A Novel Way of Localizing and Providing Secure Transaction to ATM over Cloud

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Abstract---The use of mobile phone devices is expanding rapidly and they become essential tools that offer competitive business advantages in today’s growing world of global computing environments. A Mobile phone device is a suitable tool for authentication that could provide powerful and easy to use device to access any service securely such as an ATM terminal as well as would increase the level of protection for critical and sensitive information. Here we present a application that provides more secure ATM authentication using pin on a mobile phone device under the restriction that no changes can be made to the existing physical infrastructure, which eliminates the tradition of carrying ATM Card while accessing ATM machines and also reduces the time by localizing nearest working ATM machine available as per the user’s request using cloud.

Keywords: Authentication, Security, OTP, Localization

I. Introduction

ATM is an electronic telecommunications device that enables the customers of a financial institution to perform financial transactions, particularly cash withdrawal, without the need for a human cashier, clerk or bank teller. [1] On most modern ATMs, the customer is identified by inserting an ATM card with a magnetic stripe or a plastic smart card with a chip that contains a unique card number and some security information. In every ATM, authentication is provided by the customer entering a Personal Identification Number(PIN). In our proposed system we do not make use of ATM cards instead we provide them with a mobile application.[2] We provide PIN to the mobile application which is sent to the customers mail to authenticate them i.e., Once the user is authenticated, customers can access their bank deposit or credit accounts in order to make a variety of transactions such as cash withdrawals, check balances through mobile phones[7][9].

II. Existing system

In any ATM, the customer can insert their ATM cards given by their banks and they are authenticated by giving the Personal Identification Number (PIN). [4] If they are authenticated they can access their accounts and perform variety of transactions like cash withdrawals, check balance etc.

A. Limitations of Existing system

Authentication is provided by the Personal Identification Number (PIN). [5] If a hacker or any other person other than the account holder gives the correct PIN, then he can perform transactions and withdraw money. This system is not so secure. Added to this in the real-time scenario, when a person finds an ATM location and reaches there and comes to know that the machine is not in working condition. His search goes in vain; the proposed system overcomes this disadvantage.

III. Proposed system

We propose a new system of ATM which authenticates user by mobile application through PIN and allows accessing their bank account details. We provide each customer with a mobile application which helps the customer to identify the nearby working ATM’s as well as helps to know which ATM has sufficient balance to serve the purpose of the customer[6]. We use computers in a network to illustrate this working procedure. Networking is used as the communication between server and ATM with socket programming. One computer will be considered as Server, which contains all the banking details like account, account details, PIN etc. Each
node will be used as ATM-computers. The customers have to provide their PIN for authentication i.e., PIN authentication system is used – When the user sends request from the registered mobile number, the PIN will be generated and active for ‘n’ minutes. If their PIN matches with the one stored in database, then customer is allowed to access his account details. As far as challenge of finding a working ATM is considered, this is ensured by sending the UDP hello messages to the server by the ATM to ensure it is in working condition.

A. System Architecture

The architecture explains the working of the proposed ATM system i.e., in the first phase the ATM is registered in particular location, after registering in order to verify whether the ATM is of particular bank, the ATM sends a request to bank admin to approve the ATM. This request is to admin of bank through cloud then the admin can approve or reject the request. Here admin also plays a vital roles as shown in the architecture. The user will be given a application in which he enters his account number and PIN to login. The user has also an option to search nearby ATMs which are in working condition. [3] After searching the ATMs the user decides to move to the nearby ATM and when he enters the ATM counter and provides necessary credentials and logs in, an OTP is generated to user mobile if the user enters the OTP and if it is valid he can perform necessary transactions.

The proposed ATM authentication protocol offers more features over the existing one. It requires no modification or change in the current infrastructure setup. It utilizes the current communication channel between the ATM terminal and the banking system. Additionally, it does not require adding any new hardware to the existing ATM components. It just needs to update the current
software of the ATM terminal with a new feature that automatically senses and displays them in the screen. It uses a feature as a third layer of authentication using PIN.

B. Cloud and its uses

Cloud computing is set of resources that are being allocated on demand. Cloud computing proposes new ways to provide services. These new innovative, technical and pricing opportunities bring changes in the way business operated. Cloud computing is the matchless computing technology. Cloud computing is a new label to an old idea. Cloud computing is a collection of resources and services provided by cloud service provider through internet. Cloud services are distributed from data centres sited all over the world. Cloud computing makes possible for its users to use the virtual resources via internet as per their requirements.

In our proposed system cloud plays an vital role. It helps to store the customer database as well as helps to communicate between customers and ATM’s. It also helps to generate PIN for the customers.

C. Modules

The project contains the following functionalities/modules.

1. Registration

When users register to our application, they provide their personal details like name, bank details, account details, etc. These details will be sent to admin (server) for verification. If the bank account is blocked, then user is rejected, else he will be approved.

2. Storage management

All the users’ details will be stored in cloud like name, bank details, account details, mobile number, PIN etc.

3. Location

The user can be at different cities, by the help of GPS, user location and nearby ATM location is found. The user can locate for a nearby ATM which is in a working condition using Global Positioning System (GPS).

4. Balance Enquiry

User can enter the required amount and the application finds out whether which ATM has so much balance in ATM and can suggest that ATM[8][10].

VI. Conclusion and Future Enhancement

We detailed and explained our proposed mobile application that exploits the use of PIN feature on a mobile phone device to provide a strong authentication method in accessing an ATM terminal which eliminates the usage of physical ATM card. We have also minimized the time taken in finding nearest and working ATM machine. As a future work we can make this application to deliver messages informing the low balance on the ATM machines to the customers.

REFERENCES

