CROSS-BORDER PAYMENT SYSTEM AND METHOD, MEDIUM, AND COMPUTER SYSTEM

TECHNICAL FIELD

[0001] This specification relates to the field of computer technologies, and in particular, to a cross-border payment system and method, a medium, and a computer system.

BACKGROUND

[0002] With development of society, people pay increasingly more attention to privacy data. In a cross-border payment scenario, it is even more important to ensure security of private data. Usually, a cross-border payment system, mainly includes three parts: a payment institution, a transfer network, and an acquiring institution. The payment institution and the acquiring institution are located in different regions.

[0003] Generally, the payment institution provides a payment service for a user, and the acquiring institution performs transaction settlement for a merchant. Specifically, the user can place an order in a merchant system, and select a corresponding payment institution for payment. The acquiring institution can assist the merchant to initiate a deduction from the payment institution selected by the user. The transfer network is a bridge between the acquiring institution and the payment institution, and can also provide security guarantee for data exchanged between the acquiring institution and the payment institution.

[0004] However, in some regions, neither an identifier of the user on the payment institution side nor a mapping identifier generated by the payment institution corresponding to the identifier of the user is not allowed to be transmitted and used across borders. For example, the payment institution can be an electronic wallet, and the identifier of the user on the payment institution side can be an account of the electronic wallet. In this case, the account of the electronic wallet of the user is not allowed to be sent to an acquiring institution or a transfer network in another place. In addition, a mapping identifier corresponding to the account of the electronic wallet generated by the payment institution for the user is also not allowed to be sent to an acquiring institution or a transfer network in another place. Therefore, in the cross-border payment scenario, it is an important problem how to smoothly perform a payment procedure while ensuring that neither identification data of the user on the payment institution side nor mapping data generated by the

payment institution for the identification data of the user is not transmitted across borders.

[0005] Based on this, this specification of this application provides a cross-border payment system.

SUMMARY

[0006] Embodiments of this specification provide a cross-border payment system and method, a medium, and a computer system, to partially resolve the above-mentioned problem in the conventional technology.

[0007] This specification provides a cross-border payment system, where the system includes a payment institution, a transfer network, and an acquiring institution. The transfer network includes a front-end node and a back-end node. The front-end node and the payment institution are located in a same region, the acquiring institution and the payment institution are located in different regions, and the back-end node and the acquiring institution are located in a same region. The acquiring institution receives a first transaction request of a user, where the first transaction request carries an acquiring side identifier of the user on the acquiring institution side, and sends the first transaction request to the back-end node. The back-end node determines, in a pre-established back-end correspondence based on the acquiring side identifier carried in the received first transaction request, an intermediate identifier corresponding to the user; and sends a second transaction request that carries the intermediate identifier to the front-end node, where the back-end correspondence is a correspondence pre-generated by the back-end node for the user between the intermediate identifier and the acquiring side identifier of the user. The front-end node determines, in a pre-established front-end correspondence, a payment side identifier of the user on the payment institution side based on the intermediate identifier carried in the received second transaction request; and completes, based on the determined payment side identifier of the user by using the payment institution, a service corresponding to the first transaction request, where the front-end correspondence is a correspondence between the intermediate identifier of the user and the payment side identifier of the user.

[0008] This specification provides a cross-border payment method, where the method is applied to a front-end node of a transfer network in a cross-border payment system. The transfer network further includes a back-end node, and the cross-border payment system further includes a payment institution and an acquiring institution. The front-end node and the payment institution are located in a same region, the acquiring institution and the payment institution are located in different regions, and the back-end node and the acquiring institution are located in a same region. The method includes: receiving a second transaction request of a user sent by the back-end node,

where the second transaction request carries an intermediate identifier, the intermediate identifier is determined by the back-end node in a pre-established back-end correspondence based on a first transaction request of the user sent by the acquiring institution, the first transaction request carries an acquiring side identifier of the user on the acquiring institution side, and the back-end correspondence is a correspondence pre-generated by the back-end node for the user between the intermediate identifier and the acquiring side identifier of the user; determining, in a pre-established front-end correspondence, a payment side identifier of the user on the payment institution side based on the intermediate identifier carried in the received second transaction request, where the front-end correspondence is a correspondence between the intermediate identifier of the user and the payment side identifier of the user; and sending the determined payment side identifier of the user to the payment institution, so that the payment institution completes a service corresponding to the first transaction request.

[0009] This specification provides a cross-border payment method, where the method is applied to a back-end node of a transfer network in a cross-border payment system. The transfer network further includes a front-end node, and the cross-border payment system further includes a payment institution and an acquiring institution. The front-end node and the payment institution are located in a same region, the acquiring institution and the payment institution are located in different regions, and the back-end node and the acquiring institution are located in a same region. The method includes: receiving a first transaction request of a user sent by the acquiring institution, and determining, in a pre-established back-end correspondence, an intermediate identifier corresponding to the user, where the first transaction request carries an acquiring side identifier of the user in the acquiring institution, and the back-end correspondence is a correspondence pre-generated by the back-end node for the user between the intermediate identifier and the acquiring side identifier of the user; and sending a second transaction request that carries the intermediate identifier to the front-end node, so that the front-end node determines, in a pre-established front-end correspondence, a payment side identifier of the user on the payment institution side, and the payment institution completes, based on the determined payment side identifier of the user, a service corresponding to the first transaction request, where the front-end correspondence is a correspondence between the intermediate identifier of the user and the payment side identifier of the user.

[0010] This specification provides a computer system that serves as a front-end node of a transfer network in a cross-border payment system. The transfer network further includes a back-end node, and the cross-border payment system further includes a payment institution and an acquiring institution. The front-end node and the payment institution are located in a same region, the acquiring institution and the payment institution are located in different regions, and the back-

end node and the acquiring institution are located in a same region. The computer system includes a memory, a processor, and a computer program that is stored in the memory and that is capable of running on the processor. The processor executes the program to implement the following steps: receiving a second transaction request of a user sent by the back-end node, where the second transaction request carries an intermediate identifier, the intermediate identifier is determined by the back-end node in a pre-established back-end correspondence based on a first transaction request of the user sent by the acquiring institution, the first transaction request carries an acquiring side identifier of the user on the acquiring institution side, and the back-end correspondence is a correspondence pre-generated by the back-end node for the user between the intermediate identifier and the acquiring side identifier of the user; determining, in a pre-established front-end correspondence, a payment side identifier of the user on the payment institution side based on the intermediate identifier carried in the received second transaction request, where the front-end correspondence is a correspondence between the intermediate identifier of the user and the payment side identifier of the user; and sending the determined payment side identifier of the user to the payment institution, so that the payment institution completes a service corresponding to the first transaction request.

[0011] This specification provides a computer system that serves as a back-end node of a transfer network in a cross-border payment system. The transfer network further includes a front-end node, and the cross-border payment system further includes a payment institution and an acquiring institution. The front-end node and the payment institution are located in a same region, the acquiring institution and the payment institution are located in different regions, and the back-end node and the acquiring institution are located in a same region. The computer system includes a memory, a processor, and a computer program that is stored in the memory and that is capable of running on the processor. The processor executes the program to implement the following steps: receiving a first transaction request of a user sent by the acquiring institution, and determining, in a pre-established back-end correspondence, an intermediate identifier corresponding to the user, where the first transaction request carries an acquiring side identifier of the user in the acquiring institution, and the back-end correspondence is a correspondence pre-generated by the back-end node for the user between the intermediate identifier and the acquiring side identifier of the user; and sending a second transaction request that carries the intermediate identifier to the front-end node, so that the front-end node determines, in a pre-established front-end correspondence, a payment side identifier of the user on the payment institution side, and the payment institution completes, based on the determined payment side identifier of the user, a service corresponding to the first transaction request, where the front-end correspondence is a correspondence between the intermediate identifier of the user and the payment side identifier of the user.

[0012] This specification provides a computer-readable nonvolatile storage medium. The storage medium stores a computer program, and the computer program is executed by a processor to implement the above-mentioned cross-border payment method.

[0013] At least one of the above-mentioned technical solutions used in embodiments of this specification can achieve at least one of the following beneficial effects: In a cross-border payment scenario, the payment side identifier of the user on the payment institution side is replaced with the intermediate identifier, so that it is ensured that the payment side identifier corresponding to the user on the payment institution side does not need to be transmitted across borders. In addition, the intermediate identifier is pre-generated by the back-end node located in a region different from that of the payment institution, that is, the intermediate identifier is not a mapping identifier corresponding to the payment side identifier generated by the payment institution itself for the user. Therefore, there is no need to worry about of cross-border transmission of mapping data of the payment side identifier of the user on the payment institution side, so that a cross-border payment procedure can be smoothly performed while ensuring that neither the payment side identifier of the user on the payment institution side nor mapping data corresponding to the payment side identifier generated by the payment institution crosses borders, thereby enhancing protection of identification data of the user on the payment institution side in the cross-border payment procedure.

BRIEF DESCRIPTION OF DRAWINGS

[0014] The accompanying drawings described herein are used to provide a further understanding of this specification and constitute a part of this specification. The example embodiments of this specification and descriptions thereof are used to explain this specification, and do not constitute an improper limitation on this specification. In the accompanying drawings:

[0015] FIG. 1 is a schematic diagram of a cross-border payment system according to this specification;

[0016] FIG. 2 is a schematic diagram of a procedure for establishing a correspondence according to this specification;

[0017] FIG. 3 is a schematic diagram of a procedure for establishing a correspondence according to this specification;

[0018] FIG. 4 is a schematic flowchart of a cross-border payment method according to this specification;

[0019] FIG. 5 is a schematic diagram of a procedure for establishing a first front-end correspondence by a front-end node according to this specification;

[0020] FIG. 6 is a schematic diagram of a procedure for establishing a second front-end correspondence by a front-end node according to this specification;

[0021] FIG. 7 is a schematic flowchart of a cross-border payment method according to this specification;

[0022] FIG. 8 is a schematic diagram of a procedure for establishing a first back-end correspondence by a back-end node according to this specification;

[0023] FIG. 9 is a schematic diagram of a procedure for establishing a second back-end correspondence by a back-end node according to this specification; and

[0024] FIG. 10 is a schematic diagram of a structure of a computer system according to an embodiment of this specification.

DESCRIPTION OF EMBODIMENTS

[0025] To make the objectives, technical solutions, and advantages of this specification clearer, the following clearly and comprehensively describes the technical solutions of this specification with reference to specific embodiments and accompanying drawings of this specification. Clearly, the described embodiments are merely some but not all of embodiments of this specification. All other embodiments obtained by a person of ordinary skill in the art based on the embodiment of this specification without creative efforts shall fall within the protection scope of this specification.

[0026] The following describes in detail the technical solutions provided in the embodiments of this specification with reference to the accompanying drawings.

[0027] FIG. 1 is a schematic diagram of a cross-border payment system according to this specification. The system includes a payment institution, a transfer network, and an acquiring institution. The transfer network includes a front-end node and a back-end node. The front-end node and the payment institution are located in a same area, the acquiring institution and the payment institution are located in different areas, and the back-end node and the acquiring institution are located in a same area.

[0028] As described in the background, in an actual application scenario, the acquiring institution can perform transaction settlement for a merchant. When a user places an order at a merchant to initiate a payment transaction, the merchant can send a transaction request of the user to the acquiring institution, so that the acquiring institution performs transaction settlement for the merchant.

[0029] In this specification, the acquiring institution can receive a first transaction request of a user, where the first transaction request carries an acquiring side identifier of the user on the acquiring institution side. The acquiring institution can send the first transaction request to the

back-end node.

[0030] The back-end node can determine, in a pre-established back-end correspondence based on the acquiring side identifier of the user carried in the received first transaction request, an intermediate identifier corresponding to the user. The back-end node can further send a second transaction request that carries the intermediate identifier to the front-end node. The back-end correspondence is a correspondence pre-generated by the back-end node for the user between the intermediate identifier and the acquiring side identifier of the user.

[0031] The front-end node can determine, in a pre-established front-end correspondence based on the intermediate identifier carried in the received second transaction request, a payment side identifier of the user on the payment institution side. Then, the front-end node can complete, based on the determined payment side identifier of the user by using the payment institution, a service corresponding to the first transaction request. The front-end correspondence is a correspondence between the intermediate identifier of the user and the payment side identifier of the user.

[0032] It should be noted that, the service corresponding to the first transaction request can be a payment transaction, a refund service, etc. This is not specifically limited in this specification.

[0033] In addition, the acquiring side identifier of the user refers to an identifier of the user in the acquiring institution, and the acquiring side identifier can be an identifier allocated to the user by the acquiring institution, or can be an identifier allocated to the user by a merchant. A specific form of the acquiring side identifier is not limited in this specification, provided that the acquiring side identifier can be used to identify the user. In addition, a specific form of each identifier in this specification is not limited.

[0034] As described above, in this specification, the intermediate identifier is generated by the back-end node. Specifically, in one or more embodiments of this specification, the back-end node can randomly generate the intermediate identifier, where the intermediate identifier is used to replace the payment side identifier of the user on the payment institution side. In this specification, a method in which the back-end node generates the intermediate identifier is not limited.

[0035] It should be noted that, in one or more embodiments of this specification, after randomly generating the intermediate identifier, the back-end node may not make a correspondence between the intermediate identifier and the user, and may directly send the intermediate identifier to the front-end node, so that the front-end node and the payment institution make a correspondence between the intermediate identifier and the payment side identifier of the user on the payment institution side, to make a correspondence between the intermediate identifier and the user. Further, the front-end node can send a notification message to the back-end node, to notify the back-end node that the front-end node has completed establishment of the front-end correspondence between the intermediate identifier and the payment side identifier of the user, so

that the back-end node can establish, based on the user corresponding to the intermediate identifier in the front-end correspondence established by the front-end node, a correspondence between the acquiring side identifier corresponding to the user and the intermediate identifier.

[0036] Specifically, in one or more embodiments of this specification, the notification message can include a common identifier of the user corresponding to the front-end correspondence established by the front-end node, and the common identifier can be a mobile number of the user, a name of the user, an identity card number of the user, a mailbox account of the user, etc. The common identifier refers to an identifier that is used to identify a user identity and that is common to both the payment institution and the acquiring institution, and the common identifier can be agreed in advance between the payment institution and the acquiring institution.

[0037] The cross-border payment system shown based on FIG. 1 can be applied to a cross-border payment scenario. During cross-border payment, the payment side identifier of the user on the payment institution side is replaced with the intermediate identifier, so that it is ensured that the payment side identifier corresponding to the user on the payment institution side does not need to be transmitted across borders. In addition, the intermediate identifier is pre-generated by the back-end node located in a region different from that of the payment institution, that is, the intermediate identifier is not a mapping identifier corresponding to the payment side identifier generated by the payment institution itself for the user. Therefore, there is no need to worry about of cross-border transmission of mapping data of the payment side identifier of the user on the payment institution side, so that a cross-border payment procedure can be smoothly performed while ensuring that neither the payment side identifier of the user on the payment institution side nor mapping data corresponding to the payment side identifier generated by the payment institution crosses borders, thereby enhancing protection of identification data of the user on the payment institution side in the cross-border payment procedure.

[0038] In addition, the cross-border payment system expands an applicable region of the cross-border payment procedure corresponding to the cross-border payment system. Specifically, the solution is applicable to a region in which neither the payment side identifier of the user on the payment institution side nor the mapping data corresponding to the payment side identifier of the user generated by the payment institution is allowed to be transmitted across borders.

[0039] In addition, in one or more embodiments of this specification, the intermediate identifier includes a first intermediate identifier and a second intermediate identifier, the acquiring side identifier includes a first acquiring side identifier and a second acquiring side identifier, the payment side identifier includes a first payment side identifier and a second payment side identifier, the front-end correspondence includes a first front-end correspondence and a second front-end correspondence, and the back-end correspondence includes a first back-end correspondence and a

second back-end correspondence.

[0040] In one or more embodiments of this specification, the first payment side identifier can be a payment account of the user in the payment institution, or can be a mapping identifier corresponding to the payment account of the user generated by the payment institution. This is not specifically limited in this specification. The second payment side identifier refers to a payment token, that is, a verification token used for payment. The payment token can be used for verification, so that the payment institution can deduct money from the payment account of the user based on the payment token, or perform a service such as password-free payment.

[0041] FIG. 2 is a schematic diagram of a procedure for establishing a correspondence according to this specification. It can be learned that, when the intermediate identifier is the first intermediate identifier, the acquiring side identifier is the first acquiring side identifier, and the payment side identifier is the first payment side identifier, a specific procedure in which the front-end node establishes the first front-end correspondence and the back-end node establishes the first back-end correspondence is as follows: The back-end node can randomly generate the first intermediate identifier, and send the randomly generated first intermediate identifier to the front-end node. Then, the front-end node can receive the first intermediate identifier, and the front-end node can further receive the first payment side identifier that is of the user on the payment institution side and that is sent by the payment institution, and can further establish the first front-end correspondence between the first intermediate identifier and the first payment side identifier based on the received first intermediate identifier and the first payment side identifier. The front-end node can send a first notification message to the back-end node in response to completion of establishing the first front-end relationship. Therefore, the back-end node can receive the first notification message, and can determine, based on the received first notification message, the first acquiring side identifier on the acquiring institution side of the user corresponding to the first intermediate identifier, and establish the first back-end correspondence between the first intermediate identifier and the determined first acquiring side identifier of the user.

[0042] FIG. 3 is a schematic diagram of a procedure for establishing a correspondence according to this specification. It can be learned that, when the intermediate identifier is the second intermediate identifier, the acquiring side identifier is the second acquiring side identifier, and the payment side identifier is the second payment side identifier, a specific procedure in which the front-end node establishes the second front-end correspondence and the back-end node establishes the second back-end correspondence is as follows: The acquiring institution can receive a subscription request of the user, where the subscription request is used to request the payment institution to generate a payment token for the user, that is, the second payment side identifier, and the subscription request carries the first acquiring side identifier of the user. The acquiring

institution can send the subscription request to the back-end node. Then, the back-end node can determine, in the established first back-end correspondence, the first intermediate identifier corresponding to the first acquiring side identifier carried in the received subscription request. The back-end node can generate the second intermediate identifier, and send the determined first intermediate identifier and the generated second intermediate identifier to the front-end node, where the second intermediate identifier is used to replace the second payment side identifier generated by the payment institution for the user. Next, the front-end node can determine, in the established first front-end correspondence based on the received first intermediate identifier, the first payment side identifier corresponding to the received first intermediate identifier, and can send the determined first payment side identifier to the payment institution.

[0043] Therefore, the payment institution can generate the second payment side identifier for the user corresponding to the received first payment side identifier, and can send the generated second payment side identifier of the user to the front-end node. Then, the front-end node can establish the second front-end correspondence between the received second payment side identifier of the user and the second intermediate identifier, and the front-end node sends a second notification message to the back-end node in response to completion of establishing the second front-end relationship. Further, the back-end node can determine, based on the received second notification message, a subscription result corresponding to the subscription request, and the back-end node can establish the second back-end correspondence between the second intermediate identifier and the second acquiring side identifier of the user on the acquiring institution side.

[0044] As described above, the second intermediate identifier is an identifier that is pre-generated by the back-end node and that is used to replace the second payment side identifier generated by the payment institution, and the second payment side identifier is a payment token. Therefore, in an actual case, the second acquiring side identifier is the same as the second intermediate identifier, or in other words, the second acquiring side identifier may be the second intermediate identifier. Certainly, the second acquiring side identifier may be different from the second intermediate identifier. Therefore, the second acquiring side identifier can be pre-generated by the back-end node or the payment institution, and is used to establish a correspondence with the second intermediate identifier to bind to the user. Further, in combination with the second front-end correspondence generated by the payment institution in cooperation with the front-end node, the second payment side identifier corresponding to the user on the payment institution side can be found by using the second acquiring side identifier and the second intermediate identifier.

[0045] For example, an entity that generates the second acquiring side identifier is the acquiring institution. In one or more embodiments of this specification, the acquiring institution can generate the second acquiring side identifier for the user who sends the subscription request,

and can send the second acquiring side identifier to the back-end node, so that the back-end node can receive the second acquiring side identifier, and can respond to the received second notification message to establish the second back-end correspondence between the second intermediate identifier and the second acquiring side identifier of the user.

[0046] Establishment time of the first back-end correspondence is later than establishment time of the first front-end relationship, and establishment time of the second back-end correspondence is later than establishment time of the second front-end correspondence.

[0047] As described above, the second payment side identifier can be a payment token, that is, a verification token used for payment. Therefore, in this specification, when the payment side identifier is the second payment side identifier, the acquiring institution can receive a first transaction request of the user, where the first transaction request carries the second acquiring side identifier of the user; and can send the first transaction request to the back-end node. The back-end node can determine, in the pre-established second back-end correspondence based on the second acquiring side identifier carried in the received first transaction request, the second intermediate identifier corresponding to the user, and can send a second transaction request that carries the second intermediate identifier to the front-end node. Then, the front-end node can determine, in the pre-established second front-end correspondence based on the second intermediate identifier carried in the received second transaction request, the second payment identifier corresponding to the user, and can send a third transaction request that carries the second payment identifier to the payment institution. Further, the payment institution can verify the second payment identifier carried in the received third transaction request, and the payment institution can complete, in response to that the verification succeeds, a service corresponding to the first transaction request.

[0048] This specification further provides a cross-border payment method. The method is applied to a front-end node of a transfer network in the foregoing cross-border payment system. As shown in FIG. 4, FIG. 4 is a schematic flowchart of a cross-border payment method according to this specification. The method can specifically include the following steps:

[0049] S400: Receive a second transaction request of a user sent by the back-end node, where the second transaction request carries an intermediate identifier, the intermediate identifier is determined by the back-end node in a pre-established back-end correspondence based on a first transaction request of the user sent by the acquiring institution, the first transaction request carries an acquiring side identifier of the user on the acquiring institution side, and the back-end correspondence is a correspondence pre-generated by the back-end node for the user between the intermediate identifier and the acquiring side identifier of the user.

[0050] S402: Determine, in a pre-established front-end correspondence, a payment side

identifier of the user on the payment institution side based on the intermediate identifier carried in the received second transaction request, where the front-end correspondence is a correspondence between the intermediate identifier of the user and the payment side identifier of the user.

[0051] S404: Send the determined payment side identifier of the user to the payment institution, so that the payment institution completes a service corresponding to the first transaction request.

[0052] FIG. 5 is a schematic diagram of a procedure for establishing a first front-end correspondence by a front-end node according to this specification. Corresponding to the foregoing description of the cross-border payment system, in this specification, the intermediate identifier is the first intermediate identifier, the acquiring side identifier is the first acquiring side identifier, and the payment side identifier is the first payment side identifier. In an example, the procedure for establishing the first front-end correspondence by the front-end node can specifically include the following steps:

[0053] S500: Receive the first intermediate identifier, where the first intermediate identifier is generated by the back-end node and sent to the front-end node; and receive the first payment side identifier of the user sent by the payment institution.

[0054] S502: Establish the first front-end correspondence between the first intermediate identifier and the first payment side identifier.

[0055] S504: Send a first notification message to the back-end node in response to completion of establishing the first front-end relationship, so that the back-end node establishes the first back-end correspondence between the first intermediate identifier and the first acquiring side identifier of the user based on the notification message.

[0056] FIG. 6 is a schematic diagram of a procedure for establishing a second front-end correspondence by a front-end node according to this specification. Corresponding to the foregoing description of the cross-border payment system, in this specification, the intermediate identifier further includes the second intermediate identifier, the acquiring side identifier further includes the second acquiring side identifier, and the payment side identifier further includes the second payment side identifier. Correspondingly, the front-end correspondence further includes the second front-end correspondence, and the back-end correspondence further includes the second back-end correspondence. In an example, the procedure for establishing the second front-end correspondence by the front-end node can specifically include the following steps:

[0057] S600: Receive the first intermediate identifier and the second intermediate identifier of the subscribed user that are sent by the back-end node, where the first intermediate identifier is determined by the back-end node in the established first back-end correspondence based on a received subscription request of the user sent by the acquiring institution, and the first subscription request carries the first acquiring side identifier of the user.

[0058] S602: Determine, in the established first front-end correspondence, the first payment side identifier corresponding to the received first intermediate identifier.

[0059] S604: Send the determined first payment side identifier to the payment institution, so that the payment institution generates the second payment side identifier for the user corresponding to the received first payment side identifier, and the payment institution sends the generated second payment side identifier of the user to the front-end node.

[0060] S606: Establish the second front-end correspondence between the received second payment side identifier of the user and the second intermediate identifier.

[0061] S608: Send a second notification message to the back-end node in response to completion of establishing the second front-end relationship, so that the back-end node determines a subscription result corresponding to the subscription request and establishes the second back-end correspondence between the second intermediate identifier and the second acquiring side identifier of the user on the acquiring institution side.

[0062] Based on the foregoing cross-border payment method shown in FIG. 4, it can be learned that, in this method, a cross-border payment procedure can be smoothly performed while ensuring that neither the payment side identifier of the user on the payment institution side nor mapping data corresponding to the payment side identifier generated by the payment institution crosses borders.

[0063] This specification further provides a cross-border payment method. The method is applied to the back-end node of the transfer network in the cross-border payment system. As shown in FIG. 7, FIG. 7 is a schematic flowchart of a cross-border payment method according to this specification. The method can specifically include the following steps:

[0064] S700: Receive a first transaction request of a user sent by the acquiring institution, and determine, in a pre-established back-end correspondence, an intermediate identifier corresponding to the user, where the first transaction request carries an acquiring side identifier of the user in the acquiring institution, and the back-end correspondence is a correspondence pre-generated by the back-end node for the user between the intermediate identifier and the acquiring side identifier of the user.

[0065] S702: Send a second transaction request that carries the intermediate identifier to the front-end node, so that the front-end node determines, in a pre-established front-end correspondence, a payment side identifier of the user on the payment institution side, and the payment institution completes, based on the determined payment side identifier of the user, a service corresponding to the first transaction request, where the front-end correspondence is a correspondence between the intermediate identifier of the user and the payment side identifier of the user.

[0066] This specification provides a schematic diagram of a procedure for establishing a first back-end correspondence by a back-end node, as shown in FIG. 8. Corresponding to the foregoing description of the cross-border payment system, in this specification, the intermediate identifier is the first intermediate identifier, the acquiring side identifier is the first acquiring side identifier, and the payment side identifier is the first payment side identifier. The procedure for establishing the first back-end correspondence by the back-end node can specifically include the following steps:

[0067] S800: Generate the first intermediate identifier.

[0068] S802: Send the first intermediate identifier to the front-end node, so that the front-end node establishes the first front-end correspondence between the first intermediate identifier and the first payment side identifier of the user sent by the payment institution, and the front-end node sends a first notification message to the back-end node when completing establishment of the first front-end relationship.

[0069] S804: Receive the first notification message, and determine, based on the received first notification message, the first acquiring side identifier on the acquiring institution side of the user corresponding to the first intermediate identifier.

[0070] S806: Establish the first back-end correspondence between the first intermediate identifier and the determined first acquiring side identifier of the user.

[0071] This specification provides a schematic diagram of a procedure for establishing a second back-end correspondence by a back-end node, as shown in FIG. 9. The intermediate identifier further includes the second intermediate identifier, the acquiring side identifier further includes the second acquiring side identifier, and the payment side identifier further includes the second payment side identifier. Correspondingly, the front-end correspondence further includes the second front-end correspondence, and the back-end correspondence further includes the second back-end correspondence. The procedure for establishing the second back-end correspondence by the back-end node can specifically include the following steps:

[0072] S900: Determine, in the established first back-end correspondence based on a received subscription request sent by the acquiring institution, the first intermediate identifier corresponding to the first acquiring side identifier carried in the received subscription request.

[0073] S902: Generate the second intermediate identifier, and send the generated second intermediate identifier and the determined first intermediate identifier to the front-end node, so that the front-end node sends, to the payment institution based on the established first front-end correspondence, the first payment side identifier corresponding to the determined first intermediate identifier; the payment institution generates the second payment side identifier for the user corresponding to the received first payment side identifier, and sends the second payment side

identifier to the front-end node; and the front-end node establishes the second front-end correspondence between the second payment side identifier of the user and the second intermediate identifier, and sends a second notification message to the back-end node.

[0074] S904: Receive the second notification message.

[0075] S906: Determine, based on the received second notification message, a subscription result corresponding to the subscription request; and establish the second back-end correspondence between the second intermediate identifier and the second acquiring side identifier of the user on the acquiring institution side.

[0076] Based on the foregoing cross-border payment method shown in FIG. 7, it can be learned that, in this method, a cross-border payment procedure can be smoothly performed while ensuring that neither the payment side identifier of the user on the payment institution side nor mapping data corresponding to the payment side identifier generated by the payment institution crosses borders.

[0077] The specification also provides a computer-readable non-transitory storage medium, where the storage medium stores a computer program, which, when executed by a processor, can be used to perform one or more steps of one or more methods described or illustrated herein or provides functionality described or illustrated herein. Herein, the computer-readable non-transitory storage medium or media may include one or more semiconductor-based or other integrated circuits (ICs) (such, as for example, field-programmable gate arrays (FPGAs) or application-specific ICs (ASICs)), hard disk drives (HDDs), hybrid hard drives (HHDs), optical discs, optical disc drives (ODDs), magneto-optical discs, magneto-optical drives, floppy diskettes, floppy disk drives (FDDs), magnetic tapes, solid-state drives (SSDs), RAM-drives, SECURE DIGITAL cards or drives, any other suitable computer-readable non-transitory storage media, or any suitable combination of two or more of these, where appropriate. A computer-readable non-transitory storage medium may be volatile, non-volatile, or a combination of volatile and non-volatile, where appropriate.

[0078] The specification also provides a computer system. FIG. 10 illustrates an example computer system 700. In particular embodiments, one or more computer systems 700 perform one or more steps of one or more methods described or illustrated herein. In particular embodiments, one or more computer systems 700 provide functionality described or illustrated herein. In particular embodiments, software running on one or more computer systems 700 performs one or more steps of one or more methods described or illustrated herein or provides functionality described or illustrated herein. Particular embodiments include one or more portions of one or more computer systems 700. Herein, reference to a computer system may encompass a computing device, and vice versa, where appropriate. Moreover, reference to a computer system may

encompass one or more computer systems, where appropriate.

[0079] This disclosure contemplates any suitable number of computer systems 700. This disclosure contemplates computer system 700 taking any suitable physical form. As example and not by way of limitation, computer system 700 may be an embedded computer system, a system-on-chip (SOC), a single-board computer system (SBC) (such as, for example, a computer-on-module (COM) or system-on-module (SOM)), a desktop computer system, a laptop or notebook computer system, an interactive kiosk, a mainframe, a mesh of computer systems, a mobile telephone, a personal digital assistant (PDA), a server, a tablet computer system, or a combination of two or more of these. Where appropriate, computer system 700 may include one or more computer systems 700; be unitary or distributed; span multiple locations; span multiple machines; span multiple data centers; or reside in a cloud, which may include one or more cloud components in one or more networks. Where appropriate, one or more computer systems 700 may perform without substantial spatial or temporal limitation one or more steps of one or more methods described or illustrated herein. As an example and not by way of limitation, one or more computer systems 700 may perform in real time or in batch mode one or more steps of one or more methods described or illustrated herein. One or more computer systems 700 may perform at different times or at different locations one or more steps of one or more methods described or illustrated herein, where appropriate.

[0080] In particular embodiments, computer system 700 includes a processor 702, memory 704, storage 706, an input/output (I/O) interface 708, a communication interface 710, and a bus 712. Although this disclosure describes and illustrates a particular computer system having a particular number of particular components in a particular arrangement, this disclosure contemplates any suitable computer system having any suitable number of any suitable components in any suitable arrangement.

[0081] In particular embodiments, processor 702 includes hardware for executing instructions, such as those making up a computer program. As an example and not by way of limitation, to execute instructions, processor 702 may retrieve (or fetch) the instructions from an internal register, an internal cache, memory 704, or storage 706; decode and execute them; and then write one or more results to an internal register, an internal cache, memory 704, or storage 706. In particular embodiments, processor 702 may include one or more internal caches for data, instructions, or addresses. This disclosure contemplates processor 702 including any suitable number of any suitable internal caches, where appropriate. As an example and not by way of limitation, processor 702 may include one or more instruction caches, one or more data caches, and one or more translation lookaside buffers (TLB s). Instructions in the instruction caches may be copies of instructions in memory 704 or storage 706, and the instruction caches may speed up retrieval of

those instructions by processor 702. Data in the data caches may be copies of data in memory 704 or storage 706 for instructions executing at processor 702 to operate on; the results of previous instructions executed at processor 702 for access by subsequent instructions executing at processor 702 or for writing to memory 704 or storage 706; or other suitable data. The data caches may speed up read or write operations by processor 702. The TLBs may speed up virtual-address translation for processor 702. In particular embodiments, processor 702 may include one or more internal registers for data, instructions, or addresses. This disclosure contemplates processor 702 including any suitable number of any suitable internal registers, where appropriate. Where appropriate, processor 702 may include one or more arithmetic logic units (ALUs); be a multi-core processor; or include one or more processors 702. Although this disclosure describes and illustrates a particular processor, this disclosure contemplates any suitable processor.

[0082] In particular embodiments, memory 704 includes main memory for storing instructions for processor 702 to execute or data for processor 702 to operate on. As an example and not by way of limitation, computer system 700 may load instructions from storage 706 or another source (such as, for example, another computer system 700) to memory 704. Processor 702 may then load the instructions from memory 704 to an internal register or internal cache. To execute the instructions, processor 702 may retrieve the instructions from the internal register or internal cache and decode them. During or after execution of the instructions, processor 702 may write one or more results (which may be intermediate or final results) to the internal register or internal cache. Processor 702 may then write one or more of those results to memory 704. In particular embodiments, processor 702 executes only instructions in one or more internal registers or internal caches or in memory 704 (as opposed to storage 706 or elsewhere) and operates only on data in one or more internal registers or internal caches or in memory 704 (as opposed to storage 706 or elsewhere). One or more memory buses (which may each include an address bus and a data bus) may couple processor 702 to memory 704. Bus 712 may include one or more memory buses, as described below. In particular embodiments, one or more memory management units (MMUs) reside between processor 702 and memory 704 and facilitate accesses to memory 704 requested by processor 702. In particular embodiments, memory 704 includes random access memory (RAM). This RAM may be volatile memory, where appropriate. Where appropriate, this RAM may be dynamic RAM (DRAM) or static RAM (SRAM). Moreover, where appropriate, this RAM may be single-ported or multi-ported RAM. This disclosure contemplates any suitable RAM. Memory 704 may include one or more memories 704, where appropriate. Although this disclosure describes and illustrates particular memory, this disclosure contemplates any suitable memory.

[0083] In particular embodiments, storage 706 includes mass storage for data or instructions. As an example and not by way of limitation, storage 706 may include a hard disk drive (HDD), a

floppy disk drive, flash memory, an optical disc, a magneto-optical disc, magnetic tape, or a Universal Serial Bus (USB) drive or a combination of two or more of these. Storage 706 may include removable or non-removable (or fixed) media, where appropriate. Storage 706 may be internal or external to computer system 700, where appropriate. In particular embodiments, storage 706 is non-volatile, solid-state memory. In particular embodiments, storage 706 includes read-only memory (ROM). Where appropriate, this ROM may be mask-programmed ROM, programmable ROM (PROM), erasable PROM (EPROM), electrically erasable PROM (EEPROM), electrically alterable ROM (EAROM), or flash memory or a combination of two or more of these. This disclosure contemplates mass storage 706 taking any suitable physical form. Storage 706 may include one or more storage control units facilitating communication between processor 702 and storage 706, where appropriate. Where appropriate, storage 706 may include one or more storages 706. Although this disclosure describes and illustrates particular storage, this disclosure contemplates any suitable storage.

[0084] In particular embodiments, I/O interface 708 includes hardware, software, or both, providing one or more interfaces for communication between computer system 700 and one or more I/O devices. Computer system 700 may include one or more of these I/O devices, where appropriate. One or more of these I/O devices may enable communication between a person and computer system 700. As an example and not by way of limitation, an I/O device may include a keyboard, keypad, microphone, monitor, mouse, printer, scanner, speaker, still camera, stylus, tablet, touch screen, trackball, video camera, another suitable I/O device or a combination of two or more of these. An I/O device may include one or more sensors. This disclosure contemplates any suitable I/O devices and any suitable I/O interfaces 708 for them. Where appropriate, I/O interface 708 may include one or more device or software drivers enabling processor 702 to drive one or more of these I/O devices. I/O interface 708 may include one or more I/O interfaces 708, where appropriate. Although this disclosure describes and illustrates a particular I/O interface, this disclosure contemplates any suitable I/O interface.

[0085] In particular embodiments, communication interface 710 includes hardware, software, or both providing one or more interfaces for communication (such as, for example, packet-based communication) between computer system 700 and one or more other computer systems 700 or one or more networks. As an example and not by way of limitation, communication interface 710 may include a network interface controller (NIC) or network adapter for communicating with an Ethernet or other wire-based network or a wireless NIC (WNIC) or wireless adapter for communicating with a wireless network, such as a WI-FI network. This disclosure contemplates any suitable network and any suitable communication interface 710 for it. As an example and not by way of limitation, computer system 700 may communicate with an ad hoc network, a personal

area network (PAN), a local area network (LAN), a wide area network (WAN), a metropolitan area network (MAN), or one or more portions of the Internet or a combination of two or more of these. One or more portions of one or more of these networks may be wired or wireless. As an example, computer system 700 may communicate with a wireless PAN (WPAN) (such as, for example, a BLUETOOTH WPAN), a WI-FI network, a WI-MAX network, a cellular telephone network (such as, for example, a Global System for Mobile Communications (GSM) network), or other suitable wireless network or a combination of two or more of these. Computer system 700 may include any suitable communication interface 710 for any of these networks, where appropriate. Communication interface 710 may include one or more communication interfaces 710, where appropriate. Although this disclosure describes and illustrates a particular communication interface, this disclosure contemplates any suitable communication interface.

[0086] In particular embodiments, bus 712 includes hardware, software, or both coupling components of computer system 700 to each other. As an example and not by way of limitation, bus 712 may include an Accelerated Graphics Port (AGP) or other graphics bus, an Enhanced Industry Standard Architecture (EISA) bus, a front-side bus (FSB), a HYPERTRANSPORT (HT) interconnect, an Industry Standard Architecture (ISA) bus, an INFINIBAND interconnect, a low-pin-count (LPC) bus, a memory bus, a Micro Channel Architecture (MCA) bus, a Peripheral Component Interconnect (PCI) bus, a PCI-Express (PCIe) bus, a serial advanced technology attachment (SATA) bus, a Video Electronics Standards Association local (VLB) bus, or another suitable bus or a combination of two or more of these. Bus 712 may include one or more buses 712, where appropriate. Although this disclosure describes and illustrates a particular bus, this disclosure contemplates any suitable bus or interconnect.

[0087] Certainly, in addition to software implementations, this specification does not exclude other implementations such as a logic device or a combination of software and hardware. In other words, an execution body of the following processing procedure is not limited to each logical unit, and can be hardware or a logic device.

[0088] It should be further noted that, the terms "include", "comprise", or any other variant thereof are intended to cover a non-exclusive inclusion, so that a process, a method, a product, or a device that includes a list of elements not only includes those elements but also includes other elements which are not expressly listed, or further includes elements inherent to such process, method, product, or device. Without more constraints, an element preceded by "includes a …" does not preclude the existence of additional identical elements in the process, method, product, or device that includes the element.

[0089] Embodiments of this specification are described in a progressive manner, and for the same and similar parts of the embodiments, references can be made to each other. Each

embodiment focuses on a difference from other embodiments. Particularly, system embodiments are briefly described because they are basically similar to method embodiments. For related parts, references can be made to partial descriptions in the method embodiments.

[0090] The above-mentioned descriptions are merely embodiments of this specification, and are not intended to limit this specification. A person skilled in the art can make various modifications and variations to this specification. Any modification, equivalent replacement, improvement, etc. made without departing from the spirit and principle of this specification shall fall within the scope of the claims in this application.

CLAIMS

What is claimed is:

1. A cross-border payment system, wherein the system comprises a payment institution, a transfer network, and an acquiring institution; the transfer network comprises a front-end node and a back-end node; and the front-end node and the payment institution are located in a same region, the acquiring institution and the payment institution are located in different regions, and the back-end node and the acquiring institution are located in a same region;

the acquiring institution receives a first transaction request of a user, wherein the first transaction request carries an acquiring side identifier of the user on the acquiring institution side, and sends the first transaction request to the back-end node;

the back-end node determines, in a pre-established back-end correspondence based on the acquiring side identifier carried in the received first transaction request, an intermediate identifier corresponding to the user; and sends a second transaction request that carries the intermediate identifier to the front-end node, wherein the back-end correspondence is a correspondence pre-generated by the back-end node for the user between the intermediate identifier and the acquiring side identifier of the user; and

the front-end node determines, in a pre-established front-end correspondence, a payment side identifier of the user on the payment institution side based on the intermediate identifier carried in the received second transaction request; and completes, based on the determined payment side identifier of the user by using the payment institution, a service corresponding to the first transaction request, wherein the front-end correspondence is a correspondence between the intermediate identifier of the user and the payment side identifier of the user.

2. The system according to claim 1, wherein the intermediate identifier comprises a first intermediate identifier, the acquiring side identifier comprises a first acquiring side identifier, and the payment side identifier comprises a first payment side identifier;

the front-end correspondence comprises a first front-end correspondence, and the back-end correspondence comprises a first back-end correspondence;

the back-end node generates the first intermediate identifier, and sends the first intermediate identifier to the front-end node;

the front-end node receives the first intermediate identifier and the first payment side identifier of the user sent by the payment institution, and establishes the first front-end correspondence between the first intermediate identifier and the first payment side identifier; and sends a first notification message to the back-end node in response to completion of establishing the first front-end relationship; and

the back-end node determines, based on the received first notification message, the first acquiring side identifier that is of the user on the acquiring institution side and that corresponds to the first intermediate identifier, and establishes the first back-end correspondence between the first intermediate identifier and the determined first acquiring side identifier of the user.

3. The system according to claim 2, wherein the intermediate identifier further comprises a second intermediate identifier, the acquiring side identifier further comprises a second acquiring side identifier, and the payment side identifier further comprises a second payment side identifier;

the front-end correspondence further comprises a second front-end correspondence, and the back-end correspondence further comprises a second back-end correspondence;

the acquiring institution receives a subscription request of the user, wherein the first subscription request carries the first acquiring side identifier of the user; and sends the subscription request to the back-end node;

the back-end node determines, in the established first back-end correspondence, the first intermediate identifier corresponding to the first acquiring side identifier carried in the received subscription request; and generates the second intermediate identifier, and sends the determined first intermediate identifier and the generated second intermediate identifier to the front-end node;

the front-end node determines, in the established first front-end correspondence, the first payment side identifier corresponding to the received first intermediate identifier; and sends the determined first payment side identifier to the payment institution;

the payment institution generates the second payment side identifier for the user corresponding to the received first payment side identifier, and sends the generated second payment side identifier of the user to the front-end node;

the front-end node establishes the second front-end correspondence between the received second payment side identifier of the user and the second intermediate identifier; and sends a second notification message to the back-end node in response to completion of establishing the second front-end relationship; and

the back-end node determines, based on the received second notification message, a subscription result corresponding to the subscription request; and establishes the second back-end correspondence between the second intermediate identifier and the second acquiring side identifier of the user on the acquiring institution side.

4. The system according to claim 3, wherein the acquiring institution is specifically configured to generate the second acquiring side identifier for the user who sends the subscription request, and sends the second acquiring side identifier to the back-end node; and

the back-end node is specifically configured to receive the second acquiring side identifier; and establishes the second back-end correspondence between the second intermediate identifier

and the second acquiring side identifier of the user in response to the received second notification message.

5. The system according to claim 1, wherein the intermediate identifier comprises a second intermediate identifier, the acquiring side identifier comprises a second acquiring side identifier, and the payment side identifier comprises a second payment side identifier; and the front-end correspondence comprises a second front-end correspondence, and the back-end correspondence comprises a second back-end correspondence;

the acquiring institution is specifically configured to receive the first transaction request of the user, wherein the first transaction request carries the second acquiring side identifier of the user; and send the first transaction request to the back-end node;

the back-end node is specifically configured to determine, in the pre-established second back-end correspondence based on the second acquiring side identifier carried in the received first transaction request, the second intermediate identifier corresponding to the user; and send the second transaction request that carries the second intermediate identifier to the front-end node;

the front-end node is specifically configured to determine, in the pre-established second front-end correspondence based on the second intermediate identifier carried in the received second transaction request, the second payment identifier corresponding to the user; and send a third transaction request that carries the second payment identifier to the payment institution; and

the payment institution verifies the second payment identifier carried in the received third transaction request; and completes, in response to that the verification succeeds, the service corresponding to the first transaction request.

6. A cross-border payment method, wherein the method is applied to a front-end node of a transfer network in a cross-border payment system; the transfer network further comprises a back-end node, and the cross-border payment system further comprises a payment institution and an acquiring institution; the front-end node and the payment institution are located in a same region, the acquiring institution and the payment institution are located in different regions, and the back-end node and the acquiring institution are located in a same region; and the method comprises:

receiving a second transaction request of a user sent by the back-end node, wherein the second transaction request carries an intermediate identifier, the intermediate identifier is determined by the back-end node in a pre-established back-end correspondence based on a first transaction request of the user sent by the acquiring institution, the first transaction request carries an acquiring side identifier of the user on the acquiring institution side, and the back-end correspondence is a correspondence pre-generated by the back-end node for the user between the intermediate identifier and the acquiring side identifier of the user;

determining, in a pre-established front-end correspondence, a payment side identifier of the

user on the payment institution side based on the intermediate identifier carried in the received second transaction request, wherein the front-end correspondence is a correspondence between the intermediate identifier of the user and the payment side identifier of the user; and

sending the determined payment side identifier of the user to the payment institution, so that the payment institution completes a service corresponding to the first transaction request.

7. The method according to claim 6, wherein the intermediate identifier comprises a first intermediate identifier, the acquiring side identifier comprises a first acquiring side identifier, and the payment side identifier comprises a first payment side identifier;

the front-end correspondence comprises a first front-end correspondence, and the back-end correspondence comprises a first back-end correspondence; and

pre-establishing the first front-end correspondence specifically comprises:

receiving the first intermediate identifier, wherein the first intermediate identifier is generated by the back-end node and sent to the front-end node; and receiving the first payment side identifier of the user sent by the payment institution;

establishing the first front-end correspondence between the first intermediate identifier and the first payment side identifier; and

sending a first notification message to the back-end node in response to completion of establishing the first front-end relationship, so that the back-end node establishes the first back-end correspondence between the first intermediate identifier and the first acquiring side identifier of the user based on the notification message.

8. The method according to claim 7, wherein the intermediate identifier further comprises a second intermediate identifier, the acquiring side identifier further comprises a second acquiring side identifier, and the payment side identifier further comprises a second payment side identifier;

the front-end correspondence further comprises a second front-end correspondence, and the back-end correspondence further comprises a second back-end correspondence; and

pre-establishing the second front-end correspondence specifically comprises:

receiving the first intermediate identifier and the second intermediate identifier of the subscribed user that are sent by the back-end node, wherein the first intermediate identifier is determined by the back-end node in the established first back-end correspondence based on a received subscription request of the user sent by the acquiring institution, and the subscription request carries the first acquiring side identifier of the user;

determining, in the established first front-end correspondence, the first payment side identifier corresponding to the received first intermediate identifier;

sending the determined first payment side identifier to the payment institution, so that the payment institution generates the second payment side identifier for the user corresponding to the

received first payment side identifier, and the payment institution sends the generated second payment side identifier of the user to the front-end node;

establishing the second front-end correspondence between the received second payment side identifier of the user and the second intermediate identifier; and

sending a second notification message to the back-end node in response to completion of establishing the second front-end correspondence, so that the back-end node determines a subscription result corresponding to the subscription request and establishes the second back-end correspondence between the second intermediate identifier and the second acquiring side identifier of the user on the acquiring institution side.

9. A cross-border payment method, wherein the method is applied to a back-end node of a transfer network in a cross-border payment system; the transfer network further comprises a front-end node, and the cross-border payment system further comprises a payment institution and an acquiring institution; the front-end node and the payment institution are located in a same region, the acquiring institution and the payment institution are located in different regions, and the back-end node and the acquiring institution are located in a same region; and the method comprises:

receiving a first transaction request of a user sent by the acquiring institution, and determining, in a pre-established back-end correspondence, an intermediate identifier corresponding to the user, wherein the first transaction request carries an acquiring side identifier of the user in the acquiring institution, and the back-end correspondence is a correspondence pre-generated by the back-end node for the user between the intermediate identifier and the acquiring side identifier of the user; and

sending a second transaction request that carries the intermediate identifier to the front-end node, so that the front-end node determines, in a pre-established front-end correspondence, a payment side identifier of the user on the payment institution side, and the payment institution completes, based on the determined payment side identifier of the user, a service corresponding to the first transaction request, wherein the front-end correspondence is a correspondence between the intermediate identifier of the user and the payment side identifier of the user.

10. The method according to claim 9, wherein the intermediate identifier comprises a first intermediate identifier, the acquiring side identifier comprises a first acquiring side identifier, and the payment side identifier comprises a first payment side identifier;

the front-end correspondence comprises a first front-end correspondence, and the back-end correspondence comprises a first back-end correspondence; and

pre-establishing the first back-end correspondence specifically comprises:

generating the first intermediate identifier;

sending the first intermediate identifier to the front-end node, so that the front-end node

establishes the first front-end correspondence between the first intermediate identifier and the first payment side identifier of the user sent by the payment institution, and the front-end node sends a first notification message to the back-end node when completing establishment of the first front-end relationship;

receiving the first notification message, and determining, based on the received first notification message, the first acquiring side identifier that is of the user on the acquiring institution side and that corresponds to the first intermediate identifier; and

establishing the first back-end correspondence between the first intermediate identifier and the determined first acquiring side identifier of the user.

11. The method according to claim 10, wherein the intermediate identifier further comprises a second intermediate identifier, the acquiring side identifier further comprises a second acquiring side identifier, and the payment side identifier further comprises a second payment side identifier;

the front-end correspondence further comprises a second front-end correspondence, and the back-end correspondence further comprises a second back-end correspondence; and

pre-establishing the second back-end correspondence specifically comprises:

determining, in the established first back-end correspondence based on a received subscription request sent by the acquiring institution, the first intermediate identifier corresponding to the first acquiring side identifier carried in the received subscription request;

generating the second intermediate identifier, and sending the generated second intermediate identifier and the determined first intermediate identifier to the front-end node, so that the front-end node sends, to the payment institution based on the established first front-end correspondence, the first payment side identifier corresponding to the determined first intermediate identifier; the payment institution generates the second payment side identifier for the user corresponding to the received first payment side identifier, and sends the second payment side identifier to the front-end node; and the front-end node establishes the second front-end correspondence between the second payment side identifier of the user and the second intermediate identifier, and sends a second notification message to the back-end node;

receiving the second notification message; and

determining, based on the received second notification message, a subscription result corresponding to the subscription request; and establishing the second back-end correspondence between the second intermediate identifier and the second acquiring side identifier of the user on the acquiring institution side.

12. A computer system, serving as a front-end node of a transfer network in a cross-border payment system; the transfer network further comprises a back-end node, and the cross-border payment system further comprises a payment institution and an acquiring institution; and the front-

end node and the payment institution are located in a same region, the acquiring institution and the payment institution are located in different regions, and the back-end node and the acquiring institution are located in a same region; and

the computer system comprises a memory, a processor, and a computer program that is stored in the memory and that is capable of running on the processor, wherein the processor executes the program to implement the following steps:

receiving a second transaction request of a user sent by the back-end node, wherein the second transaction request carries an intermediate identifier, the intermediate identifier is determined by the back-end node in a pre-established back-end correspondence based on a first transaction request of the user sent by the acquiring institution, the first transaction request carries an acquiring side identifier of the user on the acquiring institution side, and the back-end correspondence is a correspondence pre-generated by the back-end node for the user between the intermediate identifier and the acquiring side identifier of the user;

determining, in a pre-established front-end correspondence, a payment side identifier of the user on the payment institution side based on the intermediate identifier carried in the received second transaction request, wherein the front-end correspondence is a correspondence between the intermediate identifier of the user and the payment side identifier of the user; and

sending the determined payment side identifier of the user to the payment institution, so that the payment institution completes a service corresponding to the first transaction request.

13. The computer system according to claim 12, wherein the intermediate identifier comprises a first intermediate identifier, the acquiring side identifier comprises a first acquiring side identifier, and the payment side identifier comprises a first payment side identifier;

the front-end correspondence comprises a first front-end correspondence, and the back-end correspondence comprises a first back-end correspondence; and

pre-establishing the first front-end correspondence specifically comprises:

receiving the first intermediate identifier, wherein the first intermediate identifier is generated by the back-end node and sent to the front-end node; and receiving the first payment side identifier of the user sent by the payment institution;

establishing the first front-end correspondence between the first intermediate identifier and the first payment side identifier; and

sending a first notification message to the back-end node in response to completion of establishing the first front-end relationship, so that the back-end node establishes the first back-end correspondence between the first intermediate identifier and the first acquiring side identifier of the user based on the notification message.

14. The computer system according to claim 13, wherein the intermediate identifier further

comprises a second intermediate identifier, the acquiring side identifier further comprises a second acquiring side identifier, and the payment side identifier further comprises a second payment side identifier;

the front-end correspondence further comprises a second front-end correspondence, and the back-end correspondence further comprises a second back-end correspondence; and

pre-establishing the second front-end correspondence specifically comprises:

receiving the first intermediate identifier and the second intermediate identifier of the subscribed user that are sent by the back-end node, wherein the first intermediate identifier is determined by the back-end node in the established first back-end correspondence based on a received subscription request of the user sent by the acquiring institution, and the subscription request carries the first acquiring side identifier of the user;

determining, in the established first front-end correspondence, the first payment side identifier corresponding to the received first intermediate identifier;

sending the determined first payment side identifier to the payment institution, so that the payment institution generates the second payment side identifier for the user corresponding to the received first payment side identifier, and the payment institution sends the generated second payment side identifier of the user to the front-end node;

establishing the second front-end correspondence between the received second payment side identifier of the user and the second intermediate identifier; and

sending a second notification message to the back-end node in response to completion of establishing the second front-end correspondence, so that the back-end node determines a subscription result corresponding to the subscription request and establishes the second back-end correspondence between the second intermediate identifier and the second acquiring side identifier of the user on the acquiring institution side.

15. A computer system, serving as a back-end node of a transfer network in a cross-border payment system; the transfer network further comprises a front-end node, and the cross-border payment system further comprises a payment institution and an acquiring institution; and the front-end node and the payment institution are located in a same region, the acquiring institution and the payment institution are located in different regions, and the back-end node and the acquiring institution are located in a same region; and

the computer system comprises a memory, a processor, and a computer program that is stored in the memory and that is capable of running on the processor, wherein the processor executes the program to implement the following steps:

receiving a first transaction request of a user sent by the acquiring institution, and determining, in a pre-established back-end correspondence, an intermediate identifier corresponding to the user,

wherein the first transaction request carries an acquiring side identifier of the user in the acquiring institution, and the back-end correspondence is a correspondence pre-generated by the back-end node for the user between the intermediate identifier and the acquiring side identifier of the user; and

sending a second transaction request that carries the intermediate identifier to the front-end node, so that the front-end node determines, in a pre-established front-end correspondence, a payment side identifier of the user on the payment institution side, and the payment institution completes, based on the determined payment side identifier of the user, a service corresponding to the first transaction request, wherein the front-end correspondence is a correspondence between the intermediate identifier of the user and the payment side identifier of the user.

16. The computer system according to claim 15, wherein the intermediate identifier comprises a first intermediate identifier, the acquiring side identifier comprises a first acquiring side identifier, and the payment side identifier comprises a first payment side identifier;

the front-end correspondence comprises a first front-end correspondence, and the back-end correspondence comprises a first back-end correspondence; and

pre-establishing the first back-end correspondence specifically comprises:

generating the first intermediate identifier;

sending the first intermediate identifier to the front-end node, so that the front-end node establishes the first front-end correspondence between the first intermediate identifier and the first payment side identifier of the user sent by the payment institution, and the front-end node sends a first notification message to the back-end node when completing establishment of the first front-end relationship;

receiving the first notification message, and determining, based on the received first notification message, the first acquiring side identifier that is of the user on the acquiring institution side and that corresponds to the first intermediate identifier; and

establishing the first back-end correspondence between the first intermediate identifier and the determined first acquiring side identifier of the user.

17. The computer system according to claim 16, wherein the intermediate identifier further comprises a second intermediate identifier, the acquiring side identifier further comprises a second acquiring side identifier, and the payment side identifier further comprises a second payment side identifier;

the front-end correspondence further comprises a second front-end correspondence, and the back-end correspondence further comprises a second back-end correspondence; and

pre-establishing the second back-end correspondence specifically comprises:

determining, in the established first back-end correspondence based on a received

subscription request sent by the acquiring institution, the first intermediate identifier corresponding to the first acquiring side identifier carried in the received subscription request;

generating the second intermediate identifier, and sending the generated second intermediate identifier and the determined first intermediate identifier to the front-end node, so that the front-end node sends, to the payment institution based on the established first front-end correspondence, the first payment side identifier corresponding to the determined first intermediate identifier; the payment institution generates the second payment side identifier for the user corresponding to the received first payment side identifier, and sends the second payment side identifier to the front-end node; and the front-end node establishes the second front-end correspondence between the second payment side identifier of the user and the second intermediate identifier, and sends a second notification message to the back-end node;

receiving the second notification message; and

determining, based on the received second notification message, a subscription result corresponding to the subscription request; and establishing the second back-end correspondence between the second intermediate identifier and the second acquiring side identifier of the user on the acquiring institution side.

18. A computer-readable nonvolatile storage medium, wherein the storage medium stores a computer program, and the computer program is executed by a processor to implement the method according to any one of claims 6 to 11.