signed):  
[http://www.n2ex.com/digitalAssets/66/66208\\_clearingrules201001111.pdf](http://www.n2ex.com/digitalAssets/66/66208_clearingrules201001111.pdf)
- Receive user account details
- *Clients are available at [WWW.n2ex.com](http://WWW.n2ex.com) -> Quick Links and N2EX FTP site: <ftp.n2ex.com>.*

For any questions regarding access to the test systems and to submit forms, please contact

Phone: +44 207 065 8140

*Clearing operations: [physical.Clearing@n2ex.com](mailto:physical.Clearing@n2ex.com) Option #1*

*Market operations: [physical.trading@n2ex.com](mailto:physical.trading@n2ex.com) Option #2*

*N2EX technical service desk: [technical.operations@n2ex.com](mailto:technical.operations@n2ex.com) Option #3*

## 15 Contact details

For any questions regarding access to the test systems and to submit forms, please contact

Clearing questions to Clearing operations:

E-Mail: [physical.clearing@n2ex.com](mailto:physical.clearing@n2ex.com),  
Phone: +44 207 065 8140\_Option #1

Questions regarding products and trading to Trading Operations:

E-Mail: [physical.trading@n2ex.com](mailto:physical.trading@n2ex.com),  
Phone: +44 207 065 8140 Option #2

Sales and marketing contacts for signing up:

Richard Sarti, Sales Manager  
E-mail: [rs@npspot.com](mailto:rs@npspot.com)  
Phone: +44 7825 300098

Questions regarding Margining and Trade limit check during night time:

Kjetil Bundli, risk analyst, clearing risk management,  
E-mail: [kjetil.bundli@nasdaqomx.com](mailto:kjetil.bundli@nasdaqomx.com)  
Phone +47 6710 8441/+47 9900 3690

## 16 User documentation

In addition to the information provided in this document, additional details of the platform can be found in the following documents:

**User guidelines**

- N2 Exchange Platform Technical Overview
- CONDICO Trade User Guide
- CONDICO Clearing Station User Guide
- N2EX User and Account Configuration Guideline

**API documentation**

- CONDICO Trading XML API Specification
- CONDICO Trading FIX API Specification
- CONDICO Clearing API Specification

**Additional details regarding Products:**

- N2EX UK Product Overview (including Spot)