

# A Review: Secured Electronic Payment Gateway

Krantee Jamdaade, Hetal Champaneri

Associate Professor, Department of MCA, LBHSST, Mumbai, India  
Student, Department of MCA, LBHSST, Mumbai, India  
Email: krantee\_jamdaade@yahoo.co.in; hetu.chauhan99@gmail.com

**ABSTRACT:** In this paper we review a secure e-payment system for online transaction. The e-payment system is to be secure fore-transaction included participants such as Payment gateway, Bank and Merchant. Electronic payment system is the online processing of exchanging information between included participants. Basically the main goal of e-payment system is to perform transaction from anyway as well as for fast processing rather than manual. The electronic payment process gives a way to do online transaction for doing activities such as placing order, money transfer, etc.

**Keywords:** Payment system, E-payment, Electronic payment, Payment Gateway

## 1. INTRODUCTION

Nowadays online shopping increase in market, use of E-payment gives more important benefits to merchants as well as customers. All online transactions must pass through a Payment Gateway to be processed. In effect, Payment Gateways act as a bridge between the merchant's website and the financial institutions that process the transaction. Here we are talk about the only payment is made by the means of a credit card/ Debit card, and the goods need to be shipped physically [2]. E-payments services are a convenient and efficient way to do financial transactions. Internet is not secure media. Customers can purchase online through different methods such as, Electronic Fund Transfer (EFT), Credit cards, Debit cards, etc.

## 2. LITERATURE REVIEW

### 2.1 "The Empowered Internet Payment Gateway" by Ved Prakash Gulati and Shilpa Srivastava

All online transactions must pass through a Payment Gateway to be processed. In effect, Payment Gateways act as a bridge between the merchant's website and the financial institutions that process the transaction. Internet payment gateway is gate for making online transaction possible. By using payment gateway, transactions perform faster than old system. It is more secure as payment gateway proves secure tunnel to do payment. Payment gateway acts as the mediator between user bank and merchant bank. Also do verification of their details and make appropriate message to send information. Different payment systems are developing as internet-based so it becomes more faster than manual system. For every transaction it need to create tunnel so it takes more time to process, so better to use "National Internet E-Commerce Payment Gateway", which will act as an integrated payment service. Main components which are involved during online transaction:

- Authorizing – Approving the buyer's details
- Clearing – Sending details of transaction to merchant's bank
- Reporting – Tracking all transactions [1]

### 2.2.1 Basics of Payment Gateway:

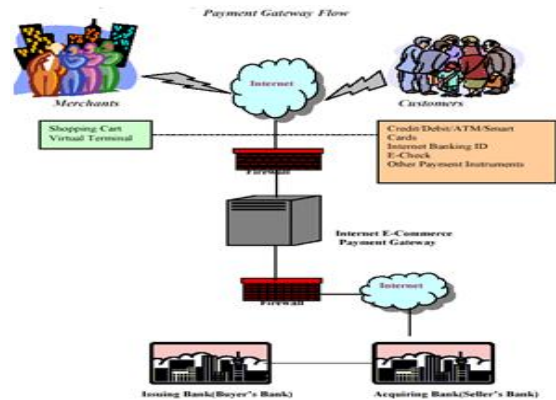


Figure 2.1.1: Payment Gateway Flow  
[Source adopted from [1]]

Steps Involved in a Payment Gateway Transaction:

- Step 1 – Consumer visits a shopping website and selects the goods or services and clicks on the "Buy" button. A message is sent to the website regarding the consumer's desire to buy and make payment.
- Step 2 - The Web store's server, after receiving the message from the buyer, adds its digital certificate to identify the mall. This message is now called a "Digital Order" and also includes the consumer's IP address and transaction amount. The Digital Order is now sent to the Payment Gateway over a secure network. Security is ensured by data encryption.
- Step 3 - Based on the Digital Certificate, the Payment Gateway authenticates the web store.
- Step 4 - The Payment Gateway offers various payment options on a screen to the buyer.
- Step 5 - Buyer chooses the desired payment option, which is transmitted via the secure link to the Payment Gateway.
- Step 6 - The Payment Gateway sends the payment details to the acquiring bank (in case of card transactions) or seller's bank (as termed for other instruments).

- Step 7 - The acquiring bank sends the information to the buyer's issuing bank (in case of card transactions) or buyer's bank (as termed for other instruments) over a secure link.
- Step 8 - Based on the credit limit and the payment instrument's validity, the issuing bank either accepts or rejects the transaction. The confirmation/rejection message is transmitted to the Payment Gateway through the acquiring bank.
- Step 9 - The Payment Gateway then transmits digital receipts to the shopping site as well as the buyer.
- Step 10 – The web store can ship the goods/services to the buyer. [Source adopted from [1]]

**2.2 “A Review: Secure Payment System for Electronic Transaction” By Ajeet Singh, Karan Singh, Shahazad, M.H Khan, Manik Chandra**

E-payments services are a convenient and efficient way to do financial transactions. Internet is not secure media. Customers can purchase online through different methods such as, Electronic Fund Transfer (EFT), Credit cards, Debit cards, etc. Here we are talk about the only payment is made by the means of a credit card/ Debit card, and the goods need to be shipped physically [2]. A payment gateway facilitates the transfer of information between a payment and the Front End Processor or acquiring bank. There has been a requirement for a simple, safe, reliable and effective online payment system. This necessity is fulfilled with the inception of different payment systems.



**Figure 2.2.1:** A typical e-commerce scenario. [Source adopted from [2]]

For security and safety there is a SET or the Secure Electronic Transaction. The SET uses the unique encryption technique for the information gained between the customers and the merchant. Transaction entities assume the existence of three participants a customer (the payer), a merchant (the payee) and a financial institution (e.g. a bank). All participants are in link as figure 2.1 shows. At the time of purchase, all entities have to share some information. If they share information in simple text, there is a chance of leaking information. The attacker can obtain important information from the channel, and can able to use that information. In e-payment, each and every transaction is recorded on server. When an e-payment does, server uploads these entries for audit. Secure electronic payment system uses different cryptographic algorithms and techniques to achieve: privacy, integrity, authentication and non-repudiation [2]. Types of payments are:

1. Online payment: in which vendor checks the payment send by purchaser with a bank before serving the purchaser [2].

2. Offline payment: in which over spending must be detected, and consequently, no online link to the bank is needed [2].

**2.3 “Payment Processing Systems and Security for E-Commerce: A Literature Review” By Ms. Vaishnavi. J. Deshmukh, Sapna. S. Kaushik, Mr. Amit. M. Tayade**

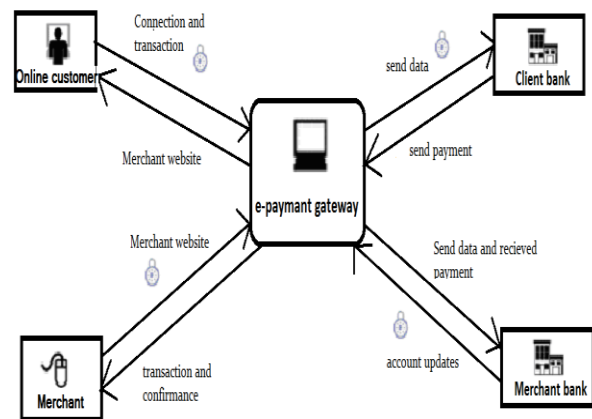
Electronic commerce is the business that is doing through internet. There is no need to go in shop and buy particulars, it is just make online. E-commerce is the easy way for making online business. The way of e-commerce makes transaction reliable and faster with low cost. E-payment and E-commerce are tightly coupled to each other as to pay for using online services.

**2.3.1 Types of Electronic Payment System**

The Secure Electronic Transaction (SET) protocol handles e-payments. Fraud prevention is a main motivator for SET. That would seem to indicate that the current model of using SSL to protect transactions is adequate. SET has the potential to reduce the chance of fraud by providing rigorous authentication measures in addition to encrypting transactions [3]. SET provides a higher privacy for customers by encrypting payment information so that only involved bank can able to see it. Customer device sends a purchase request to the merchant including unencrypted order information and a digital signature, intended for the merchant; payment message and a digital signature, both encrypted and intended for the payment gateway; for secure payment gateway. All parties require the ability to make or receive payments whenever necessary. Payment transactions must be atomic [3].

**2.4 “E-payment Gateway Model” By Anuja Pande, Prof. A.B. Deshmukh, Prof.M. D. Tambakhe**

Gateway is the secure channel for making online transaction. Shop from home becomes more and more online transaction for paying value and many more things are possible through electronic payment. For that purpose people wants some secure e-pay media for transaction.



**Figure 2.4.1:** Proposed Gateway Network [Source adopted from [4]]

There are five interfaces.

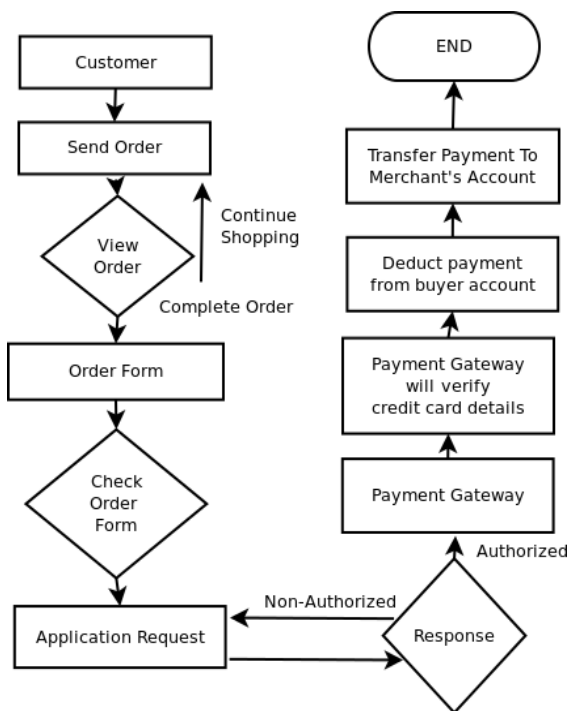
1. Customer Interface
2. Server (e-payment Gateway) Interface
3. User Bank Interface
4. Merchant Bank Interface
5. Merchant Interface [3]

User interact electronic payment gateway by using internet. And that gateway associates with Bank and verify details of account for whether user should able to purchase or not. There are various ways to make transaction such by using debit card, by using credit card and so on. All payment data are gained from merchant and will submit to gateway.

### 2.5 “Integration of CRM Systems with Payment Gateway”By Niketa Singhal

There are many ways for communicating between customer and merchant. Whenever customer place online order, CRM (Customer Relationship Management) comes into picture. For online transaction customer wants reliable and secure payment gateway for placing the order.

#### Flow of Information in Payment Gateway



**Figure 2.5.1:** Flow Chart of Payment Gateway  
[Source adopted from [5]]

#### Flow of Payment Gateway:

Client place order and collect all order details, then after confirming all order form the order. Final form application request send to merchant. And get response from merchant if not authorized cancel it. If authorized then send it for further process. Payment gateway comes into picture. Payment gateway receives all details of user. Payment gateway will verify details of user. Debit appropriate amount from user’s account. Transfer that amount to merchant’s account.

### 3. RESEARCH FINDING

Payment gateway is the way of making online payment. It acts as the third party between user and vendor. Because of the security user proceed to pay vendor. Still payment gateway is not fully secured. By using payment gateway transactions makes fast and easy. From anywhere we can able to access the facility given by e-payment.

### 4. CONCLUSION

By using payment gateway, user and merchant both can do transactions easily. E-payment is the easy and reliable to do shopping and many more things. Payment gateway makes every payment without hard money as it directly transfers money from buyer to merchant.

### ACKNOWLEDGMENT

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