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FIXPROTOCOL
INDUSTRY-DRIVEN MESSAGING STANDARDSM

The Use of FIX in Exchanges

Next Generation of Derivative Markets - Eurex

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Exchange Technology Evolves Over Time

- Technology continues to be a key factor for exchange services to members
- Exchanges have gone global with their offerings to increase liquidity, i.e. network infrastructure for remote access was required
- Regulatory environments have changed (RegNMS, MiFID) in favour of increased competition and to the benefit of exchange members
- Alternative trading venues (e.g. ECNs, MTFs) and dark pools have emerged, offering easy access and high-speed execution systems
- Exchanges are offering co-location to minimize network latency
- Participants trading multiple asset classes and markets have an increasingly large number of trading venues to interact with
- Network connections have become a commodity, even for high bandwidth
- Trading, clearing and market data interfaces are not (yet) a commodity



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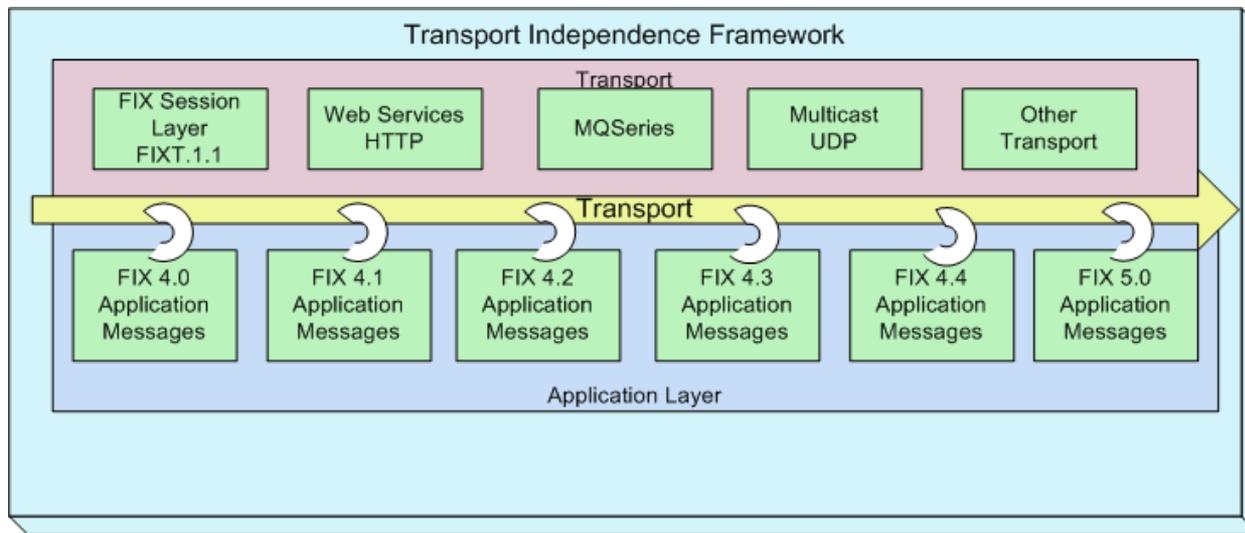
FIXPROTOCOL
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Traditional Role of FIX for Exchanges

- Limited functional scope, mostly FIX order routing applications
- No FIX access for areas such as market data, reference data, mass quoting
- FIX Gateway with standard FIX Engine on top of a proprietary native interface
- Complex translation between FIX concepts and core system concepts
- Comprehensive database to keep state
- Reconciliation of order state with the core system on a regular basis
- Ease of access as only driver, performance not an issue
- Support for FIX versions 4.2 and 4.4

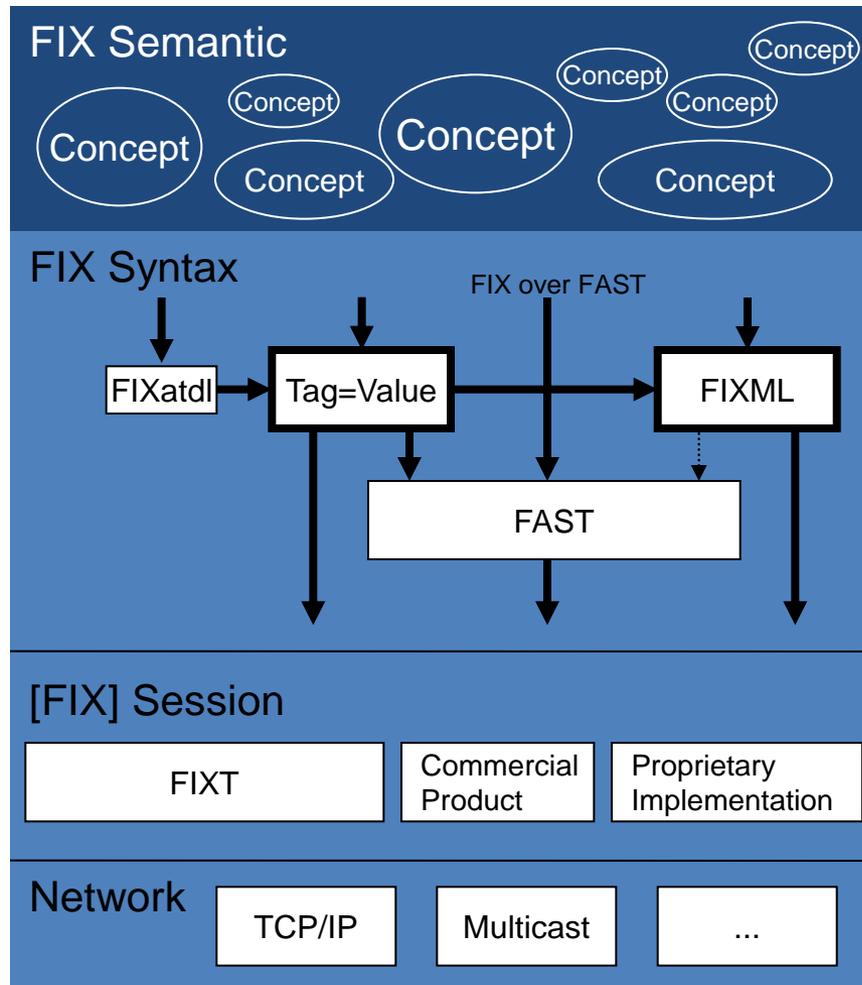


FIX Transport Independence (as of FIX 5.0)





FIX Semantic, Syntax Session





New Role of FIX for Exchanges

- FIX semantics as conceptual basis for the complete functional scope
 - Conceptual differences have the largest cost impact for application developers
 - FIX offers a set of concepts for the various business requirements across the processing chain, asset classes and user environments
- FIX semantics start within the core system design, for example
 - Can I find an order based upon the identification provided by the user?
 - Do I keep track of the total order quantity or only the remaining quantity?
 - Do I support cancel/replace as an atomic transaction?
- Choice of FIX syntax and transport according to given purpose, for example
 - FIX over tag=value and TCP/IP for traditional order routing
 - FIX over binary transport and TCP/IP for algorithmic trading
 - FIX over FAST and UDP multicast for high-speed market data
 - FIX over FIXML and MQSeries or AMQP for clearing
- FIX will provide a new standard binary transport for high-speed trading environments
 - HFTWG – High Frequency Trading Working Group just announced at the FPL Americas
 - Objective is to allow trading venues to replace their proprietary protocols



Benefits for Exchanges and their Members

- Increased Business Flow
 - Acquisition of new members easier due to lower technical barrier of entry
 - Ease of access is a requirement for new marketplaces (e.g. MTFs in Europe)
 - Firms have a reduced cost of access to multiple execution venues
- Complete Functional Scope
 - FIX covers the entire scope of trading for an exchange, i.e. reference data, market data, orders, (mass) quotes, executions, trades
 - FIX allows a flexible release management for both exchanges and members, i.e. exchanges can easily roll out new features while members can upgrade when they are ready to use them
- High Performance
 - Performance as an argument for proprietary exchange interfaces is no longer valid
 - New binary FIX transports (FAST, “HFTi”) offer maximum speed whilst being a standard
- Reduced Development Cost
 - Widespread availability of skilled FIX resources and expertise in the community
 - Large amount of (open source) tools and guidelines available for FIX
 - Faster learning curve for newcomers compared to a proprietary interface



Use of FIX for Trading in Deutsche Börse Group

- International Securities Exchange (ISE)
 - New trading system for equity options
 - New high-speed order/quote/trade interface using FIX over binary transport
 - New high-speed reference and market data interface using FIX over FAST
 - Existing order routing system access using classic FIX Engine (FIX 4.x)
- Eurex
 - Development underway for new trading system based on new ISE system
 - New FIX Gateway for easy FIX 4.2/FIX 4.4 access (orders and trades)
 - Transition of existing high-speed ETS interface to FIX over “ETS+”
 - Transition of existing high-speed EnBS interface to FIX over FAST
- Xetra
 - New FIX Gateway for easy FIX 4.2/FIX 4.4 access (orders and trades)



Use of FIX for Clearing in Deutsche Börse Group

- FIA/FOA Post Trade Working Group (PTWG)
 - Initiative started in 2007 to address listed derivatives
 - CME, ICE, OCC, Eurex, NASDAQ OMX, NYSE, MEFF as active members
 - Objective to define common clearing business processes
 - Scope includes trade reporting, allocations, positions, margin requirements, collateral management
 - FIX Protocol standard (FIXML syntax) chosen as basis for specifications
- Eurex
 - New interface Enhanced Risk Solution provides standard access to real-time risk data and uses FIXML over AMQP (Advanced Message Queuing Protocol)
 - FIX Margin Requirement messages provided with Eurex 12 in March 2010
 - FIX Risk Limit messages to be provided with Eurex 13 in November 2010
 - Additional clearing functionality provided via FIXML is driven by member demand and continues to be aligned with the processes defined by the FIA/FOA PTWG
 - Migration to a standard interface eases later transition to new clearing system



How does FIX Protocol support Exchanges?

- Committees and Working Groups
 - FIX Global Exchanges and Markets Committee
 - FIX Global Technical Committee
 - Regional committees and working groups
 - FIA/FOA Post Trade Working Group
- Extension Process
 - FPL members can submit extension proposals to cover new business requirements
 - FPL provides a Gap Analysis template to capture gaps and proposed extensions
 - Gap Analysis documents are reviewed and discussed in a standard process
 - Approved extensions are implemented by FPL as individual Extension Packs
- Tools from FPL
 - Comprehensive repository (XML/XSD files) defining all messages, fields and values
 - FIXimate (<http://www.fixprotocol.org/FIXimate3.0/>) for all FIX versions
 - Discussion forums (<http://www.fixprotocol.org/discuss/>)