



*Oslo Børs derivatives –
introducing a new trading
system*

2009

Agenda

Agenda	Speaker
Introduction and background <ul style="list-style-type: none">-Why new trading system-LSEG/EDX and the new partnership-SOLA Trading technology-Further changes?	Jesper von Zweigbergk
System and market models <ul style="list-style-type: none">-System overview-Key dates to launch-ISV status	Preben Danielsen
Clearing and migration of positions	Christian Sjöberg
Communication and system architecture <ul style="list-style-type: none">-Access solutions-Network-Customer test activities	Ernst von Düring
Further information	Jesper von Zweigbergk
Q and A:s	Jesper von Zweigbergk

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Enhancing our LSEG partnership with new link features and products

- Oslo Børs and LSEG have announced a new strategic partnership across cash, fixed income and derivatives
- Members of Oslo Børs and EDX will continue to benefit from linked trading and clearing across all current derivatives products
 - Single liquidity pool and orderbooks accessed through local membership, regulatory and clearing infrastructure



London Stock Exchange Group - LSEG



SOLA Trading technology

- Developed by TMX Group
 - Largest exchange in Canada
 - TMX created through the merger between Toronto and Montreal exchanges in 2008
 - Developed by Montreal Exchange in 2000
- SOLA uses:
 - Trades Canadian equity and fixed income derivatives
 - Used by Boston Options Exchange to trade US equity options
 - Licensed by LSEG for use by EDX London and Oslo Børs





Few changes besides the change of trading system

- Market model
 - The LEC three party agreement ends. Oslo Børs and EDX continue cooperation as before
 - The cooperation is built on the same market model
- Clearing system
 - No change; Oslo Clearing will use SECUR
 - Cross border clearing between Oslo Børs and EDX members
- Product structure
 - Same product structure as today
 - Access to new common products will increase the number of available products in the longer term

Delivering an enlarged group derivatives offering

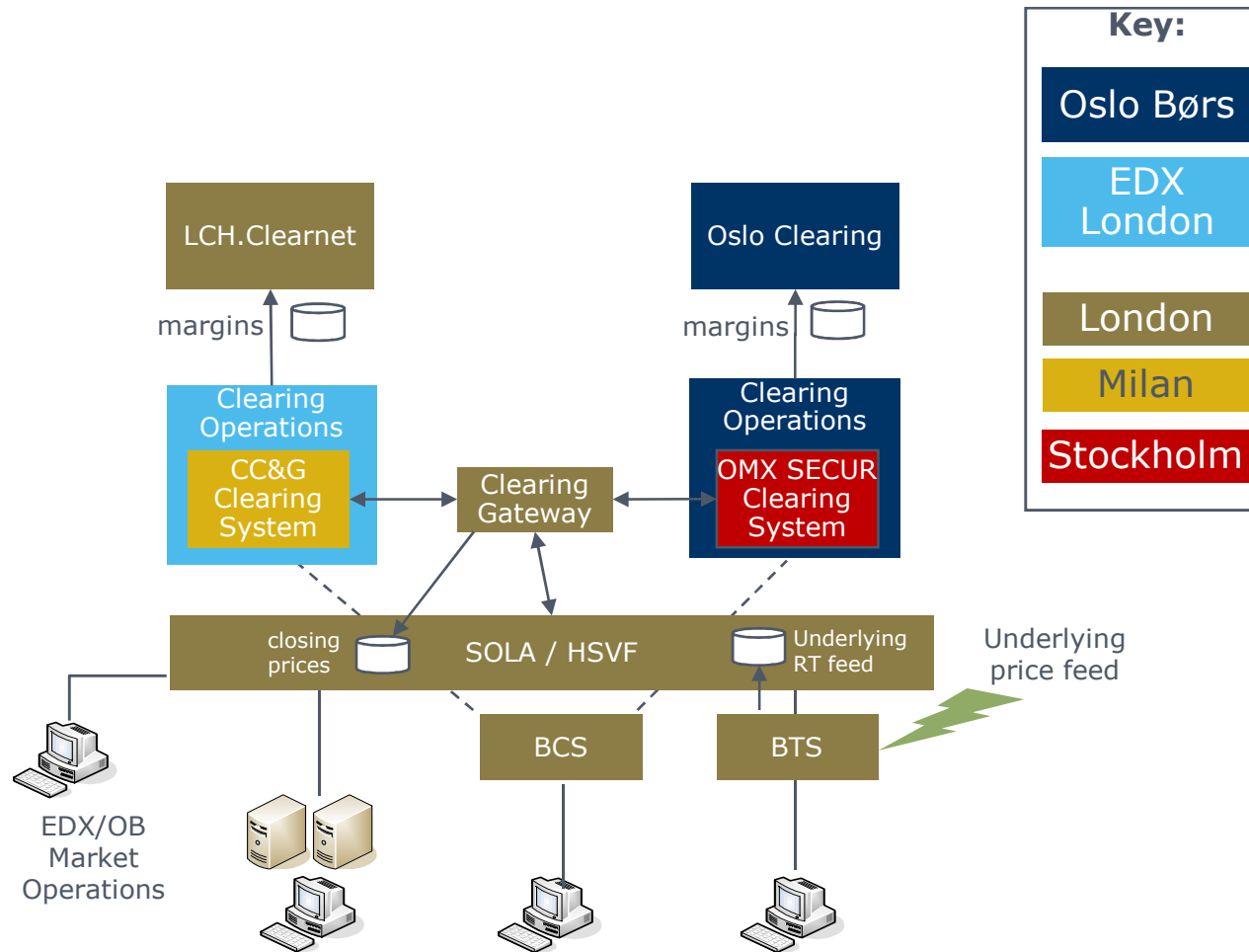
Derivatives asset class

Market		Index	Individual Equity	Individual Depository receipts	Interest rates	Government bonds	Power
	Sweden Norway						
	Denmark						
	Finland						
	Russia						
	Egypt Kazakhstan India South Korea						
	Italy						

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The physical architecture of the new OB system



Key dates to launch

Month	Key activities	
April		Technical specifications
May	Customer test service (Montreal)	
June		Internal acceptance testing
July		
August	Customer test service and customer conformance (London)	
September		
October		Dress Rehearsals
November	16/11: EDX – Oslo Børs Go-Live	
December	18/12: Parallel run to 18 December when trading on CLICK ends	

Dress rehearsals

1

- Sat 17th October

2

- Sat 31st October

3

- Sat 7th November

Go-live 16th November

ISV's and SOLA

- ORC Software
 - Already has a solution towards SOLA in North America today og they believe it will not be a big problem adapting to the changes in SOLA
- Sungard (Front Arena)
 - They have no solution towards SOLA today, but their subsidiary company, GL Trade, has a SOLA connection, and Sungard will use their experience in the development
- LSE/BIT Systems (BTS)
 - BTS is used in CLICK today, but it's not used towards SOLA. This interface will be developed
 - Oslo Børs involved in establishing requirements for the trading terminal
- Tieto
 - Will continue to connect to SECUR and get trading information from the clearing system. In other words no major changes for ProBroker and Amis.

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Clearing

- Clearing system
 - No change; Oslo Clearing will continue using SECUR
 - Cross border clearing between Oslo Clearing & LCH
 - Existing clearing functionality will remain
 - Cross border give ups, position transfers, rectifies etc
 - Margining method will be maintained (Delta Hedge)
- Clearing model
 - No change of existing clearing model
 - Complemented with additional GCM clearing models in later phase
 - Additional collateral management services for Nordic members
- Open interest
 - Common communication from Oslo Bors, OMX and EDX will be presented at least 6 months before actual production date
 - Possibility for members to transfer positions before launch

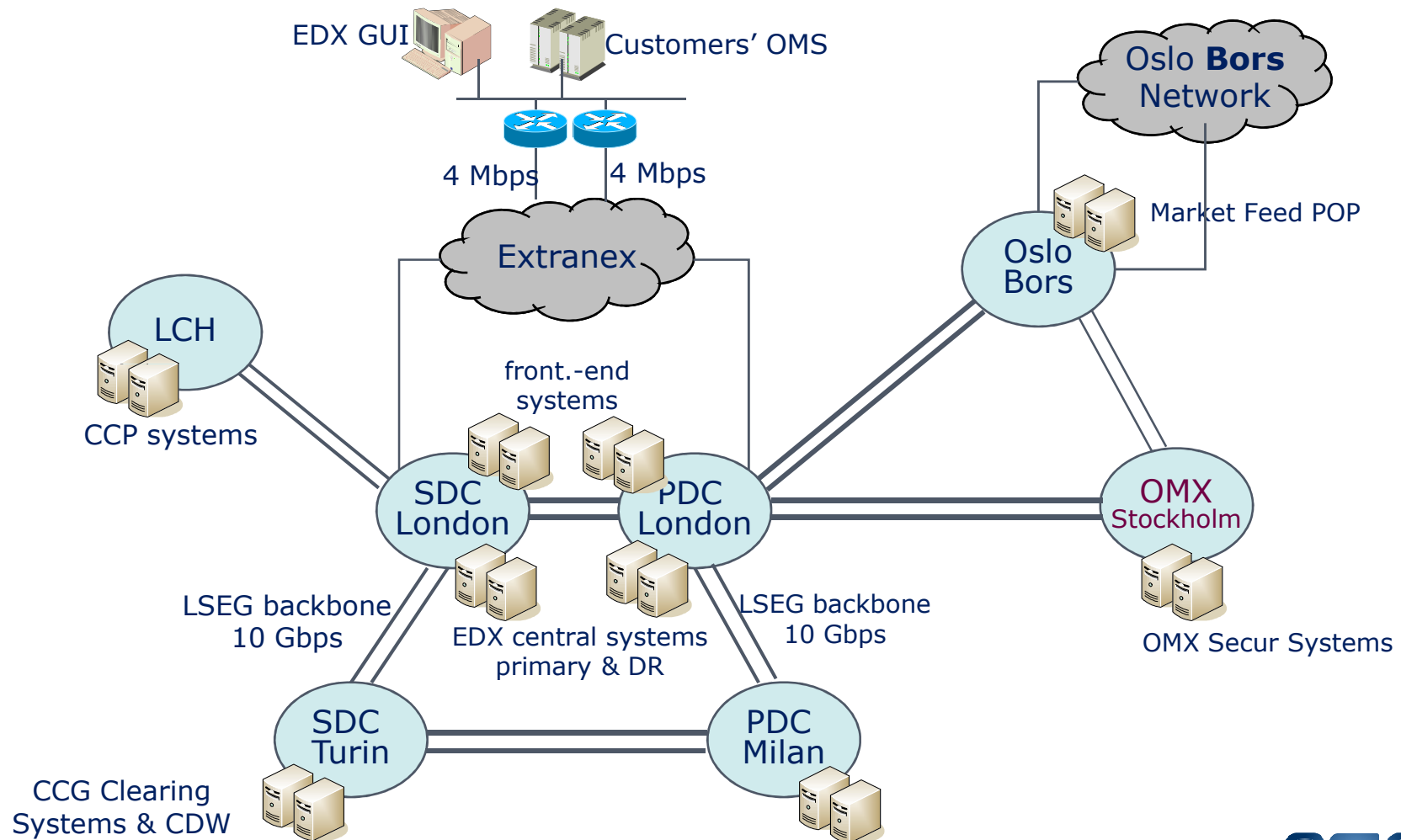
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SOLA Trading – major characteristics

- The infrastructure of the SOLA Central system is based on 3 different environments:
 - SOLA, HSVF, Front-end Primary Environment
 - SOLA, HSVF, Front-end Disaster Recovery Environment
 - SOLA, HSVF customer development environment; an early CDS environment is already available in Montreal based on the current version of the software application.
- The primary site is fully redundant: failover is completely transparent to the customer
- Proven low latency and high capacity characteristics:
 - < 2 ms at 250,000 tps; under average load, latency < 1 ms; 250 M quotes and orders entered in 30 mins
- Continuous service: the new system will be active continuously 24 h x 5 days a week (no EOD procedures)

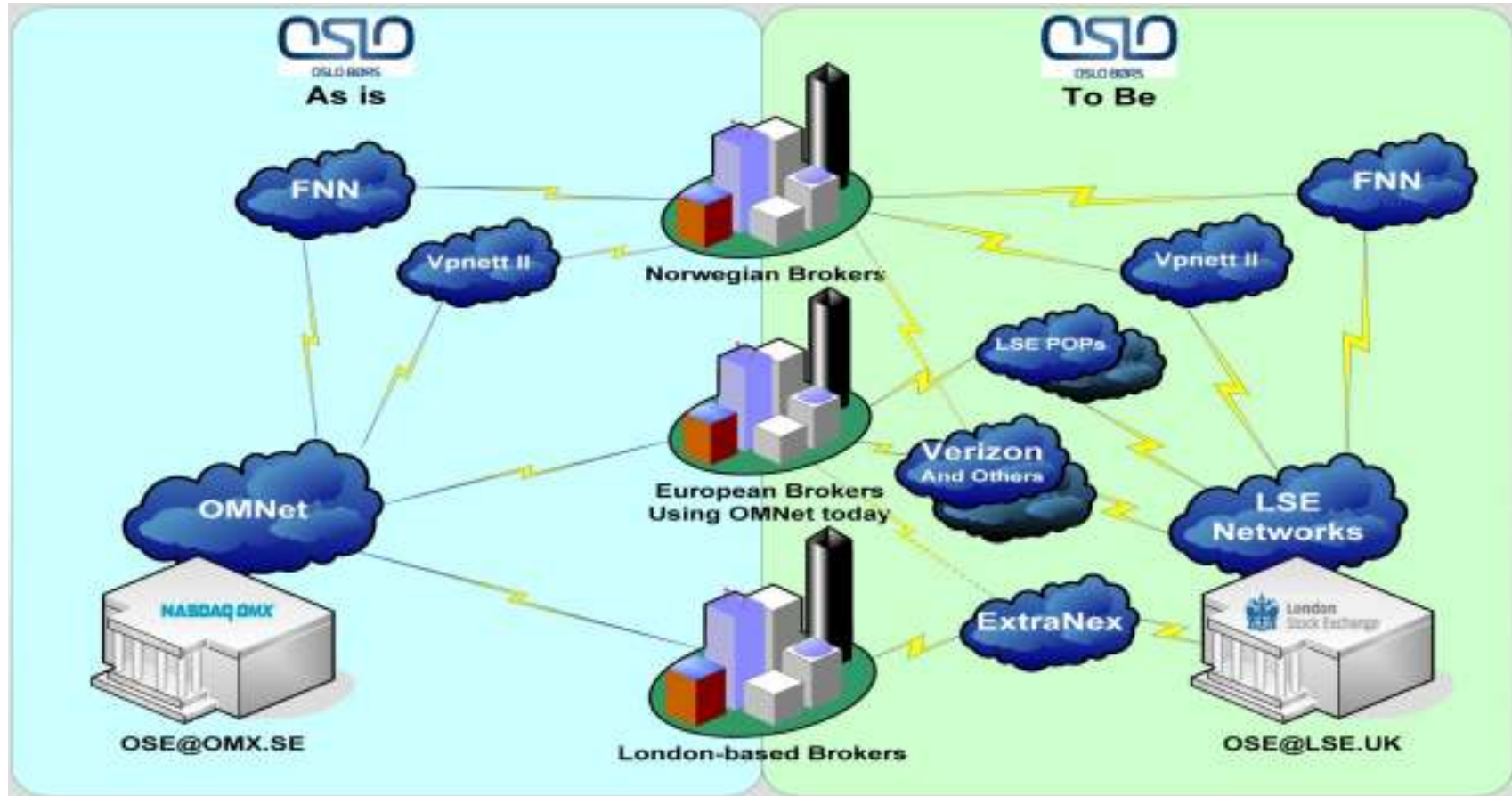
Physical architecture



SOLA Trading - network

- Today, access to OB Derivative Market is provided through the OMX Network connecting market participants to Stockholm
- All OMX network links will be migrated onto VPNett/FNN or onto alternative connectivity solutions
- Proximity hosting

Network – today and future*



*Preliminary network overview; may be a subject to change

Flexible SOLA Trading access solutions

- Participants can select among the following order management protocols
 - SOLA Application Input Language (SAIL) – SOLA’s proprietary protocol
 - API available for faster, simpler development
 - Market Making and regular order management
 - FIX v4.2+
 - Regular order management
- Access Solutions
 - Oslo Børs trading and clearing applications
 - BTS system: replaces ClickTrade
 - BOPC: same clearing customer application as today
 - Proprietary, 3rd party software vendors or approved software providers’ trading and clearing applications
 - Members can continue to call the free Oslo Børs Marketplace Service
- Participants can connect via Extranex and other scalable solutions suited to their trading activity

SAIL – SOLA Access Information Language

- External communication is provided through:
 - SOLA® native protocols:
 - SAIL for quotes and orders
 - SOLA® Native Market Data Dissemination Feed (HSVF)
 - Standard industry protocols (FIX)
- SAIL is a TCP-IP protocol
- Messages sequence numbering is handled to allow messages retransmission

SAIL – SOLA Access Information Language

- Participants and end user application connections:
 - The entry points to the SOLA front end are the connections; a participant (to which a participant ID is assigned) can have several connections depending on their needs
 - Each trader has a user ID and a password
- When an unexpected disconnection occurs, the quotes sent by the user can be automatically cancelled
- It is possible for the participant to use previous protocol version for a period, protocol-ID must be specified in the user connection message
- Different user profiles will be defined according to the user role

HSVF – High Speed Vendor Feed

- Market data feed will be disseminated over the TCP-IP based native HSVF protocol
- After the closing of the market, messages indicating the day's transmission is completed are sent
- In order to subscribe to the two different markets, EDX and Oslo market, participants should connect to two different HSVF IP-Address provided by the exchange
- Members can tailor the feed to their requirement using the connection message subscription mechanism
- It is possible for the participant to use previous protocol version for a period, protocol-ID must be specified in the user connection message

Customer testing activities

- Dress rehearsals, mandatory
 - Saturday 17/10, 31/10, 7/11
 - Purpose: Ensure value chain ready for migration
- Conformance testing
 - Ensure that a stable system is in operation between customer and exchange
- CDS London: From August
- CDS Montreal (VPN): From May
- Updated technical specifications
 - Ongoing
- Current technical specifications and overview of changes
 - Available

SOLA Customer Development Services (CDS)

Early access to the CDS:

- Location of CDS
- VPN Access
- Protocol Versions
 - SAIL, FIX and HSVF gateways
- Listed Products on CDS
 - Limited products and series available initially
 - Full list available on request
- CDS Opening Hours
 - 07:30 to 17:00 BST

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Further information

- **Homepage:** www.oslobors.no

www.obvps.no/obvps_eng/Frontpage/Delta



- **Newsletters:**

- Important information about the SOLA and TradElect implementations to be distributed on a regular basis (e-mail and web)

- **Meetings:**

- According to plan and/or upon request

➔ Today's presentation will be available on the homepage

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