

OPTION COMPUTERS

Financial Software Engineering

DEAL*Hub*TM

Business Overview

DealHub Business Overview

© Option Computers Ltd.,
London • England
Phone +44 (0) 20 7382 4150 • Fax +44 (0) 20 7382 4155

Email: sales@dealhub.com

<http://www.dealhub.com>

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1. Introduction

The purpose of this document is to present the business arguments for the various elements of the Option Computer's **DealHub** family of software products.

Founded in 1985, Option Computers is a leading supplier of software and services to trading and back office operations. **DealHub**, the flagship product, is targeted at FX trading operations ranging from single locations through to global operations. It provides extensive real-time conversation and trading monitoring, including statistics on customer interactions and dealing code usage, whilst its multi-source deal capture capabilities provide for straight through processing from the front office right through to back office systems. All activity is archived, thus supporting investigation of out trades etc.

External sources supported by **DealHub** include Reuters, EBS, Garban ICAP, AVT, TIB Mercury, Voice Broker DDN, as well as e-commerce (such as FXall, Currenex and FXConnect) and in-house trading platforms.

In addition, **DealHub/Connect** is a cost cutting alternative peer-to-peer FX dealing solution designed to integrate counterparties, branches and FX dealing portals without the need for routing via expensive FX dealing networks.

DealHub is used globally by several of the top FX dealing banks in the world, including UBS Warburg, J P Morgan Chase, HSBC and Deutsche Bank.

The following sections cover:

- The headline business benefits of **DealHub**
- A brief product overview intended to give a quick understanding of the **DealHub** product components and where they sit in relation to the surrounding environment as well as to one another.
- As **DealHub** can be of benefit to different organisations / departments in diverse ways, a comprehensive list of business benefits is provided, largely organised by the **DealHub** components to which they relate.
- Appendices supported feeds as well as protocols and formats handled.

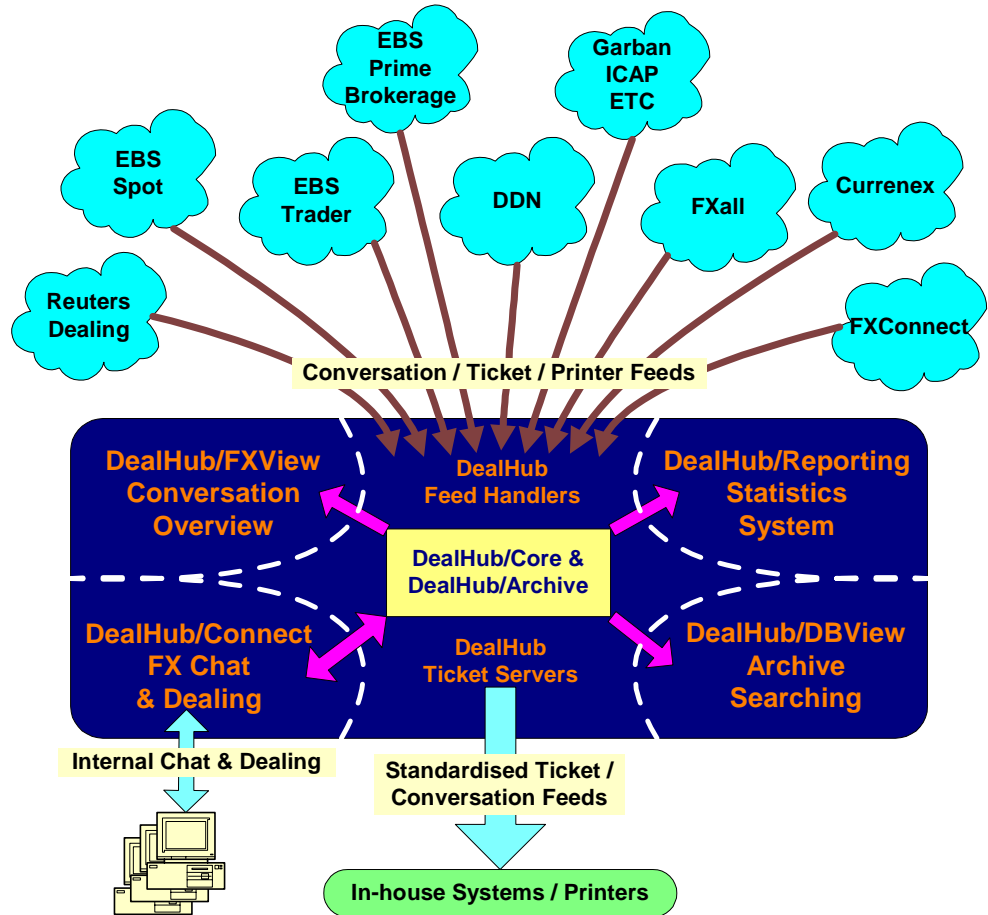
2. Key Business Benefits of DealHub

- Overview conversations, tickets etc. for all automated FX dealing services - globally or regionally as well as locally.
- On-line archive of conversations and tickets for instant retrieval, dramatically speeding up investigations and removing the need for printed conversations / tickets and the associated equipment and other costs.
- Internal, forms based, conversational dealing over internal networks, allowing significant cost savings by reducing dealing codes and keystations.
- Provides detailed analysis of existing dealing code, keystation and conversation usage, permitting considerable reductions in costs to be achieved by cutting back on dealing codes, keystations and conversation channels that are redundant or under used.
- Integrated multi-function product, supporting consolidated ticket feeds from multiple sources to in-house systems via a wide range of industry standard protocols / formats:
 - Improved simplicity and clarity of infrastructure.
 - Reduced cost of service and maintenance.
 - Flexibility (e.g. can easily route tickets to multiple target systems locally or remotely).
 - Speed and ease of implementation of additional source and destination feeds.
- Automation of trade feeds and deal splitting for Prime Brokerage services.

3. Product Overview

The key **DealHub** functionality is represented in the following diagram.

DealHub Functional Overview



DealHub Feed Handlers

The feed handlers manage the communications with external feed services such as the Reuters TOF (ticket) and DTF (conversation) feeds, EBS/ASI feeds and DDN feeds. Appendix I - Supported Feeds provides a full list of the feeds supported.

DealHub/Core and DealHub/Archive

These are the central components of **DealHub** and provide the logging / database capabilities. As well as logging all of the information from the various feeds as a permanent record, separate feeds (from the same source) are cross referenced to provide a composite view (e.g. Reuters TOF, DTF and Printer feeds).

DealHub/FXView

DealHub's conversation overview capability is handled by FXView. FXView provides multiple views on real-time conversation activity including incoming calls, outgoing calls, withdrawn calls, active conversations, completed conversations.

Conversation details can be called up by clicking on conversations. Details of multiple active conversations can also be dynamically viewed.

Viewing criteria are highly configurable, including currency pair, dealer and counterparty.

FXView can be used to overview activity on a desk, across the trading floor or even across the globe. Dealers can see the most recent bid-ask prices as they occur.

Distribution platforms such as Tibco Rendezvous and Reuters Triarch are supported.

FXView is primarily targeted at Spot Desks, Sales Desks, Options Desks, Desk Heads, Treasurers.

DealHub/Connect

Connect provides forms based conversational FX dealing over a bank's internal network or on secure connections over the Internet. It is based upon the dealing code / conversation / ticket model already in use for other dealing products. Conversations can be overviewed (in FXView) and tickets processed and forwarded just as for Reuters and EBS.

A supplementary Rate Server can be installed (fed from Reuters IDN Selectfeed or an equivalent internal rates service) enabling market rates to be available as a basis for dealing.

DealHub/DBView

The *DealHub* database stores a comprehensive history of calls, conversations and tickets. DBView allows queries to be carried out using either simple or complex search criteria, following the same style as FXView. As such, it provides a printer replacement capability, avoiding the need for banks of ticket / conversation printers.

Queries can be defined once and re-called for later use and can be used as templates for further queries.

DBView is particularly suitable for investigations especially in the middle / back office areas.

DealHub/Reporting (Statistics and Brokerage Fees)

The Reporting module provides analyses of the usage of the dealing systems, both in terms of what is used (e.g. dealing codes, keystations) and to what extent, as well as service levels provided to and received by Counterparties (e.g. speed of answering both incoming and outgoing calls).

Also, the Reporting module can be configured to produce a breakdown of the anticipated brokerage fees for matched dealing services.

DealHub Ticket Servers

The ticket servers provide the ability to forward tickets to other in-house systems. Numerous industry standard formats and protocols are supported and it is possible to replicate the same feeds into multiple target systems using different formats and protocols (see Appendix II for details of supported protocols / formats). Both asynchronous serial (RS232) and TCP/IP connections to in-house systems are supported.

In addition to supplying tickets to other systems, servers can provide printed output of both tickets and conversations and can be used to meet regulatory requirements.

DealHub/EBSPB (EBS Prime Brokerage)

EBSPB is targeted at Prime Brokers and includes a feed handler connection to the EBS DFC (Deal Feed Client) to receive EBS Prime Brokerage trades and split these into the two trades from the Prime Broker's perspective (one against the market counterpart and one against the Prime Broker client with the wider spread added). After splitting the trades are delivered to downstream systems via an appropriate ticket server.

Separate documents, covering the above areas in more detail, are available.

It should be noted that there are interdependencies between the above components (for example, depending upon requirements, in most cases DealHub Feed Handlers would be required to support other areas of functionality).

4. Business Benefits

Each **DealHub** component has its own unique set of benefits as outlined later in this section. Moreover, some benefits transcend the individual components.

4.1. Global / Regional Implementations

DealHub is highly configurable and provides banks with several high level options in order to meet management, organisational and technical needs at local, regional and global levels.

Management

For management, **DealHub** can be used to provide dealing overview capabilities at the level required within a bank. For example, local desk heads can see activity on their dealing code(s), regional heads can overview complete regions and global managers can oversee the whole world.

Organisational

As it is quite common now for trading to be booked against regional or global entities, deal tickets can be channelled to regional or global centres according to a bank's processing and settlement infrastructure needs. **DealHub's** flexible configuration options facilitate support of the differing needs that can arise.

Technical

Inherent with the above support is adaptability to meet varying technical requirements within an organisation, as this can often differ from one location to another.

4.2. Consolidation Of Trading Activity

Using **DealHub's** ability to support input feeds from multiple disparate sources, a bank can benefit from:

- Consolidated views of trading activity uniformly presented in a single **DealHub** application. This not only makes it easier to overview activity or investigate out trades, but also reduces the possibility of missed trades or incomplete views.
- Combined feeds of tickets / conversations to in-house systems. Avoids / minimises internal systems having to contend with multiple feeds whilst providing a secure record of all deals at the point of receipt. Can dramatically simplify technical infrastructure and reduce cost overheads of maintaining and supporting several feeds to downstream in-house systems.

4.3. DealHub/FXview

Benefits for Dealers

- Supports unified, coherent overview of dealing from all sources (e.g. Reuters, EBS, DDN, FX portals, e-commerce, manual) in one place.
- Dealers can monitor bid/ask prices as they occur, whether they be from their own desk or elsewhere on the floor / other dealing locations.
- Dealers can set alerts in order to be notified of conversations that meet customisable criteria.
- Potential to identify arbitrage opportunities between locations.
- Sales and Corporate desks can overview Spot & Forward desks to get the latest prices.
- Prioritisation of unanswered calls by time outstanding, counterparty etc.

Benefits for FX Management

- Supports unified, coherent overview of dealing from all sources (e.g. Reuters, EBS, DDN, FX portals, e-commerce, manual entry) in one place.
- Desk / floor wide dynamic overview of dealing conversations.
- Ability to monitor activity levels (e.g. by dealing code).
- Ability to monitor response times to incoming / outgoing calls.
- Can see how long rates have been on offer for and check dealt rates against in-house prices.
- Can monitor status of dealing codes.

4.4. DealHub/DBView

Benefits

- Removes need for printed conversations, associated printers and space and long term storage costs.
- Tickets and conversations, potentially going back many years, can be retrieved instantly using a variety of search criteria.
- Investigation times can be cut dramatically, minimising potential costs associated with out trades etc.
- Provides a detailed, consistent and coherent audit trail.

4.5. DealHub/Connect

Benefits

- Potential for significant cost savings by:
 - Reducing dealing codes / keystations / conversations
 - Cutting back on hardware on traders' desktops and associated infrastructure at both main and satellite locations
- Provide easy and inexpensive access to internal pricing and dealing services for a broader community.
- Can enforce, where relevant, trading only occurs internally.
- Easy integration with existing systems, improving STP capabilities through front, middle and back office systems.
- Potential to connect and trade directly with corporate clients with a view to keeping business in-house.
- Flexible and dynamic installation, with implementation and management under bank control.
- Fast, forms based dealing with minimal scope for errors.

4.6. DealHub/Reporting

Benefits

- Analysis of dealing code / keystation / conversation usage can be used to rationalise infrastructure and reduce associated costs.
- Statistical reports provide ability to analyse performance related to answering calls, enabling optimisation of dealing resources to be achieved.
- Counterparty service levels can be determined and focus placed on areas requiring improvement / action to improve profitability.

4.7. DealHub Feed Handlers

Benefits

- Comprehensive range of feeds supported allowing a single composite view of dealing activity.
- Robust, automatic handling of incoming feeds
- Enables consolidated management and forwarding of tickets from multiple sources.

4.8. DealHub Ticket Servers

Benefits

- Virtually instantaneous straight through transmission of tickets to multiple in-house systems.
- Fast, robust technology using industry standard protocols / formats.
- Uniform interfaces to in-house systems
- Error free processing.
- Eradication of missed deals.
- Reduction of costs (e.g. staff can be redeployed, uniform interfacing simplifies communications and reduces costs).

4.9. DealHub/EBS/SPB (EBS Prime Brokerage)

Benefits

In addition to the benefits given above that accrue from being part the **DealHub** environment:

- Automatically splits trades, applying margin in form of pips to client leg.
- Avoids manual intervention, speeding operation and avoiding errors.
- Provides basis for handling large volumes in an evolving market.

Appendix I

Supported Feeds

Feed handlers for the following feeds are available with **DealHub**:

Reuters Dealing Direct

- Ticket Output Feed (TOF)
- Deal Tracker Feed (DTF)
- Ticket Printer
- Conversation Printer

In addition Audit and General Printer feeds can be captured

The Printer outputs can be captured by **DealHub** and stored in the **DealHub** database. Not only does this meet regulatory requirements, but enables a composite view of information from all feeds to be provided.

Reuters Dealing Link

- Ticket Output Feed (TOF)
- Ticket Printer

Reuters Spot and Forward Matching

- Ticket Output Feed (TOF)
- Ticket Printer

EBS Spot (Matched Dealing)

- ASI Ticket Feed
- Printer Feed

EBS Trader

- Ticket Feed
- Conversation Feed

EBS Prime Brokerage

- Ticket Feed (including deal splitting)

DDN

- Ticket Feed (TOF format)

Garban ICAP

- Garban ICAP ETC interface

Market Arts

- TOF Feed
- ASI Feed

E-Commerce

- Currenex ticket interface
- State Street FXConnect ticket interface
- FXall ticket interface (under development)
- Links with generic AVT e-commerce dealing platforms

Appendix II

Protocols/Formats Supported By Ticket Servers

The **DealHub** Ticket Servers can support a wide range of protocols / formats including:

- Reuters TOF
- Reuters Triarch SSL3 / SSL4
- TIBCO ETX
- TIBCO Rendezvous
- XML (with option of pseudo TOF format)
- MT300
- Market Arts
- TCP/IP
- RS232 (asynchronous serial)
- Ticket Fan Out Adapter
- Ticket Merge Adapter
- Websphere MQ (formerly MQSeries)
- MSMQ
- Microsoft BizTalk
- Flat files

Using the above, a wide range of banking systems can be interfaced with, including:

- Reuters Kondor+
- Devon FX
- IBS
- Alphametrics
- Global Trader
- Wall Street