Intraday Messenger Implementation for Trading using the Secured XML Technologies

Padmini Priya Chandra. S[*].
School of Information Technology & Engg
VIT University
Vellore, India
padminipriya@in.com

Balamurugan. B.
School of Information Technology & Engg
VIT University
Vellore, India
balamuruganb@vit.ac.in

Venkatakrishna. P
School of Computing Sciences &Engg
VIT University
Vellore, India
pvenkatakrishna@vit.ac.in

Abstract: This paper analyses the implementation of a secured intraday mobile instant messenger for the exchange of data and files for stock trading activities. The secured information updates regarding the stocks, optimization and increased data transmission rates are focused in this new system. The presence protocol, jabber allows a broker to link with any number of traders and give them instantaneous updates. Security throughout the system is provided by the xml based techniques of encryption and access control like xml-enc and xacml. The facility of Timber database xml security even at the database level can be fully used for the trading security as monetary transactions is involved totally. For all trading days, the market data are analysed frequently using the algorithms and the traders are provided with the option to view the graph regarding their status of shares. Finally, this system allows an active investor to track stocks in real time, to get live intraday and charts with procedural analysis, collaborating in groups and security on top of all the layers of this system with supported brokerage accounts.

Keywords: jabber, timber, xml security, xml-enc, xacml.

I.INTRODUCTION

Various systems exist for traders to get the instant updates on the stocks. Instant messengers are one of the existing trends which are cheaper compared to the SMS or mail based services. The main need to develop an instant messenger for traders is seeking the broker and the investor presence [1]. These messengers at times undergo number of security risks. For example, sending attachments in through IM fosters a richer experience and the files are subject to viruses and other malware. IM attachments often bypass antivirus software. Some IM networks are susceptible to eaves dropping. The problem looming in the horizon is "spim" i.e. the IM version of spam. The other need to develop a secure IM environment is it's hardly difficult to verify instant messaging source that sends unwanted messages to IM clients and bogus advertisements, solicitations for personal information.

II.BUILIDING A SECURED IM FOR TRADERS

A. Jabber presence in Intraday IM

Jabber XMPP protocol overcomes all the drawbacks over the existing instant messaging protocols having support for asynchronous message relaying, transport layer security, unlimited number of contacts, bulletin to all contacts, standardized spam protection, with audio and video support. The support for groups, access for non body and non members are made as optional phases. This enhances the privacy in a communication between two members [2]. Therefore, my point here is jabber is an excellent protocol for an instant messenger that no other can take into that place for secured data transfer between various computers (including audio and video based data transfer).

B. Xml security with jabber presence

The instant messenger traffic simply cannot be blocked at the firewalls with the support of native IM port. Many instant messengers such as AIM, Yahoo and MSN are "port-agile" that when their native port is closed, they can open other port instead [3]. In this paper, we focus on some solutions by Jabber/XMPP to define specific services, to block specific features, to Log IM access and communication, and to block by categories.

C. Timber database in Intraday IM

Timber was one of those XML database systems, used to store the information and to process queries the data which were semi-structured. Algebraic underpinning is the basic principle in this XML database. The exchange of data and the integration, everything is denoted in XML documents and XML DTDs. Our instant messenger uses this

database system for experimental evaluation all the way through several XML datasets with a variety of queries[4].

D. XML security in Timber

The database resources integration in the pervasive environment is the need for database level security enhancement [5]. The security mechanisms in this project are implemented using the XML and Web services provided by Timber2.1 database, that the problems of security are solved for various platforms in the pervasive environment [6].

E. Xml based Access control in Intraday IM

Access control critically protects against security threats in computer environments. Authorizing, guaranteeing and managing are the target of the access control strategies [7]. For example, consider an organization access control strategies using administration models in the diagram followed.
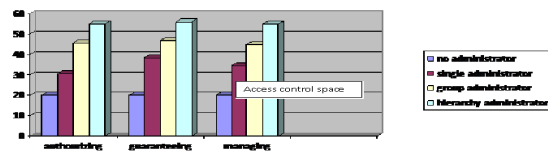

Figure 1: access control strategies

XACML2.0, the access control mark up language defines schemas and namespaces for access control strategies in XML, rather the objects being identified in xml. This language has the features of digital signatures, multiple resources, hierarchical resource, Role Based Access Control, Security Assertion Mark up Language and other privacy enhancement mechanisms.

F. Xml based encryption in Intraday IM

End to end means that the data is protected from the point it is captured, the intermediary processes it passes through and till it reaches the destination point. Encryption transforms information using an algorithm that makes the information unreadable unless using keys [8]. This is achieved through Xml-Enc mechanisms, Java Cryptographic Architecture and Java Cryptographic Engine.

Consider the encryption zones applied for our intraday instant messenger:
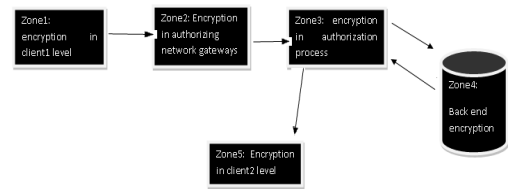

Figure 2: Xml-Enc (Encryption) in Intraday Messenger

III.INTRADAY INSTANT MESSENGER

The security enhancement for the newly designed '*Intraday Instant Messenger*' is the focus. The enhancements include the support for server side database '*Timber2.1*', *Jabber* and *XMPP* servers which act as gateways to other IM protocols. The attempt is to combine the many disparate protocols inside the IM *server* application and to provide secure transmission, to maintain the state of users with the help of Timber which has the in-built features of the xml streams based effective cost estimation and the query optimization techniques [9].

Intraday Instant Messenger is all new messenger for secured communication in an organization that controls data and security breaches with security algorithms discussed above. The whole messenger is to be developed based on xml technology such that the risks management is the main focus.

A. Server implementation

The main function of instant messenger is to connect both the clients (who would like to chat to the server) and when once they both are getting connected, the path for them is established. From next messages they establish peer to peer connection. Security algorithms such as access control and location awareness are included at all levels for preventing security and data breaches. Even the diagram below describes the "Intraday instant messenger environment for a secure chat".

B. Client implementation

The encryption at various zones of a client communicating with other client at other terminal is implemented. The clients have the following user interfaces that are designed in J2ME platform using Java Mobile Information Device Profile and Java specifications. The interfaces are browser based and can support any kind of mobile devices in such way the application is device independent.
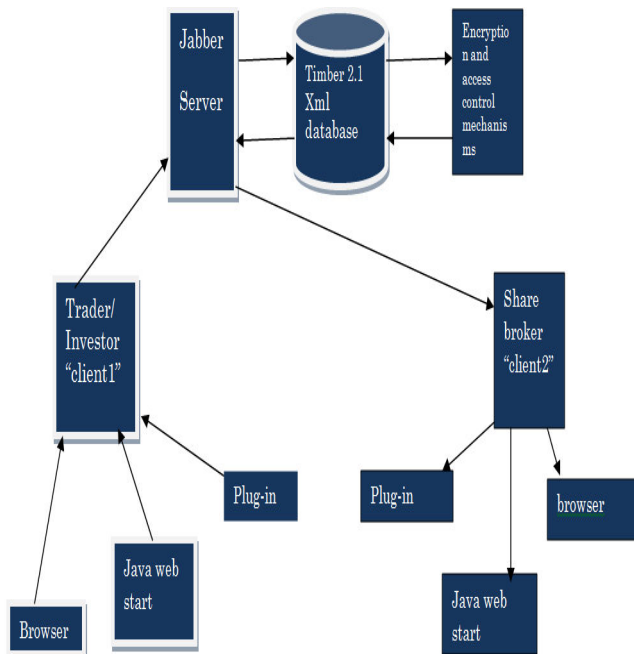
Figure 3: Client-Server communication

Figure 4: overall architecture

C. Architecture of Jargon Instant Messenger

The messenger's overall structure is represented. The clients of different computers are connected with the plug-ins. The plug-ins establishes connections from the browser to the server. The user profiles with captchas are recognized using Java MIDP applications and the details of the users are encrypted. The profiles are forwarded to jabber server. Here various attempts to integrate the features of other existing protocols such as sip, wap and http are made. The timber xml database is the back end storage for profile information. The gateways to connect other networks are available.

Optional interface applications to view the up to date text data, charts and graphs, to get text based or video based guidance from experts and to view previous day's report are provided to add features for the system.
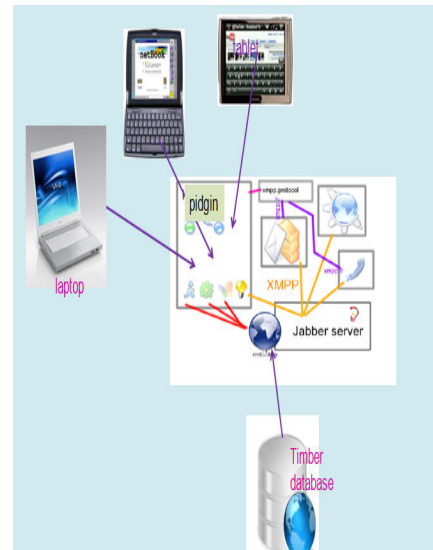
D. Data exchange in Intraday Instant Messenger

The working of "*Intraday mobile instant messenger*" is addressed below:

- The investor makes a request to the server using the browser start-up. This start up is run by the help of plug-in program.
- The investor is acknowledged with a screen of a user login, a password and a captcha. The login credentials are validated by the jabber server where the security mechanism of access control is established using xacml.
- The login credentials of the investors are stored in the form of xml streams in xml database Timber.
- The investor after passing the security check that he/she is an authorized client then the user types the message in the editing space provided in the browser.
- The option to send the message to the share broker who's in his/ her (investor's) contact is made. Here the security mechanism of encryption using xml-enc, JCA, JCE is applied.
- Investors can make use of the optional features such as seeking the expert's guidance; to view the graphical data. The share broker resides at the server side providing instantaneous updates to all his investors using the Jabber, Timber and xml technologies.
- The investor can quit from the chat stream whenever he/she wishes, such that the plug-in instantly disconnects the client from the server.
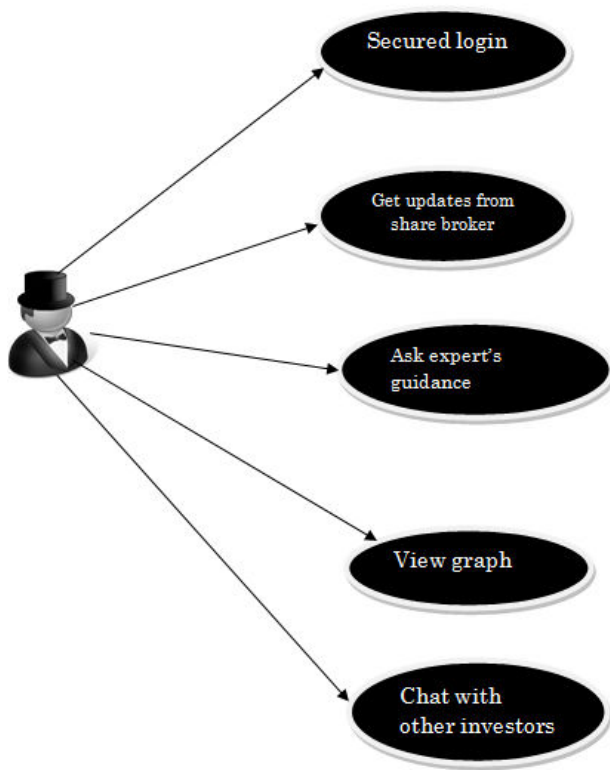
Figure 5: Data exchange in Intraday Messenger

E. Evaluation of client and server

The evaluation scheme for client and server denotes the internal working of client and server independently in *"IntradayInstantMessenger"*.
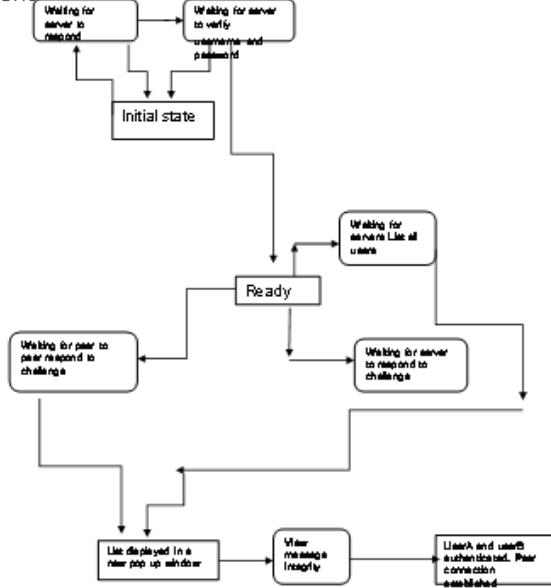

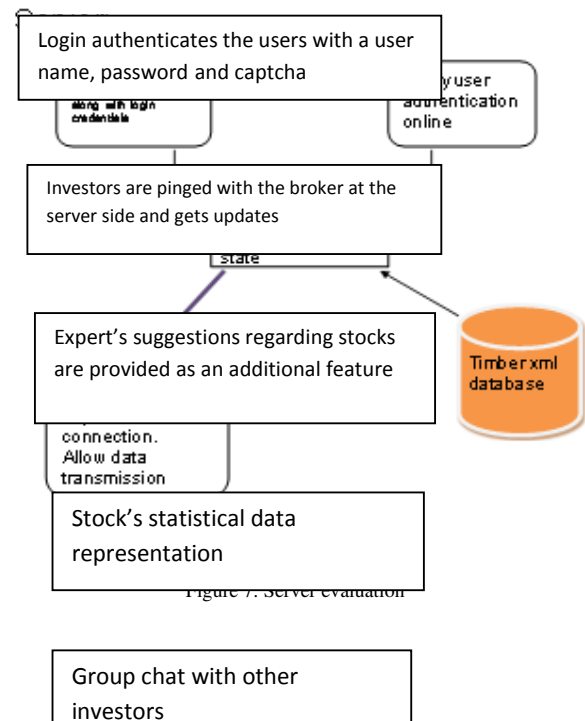Figure 6: client evaluation

Figure 7: Server evaluation

This messenger mainly targets at the attempt to connect the jabber server with Timber xml database, where no other existing messengers had done this ever before. The messenger has implemented the unique open sourced jabber presence protocol. This decision has been made by the comparative study made on the already available existing instant messaging protocols. The whole messenger is of xml based such that xml security using java technology is the main focus of this messenger. The extensions for file transfer, video and audio communications are under study. This system will sure increase the investor-broker relationships. The system is simple to install, maintain and to monitor. The system's main feature is it can support any number of investors connected to a share broker.

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