SYSTEM AND METHOD FOR SECURE ACCOUNT TRANSFER

Inventor: Jian Sun

BACKGROUND

Field

[0001] This disclosure is generally related to financial transactions. This disclosure is generally related to a system and method for secure transfer of funds based on a third-party entity that authenticates the validity of a payee.

Related Art

[0002] The progress of technology brings both an increasing convenience and risk to financial transactions. A payer can transfer funds from his bank account to the bank account of a payee by using a variety of computing and mobile devices. In some cases, multiple payers may wish to transfer funds to a single payee, e.g., multiple families paying tuition to a school, or multiple business owners donating funds to a charity or trust account. In these instances, certain payee information, such as the name and bank account number of the payee, may be publicly disclosed. The public disclosure of some payee information can result in security issues. For example, a hacker may obtain a bank account identifier for a person who has the same name (e.g., same first name and same last name) as the intended payee. The hacker can then publish incorrect information over the internet by replacing the bank account identifier for the intended payee with a different bank account identifier for the person with the same name. In another example, a hacker may intercept a packet that contains account information and replace the payee's account identifier with a malicious account identifier. Upon receiving the intercepted packet, a payee's system may remain unaware of the replaced identifier, and proceed with the indicated funds transfer. As a result, in both of these examples, funds may be improperly transferred to the bank account of an unauthorized person. In addition, current methods for account transfer may not allow a payer to state the dedicated purpose for a transfer of funds, which may also result in improper funds transfer.

SUMMARY

[0002a] The invention is defined in the independent claims. Further embodiments of the invention are defined in the dependent claims.

[0003] One embodiment provides a system that facilitates secure transfer of funds. During operation, the system generates, by a server, an authentication identifier for a payee of a bank account, wherein the authentication identifier indicates the bank account and a corresponding payment account of the payee. The system receives, from a payer, a message which indicates a first command to transfer a payment amount to the payee, wherein the first command includes the authentication identifier. In response to successfully verifying the authentication identifier, the system extracts information associated with the payment account and the bank account from the authentication identifier. The system transfers the payment amount to the bank account of the payee based on the extracted information.

[0004] In some embodiments, the system determines the bank account and the corresponding payment account of the payee, and authenticates the bank account and the payment account of the payee.

[0005] In some embodiments, the system transmits one or more messages to a payment system which manages the payment account for the payee, wherein the payment system communicates with a banking system which manages the bank account for the payee.

[0006] In some embodiments, the system transmits a message which indicates a second command to increase funds in the payment account by the payment amount and to freeze the payment account.

[0007] In some embodiments, in response to receiving the second message, the system increases, by a payment system which manages the payment account of the payee, the funds in the payment account by the payment amount. The system also freezes the payment account.

[0008] In some embodiments, in response to receiving a confirmation message which indicates a completion of the second command, the system stores in a database a report which includes the payment amount, the payee, and the authentication identifier.

[0009] In some embodiments, the system performs a search in the database for one or more reports which include the authentication identifier, based on a predetermined date or time period, wherein a report includes a payment amount. The system calculates a total payment amount for the one or more reports. The system generates a batch number for the one or more reports. The system also transmits a message which indicates a third command to transfer the total payment amount from the payment account of the payee to the bank account of the payee, to unfreeze the payment account, and to deduct the total payment amount from the funds of the payment account.

[0010] In some embodiments, in response to receiving a confirmation message which indicates a completion of the third command, the system updates in a database a report which includes the total payment amount, the payee, the authentication identifier, and the batch number.

[0011] In some embodiments, in response to receiving the third command, the system generates, by a payment system which manages the payment account of the payee, a message which indicates a fourth command to transfer the total payment amount from the payment account to the bank account of the payee. The system unfreezes the payment account. The system deducts the total payment amount from the funds of the payment account. The system also transmits a confirmation message to the server which indicates a completion of the third command.

[0012] In some embodiments, the system authenticates, by the payment system, the bank account of the payee.

[0013] In some embodiments, the system generates, by a server, a first authentication identifier for a payee, wherein the first authentication identifier is associated with a payment account of the payee and stored in the server. The system receives, from a payer, a request to transfer a payment amount to the payee, wherein the request includes a second authentication identifier. Upon successfully matching the second authentication identifier with the first authentication identifier, the server extracts the payment account based on the first authentication identifier. The system transfers the payment amount to the payment account of the payee.

[0014] In some embodiments, the system provides that the payment account of the payee at the third party system is coupled to the bank account of the payee at the bank system. The system generates a first authentication identifier for the payee at the third party system, wherein the first authentication identifier is associated with the bank account of the payee and stored in the third party system. The system receives, from a payer, a request to transfer a payment amount to the payee, wherein the request includes a second authentication identifier. Upon successfully matching the second authentication identifier with the first authentication identifier at the third party system, the system extracts the coupled bank account of the payee at the bank system, and transfers the payment amount to the bank account of the payee.

BRIEF DESCRIPTION OF THE FIGURES

[0015] FIG. 1A illustrates an exemplary computing system that facilitates secure transfer of funds, in accordance with an embodiment of the present application.

[0016] FIG. 1B illustrates an exemplary computing environment that facilitates secure transfer of funds, in accordance with an embodiment of the present application.

[0017] FIG. 2 presents a flowchart illustrating a method by a transaction server for securely transferring funds, in accordance with an embodiment of the present application.

[0018] FIG. 3 presents a flowchart illustrating a method by a transaction server for securely transferring funds, including interaction with a payment system, in accordance with an embodiment of the present application.

[0019] FIG. 4A presents a flowchart illustrating a method by a transaction server for summarizing and processing a secure transfer of funds, including interaction with a payment system, in accordance with an embodiment of the present application.

[0020] FIG. 4B presents a flowchart illustrating a method by a payment system for processing a secure transfer of funds, in accordance with an embodiment of the present application.

[0021] FIG. 5 illustrates an exemplary apparatus that facilitates secure transfer of funds, in accordance with an embodiment of the present application.

[0022] FIG. 6 illustrates an exemplary computer system that facilitates secure transfer of funds, in accordance with an embodiment of the present application.

[0023] In the figures, like reference numerals refer to the same figure elements.

DETAILED DESCRIPTION

[0024] The following description is presented to enable any person skilled in the art to make and use the embodiments, and is provided in the context of a particular application and its requirements. Various modifications to the disclosed embodiments will be readily apparent to those skilled in the art, and the general principles defined herein may be applied to other embodiments and applications without departing from the spirit and scope of the present disclosure. Thus, the present invention is not limited to the embodiments shown, but is to be accorded the widest scope consistent with the principles and features disclosed herein.

Overview

[0025] Embodiments of the present invention disclosed herein may solve the problem of improper funds transfer by providing a system which validates the authenticity of a payee, enables freezing of the appropriate payment account, and facilitates automatic funds transfer from the payment account to the corresponding bank account. Improper funds transfer can occur when certain information of a payee is publicly disclosed. For example, if the name and bank account number of a payee are known, a hacker can replace the payee's bank account number with the bank account number for a person with the same name as the payee. In another example, a hacker can intercept a

What Is Claimed Is:

1. A computer system for securely transferring funds to a payee, the computer system comprising:

a processor; and

a memory coupled to the processor and storing instructions, which when executed by the processor cause the processor to perform a method, the method comprising:

generating, by a server, an authentication identifier for the payee of a bank account, wherein the authentication identifier indicates both the bank account and a payment account of the payee, wherein the payment account corresponds to the bank account;

receiving, from a payer, a message which indicates a first command to transfer a payment amount to the payee, wherein the first command includes the authentication identifier;

in response to successfully verifying the authentication identifier, extracting information associated with the payment account and the bank account from the authentication identifier; and

transferring the payment amount to the bank account of the payee based on the extracted information.

2. The computer system of claim 1, wherein generating the authentication identifier comprises:

determining the bank account and the payment account of the payee; and

authenticating the bank account and the payment account of the payee.

3. The computer system of claim 1, wherein transferring the payment amount to the bank account of the payee further comprises:

transmitting one or more messages to a payment system which manages the payment account for the payee, wherein the payment system communicates with a banking system which manages the bank account for the payee.

4. The computer system of claim 1, wherein transferring the payment amount to the bank account of the payee further comprises:

transmitting a second message which indicates a second command to increase funds in the payment account by the payment amount and to freeze the payment account.

5. The computer system of claim 4, wherein in response to receiving the second message, the method further comprises:

increasing, by a payment system which manages the payment account of the payee, the funds in the payment account by the payment amount; and

freezing the payment account.

6. The computer system of claim 4, wherein the method further comprises:

in response to receiving a confirmation message which indicates a completion of the second command, storing in a database a report which includes the payment amount, the payee, and the authentication identifier.

7. The computer system of claim 5, wherein transferring the payment amount to the bank account of the payee further comprises:

performing a search in a database for one or more reports which include the authentication identifier, based on a predetermined date or time period, wherein a report includes a payment amount;

calculating a total payment amount for the one or more reports;

generating a batch number for the one or more reports; and

transmitting a message which indicates a third command to transfer the total payment amount from the payment account of the payee to the bank account of the payee, to unfreeze the payment account, and to deduct the total payment amount from the funds of the payment account.

8. The computer system of claim 7, wherein the method further comprises:

in response to receiving a confirmation message which indicates a completion of the third command, updating in the database a report which includes the total payment amount, the payee, the authentication identifier, and the batch number.

9. The computer system of claim 7, wherein in response to receiving the third command, the method further comprises:

generating, by the payment system which manages the payment account of the payee, a message which indicates a fourth command to transfer the total payment amount from the payment account to the bank account of the payee;

unfreezing the payment account;

deducting the total payment amount from the funds of the payment account; and

transmitting a confirmation message to the server which indicates a completion of the third command.

10. The computer system of claim 9, wherein generating the fourth command further comprises:

authenticating, by the payment system, the bank account of the payee.

11. A computer-implemented method for securely transferring funds to a payee, the computer-implemented method comprising:

generating, by a server, an authentication identifier for the payee of a bank account, wherein the authentication identifier indicates both the bank account and a payment account of the payee, wherein the payment account corresponds to the bank account;

receiving, from a payer, a message which indicates a first command to transfer a payment amount to the payee, wherein the first command includes the authentication identifier;

in response to successfully verifying the authentication identifier, extracting information associated with the payment account and the bank account from the authentication identifier; and

transferring the payment amount to the bank account of the payee based on the extracted information.

12. The computer-implemented method of claim 11, wherein generating the authentication identifier comprises:

determining the bank account and the payment account of the payee; and

authenticating the bank account and the payment account of the payee.

13. The computer-implemented method of claim 11, wherein transferring the payment amount to the bank account of the payee further comprises:

transmitting one or more messages to a payment system which manages the payment account for the payee, wherein the payment system communicates with a banking system which manages the bank account for the payee.

14. The computer-implemented method of claim 11, wherein transferring the payment amount to the bank account of the payee further comprises:

transmitting a second message which indicates a second command to increase funds in the payment account by the payment amount and to freeze the payment account.

15. The computer-implemented method of claim 14, wherein in response to receiving the second message, the method further comprises:

increasing, by a payment system which manages the payment account of the payee, the funds in the payment account by the payment amount; and

freezing the payment account.

16. The computer-implemented method of claim 14, further comprising:

in response to receiving a confirmation message which indicates a completion of the second command, storing in a database a report which includes the payment amount, the payee, and the authentication identifier.

17. The computer-implemented method of claim 15, wherein transferring the payment amount to the bank account of the payee further comprises:

performing a search in a database for one or more reports which include the authentication identifier, based on a predetermined date or time period, wherein a report includes a payment amount;

calculating a total payment amount for the one or more reports;

generating a batch number for the one or more reports; and

transmitting a message which indicates a third command to transfer the total payment amount from the payment account of the payee to the bank account of the payee, to unfreeze the payment account, and to deduct the total payment amount from the funds of the payment account.

18. The computer-implemented method of claim 17, further comprising:

in response to receiving a confirmation message which indicates a completion of the third command, updating in the database a report which includes the total payment amount, the payee, the authentication identifier, and the batch number.

19. The computer-implemented method of claim 17, wherein in response to receiving the third command, the method further comprises:

generating, by the payment system which manages the payment account of the payee, a message which indicates a fourth command to transfer the total payment amount from the payment account to the bank account of the payee;

unfreezing the payment account;

deducting the total payment amount from the funds of the payment account; and

transmitting a confirmation message to the server which indicates a completion of the third command.

20. The computer-implemented method of claim 19, wherein generating the fourth command further comprises:

authenticating, by the payment system, the bank account of the payee.

21. A computer system for securely transferring funds to a payee, the computer system comprising:

a processor; and

a memory coupled to the processor and storing instructions, which when executed by the processor cause the processor to perform a method, the method comprising:

generating, by a server, a first authentication identifier for the payee,

wherein the first authentication identifier is associated with both a bank account and a payment account of the payee, and is stored in the server, and wherein the payment account corresponds to the bank account;

receiving, from a payer, a request to transfer a payment amount to the payee, wherein the request includes a second authentication identifier;

upon successfully matching the second authentication identifier with the first authentication identifier, by the server, extracting the payment account based on the first authentication identifier; and

transferring the payment amount to the payment account of the payee.

22. A computer system for securely transferring funds to a payee having a bank account at a bank system and a payment account at a third party system, the computer system comprising:

a processor; and

a memory coupled to the processor and storing instructions, which when executed by the processor cause the processor to perform a method, the method comprising:

providing that the payment account of the payee at the third party system is coupled to the bank account of the payee at the bank system;

generating a first authentication identifier for the payee at the third party system,

wherein the first authentication identifier is associated with both the bank account and the payment account of the payee, and is stored in the third party system, and wherein the payment account corresponds to the bank account;

receiving, from a payer, a request to transfer a payment amount to the payee, wherein the request includes a second authentication identifier;

upon successfully matching the second authentication identifier with the first authentication identifier at the third party system, extracting the coupled bank account of the payee at the bank system; and

transferring the payment amount to the bank account of the payee.

23. A computer program or a computer program product comprising instructions which, when executed by a computing device, cause the computing device to carry out the method of any one of claims 11 to 20.