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Kerberos Based Electronic Tender system

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ABSTRACT
An electronic tender (e-tender) system is a system in which selling, buying and providing contract by the government with the help of online software. In this system the tender data is recorded, stored and processed primarily as digital information. In the modern world e-tender system is increasing speedily and the popularity of e-tender system need quality and security. In this paper a 'KBETS' is proposed which provides user to participating in tender nevertheless of the geographic locations and without worrying about security.
Keywords: KBETS, TGS, AS,Kerberos

I. INTRODUCTION

Current tender systems which were based on some rules for exchange and these rules were used for providing contract for goods or several other types of services and then selling the item up to the highest price. But this tendering system has several types of issues like large number of resources, higher cost, and different locations for different type of tender. To overcome these issues, in recent years e-tender system has widely used in many different formats. There are some popular tender algorithms such as English, Dutch, Vickery auctions and Sealed-bid used over the internet[1].

The popularity of e-tender system is increasing day by day ,due to this popularity the fraud related activities are also increasing[2].

In this paper, a model KBETS is proposed which uses concept of Kerberos. Users who are interested for e-tendering have to download an application on their mobile, now they are able to participate in e-tender and they will also be unaware from background processes. The basic purpose of this model of e-tender is to increase security and quality of an e-tender system.

II. RELATED WORK:

The first Web browser for the Windows and Macintosh platforms was released at the end of year 1993. The auctions were already in use even before the release of this browser with the help of email discussion lists and text-based newsgroups of Internet[3].

According to government records, a total of 52,33 tenders, worth Rs 19,131 crore, have been awarded through this system since it was instituted for the first time in 2008. At present, the PWD, with 1,154 tenders worth Rs 7,243 crore, is the top grosser in the list of departments that have gone the e-tendering

way. The decision to implement the e-tendering system follows an order by the Allahabad high court many years ago. In addition, the World Bank had also said it would not grant a development policy loan to UP unless a transparent e-procurement process was put in place. Following these orders, former chief minister Mayawati had introduced the e-procurement system in January 2008, but the practice was quietly dropped in 2010 without citing any reason. In 2008, as a pilot project, e-procurement was introduced in seven departments, including PWD and family welfare, which was plagued by the National Rural Health Mission scam. Later, it was also extended to four more departments in 2009 but dropped hurriedly in January 2010 because it was "too transparent" for comfort. This happened even though the same ministers had earlier approved the system after hearing of the project's successful implementation in Maharashtra and Karnataka. In May 2012, the SP government allowed e-tendering in the mining department, believed to be one department that is worst affected by rigging[7].

At present, 14 government agencies - PWD, industries, IT and Electronics, irrigation, mining, KGMU,cooperative federation, women's welfare, Jal Nigam, new and renewable energy development agency, health and family welfare, UPPCL, mandiparishad and the centrally-funded Pradhan MantriGrameenSadak Y ojana (PMGSY) - have adopted the e-tendering and e-procurement model[1].link

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Thiruvananthapuram corporation has invited e-tender for roadworks for the first time since electronic tendering has been introduced in the state. According to a report in the New Indian Express, all tenders under the public works section will now follow the e-tendering process[8]. e-Tendering will not only reduce corruption but will also make the task of the administration and contractors easier as they could

process the tenders from the comfort of their homes and would not have to deal with bulky physical documents.

CHANDIGARH: The Haryana Government has, for the first time, decided to introduce the concept of e-tendering to ensure more transparent and competitive bidding, Chief Minister Bhupinder Singh Hooda said here on Wednesday. He said the Haryana Public Works (Building and Roads) Department would procure all contracts through e-tenders for the recently sanctioned Pradhan MantriGraminSadakYojana Phase VII projects[9].

Recently it has seen that some websites are also used by thieves for the purpose of issuing false tender or selling stolen things to unsuspecting buyers[5]. paper According to the record of police there were above 8000 crimes which involves fraud or deception, stolen goods on e-Bay in the year of 2009[6].paper

III. THE PROPOSED ELECTRONIC TENDER SYSTEM

In this section an E-tender system called KBETS is proposed. This system covers three stages: Pre-registration, Post-registration & Retrieving e-Tender services. These three stages are labelled in later section. These three stages are described one by one.

3.1 Pre-registration stage

The customer, who wants to use electronic tender system, sends message to authentication server. The message contains VID card number and Credit card number. The authentication server will receive three things, VID card number, Credit card number & corresponding mobile number, which this message has contained. Authentication server will send user's mobile number to SIM card issuing company. The SIM card issuing company will send user's detail such as user's name, date of birth, address, father's name, e-mail id etc. Now authentication server will also send VID card number to VID card issuing authority. VID card issuing authority will send user's details such as user's name, date of birth, address, father's name, e-mail id etc, corresponding to that mobile number which are common to that send by VID card issuing company. Authentication server will also ask to Credit card issuing authority for credit information by sending the user's credit card number. The credit card issuing authority will send user's credit details such as user's previous profile, available credit corresponding to that credit card number. The authentication server will verify user's details provided by VID and SIM card issuing authority and also verify user's credit card information and will check that user is eligible to participate in e-tender or not. After successful verification, the authentication server will send one session key which is a randomly generated key and

one TGS key (which is generated with the help of VID and Credit card number) for Ticket granting server (TGS) to users which are encrypted with symmetric key by the authentication server and this symmetric key is already known to TGS. Now user will request for using services of e-auction system with TGS key. TGS will decrypt the TGS key with its own symmetric key and verify that user is authenticated or not. If user is verified then TGS will send one user-id and password with the address of application server to the corresponding user in ACK. There may be a scenario where user can change his/her mobile number in that case user has to send a message to authentication server. This message contains VID card number, Credit card number & old number which user has already registered for e-auction. After performing the above procedure, If successful registration is done, then authentication server will send a acknowledgement to user. This will confirm the user about successful updation in his/her mobile number[10].

3.2 Post-registration stage

In this phase user will request for e-tender application from the given application server address by TGS then application server will send an application on his/her mobile phone. After installing successfully, an icon will be displayed. Whenever user wants to use the e-tender services, he/she simply double click on that icon, after clicking on icon an interface will appear. User has to enter his/her user id and password and click on login button. After clicking on login button, an encrypted message will be formed and send to Application server this message contains user's login details, Application server will decrypt the received message and verified it. If it is successfully verified then application server will send an acknowledgement of validation, if it is failed then it will send an acknowledgement according to kind of failure that is occurred in the process of verification.

IV. THE PROPOSED E-TENDER ALGORITHM

The steps of KBETS model are given below:

A. *Pre-registration Stage*

1) User *Ui* sends his/her VID number V*id* and Credit card number in message.
2) AS receives message along with mobile number.
3) AS sends message to SIM card issuing company.
4) AS also sends message to VID card issuing authority.
5) AS also sends message to Credit card issuing authority.
6) AS verifies user validity and has not applied for registration before this.

7) AS will update its database and send ACK which contains session key and TGS key to user Ui.

8) Now user Ui will send the request Ri for e-tender system along with TGS key to TGS.

9) TGS will send the ACK which contains user-id and password to the corresponding user.

B. *Post-registration stage*

1) User Ui will fill the user-id and password and then click on login button.

2) After pressing on the login button it will generate an encrypted message.

3) Application server will receive and send acknowledgement of confirmation to the corresponding user Ui.
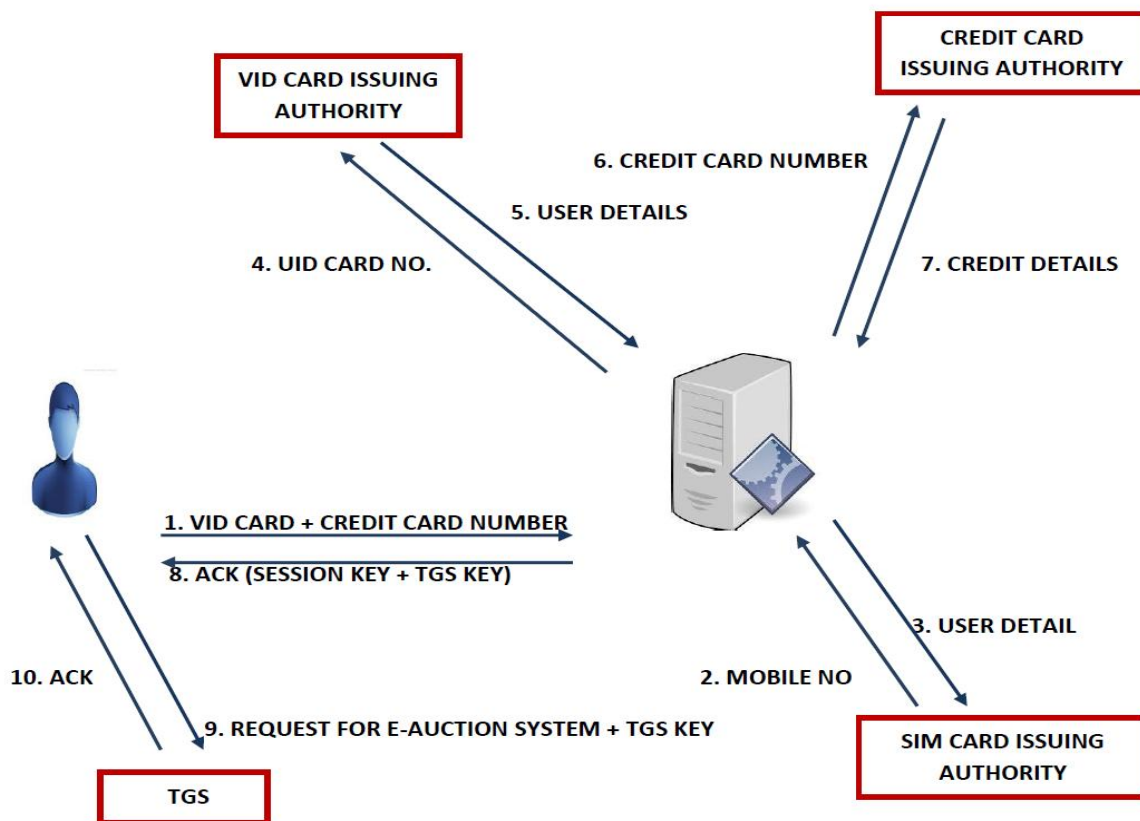
Fig 1: Pre-Registration stage

V. CONCLUSION

Kerberos based e-tender system assures a vision for providing security in the future, this system provides a secure channel which is used for providing communication between different entities. Apart from Kerberos's many strengths, it has some weaknesses and some limitations[11].

In this paper a KBETS model is proposed, which can handle all earlier issues occurred in a traditional tender system, KBETS model provides security from unauthorized happenings like selling of stolen things, occurrences of frauds during buying and selling, security threats by attackers and intruders. Purpose of this model is to enhance the level of security during an e-tender process so that user can trust the system and user can easily use the e-tender system without any hesitation. This model is secure, easyto understand and transparent and it can also be used with some other technologies.
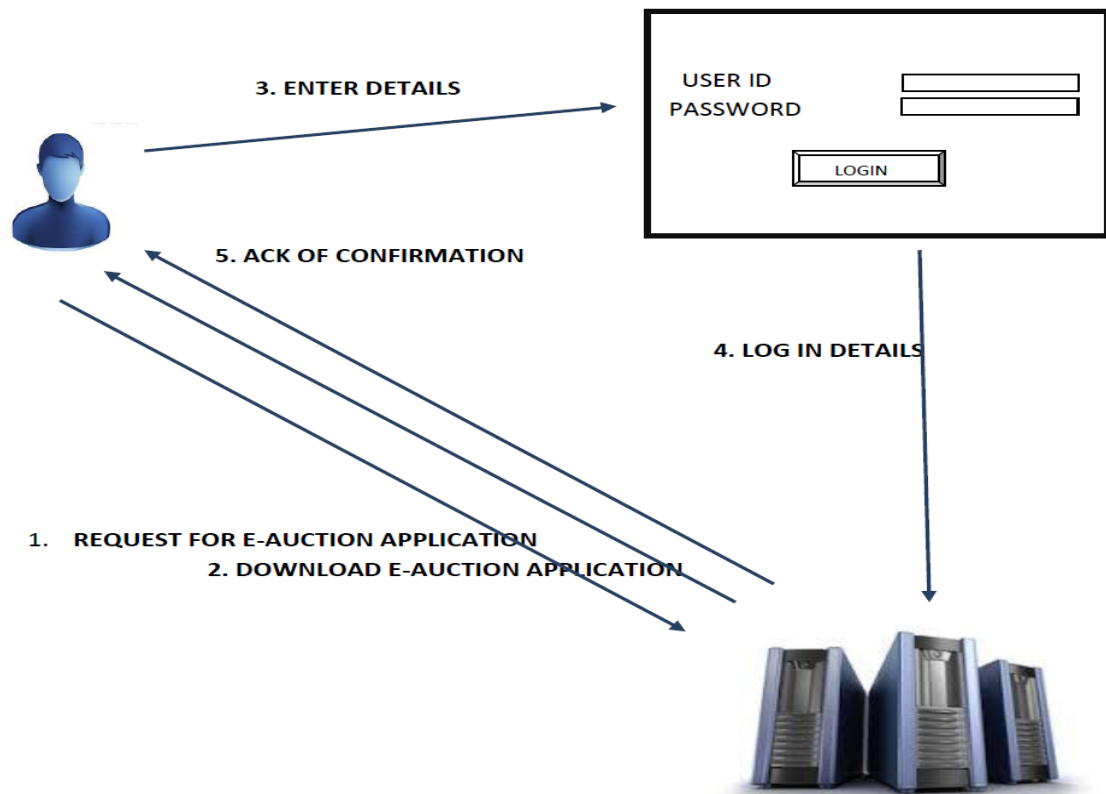
VI. ACKNOWLEDGMENTS

Fig 2: Post-Registration stage

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