

SYSTEM AND METHOD FOR SECURED PAYMENT AND SETTLEMENT IN NETWORK ENVIRONMENT

FIELD OF THE INVENTION

5 The present invention relates to the field of providing a secure payment and settlement system and method for at least a merchant (i.e. seller) and at least a customer (i.e. buyer) to conduct commerce transaction over a network (hereinafter called "network-based commerce"). Such network includes any public or private communication network like Internet, Intranet, mobile telephone
10 system etc. The present invention protects the interest of customer, merchant, deliverer, financial institution and other parties involved in a network-based commerce.

BACKGROUND OF THE INVENTION

15 A secure payment and settlement system is vital to the success of conducting a network-based commerce. The recent rapid growth of Internet and mobile phone equipped with Wireless Application Protocol (WAP) for accessing the Internet would lead to the formation of a global new market place of conducting commerce for goods, information and services (hereinafter called "Product"). The
20 size of population having access to the Internet is growing rapidly and merchants are also increasingly interested in selling Product over the Internet, particularly via the World Wide Web. On the other hand, Product sold through telephone network and postal delivery network by mail order is also on the increasing trend. Payments for such network-based commerce, especially over the Internet are
25 mostly settled by credit card. However there is a significant size of population still disqualified for using credit card. It is therefore necessary to provide a secure and convenient payment and settlement system to cater for the needs of conducting network-based commerce, especially over the Internet for all users.

30 A network-based commerce usually involves customer to order Product, customer or recipient authorised by the customer to receive the ordered Product, deliverer appointed by merchant to deliver the ordered Product to customer or recipient, and financial institution acting on customer's instruction to pay merchant for the Product ordered. The typical process of completing a network-based
35 commerce is explained as follows: upon receipt of a purchase request from customer, merchant issues a payment request to financial institution to effect

payment and then informs deliverer to deliver the ordered Product to customer or recipient. In this way, customer has no control over payment before received the ordered Product and is left with the choices of either to settle the bill or to deny payment and wait for financial institution to investigate. If there is no sufficient proof to confirm failure of customer, financial institution may probably give benefit of doubt to customer and demands merchant to bear the loss. Besides being hassle for customer and usually disadvantageous to merchant, such investigation process is usually lengthy and costly.

Furthermore, there are numerous problems hindering growth of network-based commerce market place, especially over Internet. One problem is that information such as credit card number and other confidential information supplied by customer to merchant is at risk of interception by third parties, unauthorized possession by computer network invaders or misuse by employees of merchant.

In the existing credit card payment systems for the commerce transacted over shop counter, credit card's issuing bank takes on the fraud risk associated with misuse of credit card when a merchant follows the established card acceptance procedure. Such acceptance procedure may include verification of card holder's signature on the card and obtaining authorization for payments by retrieving and sending card data to the issuing bank's computer through a network. However, merchant conducting network-based commerce can not physically examine purchaser's credit card, resulted in the fraud risk being reverted to the merchant, so many merchants are discouraged to conduct network-based commerce for not willing to bear this fraud risk. Moreover, merchants have yet to face another fraud risk of deliverer having problem to verify a person being authorized to receive the ordered Product.

Another problem with commerce over Internet is that the customer generally has to repeatedly supply and transmit a plethora of confidential information each time the customer wishes to purchase Product from a new merchant, and requirement of such information usually varies according to individual merchant's customized electronic order form. Besides being hassle for the customer, it also places the confidential information at risk each time such information is supplied to a new merchant.

Yet another problem hindering growth of network-based commerce is lack of a clearing house system for the suppliers of Product (i.e. the one who supplied Product to merchants to sell over network) to ensure payment from merchants. Without such system, suppliers are not willing to supply Product to a new merchant without having examined creditability of the new merchant, resulted in limited merchants selling their Product.

Accordingly, there is a pressing need to resolve these problems associated with conducting a network-based commerce. The present invention is therefore important for encouraging merchants to participate in the network-based commerce.

OBJECT OF THE INVENTION

The present invention has the first objective of providing a secure payment and settlement system that will authorize payment requests and remove fraud risk from customer ordering Product over network, merchants selling Product over network, deliverer identifying genuine customer or recipient and suppliers supplying Product to merchants.

The second objective of the present invention is to utilize existing financial instruments such as credit card, debit cards and demand deposit accounts to settle the payments.

The third objective of the present invention is to utilize existing encryption and authentication technique to protect confidentiality of information and to verify identification of a party participated in a network-based commerce.

SUMMARY OF THE INVENTION

The present invention provides a secure payment and settlement system for customer and merchant to conduct network-based commerce. A unique pair of customer identification code (CustID) and password are assigned by financial institution to individual customer. CustID is linked to such financial institution and at least an external account of customer managed by such financial institution. A unique merchant identification code (MerchantID) is also assigned to individual merchant.

The present invention requires a customer to use a customer means to communicate with various parties and to request payment gateway or a merchant to generate a temporary unique shopper identification code (ShopperID). The customer may communicate with a plurality of merchants
 5 directly or via payment gateway to conduct a plurality of network-based commerce by supplying ShopperID to individual merchant for generation of respective purchase record comprising non-confidential data of ShopperID, MerchantID and information for the ordered Product. Subsequently, individual merchant sends respective purchase record directly to payment gateway
 10 memory or stores such purchase record in customer means for subsequent retrieval by payment gateway or financial institution.

On completion of conducting network-based commerce with a plurality of merchants, the customer uses customer means to send CustID and ShopperID to payment gateway for executing the following processes:

- 15
- To display all purchase records which are linked to ShopperID and stored in payment gateway memory or customer means for customer to confirm.
 - To generate payment request for the confirmed purchase records.
 - To send CustID and payment request to financial institution identified by
 20 CustID.
 - To establish or initiate the establishment of a cryptographically secured session between customer means and such financial institution for customer to authorise payment through supplying password to such financial institution.

25 After verified password and CustID, financial institution initiates transfer of payment from customer's external account to a trusty account of clearing house. Thereafter, payment gateway issues for individual purchase record having been confirmed payment a unique pair of Token-code and Check-code conformed to a predefined relationship, and sends Token-code to customer and Check-code
 30 to merchant.

Upon delivery of the ordered Product, customer exchanges Token-code for the ordered Product. Deliverer of merchant verifies existence of the predefined relationship between Check-code supplied by merchant and Token-code
 35 supplied by customer for confirming Token-code and thus customer as genuine. Finally, merchant sends Token-code to payment gateway for verification and

settlement of the payment secured in trusty account for all relevant parties in a network-based commerce.

5 As such, the present invention enables deliverer to verify customer or the authorized recipient as genuine and all parties to identify defaulter caused failure in completing a network-based commerce through tracking the flow of Token-code.

BRIEF DESCRIPTION OF THE DRAWINGS

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Figure 1 illustrates the concept of a secure payment and settlement system of the present invention that a customer settles payment through a payment gateway stored the purchase records for the network-based commerce transacted by the customer with a plurality of merchants.

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Figure 2 illustrates the concept of a secure payment and settlement system of the present invention that a customer settles payment through a payment gateway by retrieving from customer means the purchase records for the network-based commerce transacted by the customer with a plurality of merchants.

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Figure 3 illustrates the concept of a secure payment and settlement system of the present invention that a customer settles payment immediately for a network-based commerce through a double loop-passing process for Check-code and Token-code.

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Figure 4 illustrates the concept of a secure payment and settlement system of the present invention that a customer settles payment immediately for a network-based commerce through a single loop-passing process for Check-code.

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DETAILED DESCRIPTION OF THE INVENTION

35 The present invention describes a method and system universally applicable to provide a secure payment and settlement system for at least a customer and a merchant to conduct a network-based commerce. To facilitate better description of the present invention, the following definitions are adopted:

- A network refers to a public or private communication system like Internet, Intranet, Extranet, mobile data communication system, wired telephone system, mobile telephone system and postal delivery system etc.
- A Product is any goods, information and services sold through a network.
- 5 • A Party is a person, company, institution, Internet portal operator or any other entity as part of a payment and settlement system involved in transaction or settlement of payment for a network-based commerce.
- A Merchant is a Party selling Product through a network.
- A Customer is a Party ordering Product through a network and making
10 payment to a Merchant.
- A Customer Means is a means e.g. computer, used by Customer to conduct network-based commerce.
- A Recipient is a Party authorized by Customer to receive the ordered Product.
- 15 • A Deliverer is a Party authorized by Merchant to deliver the ordered Product to Customer or Recipient.
- A Beneficiary is a Party entitled to receive from payment and settlement system a portion or total of the payment payable by Customer for a network-based commerce.
- 20 • An External-account is any existing financial instrument such as credit card, debit card and demand deposit account etc.
- A Financial Institution is a functional unit within a Party or a Party e.g: bank, managing External-account for Customer and ensuring sufficient fund or credit in such External-account to pay for a network-based commerce, or a trusted Party
25 authorized by Customer to initiate fund transfer from such Customer's External-account managed by a bank to pay for a network-based commerce.
- A Purchase Record describes detailed information of a network-based commerce transaction. Such information may include Merchant identification code, Merchant URL, identification code and quantity and price of individual Product,
30 invoice number and amount of payment for a network-based commerce etc.
- A Payment Request describes the detailed information of payment for a network-based commerce. Such information may include Merchant account, Customer identification code, invoice number and amount of payment for a network-based commerce.

- A Settlement Order describes the detailed account settlement information and instructions for dividing and transferring payment for a network-based commerce credited in a trusty account to the accounts of Merchant and relevant Beneficiaries. Such information may include Merchant account identification, identification code and quantity and price of individual Product sold in a network-based commerce, invoice number of a network-based commerce, account identification of Beneficiaries and method to divide payment for Merchant and Beneficiaries.
- A Clearing House is a functional unit within a Party or a Party trusted by Merchant and Beneficiaries to execute Settlement Order and manage fund transfer for Merchant and Beneficiaries according to Settlement Order.
- A Payment Gateway is a functional unit within a Party or a Party receiving Purchase Record, communicating with Customer for receiving customer identification code and confirming Purchase Record, generating Payment Request for forward transmission to Financial Institution to affect transfer of payment from Customer's External-account to Clearing House, and communicating with Merchant for verifying payment request and activating Clearing House to affect settlement of payment for each network-based commerce.
- A payment and settlement system is a service that authorizes and executes Payment Request backed by External-account of Customer and Settlement Order for the final settlement of such Payment Request.

The present invention to provide a secure payment and settlement system expressed as a method universally applicable to generating a Payment Request and processing a Settlement Order for at least a network-based commerce involving at least a Merchant and a Customer, requires assignment of a unique identification code MerchantID to individual Merchant and a unique pair of identification code CustID and password or the equivalent (e.g. the smart card or biometrics authentication technique) to individual Customer. CustID is linked to Financial Institution and at least an External-account of Customer to settle payment for a network-based commerce. Password is required by Financial Institution to authenticate Customer and is usually a fixed code subject to change by Customer or Financial Institution.

To improve security in authenticating Customer, the present invention introduces the method of allowing a password to be used once only for each authentication process. The method requires a plurality of different passwords to be printed on a handy card, and cover such printed passwords firmly by a thin layer of non-transparent material to prevent disclosure to any unauthorized party. For each authentication process, Customer gets a new password through removing the portion of non-transparent material covered such printed new password. Security is further improved by combining such printed new password with other code supplied by Customer to form a new password. The present invention adopts the following inventive steps of registering the passwords printed on a card ready to be used for authentication of Customer:

- A unique card-code is printed on each card for identification purpose. Such card-code is covered firmly by a thin layer of non-transparent material to prevent disclosure to any unauthorized party.
- The card-code and passwords printed on the card are stored in a central means.
- For registering the printed password, Customer removes the non-transparent material to read card-code and sends such card-code to Financial Institution.
- Financial Institution then sends such card-code to central means for retrieving the passwords printed on such card and stores the received passwords as registered passwords in customer records for authentication of Customer.
- Customer may repeat the above process to register new passwords printed on any new card to top up the registered password in customer record.
- In order to prevent card producer or distributor from knowing any registered password, each card is constructed by combining at least 2 partial cards into a complete card. Each partial card only captures partial printed passwords and card-code, a complete printed password and card-code is obtained by combining few partial cards into a complete card.

In detail now and referring to Figure 1 it describes the present invention in resolving the problems and limitations inhabited in the existing process of handling payment settlement for a network-based commerce. Prior to conducting a network-based commerce, Customer 101 initiates a request e.g. supply email address, to Payment Gateway 100 or Merchant 102 for requesting a unique shopper identification code ShopperID which may simply be a random number

or a unique email address or a combination of both email address and a special code supplied by Payment Gateway 100 or Merchant 102. Such special code may comprise a random number and a code derived from both email address and such random number. The use of special code helps Merchant 102 to verify
 5 email address supplied by Customer 101 and improves confidentiality for a network-based commerce because email address is the non-confidential information. ShopperID has limited life span effective for the intended purpose of identifying Customer 101.

10 In executing a network-based commerce, Customer 101 establishes a communication link directly with Merchant 102 for supplying ShopperID as identification and forward transmission to Payment Gateway 100 together with Purchase Record 115 generated by Merchant 102. Customer 101 may repeat
 15 this process with a plurality of Merchant 102 for storing a plurality of Purchase Record 115 and same ShopperID in Payment Gateway 100. Thereafter, Customer 101 establishes a communication link with Payment Gateway 100 to send CustID and ShopperID for retrieving and confirming each stored Purchase Record 115 identified by ShopperID. After completed such confirmation process, Payment Gateway 100 executes the following processes:

- 20 • To generate a Payment Request 107 for each confirmed Purchase Record 115.
- To send Payment Request 107 and CustID to Financial Institution 104 identified by CustID. Alternatively, Financial Institution 104 is identified by other information supplied by Customer 101 to Payment Gateway 100
 25 e.g. clicking an icon linked to Financial Institution 104.
- To establish or initiate the establishment of a secured cryptographic session between Customer 101 and Financial Institution 104 for Customer 101 to send confidential password to Financial Institution 104.

30 Financial Institution 104 then executes the following processes:

- To authenticate identification of Customer 101 through matching the received CustID and password with the stored contents in customer record.
- Upon successful authentication, to transfer payment for Payment Request 107 from CustID linked External-account (which is managed by Financial
 35 Institution 104) to a trusty account of Clearing House 103. Alternatively, to initiate a request to the bank of Customer 101 to transfer payment for

Payment Request 107 from CustID linked External-account (which is managed by such bank) to a trusty account of Clearing House 103.

- To inform Payment Gateway 100 completion of payment transfer.

5 Payment Gateway 100 then executes the following processes:

- To inform individual Merchant 102 of having secured payment for commencing delivery of the Product ordered under each Purchase Record 115.
- To generate a unique pair of Token-code 108 and Check-code 109 for each
10 Purchase Record 115 having payment secured, wherein Token-code 108 is uniquely related to Check-code 109 in a predefined relationship, or Token-code 108 is uniquely tied to Check-code 109 as a pair of random numbers.
- To send Token-code 108 to Customer 101 and Check-code 109 to Merchant 102.

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Subsequently, Merchant 102 passes Check-code 109 to Deliverer 105 to deliver the ordered Product to Customer 101 or Recipient 106 who is given Token-code 108 by Customer 101 for receiving the ordered Product. After having exchanged the ordered Product with Customer 101 or Recipient 106 for
20 Token-code 108, Deliverer 105 verifies existence of the predefined relationship between Check-code 109 and Token-code 108 for confirming Customer 101 or Recipient 106 as genuine. Having received Token-code 108 from Deliverer 105, Merchant 102 sends Token-code 108 to Payment Gateway 100 for verification in order to request Clearing House 103 to execute payment
25 settlement.

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The other embodiment of the present invention as described in Figure 1 requires Customer 101 to establish a communication link with Payment Gateway 100 for supplying CustID and activating a communication linkage e.g. a
30 hyperlink, provided by Payment Gateway 100 in order to establish a communication link with Merchant 102 for execution of a network-based commerce. As such, no ShopperID is required for identification of Customer 101 because Payment Gateway 100 may tie Purchase Record 115 received from Merchant 102 to CustID supplied by Customer 101.

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The other embodiment of the present invention to verify Token-code 108 as described in Figure 1 requires Financial Institution 104 to generate only Token-code 108 without Check-code 109 and store Token-code 108 in a hand-held tamper-proof device or a central means. Deliverer 105 enters the code supplied by Customer 101 into such device or remotely sends such code to central means for matching with the stored Token-code 108 in order to verify the code supplied by Customer 101 as genuine Token-code 108.

Yet the other embodiment of the present invention to verify Token-code 108 as described in Figure 1 requires a central means to store Token-code 108 and Check-code 109. Deliverer 105 remotely sends the code supplied by Customer 101 to such central means for matching such code with the stored Token-code 108 and sending the linked Check-code 109 to Deliverer 105 who then confirmed the code supplied by Customer 101 being Token-code 108 if the code received from such central means is same as Check-code 109 supplied by Merchant 102.

The other embodiment of the present invention as described in Figure 1 requires Payment Gateway 100 to send Merchant 102 a plurality of Check-code 109 and send Customer 101 a plurality of Token-code 108 after Financial Institution 104 has indicated completion of payment transfer from External-account of Customer 101 to a trusty account of Clearing House 103 for a network-based commerce. Each Token-code 108 is uniquely related to a Check-code 109 in a predefined relationship. At each stage of network-based commerce transaction (e.g. a partial delivery of ordered Product or at each stage of delivery process), Customer 101 gives Merchant 102 one of Token-code 108 in a predetermined sequence of order or in a random order. Merchant 102 firstly uses Check-code 109 to verify Token-code 108 then sends Token-code 108 to Payment Gateway 100 for requesting Clearing House 103 to execute partial payment settlement by transferring part of payment from such trusty account to the accounts of Merchant 102 and all Beneficiaries according to Settlement Order. The process of Customer 101 giving Merchant 102 a Token-code 108 for requesting Clearing House 103 to execute partial payment settlement is repeated until the last Token-code 108 is given by Customer 101 to Merchant 102 to complete full payment settlement.

Figure 2 describes an alternate embodiment of the present invention applicable to providing a secure payment and settlement system for a network-based commerce. In executing a network-based commerce, Customer 201 uses Customer Means 216 to establish a communication link with Merchant 202 for receiving and storing Purchase Record 215 generated by Merchant 202. Customer 201 may repeat this process with a plurality of Merchant 202 for Customer Means 216 to store respective Purchase Record 215. In the preferred embodiment of the present invention, the Customer means is a computer terminal or processor device. On completion of shopping activities, Customer 201 confirms each stored Purchase Record 215 retrieved from Customer Means 216. Thereafter, Customer 201 uses Customer Means 216 to establish a communication link with Payment Gateway 200 for supplying CustID and the stored Purchase Record 215 in order to complete each confirmed network-based commerce in the following way similar to what has been described in the Figure 1 embodiment:

- Payment Gateway 200 sending Payment Request 207 and CustID to Financial Institution 204.
- Customer 201 using Customer Means 216 to establish a secured cryptographic session with Financial Institution 204 for sending confidential password for authentication and initiating transfer of payment from CustID linked External-account to a trusty account of Clearing House 203.
- Payment Gateway 200 sending Token-code 208 to Customer 201 and Check-code 209 to Merchant 202.
- Merchant 202 passing Check-code 209 to Deliverer 205 for delivering the ordered Product to Customer 201 or Recipient 206 who is given Token-code 208 by Customer 201. After having exchanged ordered Product with Customer 201 or Recipient 206 for Token-code 208, Deliverer 205 uses Check-code 209 to verify Token-code 208 for identifying Customer 201 or Recipient 206. Merchant 202 sends Token-code 208 to Payment Gateway 200 for verification and requesting Clearing House 203 to execute payment settlement.

The other embodiment of the present invention as described in Figure 2 requires Customer 201 to establish a communication link with Payment Gateway 200 for supplying CustID and activating a communication linkage e.g. a

hyperlink, provided by Payment Gateway 200 for establishing a communication link with Merchant 202 to execute a network-based commerce.

Yet another embodiment of the present invention as described in Figure 2 requires Customer 201, after completion of shopping activities, to establish a communication link with Payment Gateway 200 first. As such, Payment Gateway 200 may receive CustID from Customer 202 for identification purpose and retrieve Purchase Record 215 from Customer Means 216 for Customer 201 to confirm each network-based commerce.

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In summary, the present invention resolves the inherent problems and limitations in the existing system to handle network-based commerce as follows:

- Customer is only required to supply confidential information comprising CustID and password or the equivalent to Payment Gateway or Financial Institution through a cryptographically secured session.
- Customer controls payment to Merchant through exchange of Token-code for the ordered Product.
- Deliverer may verify Customer or Recipient as genuine through testing existence of the predefined relationship between Token-code and Check-code
- Merchant and Deliverer may protect respective interest through demanding Token-code from Customer to prove that Customer has satisfactorily accepted the ordered Product.
- Financial Institution transferring payment from External-account of Customer to a trusty account of Clearing House minimises the fraud risk faced by Merchant.
- Payment Gateway or Financial Institution may solely rely on Token-code supplied by Merchant as the evidence of having received proper instruction from Customer to pay Merchant.
- Clearing House acting as a legally trusted agent to settle payment for a network-based commerce for Merchant and all Beneficiaries, including the supplier, without having to credit payment to the account controlled by Merchant relieves the concern of supplier on creditability of Merchant.

Figure 3 describes the embodiment of the present invention applicable to immediate settlement of payment for a network-based commerce e.g. a

commerce transacted over shop counter. Having transacted a network-based commerce, Merchant 302 sends Purchase Record 315 to Payment Gateway 300 for requesting Check-code 309 there from and then forward passing Check-code 309 to Customer 301. Customer 301 uses hand phone or other
 5 communication means to establish a secured session for requesting Financial Institution 304 to execute the following processes:

- Receiving CustID and password from Customer 301 to match with the contents of stored customer records for verifying identification of Customer 301.
- 10 • Receiving Check-code 309 from Customer 301 and forward transmission to Payment Gateway 300 for retrieving Purchase Record 315 identified by Check-code 309.
- Requesting Customer 301 to confirm Purchase Record 315 and authorize payment.
- 15 • Issuing a unique Token-code 308 to Customer 301 upon authorisation of payment by Customer 301.

Subsequently, Customer 301 passes Token-code 308 to Merchant 302 for sending Token-code 308 and Check-code 309 to Payment Gateway 300.
 20 Financial Institution 304 then executes the following processes upon receipt of Token-code 308, Check-code 309 and Payment Request 307 from Payment Gateway 300:

- Matching the received Token-code 308 and Check-code 309 with the contents of the stored records.
- 25 • Initiating transfer of payment for such network-based commerce from External-account of Customer 301 to a trusty account of Clearing House 303 for executing payment settlement according to Settlement Order given by Merchant 302 and other Beneficiaries.
- Informing Payment Gateway 300 completion of payment settlement.

30 A simplified version for the embodiment of the present invention as described in Figure 3 is presented in Figure 4. Having transacted a network-based commerce over a shop counter, Merchant 402 sends Purchase Record 415 to Payment Gateway 400 for requesting Check-code 409 there from and forward passing
 35 Check-code 409 to Customer 401. Customer 401 then uses hand phone or

other communication means to establish a secured session for requesting Financial Institution 404 to execute the following processes:

- 5 • Receiving CustID and password from Customer 401 to match with the contents of stored customer records for verifying identification of Customer 401.
- Receiving Check-code 409 from Customer 401 and forward transmission to Payment Gateway 400 for requesting Payment Request 407 and Purchase Record 415 (identified by Check-code 409) there from.
- 10 • Requesting Customer 401 to confirm Purchase Record 415 and authorize payment for such network-based commerce.
- Upon authorization of payment, initiating transfer of payment from External-account of Customer 401 to a trusty account of Clearing House 403 for executing payment settlement according to Settlement Order given by Merchant 402 and other Beneficiaries.
- 15 • Informing Payment Gateway 400 completion of payment settlement.

The following alternatives are applicable to the embodiments as described in Figure 3 and 4 above:

- 20 1. Merchant issues Check-code e.g. invoice number of a network-based commerce, for forward transmission to Payment Gateway together with Purchase Record.
2. Check-code is pre-assigned by Financial Institution and stored in Payment Gateway. Upon receipt of Purchase Record from Merchant for a network-based commerce, Payment Gateway sends such Check-code to Merchant
- 25 and sends to Financial Institution such Check-code together with Payment Request for Financial Institution to match with the Check-code received from Merchant through Customer.

30 The present invention may be embodied in other specific forms without departing from the spirit or essential characteristics thereof. The presently disclosed embodiments are, therefore, to be considered in all respects as illustrative and not restrictive, the scope of the invention being indicated by the appended claims and all changes which come within the meaning and range of equivalency of the claims are, therefore, to be embraced therein.

**CLAIMS****I Claim:**

- 1 1. In a system for secured settlement of transaction over at least one network
2 environment, said environment comprising at least one Customer, at least
3 one Merchant, at least one Payment Gateway, at least one Clearing House
4 and at least one Financial Institution, said system comprising:
5
6 said Customer communicating with said Merchant for generating Purchase
7 Record and storing said Purchase Record in said Payment Gateway;
8
9 said Customer communicating with said Payment Gateway for confirming
10 said Purchase Record and issuing Payment Request to said Financial
11 Institution;
12
13 said Customer communicating with said Financial Institution for authenticating
14 the identity of said Customer, authorizing said Payment Request and
15 generating delivery data for said Merchant to complete delivery of Products;
16 and
17
18 said Merchant communicating with a combination of said Payment Gateway,
19 said Financial Institution and said Clearing House for supplying completion
20 data to activate Clearing House for settlement of payment,
21
22 whereby transaction over said network environment can be accomplished
23 with minimal authentication risk and identification overhead.
- 1 2. A system for secured settlement of network transactions as in claim 1 wherein
2 said authentication of identification of said Customer is executed between
3 said Financial Institution and at least one smart card of said Customer.
- 1 3. A system for secured settlement of network transactions as in claim 1 wherein
2 said Customer is assigned at least one CustID and at least one password
3 such that said CustID linking said Financial Institution and at least one External-
4 account of said Customer for settling transaction over said network
5 environment, said Customer transmitting said CustID to said Payment
6 Gateway through at least one communication session with said Payment
7 Gateway for identification of said Financial Institution, and said Payment
8 Gateway onward transmitting said CustID to said Financial Institution and said



- 9 Customer transmitting said password to said Financial Institution through at
10 least one communication session with said Financial Institution for
11 authentication of said Customer by matching said CustID and said password
12 with the contents of stored customer records.
- 1 4. A system for secured settlement of network transactions as in claim 3 wherein
2 said CustID is unique to said Customer.
- 1 5. A system for secured settlement of network transactions as in claim 3 wherein
2 said password is changeable by either said Customer and/or said Financial
3 Institution.
- 1 6. A system for secured settlement of network transactions as in claim 1 wherein
2 said Merchant is assigned at least one MerchantID for identifying said
3 Merchant.
- 1 7. A system for secured settlement of network transactions as in claim 6 wherein
2 said MerchantID is unique to said Merchant.
- 1 8. A system for secured settlement of network transactions as in claim 1 wherein
2 said Customer communicates with a combination of said Merchant, said
3 Payment Gateway and said Financial Institution for generating at least one
4 ShopperID such that said Customer supplying said ShopperID to said
5 Merchant for onward transmission to said Payment Gateway together with
6 said Purchase Record, said Customer transmitting said ShopperID to said
7 Payment Gateway for retrieving and confirming said Purchase Record.
- 1 9. A system for secured settlement of network transactions as in claim 8 wherein
2 said ShopperID has limited effective time.
- 1 10. A system for secured settlement of network transactions as in claim 8 wherein
2 said ShopperID comprises a combination of at least one CustID uniquely
3 assigned to said Customer, at least one random number, at least one
4 network address, at least one electronic mail address, at least one code
5 derived from said network address, and at least one code derived from said
6 electronic mail address.
- 1 11. A system for secured settlement of network transactions as in claim 1 wherein
2 said delivery data comprises at least one Token-code and at least one
3 optional Check-code generated by a combination of said Payment Gateway
4 and said Financial Institution, said Token-code and said Check-code are
5 uniquely related to each other, said Token-code being received by said
6 Customer and said Check-code being received by said Merchant, said
7 Customer passing said Token-code to said Merchant for receiving said items,



8 said Merchant verifying said Token-code with a combination of said Payment
9 Gateway and said Financial Institution, optionally using said Check-code to
10 verify said Token-code; and said Merchant transmitting said Token-code to a
11 combination of said Payment Gateway and said Financial Institution for
12 verification and activation of Clearing House to affect settlement of transaction.

1 12. A system for secured settlement of network transactions as in claim 11
2 wherein said Purchase Record is uniquely related to said pair of Token-code
3 and Check-code.

1 13. A system for secured settlement of network transactions as in claim 11
2 wherein said Customer passing said Token-code to at least one recipient for
3 onward transmission to said Merchant for receiving said items.

1 14. A system for secured settlement of network transactions as in claim 11
2 wherein said Token-code is stored in at least one hand held device carried by
3 said Merchant for matching the Token-code provided by said Customer.

1 15. A system for secured settlement of network transactions as in claim 11.
2 wherein said Check-code and said Token-code are stored in at least one
3 central means for said Merchant to remotely verify the Token-code provided
4 by said Customer.

1 16. A system for secured settlement of network transactions as in claim 11
2 wherein said Token-code is related to said Check-code in a pre-defined
3 relationship.

1 17. A system for secured settlement of network transactions as in claim 11
2 wherein said Token-code and said Check-code are two random numbers.

1 18. A system for secured settlement of network transactions as in claim 11
2 wherein said Token-code and said Check-code are the same.

1 19. A system for secured settlement of network transactions as in claim 11
2 wherein said Customer receives said Token-code before the execution of
3 said network-based commerce.

1 20. A system for secured settlement of network transactions as in claim 1 wherein
2 said delivery data comprises at least a unique Token-code generated by a
3 combination of said Payment Gateway, said Financial Institution and said
4 Clearing House, said Token-code being stored in a central means and being
5 received by said Customer, said Merchant delivering items covered by said
6 Purchase Record, said Customer passing said Token-code to said Merchant
7 for receiving said items, and said Merchant sending said Token-code to said



- 8 central means for verification and subsequent activation of Clearing House to
9 affect settlement of transaction.
- 1 21. A system for secured settlement of network transactions as in claim 1 wherein
2 said Customer directly establishes at least one communication link with said
3 Merchant.
- 1 22. A system for secured settlement of network transactions as in claim 1 wherein
2 said Customer establishes at least one communication link with said Financial
3 Institution through said Payment Gateway.
- 1 23. A system for secured settlement of network transactions as in claim 1 wherein
2 said Customer establishes at least one first communication link with said
3 Payment Gateway for activating at least one communication interface
4 provided by said Payment Gateway to establish at least one second
5 communication link with said Merchant for generating said Purchase Record,
6 such that said Payment Gateway links said Purchase Record to said
7 Customer through identification of said first communication link.
- 1 24. A system for secured settlement of network transactions as in claim 1 wherein
2 said Customer establishes at least one communication link with said Merchant
3 through activation of at least one communication interface provided by said
4 Financial Institution.
- 1 25. A system for secured settlement of network transactions as in claim 1 wherein
2 said Payment Gateway and said Financial Institution are the same.
- 1 26. A system for secured settlement of network transactions as in claim 1 wherein
2 said Financial Institution and said Clearing House are the same.
- 1 27. A system for secured settlement of network transactions as in claim 1 wherein
2 said Payment Gateway and said Clearing House are the same.
- 1 28. A system for secured settlement of network transactions as in claim 1 wherein
2 said Payment Gateway and said Financial Institution and said Clearing House
3 are the same.
- 1 29. A system for secured settlement of network transactions as in claim 1 wherein
2 said Customer directly establishes at least one communication link with said
3 Financial Institution.
- 1 30. A system for secured settlement of network transactions as in claim 1 wherein
2 said Customer communicating with said Financial Institution through at least
3 one secured session.



- 1 31. A system for secured settlement of network transactions as in claim 1 wherein
2 said Merchant transmits said Purchase Record directly to said Payment
3 Gateway.
- 1 32. A system for secured settlement of network transactions as in claim 1 wherein
2 said Merchant stores said Purchase Record in at least one Customer Means
3 e.g. a computer, for said Payment Gateway to retrieve said Purchase
4 Record from said Customer Means.
- 1 33. A secured network transaction involving at least one Customer and at least
2 one Financial Institution requiring a system for issuing at least one password
3 to said Customer for said Financial Institution to authenticate identification of
4 said Customer, said system comprising:
5
6 printing at least one card-code and at least one partial code on one card,
7 covered said partial code by at least one layer of non-transparent material;
8
9 storing said card-code and said partial code in at least one central means;
10
11 combining at least two said cards for creating each said password from at
12 least one partial code on one said card and at least one partial code on
13 another card;
14
15 said Customer extracting said card-codes from said cards for onwards
16 transmission to said Financial Institution;
17
18 said Financial Institution onward transmitting all said card-codes to said central
19 means for retrieving all said partial codes printed on each said card to create
20 said password and storing said password, and
21
22 said Customer removing said layer of non-transparent material for reading
23 each said partial code on each said card to create said password and
24 transmitting said password to Financial Institution,
25
26 whereby Financial Institution matches said password with the stored contents
27 for authentication of identification of said Customer in a secured network
28 transaction



- 1 34. A system for secured authentication of identification of customer as in claim 33
2 wherein said password comprises at least one code supplied by said
3 Customer.
- 1 35. In a system for secured settlement of transaction over at least one network
2 environment, said environment comprising at least one Customer, at least
3 one Merchant, at least one Payment Gateway, at least one Clearing House
4 and at least one Financial Institution, said system comprising:
5
6 said Customer communicating with said Merchant for generating Purchase
7 Record and storing said Purchase Record in said Payment Gateway;
8
9 said Customer communicating with said Payment Gateway for confirming
10 said Purchase Record and issuing Payment Request to said Financial
11 Institution; and
12
13 said Customer communicating with said Financial Institution for authenticating
14 the identity of said Customer, authorizing said Payment Request and
15 activating Clearing House for settlement of payment,
16
17 whereby transaction over said network environment can be accomplished
18 with minimal authentication risk and identification overhead.
- 1 36. In a system for secured settlement of transaction over at least one network
2 environment, said environment comprising at least one Customer, at least
3 one Merchant, at least one Payment Gateway and at least one Financial
4 Institution, said system comprising:
5
6 said Customer being assigned at least one CustID, said CustID linking said
7 Financial Institution;
8
9 said Customer communicating with said Merchant for generating Purchase
10 Record and storing said Purchase Record in said Payment Gateway;
11
12 said Customer communicating with said Payment Gateway for confirming
13 said Purchase Record, supplying said CustID for said Payment Gateway to
14 identify said Financial Institution for onward issuance of Payment Request to



15 said Financial Institution and establishing communication link between said
16 Customer and said Financial Institution; and

17

18 said Customer communicating with said Financial Institution for authenticating
19 the identity of said Customer and authorizing payment to said Payment
20 Request,

21

22 whereby transaction over said network environment can be accomplished
23 with minimal authentication risk and identification overhead.

1 37. In a system for secured settlement of transaction over at least one network
2 environment, said environment comprising at least one Customer, at least
3 one Merchant, at least one Payment Gateway and at least one Financial
4 Institution, said system comprising:

5

6 said Customer communicating with said Merchant for generating Purchase
7 Record and storing said Purchase Record in said Payment Gateway;

8

9 said Customer communicating with said Payment Gateway for confirming
10 said Purchase Record, activating at least one communication interface
11 provided by said Payment Gateway for issuing Payment Request to said
12 Financial Institution and establishing at least one communication link between
13 said Customer and said Financial Institution;

14

15 said Customer communicating with said Financial Institution for authenticating
16 the identity of said Customer and authorizing payment to said Payment
17 Request,

18

19 whereby transaction over said network environment can be accomplished
20 with minimal authentication risk and identification overhead.

1 38. In a system for secured settlement of transaction over at least one network
2 environment, said environment comprising at least one Customer, at least
3 one Merchant, at least one Payment Gateway and at least one Financial
4 Institution, said system comprising:

5

6 said Merchant communicating with said Payment Gateway for generating at
7 least one Payment Request;



8
9 assigning at least one Check-code to said Payment Request and storing said
10 Check-code and said Payment Request in said Payment Gateway; and
11
12 said Customer receiving from said Merchant said Check-code and
13 communicating with said Financial Institution for authentication of identification,
14 submitting said Check-code to said Payment Gateway through said Financial
15 Institution for receiving said Payment Request and authorising said Financial
16 Institution to settle said Payment Request.