ISSN (Print) : 2319-5940
ISSN (Online) : 2278-1021

International Journal of Advanced Research in Computer and Communication Engineering
Vol. 2, Issue 4, April 2013

PROPOSED GATEWAY SERVER FOR E-PAYMENT

Miss. Anuja K. Pande[1], Prof. A. B. Deshmukh[2], Prof. M. D. Tambakhe[3]

ME (CSE) Amravati University, Amravati, Yavatmal, (MH), India[2]

CSE, Amravati University, Amravati, Yavatmal, (MH), India[3]

ABSTRACT: In this paper a brief overview of electronic payment gateway is provided. This paper addresses the requirements for an electronic payment gateway from both the customers and the merchants' point of view. Most of the population doesn't trust on the local existing online payment gateway because it is not very secure. Mostly people want to adopt electronic payment system as it has lots of advantages. They need such a gateway that fulfill their all requirements and provide security, privacy etc. On the basis of these requirements and the local infrastructure, we propose an electronic payment gateway for local environment.Electronic payment systems securely process such payments and can be implemented by merchants themselves on their own web servers or alternatively, they can be provided to merchants by third party e-payment service providers. This paper describes the mode of operation of a broad range of e-payment systems available today in order to provide a comparative evaluation of their advantages and disadvantages. The analysis is presented in terms of the features of each system and discusses the advantages and disadvantages to the customer, the merchant, the e-payment service provider and the financial institution.

Keyword: E-Commerce,Gateway,E-payment, Electronic Payment Gateway

I . INTRODUCTION

The Gateway is called as Trusted Third Party or Entry point to any network. Use in E-commerce system for more secure transaction.Online shopping allows customers to sit in their homes and buy goods from all over the world. Similarly allow Merchant to sell their products to all over the world from home. Most of the population will use online payment in near future. Most of the Third world countries lagged behind in making a good Internet architecture. There is need of a secure online payment gateway in developing countries. On the basis of proposed architecture of e-payment system of third world countries, this paper gives a brief overview of existing electronic payment gateway. It also mentioned the requirement for an electronic payment gateway from customer and merchant's point of view. And on the basis of these facts and figures a new secure e-payment gateway has been designed and developed. The payment gateway would provide secure transactions.On the basis of proposed architecture of epayment system of third world countries and the requirements related to any electronic payment gateway, we design and develop a Secure, reliable and efficient electronic payment gateway.

In USA about $3.5 trillion pours daily through three major payment networks that dwarf the Bank of New York's. The networks, run by banks and the government over high-speed phone lines, converge at just 10 secret data processing centres nationwide. They transmit everything from direct-deposit pay checks to utility bill payments to huge corporate transfers in the USA and abroad. PayPal in the US, which was recently purchased by EBay, is one of the most frequently used e-payment gateway. In China payment gateway is the single biggest unmet demand because of lack of trusted and secure mechanism. Turkey's payment gateway is difficult to use insecure and highly expensive. In Nepal there are around 3three banks that are offering Internet Banking Services and majority of middle class are out of such services.

II. PRELIMINARIES

Online customer:
A customer is an entity who will buy products by making payments in timely manner.
.

Merchants:
A merchant is a seller who will receive paymentsmade by customer.

Banks:
Two banks are involved.
1. Client bank
2. Merchant bank

Client bank:
Client bank holds client's bank account and validate customer during account registration.

Merchant bank:
Merchant bank holds merchant bank account. It is responsible of management, fraud control etc. A merchant account is a type of bank account that allows businesses to accept payments by payment cards, typically debit or credit cards. A merchant account is established under an agreement between an acceptor and a merchant acquiring bank for the settlement of payment card transactions. In some cases a payment processor, independent sales organization (ISO), or merchant service provider (MSP) is also a party to the merchant agreement.

Payment Gateway: A payment gateway is connected to all customers, merchants and banks through Internet and responsible for the speed and reliability and security of all

ISSN (Print) : 2319-5940
ISSN (Online) : 2278-1021

International Journal of Advanced Research in Computer and Communication Engineering
Vol. 2, Issue 4, April 2013

transactions that take place. A payment gateway is an e-commerce service that authorizes payments for e-businesses and online retailers. It is the equivalent of a physical POS (point-of-sale) terminal located in most retail outlets. A merchant account provider is typically a separate company from the payment gateway. Some merchant account providers have their own payment gateways but the majority of companies use 3rd party payment gateways.

The gateway usually has 2 components:

a) the virtual terminal that can allow for a merchant to securely login and key in credit card numbers or

b) have the website's shopping-cart connect to the gateway via an API to allow for real time processing from the merchant's website.

III. FRAMEWORK OVERVIEW

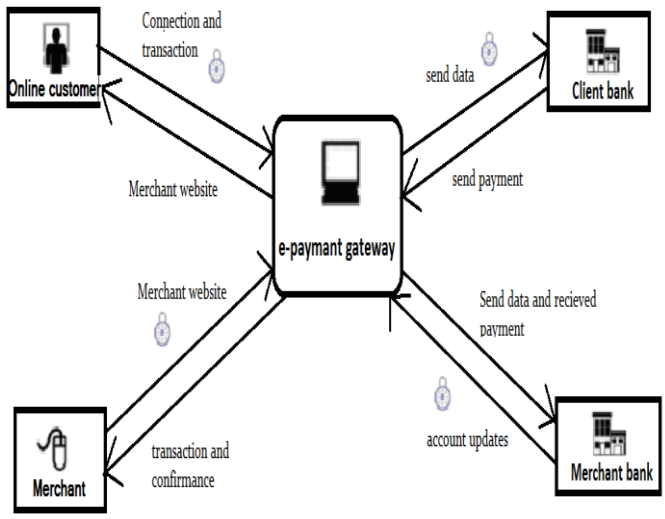

Fig.1: Proposed Gateway Network

There are five interfaces.

1. Customer Interface
2. Server (e-payment Gateway) Interface
3. Client Bank Interface
4. Merchant Bank Interface
5. Merchant Interface

Online Customer will connect to e-payment gateway through Internet. Gateway will connect to the Bank and check whether its bank accounts are enough to buy the required product. Onlinecustomer can also visit Merchant's website through Gateway. Secure Pay provides a payment gateway that facilitates electronic commerce by enabling merchants to accept credit cards and electronic checks as methods of payment for goods and services sold online.

The gateway acts as a bridge between the merchant's website and the financial institutions that process payment transactions. Payment data is collected online from the shopper and submitted to the gateway for real-time authorization. However, the payment gateway is targeted towards merchants that process Card-Not-Present transactions. In a Card-Not-Present

We proposed a model of electronic payment gateway on the basis of requirements of an electronic payment gateway in developing countries transaction, the merchant and the shopper are not in the same physical location and the customer usually calls in the payment data or keys in the details of the credit card on a website. All e-commerce and mail/telephone orders are Card-Not-Present transactions.

IV. PRELIMINARY TERM

Privacy: It is necessary to assure privacy in the payments like bank accounts.

Naming: There should be a way of identifying the customers bank accounts and the merchant bank accounts.

Security: In gateways security should provide toprotect data of transactions.

Integrity: Data should be difficult to change.

Confirmation: When transaction took placecustomer must have notification and merchantmust have confirmation

Confidentiality: Any third parties should not beable to access or view such payment

This system specially developed for developing countries where a person doesn't go for online shopping because of security issues. Here we use electronic gateway which is used for secure transactions between client and merchant. If new user wants to do transaction then he/she should register Himself/herself first through registration form then browse merchant website using e-payment gateway.

Select item and encrypt payment request and send it to Server. Server receives encrypted message from sender, decrypt message, read, encrypt it using its own keys and send it to Client bank. Client bank transfers the required amount to the merchant bank through secure network. After receiving the fund Merchant bank sends the payment.

ISSN (Print) : 2319-5940
ISSN (Online) : 2278-1021

International Journal of Advanced Research in Computer and Communication Engineering
Vol. 2, Issue 4, April 2013

V. Flow Diagram

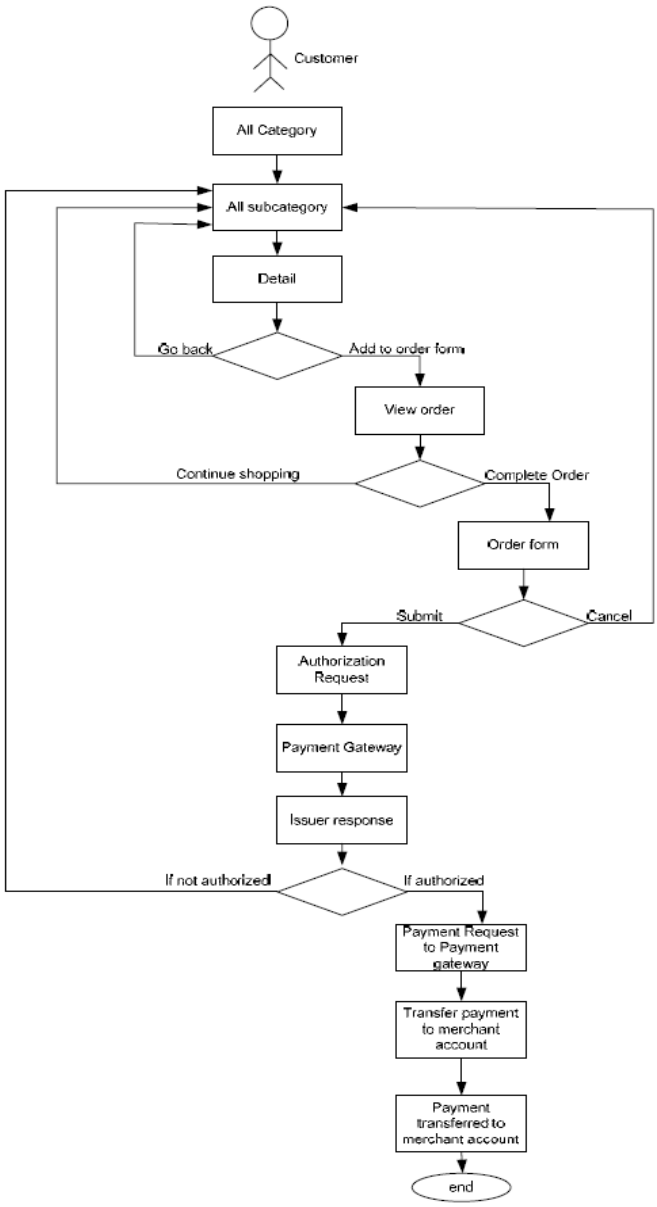

Figure no. 2: Flow diagram of proposed gatew

Fig.2: Flow Diagramof electronic payment gateway.

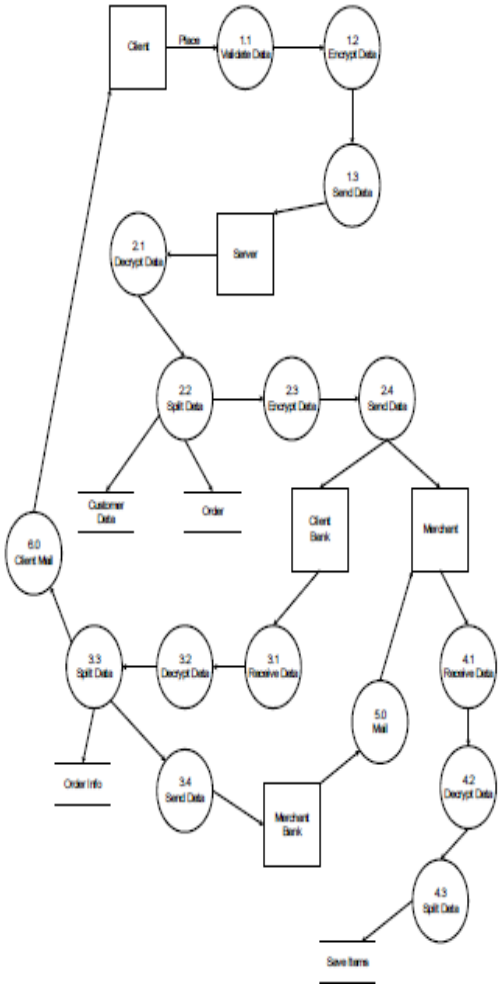

Fig.3: Working of electronic payment gateway.

VI. TECHNIQUES & ALGORITHM

There are various algorithms on actions of client ,merchant

a) Algorithm of Client:
Client can browse merchant's
website. After selection of items he can send payment order to e-payment server after filling required fields e.g. Credit card no., expiry date etc

Client:
Start and connect
Start Customer browse merchant website
If select Category then
Go to Item list of selected category
If Select Item
Then Show detail of selected item
If Want to buy selected item
Then select Add to order form
Else Go back to category
If select add to order form
Do Add To Order Sub Category Id
go to Order form and fill required fields like
credit card No., expiry Date, and telephone no,
Address
Select Submit
Else continue shopping
Else Cancel
If select submit Display Authorization
If Credit card no. Text is equal to Credit card
no. display This Customer is Authorized From Bank

b) Algorithm of Payment gateway: Server receive payment order sent by clients, decrypt and encrypt that message and send it to Client bank. Client bank will send a payment deduction message to server and server will send it to Merchant Bank. Merchant bank will send an

ISSN (Print) : 2319-5940
ISSN (Online) : 2278-1021

International Journal of Advanced Research in Computer and Communication Engineering
Vol. 2, Issue 4, April 2013

acknowledgment message to Server and server will send it to merchant.

Payment gateway:
Start connection
If connected
Receive payment message
Else display Not Connected
If receive payment message
{Decrypt message
Split and send it to different textboxes
Add to database
Sent it to Client bank}
Else Cancel
If client bank is sending message
{Receive it
Send it to merchant bank}
Else wait
If merchant bank is sending message
{Receive it
Send it to Merchant}

c) Algorithm of Client Bank: Client bank receives payment message and verify client. Deduct amount from client bank and send that amount to payment gateway.

Client Bank:
Start connection
If connected
Receive payment message including client's info
If client's info is present in database of bank
Send message to server This customer is Authorized
Else Send message This customer is not Authorized
If customer is Authorized
{Save payment request into database
Deduct amount from Client bank Send that amount to Payment Gateway}

d) Algorithm of Merchant Bank: Merchant bank verifies merchant, receives payment message from Client bank through payment server and add payment to Merchant's account.

Merchant Bank:
Start connection
If connected
Receive payment message including merchant account no.
If merchant's account is present in database of bank
{Receive payment Add payment to Merchant's account}
Else Send message Invalid account no.

e) Algorithm of Merchant: Merchant makes and updates website and receives acknowledgement messages from payment gateway.

Merchant
Start connection
If connected
{Make and update website
If server is sending message
Receive message and decrypt it}
Else retry to connect

.VII. EXPERIMENTAL RESULTS

1. Graphical result of survey:

A survey was carried out of various users in three different areas for finding the reason that why people don't use payment gateway and wrote it by compiling the average results of mentioned questions.

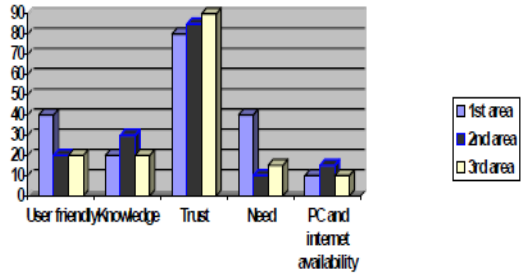

Fig.4: Graphical result of survey

a. User Friendly: People want a payment gateway which should be easy to use.
b.Knowledge: Some people don't know anything about payment gateway.
c.Trust: Mostly people don't use it because of lack of trust.
d.Need: Some people thinks there is no need of e-payment gateway.
e.PC and Internet availability: Limited access of PC and internet.

2. Graphical result of proposed gateway:

Graphical result of proposed gateway isfollowing,

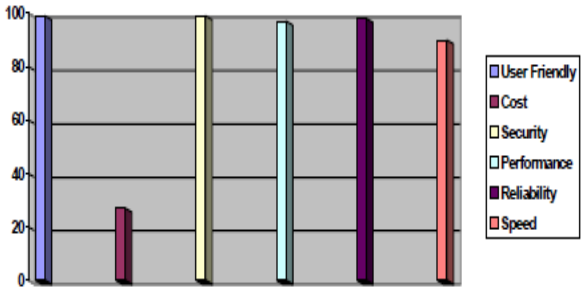

Fig.5: Graphical result of proposed gateway

As compare to other e-payment gateways our proposed system will be more secure and do transactions in less time as compare to other gateway. Proposed system will be inexpensive as compare to existing systems

a. **Time**: Time of transaction
b. **Cost**: E-gateway's charges per transaction
c. **Availability**: The degree to which egateway is operable
d. **Security**: Overall security related to electronic gateway

ISSN (Print) : 2319-5940
ISSN (Online) : 2278-1021

International Journal of Advanced Research in Computer and Communication Engineering
Vol. 2, Issue 4, April 2013

VIII. COMPARISON BETWEEN TDES AND OTHER TECHNIQUES OF ENCRYPTION:

DES (Data Encryption Standard) is a 56 bit key encryption standard. But it was problematically short. Therefore, its improved standard was developed, called Triple DES. It uses 168 independent key bits. That has been used in Proposed gateway. There is latest improvement known as AES (Advanced Encryption Standard) but it is very slow. So, Triple DES is considered to be more secure and fast Experiments were carried out to compare DES,TDES and AES encryption standards. The results are as follows: Time was compared for encryption. If there is large number of transactions, time assumes importance.

IX.FUTURE SCOPE

1. As the requirements of speedy processing of daily transaction is becoming the basic need for every area business. Therefore everybody is adapting computer technology for his or her business.
2. The "design and implementation a Gateway Server for E-Payment system" is a big and ambitious project. I am thankful for being provided this great opportunity to work on it. As already mentioned, this project has gone through extensive research work. On the basis of the research work, we have successfully designed and implemented a Gateway server for E-Payment system.

X. LIMITATIONS

- Computer cannot replace human judgment & Decision-making.
- For transaction through E-Payment Gateway, user must have account in the bank which is registered on E-payment Gateway.
- The Availability of Gateway must be high to be used by online customers.
- Cost factor must be minimum so it can be afforded by customers

XI. CONCLUSION

The proposed architecture is made secure by the implementation of secure electronic transaction methods. Because of this only authentic customers can now buy products from merchant's site whose bank accounts is enough to buy the required product. The electronic payment gateway is made secure enough that any authorized customer can easily trust on it and fearlessly or confidently make payments over the Internet. At first it's checked if the customer is authorized one or not then the whole transaction takes place.E-payment gateway that fulfill their all requirements and provide security, privacy etc. On the basis of these requirements and the local infrastructure, we propose an electronic payment gateway for local environment.

ACKNOWLEDGMENTS

We acknowledge our senior faculty who has provided us their views in the selection of topic.

REFERENCES

[1] Aboba, B., Arkko, J., Harrington, D. 2000. Introduction to accounting management. RFC 2975 (October).
[2] Ailya Izhar, Aihab Khan, Sikandar Hayat Khiyal, Wajeeh Javed, shiraz Baig "DESIGNING AND IMPLEMENTATION OF ELECTRONICPAYMENT GATEWAY FOR DEVELOPING COUNTRIES" vol. 26 No.2 April 2011
[3] Book "cryptography and network security: Principles and practice" by William stalling 3rd edition, vol: 7, August 2004
[4] Hakala, H., Mattila, L., Koskinen, J-P., Stura, M., Loughney, J. 2005. Diameter creditcontrol application. RFC 4006 (August)..
[5] Rosenberg, J., Schulzrinne, H., Camarillo,G., Johnston, A., Peterson, J., Sparks, Handley, M., Schooler, E. 2002. SIP: Session Initiation Protocol. RFC 3261(June).
[6] Wondwossen Tadesse, Tsegaye G/Medhin, Solomon Atnafu, Dawit Bekele:"e-Paymentin Ethiopia: Challenges and Opportunities"Forum on ICTs, Trade and EconomicvGrowth. March 14 – 16, 2006
[7] http://www.usatoday.com/tech/news/2001/10/ 29/ financial-networks-safety.htm accessed on 09 Dec 2010 (DATE)
[8] http://iisdb. stanford.edu/docs/189/epayment_bin_tan g.pdf accessed on 09 Dec 2010