A network-based sales system includes at least one buyer computer for operation by a user desiring to buy a product, at least one merchant computer, and at least one payment computer. The buyer computer, the merchant computer, and the payment computer are interconnected by a computer network. The buyer computer is programmed to receive a user request for purchasing a product, and to cause a payment message to be sent to the payment computer that comprises a product identifier identifying the product. The payment computer is programmed to receive the payment message, to cause an access message to be created that comprises the product identifier and an access message authenticator based on a cryptographic key, and to cause the access message to be sent to the merchant computer. The merchant computer is programmed to receive the access message, to verify the access message authenticator to ensure that the access message authenticator was created using the cryptographic key, and to cause the product to be sent to the user desiring to buy the product.

38 Claims, 25 Drawing Sheets
<table>
<thead>
<tr>
<th>Patent Number</th>
<th>Date</th>
<th>Inventor(s)</th>
<th>References</th>
</tr>
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<tbody>
<tr>
<td>5,909,492</td>
<td>1/1998</td>
<td>Gifford</td>
<td>380/24</td>
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</tbody>
</table>
FIG. 2A
buyer computer 12  merchant computer 14  payment computer 16

36  

payment computer checks whether expiration time has past

40

41

payment computer sends document to buyer computer indicating that expiration time has past

OR

payment computer checks to see if buyer network address in payment URL matches buyer's computer network address

42

OR

43

payment computer sends document indicating that access to network payment system is denied

End

End

FIG. 2B
buyer computer 12

merchant computer 14

payment computer 16

user opens new account

User continues with payment (user already has an account)

payment computer sends payment confirmation document to buyer computer; payment confirmation document includes open link (URL C) and continue link (URL B)

buyer computer sends payment URL B to payment computer; payment URL B is similar to payment URL A but also indicates that an account does exist

buyer computer sends payment URL C to payment computer; payment URL C is similar to payment URL A but also indicates that an account does not yet exist

payment computer creates new account document

payment computer sends new account document to buyer computer

FIG. 2C
buyer computer 12

user enters new account name, account password, credit card number, security information and expiration date of credit card and presses a “submit” button.

merchant computer 14

payment computer 16

buyer computer sends new account information to payment computer

payment computer enters new account

payment computer creates account name and password request message

user enters account name and password

payment computer sends account name and password request message to buyer computer

buyer computer sends account name and password to payment computer

payment computer verifies whether user name and password are correct

payment computer sends document to buyer computer indicating that access to the networks sales system is denied

End

FIG. 2D
buyer computer 12  merchant computer 14  payment computer 16

payment computer determines whether additional security is warranted, based on, e.g. whether the payment amount exceeds a threshold

if additional security is warranted, payment computer creates a challenge form document and sends it to buyer computer

user enters security information

payment computer determines whether security information is correct

buyer computer sends security information to payment computer

payment computer sends document to buyer computer indicating that access to the network sales system is denied

End

FIG. 2E
FIG. 2F
buyer computer 12

merchant computer 14

payment computer 16

85

End

82,87

payment computer verifies whether user account has sufficient funds or credit

76

payment computer sends document to buyer computer indicating that user account does not have sufficient funds

78

OR

80

payment computer creates access URL which includes merchant computer identifier, domain identifier, product identifier, end of duration time, buyer network address, and access URL authenticator

88

payment computer records product identifier, domain, user account, merchant account, end of duration time, and actual payment amount in settlement database

90

payment computer sends redirect to access URL to buyer computer

92

FIG. 2G
buyer computer sends access URL to merchant computer

merchant computer verifies whether access URL authenticator was created from contents of access URL using a cryptographic key

merchant computer sends document to buyer computer indicating that access to the product is denied

merchant computer verifies whether the duration time has expired

merchant computer sends document to buyer computer indicating that the duration time has expired

FIG. 2H
buyer computer 12  merchant computer 14  payment computer 16

merchant computer verifies that the buyer computer network address matches the network address specified in the access URL

End

merchant computer sends document to buyer computer that access is not allowed

OR

merchant computer sends fulfillment document to buyer computer

buyer computer displays fulfillment document

End

FIG. 2I
buyer computer 12  merchant computer 14  payment computer 16

From 32 108

buyer computer sends shopping cart URL to payment computer; shopping cart URL includes product identifier, domain identifier, payment amount, merchant computer identifier, merchant account identifier, duration time, expiration time, and shopping cart URL authenticator

payment computer verifies whether shopping cart URL authenticator was created from contents of shopping cart URL using a cryptographic key

OR

payment computer sends document to buyer computer indicating that access to network sales system is denied

End

payment computer and buyer computer perform steps analogous to steps 40-81

FIG. 3A
FIG. 3B

buyer computer 12

merchant computer 14

payment computer 16

payment computer creates or updates payment URL for shopping cart

user requests display of shopping cart

user requests purchase of contents of shopping cart

buyer computer sends fetch shopping cart request to payment computer

buyer computer causes payment URL for shopping cart to be activated

payment computer and buyer computer perform steps analogous to steps 64-81

buyer computer displays shopping cart

payment computer returns contents of shopping cart to buyer computer
buyer computer 12          merchant computer 14          payment computer 16

user requests smart statement

buyer computer sends smart statement URL to payment computer

payment computer verifies whether smart statement URL authenticator was created from contents of smart statement URL using cryptographic key

End

payment computer sends document to buyer computer indicating that access is denied

payment computer checks to determine whether buyer network address in smart statement URL matches buyer’s computer network address

End

payment computer sends document indicating that access is denied

payment computer and buyer computer perform steps analogous to steps 64-81

FIG. 4A
buyer computer 12

164,170

buyer computer displays received document

144

merchant computer 14

142

payment computer retrieves settlement data from settlement database and creates smart statement document for buyer and sends smart statement document to buyer computer

payment computer 16

140

User requests payment details for a particular transaction

146

buyer computer sends payment detail URL to payment computer

148

payment computer and buyer computer perform steps analogous to steps 132-140

150

payment computer retrieves from settlement database data corresponding to the payment transaction specified in the payment detail URL, creates detail document, and sends it to buyer computer

152

FIG. 4B
FIG. 4C

buyer computer 12

144

154

user requests customer service

buyer computer sends customer service URL to payment computer

156

user types comments

buyer computer sends user's comments to payment computer

160

162

166

user requests display of a product

buyer computer sends access URL to merchant computer

168

payment computer creates customer service form and sends it to buyer computer

158

payment computer posts user comments and sends thank you document to buyer computer

164

buyer computer and merchant computer perform steps analogous to steps 94-104

170

payment computer 14

144

buyer computer 12

144
Mead Data Central: Internet Information

November 28, 1993
LC’s debut on the Internet: Library of Congress catalog On the

VERONICA: A Gopher Navigational Tool On the Internet

October, 1993

Data transfer complete:
Back Forward Home Reload Open... Save As... Clone New Window Close Window

FIG. 5
Open Market Payment

You have selected an item that requires payment

Merchant: Test Merchant
Description: Head Data Central Article
Amount: 2.85 (US currency)

If you have an Open Market account click on "continue" below and you will be prompted for your account name and password. If you do not have an account, you can establish one on-line and return to this page to continue your purchase.

Open an account on-line
Continue with payment transaction.

NOTE: For demonstrations use the account name testuser@openmarket.com with the password testuser.

Open Market, Inc.
Card Number: 
Expiration Date: ___/___ (format MM/YY)

Check the appropriate boxes:
- I am the owner of the above credit card.
- The above address is also the billing address for this credit card.

Your OpenMarket account statement is available on-line. At your option you may a copy of your statement automatically sent to your e-mail address at weekly or monthly intervals. Please choose a statement option.

- Weekly statements
- Monthly statements
- No e-mail statements

Account name and password

Please choose an account name and password for your OpenMarket account. We suggest using an account name that is unique and easy to remember such as your e-mail address. Your password should be 8 characters or longer.

Account Name
Password

Data transfer complete:
Back | Forward | Home | Reload | Open | Save As | Clone | New Window | Close Window

FIG. 7
Document is protected.
Enter username for Open Market Account at payment.openmarket.com:

[Blank field for username]

[OK]  [Cancel]

FIG. 8
Open Market Payment

You have selected an item that you have purchased recently.

Merchant: Test Merchant
Description: Mead Data Central Article
Amount: 2.95 (US currency)

This could happen because you would like to buy the item again or it may have happened by accident.
You can:
- Go directly to the previous item
- Go ahead and buy the item again

Open Market, Inc.
LC's debut on the internet Library of Congress catalog

Text of Article

FIG. 10
Information about the item.

**Transactions in October 1994**

- Mon Oct 3  Test Merchant  Dilbert subscription 20 seconds amount $0.10
- Tue Oct 4  Test Merchant  Mead Data Central Article amount $2.95
- Tue Oct 4  Test Merchant  Mead Data Central Article amount $2.95
- Tue Oct 4  Test Merchant  Mead Data Central Article amount $2.95
- Tue Oct 4  Test Merchant  N.Y. Times Article amount $0.50
- Tue Oct 4  Test Merchant  Mead Data Central Article amount $2.95
- Wed Oct 5  Test Merchant  Mead Data Central Article amount $2.95
- Wed Oct 5  Test Merchant  Mead Data Central Article amount $2.95
- Wed Oct 5  Test Merchant  Mead Data Central Article amount $2.95
- Wed Oct 5  Test Merchant  Mead Data Central Article amount $2.95
- Wed Oct 5  Test Merchant  Mead Data Central Article amount $2.95

Your total is 33.05.

**Previous Statements**

- September 1994
- August 1994

Return to your Newest Statement

**Feedback**

You can send us comments and suggestions here.

Data transfer complete:
Smart Statement Detail

This is the detailed information about a particular transaction from your Smart Statement

Transaction Information

url: http://www.openmarket.com/demos/aug15/meal/mead-fingerprint/skarticle.cgo
transaction_log_id: 50254.0
currency: US
transaction_date: 781377633
initiator: I.0
expiration: 2592000
description: Mead Data Central Article
amount: 2.95
beneficiary: 3.0
ip_address: 199.170.183.13
transaction_type.p
domain: mead.internet-1

Merchant Information

telephone: 617-621-9501
address_1: Open Market, Inc.
address_2: 215 First Street
fax: 617-621-1703
address_3: Cambridge, MA
e-mail: testmerchant@openmarket.com
principal_name: Test Merchant

Data transfer complete:
Or if you prefer, you can send your comments via electronic mail to feedback@openmarket.com or via FAX to +1.617.621.1703. If you would like a reply please include your e-mail address.

Your Open Market account name (optional):

Your E-mail address (optional):

Subject:

Your comments:

Submit Feedback
1

NETWORK SALES SYSTEM

CROSS REFERENCE TO RELATED APPLICATION

This is a continuation of U.S. patent application Ser. No. 08/328,133, filed Oct. 24, 1994, now U.S. Pat. No. 5,715,314.

REFERENCE TO MICROFICHE APPENDICES

Microfiche Appendices A-G are being submitted with the present application, being 4 sheets with 220 total pages.

BACKGROUND OF THE INVENTION

This invention relates to user-interactive network sales systems for implementing an open marketplace for goods or services over computer networks such as the Internet.

U.S. patent application Ser. No. 08/168,519, filed Dec. 16, 1993 by David K. Gifford and entitled “Digital Active Advertising,” now abandoned, the entire disclosure of which is hereby incorporated herein in its entirety by reference, describes a network sales system that includes a plurality of buyer computers, a plurality of merchant computers, and a payment computer. A user at a buyer computer asks to have advertisements displayed, and the buyer computer requests advertisements from a merchant computer, which sends the advertisements to the buyer computer. The user then requests purchase of an advertised product, and the buyer computer sends a purchase message to the merchant computer. The merchant computer constructs a payment order that it sends to the payment computer, which authorizes the purchase and sends an authorization message to the merchant computer. When the merchant computer receives the authorization message it sends the product to the buyer computer.

The above-mentioned patent application also describes an alternative implementation of the network sales system in which, when the user requests purchase of an advertised product, the buyer computer sends a payment order directly to the payment computer, which sends an authorization message back to the buyer computer that includes an unforgeable certificate that the payment order is valid. The buyer computer then constructs a purchase message that includes the unforgeable certificate and sends it to the merchant computer. When the merchant computer receives the purchase request it sends the product to the buyer computer, based upon the pre-authorized payment order.

SUMMARY OF THE INVENTION

In one aspect, the invention provides a network-based sales system that includes at least one buyer computer for operation by a user desiring to buy a product, at least one merchant computer, and at least one payment computer. The buyer computer, the merchant computer, and the payment computer are interconnected by a computer network. The buyer computer is programmed to receive a user request for purchasing a product, and to cause a payment message to be sent to the payment computer that comprises a product identifier identifying the product. The payment computer is programmed to receive the payment message, to cause an access message to be created that comprises the product identifier and an access message authenticator based on a cryptographic key, and to cause the access message to be sent to the merchant computer. The merchant computer is programmed to receive the access message, to verify the access message authenticator to ensure that the access message authenticator was created using the cryptographic key, and to cause the product to be sent to the user desiring to buy the product.

The invention provides a simple design architecture for the network sales system that allows the merchant computer to respond to payment orders from the buyer computer without the merchant computer having to communicate directly with the payment computer to ensure that the user is authorized to purchase the product and without the merchant computer having to store information in a database regarding which buyers are authorized to purchase which products. Rather, when the merchant computer receives an access message from the buyer computer identifying a product to be purchased, the merchant computer need only check the access message to ensure that it was created by the payment computer (thereby establishing for the merchant computer that the buyer is authorized to purchase the product), and then the merchant computer can cause the product to be sent to the buyer computer who has been authorized to purchase the product.

In another aspect, the invention features a network-based sales system that includes at least one buyer computer for operation by a user desiring to buy products, at least one shopping cart computer, and a shopping cart database connected to the shopping cart computer. The buyer computer and the shopping cart computer are interconnected by a computer network. The buyer computer is programmed to receive a plurality of requests from a user to add a plurality of respective products to a shopping cart in the shopping cart database, and, in response to the requests to add the products, to send a plurality of respective shopping cart messages to the shopping cart computer each of which includes a product identifier identifying one of the plurality of products. The shopping cart computer is programmed to receive the plurality of shopping cart messages, to modify the shopping cart in the shopping cart database to reflect the plurality of requests to add the plurality of products to the shopping cart, and to cause a payment message associated with the shopping cart to be created. The buyer computer is programmed to receive a request from the user to purchase the plurality of products added to the shopping cart and to cause the payment message to be activated to initiate a payment transaction for the plurality of products added to the shopping cart.

In another aspect, the invention features a network-based link message system that includes at least one client computer for operation by a client user and at least one server computer for operation by a server user. The client computer and the server computer are interconnected by a computer network. The client computer is programmed to send an initial link message to the server computer. The server computer is programmed to receive the initial link message from the client computer and to create, based on information contained in the initial link message, a session link message that encodes a state of interaction between the client computer and the server computer. The session link message includes a session link authenticator, computed by a cryptographic function of the session link contents, for authenticating the session link message. The server computer is programmed to cause the session link message to be sent to the client computer. The client computer is programmed to cause the session link message to be sent to a computer in the network that is programmed to authenticate the session link message by examining the session link authenticator and that is programmed to respond to the session link message based on the state of the interaction between the client computer and the server computer.
In another aspect, the invention features a network-based sales system that includes a merchant database having a plurality of digital advertisements and a plurality of respective product fulfillment items, at least one creation computer for creating the merchant database, and at least one merchant computer for causing the digital advertisements to be transmitted to a user and for causing advertised products to be transmitted to the user. The creation computer and the merchant computer are interconnected by a computer network. The creation computer is programmed to create the merchant database, and to transmit the digital advertisements and the product fulfillment items to the merchant computer. The merchant computer is programmed to receive the digital advertisements and product fulfillment items, to receive a request for a digital advertisement from a user, to cause the digital advertisement to be sent to the user, from the user an access message identifying an advertised product, and to cause the product to be sent to the user in accordance with a product fulfillment item corresponding to the product.

In another aspect, the invention features a hypertext statement system that includes a client computer for operation by a client user and one or more server computers for operation by a server user. The client computer and the server computers are interconnected by a computer network. At least one of the server computers is programmed to record purchase transaction records in a database. Each of the purchase transaction records includes a purchase description. The server computer is programmed to transmit a statement document that includes the purchase transaction records to the client computer. The client computer is programmed to display the purchase description, to receive a request from the client user to display a product corresponding to a product description displayed by the client computer, and to cause a product hypertext link derived from a purchase transaction record to be activated. At least one of the server computers is programmed to respond to activation of the product hypertext link by causing the product to be sent to the client computer.

In another aspect, the invention features a network payment system that includes at least one buyer computer for operation by a user desiring to buy a product and at least one payment computer for processing payment messages from the buyer computer. The buyer computer and the payment computer are interconnected by a computer network. The buyer computer is programmed to cause a payment message to be sent to the payment computer. The payment message includes a product identifier identifying the product that the user desires to buy. The payment computer is programmed to receive the payment message, to cause an access message to be created to enable the user to access the product, and to record a purchase transaction record in the database. The buyer computer is programmed to receive the request for purchase transaction records and to cause a document derived from the purchase transaction records to be sent to the buyer computer.

**BRIEF DESCRIPTION OF THE DRAWINGS**

FIG. 1 is a block diagram of a network sales system in accordance with the present invention.

FIG. 2 (A through 4-C) is a flowchart diagram illustrating the operation of a smart statement in the network sales system of FIG. 1.

FIG. 3 is a screen snapshot of an advertising document that the merchant computer sends to the buyer computer in FIG. 2.

FIG. 4 is a screen snapshot of a confirmation document that the payment computer sends to the buyer computer in FIG. 2.

FIG. 5 is a screen snapshot of a new account document that the payment computer sends to the buyer computer in FIG. 2.

FIG. 6 is a screen snapshot of an account name prompt that the buyer computer creates in FIG. 2.

FIG. 7 is a screen snapshot of a document that the payment computer sends to the buyer computer in FIG. 2 and that provides an option either to repurchase or to use a previously purchased access.

FIG. 8 is a screen snapshot of a fulfillment document that the merchant computer sends to the buyer computer in FIG. 2.

FIG. 9 is a screen snapshot of a document that the payment computer sends to the buyer computer in FIG. 2.

FIGS. 10 and 11 are screen snapshots of a transaction detail document that the payment computer sends to the buyer computer in FIG. 2.

FIG. 12 is a screen snapshot of a customer service form that the payment computer sends to the buyer computer in FIG. 2.

**DETAILED DESCRIPTION**

With reference to FIG. 1, a network sales system in accordance with the present invention includes a buyer computer 12 operated by a user desiring to buy a product, a merchant computer 14, which may be operated by a merchant willing to sell products to the buyer or by a manager of the network sales system, a payment computer 16 typically operated by a manager of the network sales system, and a creation computer 20 typically operated by the merchant. The buyer, merchant, payment, and creation computers are all inter-connected by a computer network 10 such as the Internet.

Creation computer 20 is programmed to build a "store" of products for the merchant. A printout of a computer program for use in creating such a "store" in accordance with the present invention is provided as Appendix F.

The products advertised by merchant computer 14 may be, for example, newspaper or newsletter articles available for purchase by buyers. Creation computer 20 creates a digital advertisement database 18 that stores advertising documents (which may for example be in the form of summaries of newspapers or newsletter articles, accompanied by prices) and product fulfillment items (which may be the products themselves if the products can be transmitted over the network, or which may be hard goods identifiers if the products are hard goods, i.e., durable products as opposed to information products). Creation computer 20 transmits contents of the advertising document database 18 to merchant computer 14 to enable the merchant computer to cause advertisements and products to be sent to buyers. Merchant computer 14 maintains advertising documents in advertising document database 15. In an alternative embodiment, the creation computer does not have a local digital advertisement database, but instead updates a remote
advertising document database on a merchant computer. These updates can be accomplished using HTML forms or other remote database technologies as is understood by practitioners of the art.

Payment computer 16 has access to a settlement database 22 in which payment computer 16 can record details of purchase transactions. The products may be organized into various “domains” of products, and payment computer 16 can access settlement database 22 to record and retrieve records of purchases of products falling within the various domains. Payment computer 16 also has access to a shopping cart database 21 in which a “shopping cart” of products that a user wishes to purchase can be maintained as the user shops prior to actual purchase of the contents of the shopping cart.

With reference to FIG. 2, a purchase transaction begins when a user at buyer computer 12 requests advertisements (step 24) and buyer computer 12 accordingly sends an advertising document URL (universal resource locator) to merchant computer 14 (step 26). The merchant computer fetches an advertising document from the advertising document database (step 28) and sends it to the buyer computer (step 30). An example of an advertising document is shown in FIG. 5. Details of URLs and how they are used are found in Appendix G.

The user browses through the advertising document and eventually requests a product (step 32). This results in the buyer computer sending payment URL A to the payment computer (step 34). Payment URL A includes a product identifier that represents the product the user wishes to buy, a domain identifier that represents a domain of products to which the desired product belongs, a payment amount that represents the price of the product, a merchant computer identifier that represents merchant computer 14, a merchant account identifier that represents the particular merchant account to be credited with the payment amount, a duration time that represents the length of time for which access to the product is to be granted to the user after completion of the purchase transaction, an expiration time that represents a deadline beyond which this particular payment URL cannot be used, a buyer network address, and a payment URL authenticator that is a digital signature based on a cryptographic key. The payment URL authenticator is a hash of other information in the payment URL, the hash being defined by a key shared by the merchant and the operator of the payment computer.

In an alternative embodiment, step 34 consists of the buyer computer sending a purchase product message to the merchant computer, and the merchant computer provides payment URL A to the buyer computer in response to the purchase product message. In this alternative embodiment, payment URL A contains the same contents as above. The buyer computer then sends the payment URL A it has received from the merchant computer to the payment computer.

When the payment computer receives the payment URL it verifies whether the payment URL authenticator was created from the contents of the payment URL using the cryptographic key (step 36). If not, the payment computer sends a document to the buyer computer indicating that access to the network sales system is denied (step 38). Otherwise, the payment computer determines whether the expiration time has past (step 40). If it has, the payment computer sends a document to the buyer computer indicating that the time has expired (step 41). Otherwise, the payment computer checks the buyer computer network address to see if it matches the one specified in the payment URL (step 42). If it does not match, the payment computer sends a document to the buyer computer indicating that access to the network payment system is denied (step 43). Otherwise, the payment computer sends a payment confirmation document to the buyer computer, the payment confirmation document including an “open” link and a “continue” link (step 44).

An example of a confirmation document is shown in FIG. 6. The confirmation document asks the user to click on a “continue” button if the user already has an account with the payment computer, or to click on an “open” button if the user does not already have an account and wishes to open one.

If the user clicks on the “open” button (step 46), the buyer computer sends payment URL C to the payment computer (step 48), payment URL C being similar to payment URL A but also indicating that the user does not yet have an account.

The payment system creates a new account document (step 50) and sends it to the buyer computer (step 52). An example of a new account document is shown in FIG. 7. When the user receives the new account document he enters the new account name, an account password, a credit card number, the credit card expiration date, and security information such as the maiden name of the user’s mother (step 54), and presses a “submit” button (not shown in FIG. 7). The buyer computer sends the new account information to the payment computer (step 56), which enters the new account in the settlement database (step 58).

If the user clicks on the “continue” button (step 60), the buyer computer sends payment URL B to the payment computer (step 62), payment URL B being similar to payment URL A but also indicating that the user already has an account. The payment computer then instructs the buyer computer to provide the account name and password (steps 64 and 66), and the buyer computer prompts the user for this information by creating an account name prompt (example shown in FIG. 8) and a similar password prompt. The user enters the information (step 68) and the buyer computer sends the account name and password to the payment computer (step 70).

The payment computer verifies whether the user name and password are correct (step 72). If they are not correct, the payment computer sends a document to the buyer computer indicating that access to the network sales system is denied (step 74). Otherwise, the payment computer determines whether additional security is warranted, based on, e.g., whether the payment amount exceeds a threshold (step 73). If additional security is warranted, the payment computer creates a challenge form document and sends it to the buyer computer (step 75). The user enters the security information (step 77), the buyer computer sends the security information to the payment computer (step 79), and the payment computer determines whether the security information is correct (step 81). If it is not correct, the payment computer sends a document to the buyer computer indicating that access to the network sales system is denied (step 83).

If the security information is correct, or if additional security was not warranted, the payment computer checks the settlement database to determine whether the user has unexpired access to the domain identifier contained in the payment URL (step 84). If so, the payment computer sends to the buyer computer a document providing an option either to repurchase or to use the previously purchased access (step 84). An example of such a document is shown in FIG. 9. The
user can respond to the recent purchase query document by choosing to access the previously purchased document (step 85) or to go ahead and buy the currently selected product (step 86).

If the user chooses to access the previously purchased document, the buyer computer skips to step 92 (see below). If the user chooses to buy the currently selected product, the payment computer calculates an actual payment amount that may differ from the payment amount contained in the payment URL (step 87). For example, the purchase of a product in a certain domain may entitle the user to access other products in the domain for free or for a reduced price for a given period of time.

The payment computer then verifies whether the user account has sufficient funds or credit (step 76). If not, the payment computer sends a document to the buyer computer indicating that the user account has insufficient funds (step 78). Otherwise, the payment computer creates an access URL (step 80) that includes a merchant computer identifier, a domain identifier, a product identifier, an indication of the end of the duration time for which access to the product is to be granted, the buyer network address, and an access URL authenticator that is a digital signature based on a cryptographic key. The access URL authenticator is a hash of other information in the access URL, the hash being defined by a key shared by the merchant and the operator of the payment computer.

The payment computer verifies whether the access URL authenticator was created from the contents of the shopping cart URL using a cryptographic key (step 110). If not, the payment computer sends a copy of the shopping cart to the buyer computer indicating that access to the network sales system is denied (step 112). Otherwise, before any modification to a user’s shopping cart is allowed, user authentication is performed (step 113) in a manner analogous to steps 40–81. Once the user is authenticated, the payment computer creates or updates a payment URL for the shopping cart (step 114).

The user then either requests more advertisements (step 24 in FIG. 2) and possibly adds another product to the shopping cart, requests display of the shopping cart (step 116), or requests purchase of the entire contents of the shopping cart (step 124). If the user requests display of the shopping cart (step 116), the buyer computer sends a fetch shopping cart request to the payment computer (step 118), and the payment computer and buyer computer (step 119) perform steps analogous to steps 64–81. The payment computer returns the contents of the shopping cart to the buyer computer (step 120), which displays the contents of the shopping cart (step 122). If the user requests that the entire contents of the shopping cart be purchased (step 124) the buyer computer causes the payment URL for the shopping cart to be activated (step 126) and the payment URL is processed in a manner analogous to the processing of payment URLs for individual products (beginning with step 36 in FIG. 2).

With reference now to FIG. 4, a user can request display of a “smart statement” that lists purchase transactions for a given month (step 128). When the buyer computer receives such a request, it sends a smart statement URL to the payment computer (step 130).

When the payment computer receives the smart statement URL, it verifies whether the smart statement URL authenticator was created from the contents of the smart statement URL using a cryptographic key (step 132). If not, the payment computer sends a document to the buyer computer indicating that access is denied (step 134). Otherwise, the payment computer checks to determine whether the buyer network address in the smart statement URL matches the buyer computer’s actual network address (step 136). If not, the payment computer sends a document to the buyer computer indicating that access is denied (step 138). Otherwise (step 140), the payment computer and buyer computer perform a set of steps analogous to steps 64–81 in FIG. 2 (payment computer requests account name and password, user provides the requested information, and payment computer verifies the information).

In an alternative embodiment steps 132–138 are omitted. After verification of account information is complete, the payment computer retrieves the requested settlement data from the settlement database, creates a smart statement document for the buyer, and sends the smart statement document to the buyer computer (step 142). An example of a smart statement document is shown in FIG. 11. Each purchase transaction record in the smart statement document includes the data of the transaction, the name of the merchant, an identification of the product, and the payment amount for the product. The smart statement document also includes a transaction detail URL for each purchase transaction (these URLs, or hypertext links, are discussed below and are not shown in FIG. 11). The smart statement docu-
The buyer computer displays the retrieved document (step 144), and the user may request transaction details for a particular transaction listed on the smart statement (step 146). If so, the buyer computer sends a transaction detail URL (or “payment detail URL”) to the payment computer (step 148). The transaction detail URL includes a transaction identifier, a buyer network address, and a transaction detail URL authenticator. When the payment computer receives the transaction detail URL, it performs (step 150) a set of steps analogous to steps 132–140 (verification of URL authenticator, buyer network address, and account information). The payment computer then retrieves from the settlement database data corresponding to the payment transaction specified in the transaction detail URL, creates a transaction detail document, and sends it to the buyer computer (step 152).

An example of a transaction detail document is shown in FIGS. 12 and 13. The document displays a number of items of information about the transaction, including the transaction date, end of the duration time (“expiration”), a description of the product, the payment amount, the domain corresponding to the product, an identification of the merchant, and the merchant’s address.

The smart statement document and the transaction detail document both include customer service URLs (hypertext links) that allow the user to request customer service (i.e., to send comments and suggestions to the payment computer). When the user requests customer service (step 154), the buyer computer sends the customer service URL to the payment computer (step 156), which creates a customer service form and sends it to the buyer computer (step 158). An example of a customer service form is shown in FIG. 14. The user types comments into the customer service form (step 160), and the buyer computer sends the user’s comments to the payment computer (step 162). The payment computer then posts the user comments and sends a thank you document to the buyer computer (step 164).

A user may request display of a product included in the smart statement. When the user requests that the product be displayed (step 166), the buyer computer sends the access URL contained in the smart statement document to the merchant computer (step 168), and the buyer computer and merchant computer perform a set of steps analogous to steps 94–104 in FIG. 2 (authentication of access URL, verification whether duration time has expired, verification of buyer network address, and transmission of fulfillment document to buyer computer).

Whenever the present application states that one computer sends a URL to another computer, it should be understood that in preferred embodiments the URL is sent in a standard HTTP request message, unless a URL message is specified as a redirection in the present application. The request message includes components of the URL as described by the standard HTTP protocol definition. These URL components in the request message allow the server to provide a response appropriate to the URL. The term “URL” as used in the present application is an example of a “link,” which is a pointer to another document or form (including multimedia documents, hypertext documents including other links, or audio/video documents).

When the present application states that one computer sends a document to another computer, it should be understood that in preferred embodiments the document is a success HTTP response message with the document in the body of the message. When the present application states that a server sends an account name and password request message to the client, it should be understood that in preferred embodiments the account name and password request message is an unauthorized HTTP response. A client computer sends account name and password information to a server as part of a request message with an authorization field.

The software architecture underlying the particular preferred embodiment is based upon the hypertext conventions of the World Wide Web. Appendix A describes the Hypertext Markup Language (HTML) document format used to represent digital advertisements. Appendix B describes the HTML forms fill out support in Mosaic 2.0, Appendix C is a description of the Hypertext Transfer Protocol (HTTP) between buyer and merchant computers, Appendix D describes how documents are named with Uniform Resource Locators (URLs) in the network of computers, and Appendix E describes the authentication of URLs using digital signatures.

A printout of a computer program for use in creating and operating such a “store” in accordance with the present invention is provided as Appendix F. A printout of a computer program for use in operating other aspects of the network sales system in accordance with the present invention is provided in Appendix G.

There has been described a new and useful network-based sales system. It is apparent that those skilled in the art may make numerous modifications and departures from the specific embodiments described herein without departing from the spirit and scope of the claimed invention.

What is claimed is:

1. A network-based sales system, comprising: a merchant database comprising a plurality of digital advertisements and a plurality of respective product fulfillment items; at least one creation computer for creating said merchant database; and at least one merchant computer for causing said digital advertisements to be transmitted to a user and for causing advertised products to be transmitted to said user;
said creation computers, said merchant computer, and a payment computer being interconnected by a public packet switched computer network;
said creation computer being programmed to create said merchant database, and to transmit said digital advertisements and said product fulfillment items over said network to said merchant computer;
said merchant computer being programmed to receive said digital advertisements and product fulfillment items over said network, to receive over said network a request for a digital advertisement from a user, to cause said digital advertisement to be sent to said user over said network, to receive over said network from said user a product request message identifying an advertised product, to receive an access message over said network created by said payment computer, and to cause said product to be sent to said user in accordance with a product fulfillment item corresponding to said product and based upon receipt by the merchant computer of the access message.

2. A network-based sales system in accordance with claim 1, wherein each of said digital advertisements comprises an abstract of a product and a price.

3. A network-based sales system in accordance with claim 2, wherein:
at least one of said product fulfillment items comprises a product itself; and
said creation computer is programmed to transmit said product to said merchant computer with said digital advertisements.
4. A network-based sales system in accordance with claim 2, wherein:
at least one of said product fulfillment items comprises a hard good identifier; and
said creation computer is programmed to transmit said hard good identifier to said merchant computer with said digital advertisements.
5. A method of operating a merchant computer in a network-based sales system comprising a merchant database that comprises a plurality of digital advertisements and a plurality of respective product fulfillment items, at least one creation computer for creating said merchant database, and at least one merchant computer for causing said digital advertisements to be transmitted to a user and for causing advertised products to be transmitted to said user, and at least one payment computer, said creation computer, said merchant computer, and said payment computer being interconnected by a public packet switched computer network, said method comprising the steps of:
receiving, at said merchant computer, said digital advertisements and said product fulfillment items, said digital advertisements and said product fulfillment items having been transmitted over said network to said merchant computer by said creation computer, said merchant database comprising said digital advertisements and said product fulfillment items having been created by said creation computer;
receiving over said network a request for a digital advertisement from a user;
causing said digital advertisement to be sent to said user over said network;
receiving over said network from said user a product request message identifying an advertised product;
receiving over said network an access message created by said payment computer; and
causing said product to be sent to said user in accordance with a product fulfillment item corresponding to said product and based upon receipt by the merchant computer of the access message.
6. A hypertext statement system, comprising:
a client computer for operation by a client user; and
a plurality of server computers for operation by a server user;
said client computer and said server computers being interconnected by a public packet switched computer network;
at least one of said server computers being programmed to record information pertaining to purchase transaction records in a database, each of said purchase transaction records comprising a product description, and to cause a statement document comprising said purchase transaction records to be transmitted to said client computer over said network;
said client computer being programmed to display said product descriptions, to receive a request from said client user to display a product corresponding to a product description displayed by said client computer, and to cause a product hypertext link derived from a purchase transaction record to be activated;
at least one of said server computers, other than a server computer that transmitted said statement document to said client computer, being programmed to respond to activation of said product hypertext link by causing said product to be sent to said client computer over said network.
7. A hypertext statement system in accordance with claim 6, wherein:
said client computer is programmed to receive a request from said client user to display transaction details corresponding to a product description displayed by said client computer and to cause a transaction detail hypertext link corresponding to said product description to be activated; and
at least one of said server computers is programmed to respond to activation of said transaction detail hypertext link by transmitting said transaction details to said client computer as a transaction detail document.
8. A hypertext statement system in accordance with claim 7, wherein:
said transaction detail document further comprises a customer service form hypertext link;
said client computer is programmed to receive a request from said client user to display a customer service form and to cause a customer service form hypertext link to be activated; and
at least one of said server computers is programmed to respond to activation of said customer service form hypertext link by transmitting said customer service form to said client computer.
9. A hypertext statement system in accordance with claim 6, wherein:
said statement document further comprises a customer service form hypertext link;
said client computer is programmed to receive a request from said client user to display a customer service form and to cause said customer service form hypertext link to be activated; and
at least one of said server computers is programmed to respond to activation of said customer service form hypertext link by transmitting said customer service form to said client computer.
10. A method of operating a server computer in a hypertext statement system comprising a client computer for operation by a client user, and a plurality of server computers for operation by a server user, said client computer and said server computers being interconnected by a public packet switched computer network, said method comprising the steps of:
recording, at one of said server computers, information pertaining to purchase transaction records in a database, each of said purchase transaction records comprising a product description; and
causing a statement document comprising said purchase transaction records to be transmitted to said client computer over said network;
said client computer being programmed to display said product descriptions, to receive a request from said client user to display a product corresponding to a product description displayed by said client computer, and to cause a product hypertext link derived from a purchase transaction record to be activated;
at least one of said server computers, other than a server computer that transmitted said statement document to said client computer, being programmed to respond to activation of said product hypertext link by causing said product to be sent to said client computer over said network.
11. A network payment system, comprising:
at least one buyer computer for operation by a user
desiring to buy a product; and
said buyer computer, said payment computer, and a mer-
chant computer being interconnected by a public packet
switched computer network;
said buyer computer being programmed to cause a pay-
ment message to be sent to said payment computer over
said network;
said payment computer being programmed to receive said
payment message, to cause an access message to be
created for transmission over said network to said
merchant computer to enable said user to access said
product upon verification by said merchant computer
that said access message was created by said payment
computer, and to record information pertaining to a
purchase transaction record in said settlement database;
said buyer computer being programmed to cause a request
for a purchase transaction record to be sent to said
payment computer over said network; and
said payment computer being programmed to receive said
request for said purchase transaction record and to
cause a document derived from said purchase transac-
tion record to be sent to said buyer computer over said
network.

12. The network payment system of claim 11 wherein the
payment message comprises a product identifier identifying
the product that the user desires to buy.

13. A method of operating a payment computer in a
network payment system comprising at least one buyer
computer for operation by a user desiring to buy a product,
and at least one payment computer for processing payment
messages from said buyer computer, and at least one mer-
chant computer, said buyer computer, said payment
computer, and said merchant computer being interconnected
by a public packet switched computer network, said method
comprising the steps of:
receiving, at said payment computer, a payment message
that said buyer computer has caused to be sent to said
payment computer over said network;
causing an access message to be created for transmission
to a merchant computer over said network to enable
said user to access said product upon verification by
said merchant computer that said access message was
created by said payment computer;
recording information pertaining to a purchase transaction
record in said settlement database;
receiving over said network a request for a purchase
transaction record that said buyer computer has caused
to be sent to said payment computer; and
causing a document derived from said purchase transac-
tion record to be sent to said buyer computer over said
network.

14. The method of claim 13 wherein the payment message
comprises a product identifier identifying the product that
the user desires to buy.

15. A hypertext statement system, comprising:
a client computer for operation by a client user; and
one or more server computers for operation by a server
user;
the client computer and the server computers being inter-
connected by a public packet switched computer net-
work;
at least one of the server computers being programmed to
record information pertaining to purchase transaction
records in a database, and to transmit a statement
document comprising the purchase transaction records
to the client computer over the network;
the client computer being programmed to display the
statement document to receive a request from the client
user to display transaction details corresponding to a
portion of the statement document displayed by the
client computer, and to cause a transaction detail hyper-
text link corresponding to the portion of the statement
document to be activated;
at least one of the server computers being programmed to
respond to activation of the transaction detail hypertext
link by transmitting the transaction details to the client
computer over the network as a transaction detail
document.

16. A method of operating a server computer in a hyp-
text statement system comprising a client computer for
operation by a client user, and one or more server computers
for operation by a server user, the client computer and the
server computers being interconnected by a public packet
switched computer network, the method comprising the steps
of:
recording, at one of the server computers, information
pertaining to purchase transaction records in a data-
based; and
transmitting a statement document comprising the pur-
chase transaction records to the client computer over
the network;
the client computer being programmed to display the
statement document, to receive a request from the
client user to display transaction details corresponding
to a portion of the statement document displayed by
the client computer, and to cause a transaction detail hyper-
text link corresponding to the portion of the statement
document to be activated;
at least one of the server computers being programmed to
respond to activation of the transaction detail hypertext
link by transmitting the transaction details to the client
computer over the network as a transaction detail
document.

17. A network-based sales system, comprising:
at least one buyer computer for operation by a user
desiring to buy products;
at least one shopping cart computer; and
a shopping cart database connected to the shopping cart
computer;
the buyer computer and the shopping cart computer being
interconnected by a public packet switched computer
network;
the buyer computer being programmed to receive a plu-
ularity of requests from a user to add a plurality of
respective products to a shopping cart in the shopping
cart database, and, in response to the requests to add
the products, to send a plurality of respective shopping cart
messages over the network to the shopping cart com-
puter each of which comprises a product identifier
identifying one of the plurality of products and at least
one of which comprises a universal resource locator;
the shopping cart computer being programmed to receive
the plurality of shopping cart messages, to modify the
shopping cart in the shopping cart database to reflect
the plurality of requests to add the plurality of products
to the shopping cart, and to cause a payment message
associated with the shopping cart to be created, the payment message comprising a universal resource locator; and
the buyer computer being programmed to receive a request from the user to purchase the plurality of products added to the shopping cart and to cause the payment message to be activated to initiate a payment transaction for the plurality of products added to the shopping cart;
the shopping cart being a stored representation of a collection of products, the shopping cart database being a database of stored representations of collections of products, and the shopping cart computer being a computer that modifies the stored representations of collections of products in the database.

18. A method of operating a shopping cart computer in a public packet switched computer network comprising at least one buyer computer for operation by a user desiring to buy products, at least one shopping cart computer, and a shopping cart database connected to the shopping cart computer, the method comprising the steps of:
receiving, at the shopping cart computer, a plurality of shopping cart messages sent over the network to the shopping cart computer by the buyer computer in response to receipt of a plurality of requests from a user to add a plurality of respective products to a shopping cart in the shopping cart database, each of the shopping cart messages comprising a product identifier identifying one of the plurality of products and at least one of which comprises a universal resource locator;
modifying the shopping cart in the shopping cart database to reflect the plurality of requests to add the plurality of products to the shopping cart; and
causing a payment message associated with the shopping cart to be created, the payment message comprising a universal resource locator;
the buyer computer being programmed to receive a request from the user to purchase the plurality of products added to the shopping cart and to cause the payment message to be activated to initiate a payment transaction for the plurality of products added to the shopping cart;
the shopping cart being a stored representation of a collection of products, the shopping cart database being a database of stored representations of collections of products, and the shopping cart computer being a computer that modifies the stored representations of collections of products in the database.

19. A network-based sales system, comprising:
at least one buyer computer for operation by a user desiring to buy a product;
at least one merchant computer; and
at least one payment computer;
the buyer computer, the merchant computer, and the payment computer being interconnected by a computer network;
the buyer computer being programmed to receive a user request for purchasing a product, and to cause a payment message to be sent to the payment computer that comprises a product identifier identifying the product;
the payment computer being programmed to receive the payment message, to cause an access message to be created that comprises a product identifier identifying the product and an access message authenticator based on a cryptographic key, and to cause the access message to be sent to the merchant computer; and
the merchant computer being programmed to receive the access message, to cause the access message authenticator to be verified to ensure that the access message authenticator was created using the cryptographic key, and to cause the product to be received by the user desiring to buy the product.

20. A network-based sales system in accordance with claim 19 wherein the buyer computer is programmed to cause the payment message to be sent to the payment computer by sending a purchase product message to the merchant computer, the merchant computer being programmed to receive the purchase product message, and in response thereto, to send the payment message to the payment computer.

21. A network-based sales system in accordance with claim 19 wherein the merchant computer is programmed itself to verify the access message authenticator.

22. A network-based sales system in accordance with claim 19 wherein the merchant computer is programmed to cause every access message authenticator received by the merchant computer to be verified.

23. A network-based sales system in accordance with claim 19, wherein the payment message comprises a payment amount.

24. A network-based sales system in accordance with claim 19, wherein the payment computer is programmed to record the product identifier and the payment amount.

25. A network-based sales system in accordance with claim 19, wherein the product identifier and the payment amount are recorded in a settlement database.

26. A network-based sales system in accordance with claim 19, wherein the payment message comprises a merchant computer identifier.

27. A network-based sales system in accordance with claim 19, wherein the payment message comprises a payment message authenticator based on a cryptographic key.

28. A network-based sales system in accordance with claim 27, wherein the payment computer is programmed to verify the payment message authenticator to ensure that the payment message authenticator was created using the cryptographic key.

29. A network-based sales system in accordance with claim 19 wherein the computer network is a public packet-switched communications network.

30. A method of operating a payment computer in a computer network comprising at least one buyer computer for operation by a user desiring to buy a product, at least one merchant computer, and at least one payment computer, the method comprising the steps of:
receiving, at the payment computer, a payment message that the buyer computer has caused to be sent to the payment computer in response to a user request for purchasing a product, the payment message comprising a product identifier identifying the product;
causing an access message to be created that comprises a product identifier identifying the product and an access message authenticator based on a cryptographic key; and
causing the access message to be sent to the merchant computer, the merchant computer being programmed to receive the access message, to cause the access message authenticator to be verified to ensure that the access message authenticator was created using the cryptographic key, and to cause the product to be received by the user desiring to buy the product.

31. A network-based sales system, comprising:
at least one buyer computer for operation by a user desiring to buy a product;
at least one merchant computer; and
the buyer computer, the merchant computer, and the
payment computer being interconnected by a public
packet switched computer network;
the buyer computer being programmed to receive a
request from a user for purchasing a product, and to
cause a payment message to be sent over the network
to the payment computer;
the payment computer being programmed to receive the
payment message, and, if purchase of the product by
the user has not been previously recorded in a settle-
ment database, to cause the user to be charged for the
product and to create a new record in the settlement
database reflecting purchase of the product by the user,
to cause an access message to be created, and to cause
the access message to be sent over the network to the
merchant computer; and
the merchant computer being programmed to receive the
access message and to cause the user to receive the
product.
32. The network-based sales system of claim 31 wherein:
the payment computer is programmed to cause the access
message to be created using a cryptographic key; and
at least one of the computers is programmed to use the
access message in a cryptographic process to ensure
that the user has paid for the product.
33. A method of operating a payment computer in a public
packet switched computer network comprising at least one
buyer computer for operation by a user desiring to buy a
product, at least one merchant computer, and at least one
payment computer, the method comprising the steps of:
receiving, at the payment computer, a payment message
that the buyer computer has caused to be sent over the
network to the payment computer in response to a
request from a user for purchasing a product, and, if
purchase of the product by the user has not been
previously recorded in a settlement database, causing
the user to be charged for the product and creating a
new record in the settlement database reflecting pur-
chase of the product by the user;
causing an access message to be created; and
causing the access message to be sent over the network to
the merchant computer, the merchant computer being
programmed to receive the access message and to cause
the user to receive the product.
34. The method of claim 33 wherein at least one of the
computers is programmed to use the access message in a
cryptographic process to ensure that the user has paid for the
product.
35. A network-based sales system, comprising:
at least one buyer computer for operation by a user
desiring to buy products;
at least one shopping cart computer; and
a shopping cart database connected to the shopping cart
computer;
the buyer computer and the shopping cart computer being
interconnected by a public packet switched computer
network;
the buyer computer being programmed to receive a plu-
rality of requests from a user to add a plurality of
respective products to a shopping cart in the shopping
cart database, and, in response to the requests to add the
products, to send a plurality of respective shopping cart
messages over the network to the shopping cart com-
puter each of which comprises a product identifier
identifying one of the plurality of products;
the shopping cart computer being programmed to receive
the plurality of shopping cart messages, and to modify
the shopping cart in the shopping cart database to
reflect the plurality of requests to add the plurality of
products to the shopping cart; and
the buyer computer being programmed to receive a
request from the user to purchase the plurality of
products added to the shopping cart and to cause a
payment message to be activated to initiate a payment
transaction for the plurality of products added to the
shopping cart;
the shopping cart being a stored representation of a
collection of products, the shopping cart database being
a database of stored representations of collections of
products, and the shopping cart computer being a
computer that modifies the stored representations of
collections of products in the database.
36. A method of operating a shopping cart computer in a
public packet switched computer network comprising at
least one buyer computer for operation by a user desiring to
buy products, at least one shopping cart computer, and a
shopping cart database connected to the shopping cart
computer, the method comprising the steps of:
receiving, at the shopping cart computer, a plurality of
shopping cart messages sent over the network to the
shopping cart computer by the buyer computer in
response to receipt of a plurality of requests from a user
to add a plurality of respective products to a shopping
cart in the shopping cart database, each of the shopping
cart messages comprising a product identifier identify-
ing one of the plurality of products; and
modifying the shopping cart in the shopping cart database
to reflect the plurality of requests to add the plurality of
products to the shopping cart;
the buyer computer being programmed to receive a
request from the user to purchase the plurality of
products added to the shopping cart and to cause a
payment message to be activated to initiate a payment
transaction for the plurality of products added to the
shopping cart;
the shopping cart being a stored representation of a
collection of products, the shopping cart database being
a database of stored representations of collections of
products, and the shopping cart computer being a
computer that modifies the stored representations of
collections of products in the database.
37. A network-based sales system, comprising:
a merchant database comprising a plurality of digital
advertisements and a plurality of respective product
fulfillment items;
at least one creation computer for creating the merchant
database; and
at least one merchant computer for causing the digital
advertisements to be transmitted to a user and for
causing advertised products to be transmitted to the
user;
the creation computer and the merchant computer being
interconnected by a public packet switched computer
network;
the creation computer being programmed to create the
merchant database, and to transmit the digital adver-
sisements and the product fulfillment items over the
network to the merchant computer;
the merchant computer being programmed to receive the
digital advertisements and product fulfillment items
over the network, to receive over the network a request
for a digital advertisement from a user, to cause the
digital advertisement to be sent to the user over the
network, to receive over the network from the user a
product request message identifying an advertised
product, and to cause the product to be sent to the user
in accordance with a product fulfillment item corre-
sponding to the product;

at least a portion of the digital advertisements transmitted
by the creation computer to the merchant computer
over the network being authenticated by at least one
digital signature.

38. A method of operating a merchant computer in a
network-based sales system comprising a merchant database
that comprises a plurality of digital advertisements and a
plurality of respective product fulfillment items, at least one
creation computer for creating the merchant database, and at
least one merchant computer for causing the digital adver-
tisements to be transmitted to a user and for causing adver-
tised products to be transmitted to the user, the creation
computer and the merchant computer being interconnected
by a public packet switched computer network, the method
comprising the steps of:

receiving, at the merchant computer, the digital advertise-
ments and the product fulfillment items, the digital
advertisements and the product fulfillment items hav-
ing been transmitted over the network to the merchant
computer by the creation computer, the merchant data-
base comprising the digital advertisements and the
product fulfillment items having been created by the
creation computer;

receiving over the network a request for a digital adver-
tisement from a user;

causing the digital advertisement to be sent to the user
over the network;

receiving over the network from the user a product
request message identifying an advertised product; and
causing the product to be sent to the user in accordance
with a product fulfillment item corresponding to the

product;

at least a portion of the digital advertisements transmitted
by the creation computer to the merchant computer
over the network being authenticated by at least one
digital signature.

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