Mobile Application for Secured Payment System during devastation

Dr.T.Subha[1], Gayathri Parthasarathy[2]
[1]Asso. Prof, Sri Sai Ram Engineering College,
[2]Associate Software Engineer, BNP Paribas.

Abstract— Due to unconditional circumstances especially in a disaster zone people cannot afford for food and other facilities provided by some vendors. To avoid the situation and to help the people affected by the disaster, we propose a system which perform transaction in offline mode through secure payment system using MANET(Mobile Adhoc NETwork). In this secure payment system the customer will send a purchase request to the bank via multiple nodes, the bank will generate a QR code with digital signature after ensuring the customer's account information. Quick Response code (QR code) will be generated by the issuer (Bank) at the time of payment process. The merchant will scan the customer's QR code and the amount will be credited to the mechant's account. The QR code will become invalid once validated. One of the biggest advantage of our proposed system is that it is impossible for the intruders to hack the customer account since payment system is done via QRcode.

Keywords—Endorsement, mobile adhoc networks (MANETs), mobile payment system.

I.INTRODUCTION

A disaster is a serious disruption occurring over a relatively short time of the functioning of a community or a society involving widespread human ,economic or environmental loss and impacts .A disaster
area is a region heavily damaged by either natural, technological or social hazards. Disaster areas affect the population living in the community that damage leads to economic loss. After the immediate danger of a disaster has passed individuals should continue to exercise caution in their homes The impact is leaving people in a disaster area without cash-at-hand to purchase
and communities to stay safe during the recovery process and some volunteers or government should provide necessities like food and medicine. The Government or volunteers will provide emergency goods to the disaster affected people. The reason for providing predicament goods transportation is to rapidly provide the predicament supplies for the disaster affected people that needs coordination for to allocate the necessary goods to the required location. In the existing system people can purchase goods only through online mode where network availability is a great deal in the disaster area. Consequences arises when using earlier system is people can purchase only if they have proper network connection and its impossible to perform immediate transaction in the disaster area. Carrying real cash is meant to be easiest way to purchase, it is not possible to get cash in a disaster situation because access to a bank might be restricted.

Figure 1, Picture demonstrating the natural disaster (a catastrophe)

To enable transactions in a disaster area, infrastructure-less mobile payment system is used. In which will utilize mobile adhoc networks (MANETs) formed by widely used smart mobile phones. Many payment systems provide electronic currency services, but none solved the payment challenges in a disaster area. In the proposed system we introduce offline money transactions to purchase goods in unconditional situations.

The main contributions are summarized as follows.

1) First, we convey a secure mobile payment system to allow e-commerce in disaster areas.

2) Second, we use Multilevel Endorser method (MLE) and QR code to perform purchase transaction.

II.EXISTING SYSTEM

The existing system consists of two operation modes:

I. Internet mode

II. Offline mode (MANET mode)

The first mode is the Internet mode, which functions like normal online payment system and it is used when network is available .The second mode is the MANET mode or offline mode, which is used in unconditional situation. When there is a disaster, the system automatically switches the operation mode from the Internet mode to offline mode.

The following are the process in the Existing system:

1)First, the customer and the merchant will register to join the system(The bank will sign the customer's photograph with the bank's digital signature).

2) The customer will give the list of users who will serve as his/her advocacy in the system before the disaster occurs. The advocacy selection will be used only in the MANET mode. If the user agrees to endorse the other specific users account , the user will deposit the real cash in the bank. and there won't be any direct connection to the bank in the disaster area, the deposited money will be converted to e-coins that would be used in the disaster areas to confirm whether an endorser has adequate amount to endorse other user's transaction when the purchase of an item is started. The bank generates e-coins equal to the amount deposited.

3)The customer will send a payment request to the merchant.

4) The merchant will check for the customer's identity(Digital photograph with bank's digital signature).

5)If the verification is valid Merchant will send all messages to the bank if the IDs are valid. These messages take two days to reach the bank as there is no direct communication to the bank.

6) After merchant sends all the messages to the bank, the merchant will give the item to customer.

III .PROPOSED SYSTEM

In this section, we introduce a concept called secure payment system that can used in unconditional situations like disaster and we can perform secured transaction in offline mode using MANET and it also uses QR code that will be generated by the bank at the time of transaction.

Participants

The Participants in our system are Customer, endorser, merchant, and bank in the payment system. All users communicate through MANETs.

1) *Merchant*—One who provides goods. 2) *Customer*— One who buys goods from a merchant.

3) *Endorser*— One who agrees in advance to make payments for the customer, if the customer fails to pay.

5) *Bank*—An organization that maintains users' accounts and allows transaction between them.

A merchant submits a registration request to the bank to join the mobile payment system. Then the bank accepts the registration request and a public key from the merchant.

The detailed implementation of our system is explained below:

Registration:

In this process the customer and the merchant will register with bank to perform the operation.

1) Merchant Registration: The merchant will submit a registration request to the system.

2) Customer Registration: The customer will submit a registration request to the system to participate in mobile payment system.

3) Advocacy Selection: The customer will give the list of users who will serve as his/her advocacy in the system before the disaster occurs. The advocacy selection will be used only in the MANET mode.

Providing Authentication and Security

In a disaster area, verifying a customer's identity would be difficult to access the bank, due to the lack of a communication infrastructure. In our system, we proposed to use the QR code which is one time validation..

The methodology to purchase any item in a payment system is given below.

1) The customer will send a purchase request to the merchant.

2) In the bank the customer's account balance would be checked and it will accept the transaction if the balance is enough to perform the transaction.

3) The bank will generate a QR code after validating the user account information and it will reach the customer by multilevel endorsement scheme

4) The merchant will scan the user's QR code the amount will be credited to the merchant account then the QR code will be invalid

5) Incase if the customer does not have enough money in his account to perform transaction the amount will be transferred from advocacy account to merchant account and this can be done during MANET (mobile adhoc network) mode

6)Thus the proposed system overcomes the difficulties like purchasing the necessary things in offline mode and additionally immediate transaction between merchant and customer is performed.

IV.CONCLUSION

In this paper, we propose a new secure payment system which utilizes MANETs to enable users to purchase goods during disaster. This system aims to provide a reliable endorsement mechanism, The advocacy will provide absolute payment for every transaction between a customer and a merchant, therefore allowing transactions using mobile phone in disaster areas since access to the bank is restricted.

By implementing various strategies like Bloom filter, the blind signature, the event chain, location and road monitoring system, the proposed secure payment system will provide reliable transactions, which prevents from fradulent usage and double spending attacks. This system also reduces communication overhead and time to complete the transaction. Simulations confirms that our endorsement based secure payment system is useful during disaster

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