

METHOD AND SYSTEM FOR PAPERLESS MOBILE BILLING AND PAYMENT COLLECTION

Field of Invention

- 5 The invention relates generally to paperless transactions through a mobile network. In particular, the invention relates to a method and system for wireless bill presentation and bill payment on a mobile network.

Background

- 10 A household typically receives separate bills from sources such as utility and telco companies every month. A large amount of paper is therefore needed for printing bills or invoices each year to be sent to customers for billing purposes. An average equivalent of two to three sheets of A-4 size paper are used for printing a typical bill as well as for making up the envelope that is required for containing the bill to be sent to a customer. It
15 is estimated that for a sizable organization having a total of one million customers, at least fifty thousand trees are logged every month just to produce enough billing papers and envelopes.

- Additionally, the cost of sending a printed bill to a customer is estimated to be around half
20 a dollar. Based on this estimate, a company which sends a million printed bills to its customer per month would have to incur at least half a million dollars each month for sending out printed bills. Sending of printed bills is also insufficient as it typically takes a few working days for the bill to reach the intended addressees.

- 25 With the advent of the Internet as a tool for supporting online transactions, many companies have attempted to replace printed bills with electronic bills for sending to customers via the Internet. This change, if successful, will allow these companies to significantly reduce their billing cost. However, this billing method have yet to be widely accepted by consumers due to the fact that after receiving the electronic bills, the
30 consumers still have to pay their bills the conventional manner.

The conventional manner of paying electronic bills is inconvenient because it involves multiple steps consisting login authentication, payee selection and payment amount,

amongst others, prior to completing paying of bills via the Internet. As such, making payments with the minimum number of steps is desired.

There is therefore a need for improving the efficiency of providing electronic bill payment while having the option of paying bills either partially or in full.

Summary

Embodiments of the invention disclosed herein improve the efficiency of providing electronic bill payment while having the option of paying bills either partially or in full.

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In accordance to a first aspect of the invention, a method for bill management on a mobile messaging network is disclosed. The method involves receiving a bill packet by a mobile device. The mobile device has a unique mobile identifier associated therewith. The bill packet contains at least one bill item encrypted with the mobile identifier. Each bill item is associated with at least one payment account to which bill payment is made. The method also involves decrypting the bill packet with the mobile identifier for extracting the at least one bill item from the bill packet. The method further involves presenting the at least one bill item on the mobile device for selection by a user. A payment instruction associated with the at least one bill item is generatable in response to the bill item that is selected. More specifically, payment of the at least one bill item to the at least one payment account is subsequently effectable by the payment instruction.

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In accordance to a second aspect of the invention, a system for bill management on a mobile messaging network. The system comprises a server for sending a bill packet to a mobile device. The mobile device has a unique mobile identifier associated therewith. The bill packet contains at least one bill item encrypted with the mobile identifier. Each bill item is associated with at least one payment account to which bill payment is made. The system also comprises a decryptor for decrypting the bill packet with the mobile identifier for extracting the at least one bill item therefrom. The system further comprises a user interface for presenting the at least one bill item on the mobile device for selection by a user. A payment instruction associated with the at least one bill item is generatable in response to the bill item that is selected. More specifically, payment of each of the bill

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item to the at least one payment account is subsequently effectable by the payment instruction.

Brief Description Of The Drawings

5 Two embodiments of the invention are described hereinafter with reference to the drawings, in which:

Fig. 1 is a process flow diagram of a bill management method for a mobile messaging network according to an embodiment of the invention;

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Fig. 2 is a system diagram of for a system for bill management on a mobile messaging network according to the embodiment of the invention;

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Fig. 3 is a first series of interface of queries as presentable on the interface of a mobile device of the system of Fig. 2; and

Fig. 4 is second series of interface of queries as presentable on the interface of a mobile device of the system of Fig. 2.

20 Detailed Description

With reference to the drawings, a method and a system for improving the efficiency of providing electronic bill payment while having the option of paying bills either partially or in full are disclosed. Conventional methods and systems for electronic bill payment usually require a payer to execute several steps before the bill payment process can be
25 completed. However, such conventional methods and systems do not provide payers with an efficient way of providing electronic bill payment while having the option of paying bills either partially or in full.

The method and the system as disclosed according to embodiments of the invention
30 advantageously facilitate efficient electronic bill payment. Additionally, the method and the system also provides a payee with more control over bill payment by for example providing options for full payment or partial payment of bill. The bill is paid directly in a single reply in response to a request for bill payment to pre-selected payees via a mobile

terminal with the reply indicating either partial or full payment. The method and system therefore allows a mobile phone user to pay bills electronically in a direct and simple manner.

5 For purposes of brevity and clarity, the description of the invention is limited hereinafter to a method and a system for paying electronic bills while having the option of paying the bills either partially or in full. This however does not preclude the application of embodiments of the invention to paying electronic bills according to other arrangements for payment, such as deferring payment of the electronic bills. The functional principles
10 fundamental to the embodiments of the invention remain the same throughout the variations.

An embodiment of the invention is described hereinafter in greater detail with reference to Figs. 1 to 4, wherein like elements are assigned and labeled with like numerals and
15 described accordingly.

With reference to Fig. 1, a flow diagram of a method 100 for bill management according to a first embodiment of the invention is shown. The method 100 comprises step 102 of receiving a bill packet by a mobile device. Preferably, the mobile device has a unique
20 mobile identifier associated therewith. The bill packet contains data relating to one or more bill items, each of which is encrypted with the mobile identifier. Each bill item is associated with one or more payment accounts to which bill payment can be made.

The method 100 also involves a step 104 of decrypting the bill packet with the mobile
25 identifier for extracting the one or more bill items from the bill packet. The method 100 further comprises a step 106 of presenting each of the bill items on the mobile device for selection by a user. A payment instruction associated with each of the bill items is generatable in response to the bill item that is selected. More specifically, payment of each of the bill items to each of the payment accounts is subsequently effectable by the
30 payment instruction.

Fig. 2 illustrates a system 200 for bill payment operable on a mobile messaging network according to a second embodiment of the invention. The system 200 uses a push registry

to simplify and expedite bill payment executable on a mobile phone platform. The system 200 comprises a server 202 for receiving a payment request (not shown) from a service provider, such as a utility service provider or a Telco, for bill payment. The payment request consists of a bill packet containing details for bill payment.

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A user of the system 200 preferably registers for a bill payment account 204 with the server 202 via, for instance the Internet accessed through a computer 206. The user preferably has a mobile phone 208 that is associated to him or her and is preferably required to provide a name, a password, a mobile phone number and a mobile phone
10 identifier that is unique to the mobile phone during the account registration process. Bills are preferably sent by payee agencies via the server 202 according to each payee's billing cycle. The user is further preferably required to provide a bank account number for facilitating the payment of bills.

15 The payment request is preferably stored in the server 202, which comprises a Web Server portion 210 and an EJB server portion 212. The Web Server portion 210 has a Web container 214 for handling front end requests while the EJB server portion 212 has an EJB container 216 for handling back end requests. Specifically, the Web container 214 is used for communicating with the user via the user's mobile phone 208 or the
20 computer 206. The EJB container 216 is used for communicating with the service provider as well as the user's bank 218 via a secured VPN line.

The EJB server portion 212 is connected to an SQL server database 220. The SQL server database 220 preferably contains a Payee Table 222, a Payment Table 224 and a Payer
25 Table 226 for storing the bill packet that contains payment details, for example payee's names, corresponding payer's names and payment amount, in the respective tables.

A software program for mobile phones, such as a MIDlet application 228, is preferably sent by the Web server portion 210 to the user's mobile phone 208. The MIDlet
30 application 228 is preferably installed on the user's mobile phone 208 before the mobile phone 208 receives the payment request from the server 202. Once the MIDlet application 228 is installed 230 on the user's mobile phone 208, the mobile phone 208 is ready to process any payment request it receives from the server 202.

When the payment request has to be sent to the mobile phone associated with the user, the Web server portion 210 will first encrypts the payment request with the mobile phone identifier. The encrypted payment request is then sent to the user's mobile phone 208 via a wireless communication network, such as a mobile messaging network. Examples of a mobile messaging network includes short message service (SMS) and secured socket layer (SSL) in transmission control protocol / Internet protocol (TCP / IP) or user datagram protocol (UDP). The user's mobile phone 208 receives the encrypted payment request and decrypts the payment request with the mobile phone identifier.

10 The system 200 advantageously provides a secure way by which bill payments can be made through the wireless communication network. Specifically, the encrypted payment request is only sent to a pre-registered mobile phone that has the unique mobile phone identifier. This means that only a mobile phone with the unique mobile phone identifier is able to receive the encrypted payment request. Additionally, the payment request is encrypted so that the bill packets are protected during transmission from the server 202 to the user's mobile phone 208. Furthermore, the encrypted bill packets can only be decrypted by the MIDlet application 228 installed on the user's mobile phone 208. User authentication is also required for accessing the contents of the bill packets.

20 The user is required to register at least one payee with the server 202 for bill payment before payment can be made to the registered payee. Upon installation of the MIDlet application 228 on the mobile phone 208, the user is able to retrieve via the mobile phone 208 a list of payee names 232 obtained from the SQL server database 220. The user then selects one or more payees 234 for bill payment to. The server 202 is then informed of the selection through a confirm payee process 236. The SQL server database 220 preferably stores the selection before the server 202 confirms the payees 236 with the SQL server database 220 for bill payment. The user is also able to change or remove any payees that have been registered with the server 202 with the MIDlet application 228 as well as to add new payees for bill payment to.

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Once the payment request is received and decrypted in the user's mobile phone 208, the user is able to proceed with bill payment. The bill payment is initiated by the payee agency 240 and is forwarded by the server 202 to the user. The server 202 initiates bill

payment 242 by sending a payment notice 246 to the user's mobile phone 208 through the Web Server portion 210. The user is then able to proceed to make payment 238 to the selected payees upon receiving the payment notice 246 on the user's mobile phone 208. The server 202 then communicates with the bank 218 for bill deduction 248 before
 5 providing the payment status 250 to the user's mobile phone 208. Payment details 252 and records are viewable on the computer 206 via the Internet by the user.

Using the mobile phone 208 associated to the user, the user is required to provide a password for authentication purposes before one or more bill items are subsequently
 10 presented on the mobile phone 208 for user selection. As shown in Fig. 3, the bill items are preferably presented on a user interface (UI) of the user's mobile phone 208. The UI is preferably a graphical user interface (GUI).

The password is preferably provided for authenticating the user via a Password Query 300
 15 presented on the GUI. Upon the user being authenticated, a Payee Agency Query 302 in the form of icons representing one or more payee agencies 304 are provided on the GUI for selection by the user. The user is then required to select one or more payee agencies 304 in the Payee Agency Query 302 and proceed to pay the selected payee agency either in full or partially in a Selected Payee Agency Query 308, where the user has selected a
 20 payee agent from the Payee Agency Query 302.

If full payment is opted, the user is required to confirm the full payment in a Payment Confirmation Query 310. After full payment is confirmed, a Payment Receipt Query 312
 25 appears on the UI of the user's mobile phone 208 for showing a receipt number in response to the full payment being made. Thereafter, the Payee Agency Query 302 is shown again without any icon 306 therein to indicate that the current bills are duly paid. Alternatively, the user has a choice to exit the MIDlet application 228 from the Payment Receipt Query 312.

30 If partial payment is opted, the user is required to key in the amount of partial payment in a Partial Payment Query 311 and initiates the partial payment in the Payment Confirmation Query 310. After the partial payment is paid, the Payment Receipt Query 312 appears on the UI of the mobile phone 208 for showing a receipt number in response

to the partial payment made. Thereafter, the Payee Agency Query 302 is shown again with icons 306 to indicate that there are still outstanding bills to be paid to respective companies. The user can then proceed to the Selected Payee Agency Query 308 to check the remaining outstanding bills for the selected payee. Alternatively, the user has a choice
5 to exit the MIDlet application 228 after the Payment Receipt Query 312.

With reference to Fig. 4, the user is also able to add or remove payee agencies through a Main Menu Query 400. The Main Menu Query 400 has a Pay Bill option 402 as well as an Edit Payee option 404. The Pay Bill option 402 allows the user to proceed to the
10 earlier described Queries for bill payment. The Edit Payee option 404 allows the user to proceed to an Add/Remove Payee Query 406 for adding or removing a payee.

If a payee is required to be added, an Add Payee option 408 is selected in the Add/Remove Payee Query 406. The user is then required to select from a list of available
15 payee agencies to be added into an Add Payee Query 410. Thereafter, a Payee Added Query 412 is shown for confirming the addition of the new payee.

If a payee is required to be removed, a Remove Payee option 414 is selected in the Add/Remove Payee Query 406. The user is then required to select the payee to be
20 removed in a Remove Payee Query 416. Thereafter, a Payee Removed Query 418 is shown for confirming the removal of the selected payee.

Although only an embodiment of the invention is disclosed, it becomes apparent to one skilled in the art in view of this disclosure that numerous changes or modifications can be
25 made without departing from the true scope of the invention. For example, mobile devices such as personal digital assistants or PDAs that are able to communicate with the server via the wireless communication network may be used for the bill payment besides mobile phones. Accordingly, all such changes or modifications are intended to be covered by the appended claims.

Claims:

1. A bill management method for a mobile messaging network comprising:
 receiving a bill packet by a mobile device, the bill packet being provided by a server
 in data communication with the mobile device across a mobile messaging network, the
 5 mobile device being uniquely identifiable by a mobile identifier, the bill packet being bill
 data encrypted with the mobile identifier of the mobile device;

decrypting the received bill packet with the mobile identifier by the mobile device to
 extract the bill data from the bill packet, the bill data comprising at least one service provider
 and at least one payment amount corresponding therewith; and

10 presenting on an interface of the mobile device a plurality of payment options, each
 of the plurality of payment options being associated with one of the at least one service
 provider and indicative of payment of at least a portion of one of the at least one payment
 amount, the interface being operable for selecting at least one of the plurality of payment
 options to thereby generate a payment instruction defining the selected at least one of the
 15 plurality of payment options,

wherein the payment instruction is providable to the server by the mobile device for
 effecting subsequent payment of the at least a portion of one of the at least one payment
 amount indicated thereby.

20 2. The method as in claim 1, presenting on an interface of the mobile device a plurality
 of payment options comprising:

detecting selection of the plurality of payment options by the interface of the mobile
 phone.

25 3. The method as in claim 2, presenting on an interface of the mobile device a plurality
 of payment options further comprising:

presenting the at least one service provider as at least one icon on the interface, the at
 least one icon being removable from the interface in response to payment to the at least a
 portion of one of the at least one payment amount being effected.

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4. The method as in claim 1, further comprising:

generating the payment instruction in response to and being descriptive of the at least one plurality of payment options being selected.

5. The method as in claim 1, further comprising:

5 receiving an instruction reply from the server by the mobile device subsequent the payment instruction being provided to the server.

6. The method as in claim 5, the instruction reply being indicative of status of payment of the at least one payment amount associated with the selected at least one plurality of
10 payment options described by the payment instruction.

7. The method as in claim 1, receiving a bill packet by a mobile device comprising:

receiving the bill packet by at least one of short message service (SMS) and secured socket layer (SSL) in one of Transmission Control Protocol / Internet Protocol (TCP / IP)
15 and user datagram protocol (UDP).

8. The method as in claim 1, decrypting the received bill packet with the mobile identifier by the mobile device to extract the bill data from the bill packet further comprising:

20 authenticating the bill packet by at least a password.

9. The method as in claim 1, receiving a bill packet by a mobile device further comprising:

receiving the bill packet at regular time intervals.
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10. A system for bill management on a mobile messaging network, the system comprising:

a server for receiving a bill packet by a mobile device, the bill packet being provided by the server in data communication with the mobile device across a mobile messaging
30 network, the mobile device being uniquely identifiable by a mobile identifier, the bill packet being bill data encrypted with the mobile identifier of the mobile device;

a decryptor for decrypting the received bill packet with the mobile identifier by the mobile device to extract the bill data from the bill packet, the bill data comprising at least one service provider and at least one payment amount corresponding therewith; and

an interface for presenting a plurality of payment options, each of the plurality of payment options being associated with one of the at least one service provider and indicative of payment of at least a portion of one of the at least one payment amount, the interface being operable for selecting at least one of the plurality of payment options to thereby generate a payment instruction defining the selected at least one of the plurality of payment options,

wherein the payment instruction is providable to the server by the mobile device for effecting subsequent payment of the at least a portion of one of the at least one payment amount indicated thereby.

11. The system as in claim 10, wherein the interface detects selection of the plurality of payment options for generating the payment instruction.

12. The system as in claim 10, wherein the interface presents the at least one service provider as at least one icon on the interface, the at least one icon being removable from the display of the interface in response to payment of the at least a portion of the at least one payment amount being effected.

13. The system as in claim 10, wherein the payment instruction is generated in response to and being descriptive of the plurality of payment options being selected.

14. The system as in claim 10, wherein the server sends an instruction reply to the mobile device subsequent receiving payment instruction from the mobile device.

15. The system as in claim 14, wherein the instruction reply is indicative of status of payment of the at least one payment amount associated with the selected at least one plurality of payment options described by the payment instruction.

16. The system as in claim 10, wherein the server sends the bill packet to the mobile device by at least one of short message service (SMS) and secured socket layer (SSL) in one of Transmission Control Protocol / Internet Protocol (TCP / IP) and user datagram protocol (UDP).

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17. The system as in claim 10, wherein the decryptor further involves authenticating the bill packet by at least a password.

18. The system as in claim 10, wherein the server sends the bill packet to the mobile device at regular time intervals.

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