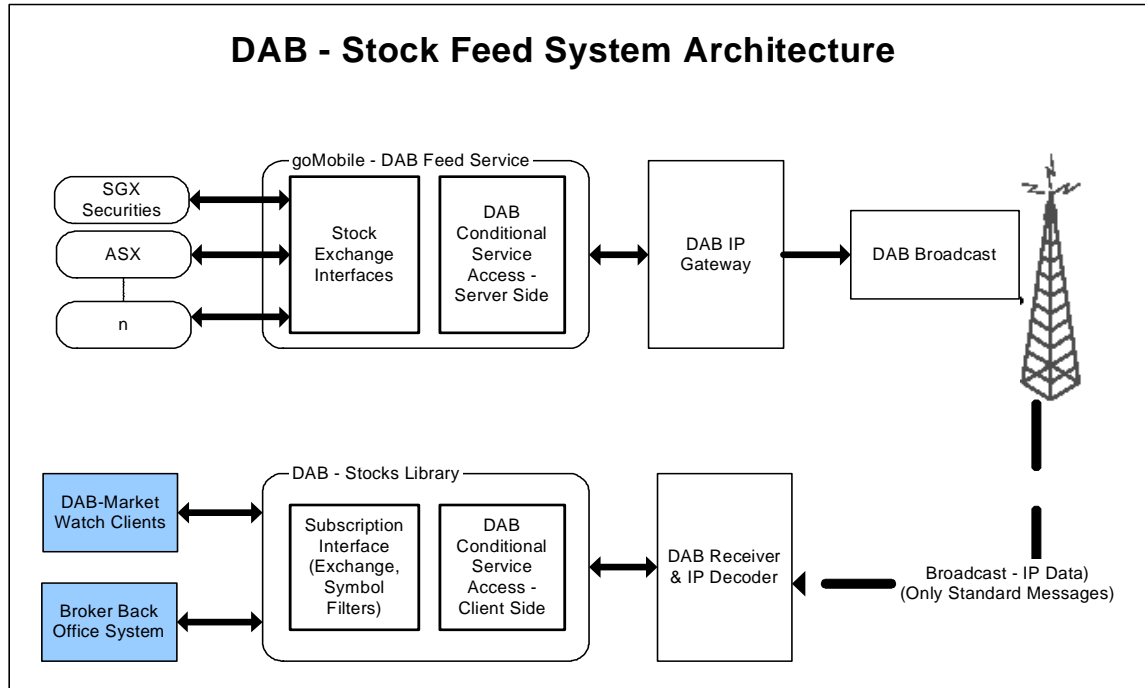


Financial Data Services

It is a data casting solution DAB broadcaster to generate recurring revenues around financial data services. DAB-Stocks System is a product that makes use of Internet and the latest in Broadcast technology to provide a service that is efficient, secure and cost-effective.



The system is divided into the following parts:

- DAB Multi-Stock Exchange Feed Service
- DAB IP Gateway
- DAB transmitter; broadcasts the acquired data to all
- DAB receiver; receives DAB data
- DAB Library
- DAB Market Watch clients

DAB service provides access of streaming data from multiple stock exchanges. The service is either directly connected to a stock exchange or through a tier one data vendors using a dedicated link (VPN, satellite etc). This link provides our system with access to level 2 stock exchange data in real-time. DAB service converts this data into a standard GoMobile feed format. Conditional access API in the service makes sure of the integrity and security of data over the broadcast medium.

This data then goes into DAB IP gateway, which is like a bridge between IP network, and DAB network. IP data is wrapped in ETI And STI frame and then sent out asynchronously by DAB transistors.

The DAB signal is transmitted unidirectional and is received by IP DAB tuned in to the proper channel and sub service. Once the DAB signal is received, the receiver converts it into IP packets. DAB library uses conditional access client API to unscramble these packets. These packets then pass through a process of filtering and then pushed to Client interfaces in real-time.

DAB provides us with a broadcast bandwidth of approx 1.5 Mbps, which are sufficient enough to distributed depth data for many exchange simultaneously.

DAB Multi-Market Stock Feed Library

The DAB Stocks Library receives the data transmitted from the Feed Service. It acts as a client to the Feed Service. The DAB Stocks Library is build as a dynamic link library that can be used by third party developers. It provides a mean to integrate the power of IP broadcast into their existing front-end applications and back-office systems

The library, after receiving encrypted data, decrypts it with the keys already given to clients based on their subscription model. After decryption the data stream is parsed and then translated into standard message format. The translated messages received are then stored in message containers called Message Models. These models can later be extracted from the library on the request of the library user. There is an option to extract data in XML for the ease of interconnectivity.

The library can use two modes of connectivity. One uses a return channel and the other does validation offline. An Internet based return is used to handle user subscription and validation online. This channel is used in the startup. Once the keys are exchanged over a secure link, asynchronous DAB takes over for data delivery. Authentication and verification of subscription can also be done offline. A subscription file is sent to the client with all the information required to run a DAB feed link.

Authorization and Subscription Mechanism

Authorization mechanism limits the number of exchanges and symbols that user can have. User will only have access to the streaming data, which he is authorized to or has paid for. From within the authorized list user can select any set of symbols or exchanges that he wishes to get in real-time in a particular session.

There is an extensive filtering mechanism placed inside the library. This is done at exchange level as well as symbol level.

API – Modes of Operation

The client API (DAB Stocks Library) has the following modes of operation, which can be selected according to the users choice.

Event Based (call backs)

This method is relatively easier to implement. All user has to do is to map the sink event in its own class. All the messages will be passed using these events. The library treats the reception of a message as an event, and triggers the appropriated function (whose definition is provided by the user) it self as a result.

Pull (normal method calls)

The library also supports a more classic approach, i.e. the library provides all the methods through which any information received by the library can be get (pulled) from it.

DAB Market Watch Client

DAB Market Watch is a desktop application that makes use of our DAB libraries. It provides a graphical user interface to all the real-time streaming data coming from different stock exchange through DAB Stock Feed Service. Application can be broadly categorized into:

1. Views
2. Customization
3. Symbol Management

Views

The application has all the standard views available in any online stock trading application client. Views are populated based on the selected symbol lists and each view can have its own customization. Application provides following views:

- Market View
- Scroll Ticker
- Waterfall Ticker
- Index View
- Market Depth View
- News View
- Live Video View

Customization

Application provides extensive customization options. User can practically have independent color, font, symbol, and column settings for all the views in the application. These customization options also cater for multiple exchange sessions. All this information is stored for each user separately and securely.

Symbol Management

Application provides interface to create the list of selected symbols for each stock exchange. User can create multiple symbol lists for each exchange. To see the data of a particular symbol list user only need to apply that list to each view through an interface provided by the application. Once symbol list applied only that data appears in the view. An aggregate list of symbols from all the views is sent to the library from subscription and filtering.

Scroll Ticker View
 Meiban Gp 0.935 0.005 ST Engg 2.07 -0.010 Beyonics 0.51 0.000 AsiaPharm 0.59

Market Watch View

Name	Last Done	Change	Open	% Change	High	Low	BuyVol	Buy	SellVol	Sell	Cumm. Value
UOL	2.4	0	2.400	0	2.420	2.400	228,000	2.400	152,000	2.410	5315310
UOB	13.4	0	13.400	0	13.400	13.400	132,000	13.400	159,000	13.500	871000
Chartered	1.39	0	1.390	0	1.390	1.390	298,000	1.390	342,000	1.390	890990
Noble Grp	0.985	-0.005	0.990	-0.505	0.990	0.985	42,000	0.985	15,000	0.985	100530
Meiban Gp	0.935	0.005	0.930	0.538	0.935	0.930	11,000	0.935	115,000	0.940	229155
AsiaPharm	0.59	0	0.590	0	0.590	0.590	135,000	0.590	535,000	0.595	77290
Beyonics	0.51	0	0.510	0	0.510	0.510	305,000	0.505	70,000	0.510	68850
KepCorp	7.25	0	7.250	0	7.250	7.250	31,000	7.200	151,000	7.250	43500
OCBC	12.4	0	12.400	0	12.400	12.400	320,000	12.300	191,000	12.400	2455200
Snowcity	0.27	-0.005	0.275	-1.818	0.275	0.270	332,000	0.270	485,000	0.275	116235
Pac Cent	0.355	0	0.355	0	0.355	0.355	25,000	0.355	52,000	0.355	235010
FibreChem	0.455	0	0.455	0	0.455	0.455	535,000	0.450	268,000	0.455	127400
S P H	4.260	0	4.260	0	4.260	4.260	74,000	4.260	134,000	4.280	732720
ST Engg	2.060	0	2.060	0	2.060	2.060	5,000	2.060	15,000	2.060	317170
Venture	17.200	0	17.200	0	17.200	17.200	79,000	17.100	99,000	17.200	3085800

Market Depth

Select Symbol: UOL(Ready)

Bid Depth		Ask Depth	
Price	Size	Price	Size
2.400	228000	2.410	152000
2.390	262000	2.420	392000
2.380	306000	2.430	489000
2.370	14000	2.440	248000
2.360	34000	2.450	479000
2.350	115000	2.460	49000
2.340	167000	2.470	157000
2.330	20000	2.480	40000
2.320	62000	2.500	200000
2.280	16000	2.520	200000

Waterfall Ticker View

KepCorp	7
Noble Grp	0
UOL	2
Pac Cent	0
Chartered	1
Venture	1
Pac Cent	0
UOL	2

Index View

Name	Value	High	Low
Straits Times Index	1866.91	1868.36	1866.91
SingEquities Mainbd	92.45	92.45	92.45
SingEquities Elect	162.33	162.33	162.33
SingEquities Foreign	170.59	170.59	170.59
All-SingEquities	496.93	496.93	496.93
All-S Equities TSC	877.85	877.85	877.85

News View