RESOURCE TRANSFER METHOD, SERVER, SWITCHING DEVICE, SYSTEM AND STORAGE MEDIUM

CROSS REFERENCE TO RELATED APPLICATION

[0001] The present application claims the priority to Chinese Patent Application No. 202011319394.9 filed on November 23, 2020 and titled "RESOURCE TRANSFER METHOD, SERVER, SWITCHING DEVICE, SYSTEM AND STORAGE MEDIUM", which is incorporated herein by reference in its entirety.

TECHNICAL FIELD

[0002] The present application relates to the field of data processing, and particularly, to a resource transfer method, server, switching device, system and storage medium.

BACKGROUND

[0003] C2C (Customer to Customer) is a kind of e-commerce between individuals. With the development of information technology, users can achieve C2C resource transfer business with other users through electronic wallets and the like, for example, the sending and receiving of red envelopes between users.

[0004] Nonetheless, in the process of C2C resource transfer between users, the transferred resources need to be placed on a resource transfer platform such as an electronic wallet and transferred between the resource sender and the resource receiver through the resource transfer platform. Compared with the user's resource account party such as the card-issuing bank, the risk of the resource transfer platform is high and thus the risk of the resources placed on the resource transfer platform is also high, which increases the risk of the resource transfer.

SUMMARY

[0005] Embodiments of the present application provide a resource transfer method, server, switching device, system and storage medium, which can reduce the risk of the resource transfer.

[0006] In a first aspect, the embodiments of the present application provide a resource transfer

method applied to a switching device, the method including: receiving a resource transfer-out request message sent by a server, the resource transfer-out request message including a resource transfer-out request identifier, transfer-out resource account information and a first resource transfer amount; determining a transfer-out management subsystem according to the resource transfer-out request message, the transfer-out management subsystem including a management subsystem for a transfer-out resource account indicated by the transfer-out resource account information; and sending the resource transfer-out request message to the transfer-out management subsystem, the resource transfer-out request message being configured to instruct the transfer-out management subsystem to freeze the first resource transfer amount of resources in the transfer-out resource account, and at least part of the frozen resources being unfrozen and transferred to a transfer-in resource account under a condition that the transfer-out management subsystem receives an account-out request message.

[0007] In a second aspect, the embodiments of the present application provide a resource transfer method applied to a server, the method including: sending a resource transfer-out request message to a switching device, the resource transfer-out request message including a resource transfer-out request identifier, transfer-out resource account information and a first resource transfer amount and being configured to instruct a transfer-out management subsystem to freeze the first resource transfer amount of resources in a transfer-out resource account, and at least part of the frozen resources being unfrozen and transferred to a transfer-in resource account under a condition that the transfer-out management subsystem receives an account-out request message; and updating a stored first resource transfer state to a resource transfer-out request state, and the first resource transfer state including a transfer state of the first resource transfer amount of resources.

[0008] In a third aspect, the embodiments of the present application provide a switching device including: a receiving module configured to receive a resource transfer-out request message sent by a server, the resource transfer-out request message including a resource transfer-out request identifier, transfer-out resource account information and a first resource transfer amount; a determining module configured to determine a transfer-out management subsystem according to the resource transfer-out request message, the transfer-out management subsystem including a management subsystem for a transfer-out resource account indicated by

the transfer-out resource account information; and a sending module configured to send the resource transfer-out request message to the transfer-out management subsystem, the resource transfer-out request message being configured to instruct the transfer-out management subsystem to freeze the first resource transfer amount of resources in the transfer-out resource account, and at least part of the frozen resources being unfrozen and transferred to a transfer-in resource account under a condition that the transfer-out management subsystem receives an account-out request message.

[0009] In a fourth aspect, the embodiments of the present application provide a server including: a sending module configured to send a resource transfer-out request message to a switching device, the resource transfer-out request message including a resource transfer-out request identifier, transfer-out resource account information and a first resource transfer amount and being configured to instruct a transfer-out management subsystem to freeze the first resource transfer amount of resources in a transfer-out resource account, and at least part of the frozen resources being unfrozen and transferred to a transfer-in resource account under a condition that the transfer-out management subsystem receives an account-out request message; and a state storing module configured to update a stored first resource transfer state to a resource transfer-out request state, and the first resource transfer state including a transfer state of the first resource transfer amount of resources.

[0010] In a fifth aspect, the embodiments of the present application provide a switching device including: a processor and a memory storing computer program instructions, in which the processor, when executing the computer program instructions, implements the resource transfer method of the first aspect.

[0011] In a sixth aspect, the embodiments of the present application provide a server including: a processor and a memory storing computer program instructions, in which the processor, when executing the computer program instructions, implements the resource transfer method of the second aspect.

[0012] In a seventh aspect, the embodiments of the present application provide a resource transfer system including the switching device of the fifth aspect and the server of the sixth aspect.

[0013] In an eighth aspect, the embodiments of the present application provide a computer

storage medium storing computer program instructions thereon which, when executed by a processor, implement the resource transfer method of the first aspect or the second aspect.

[0014] The embodiments of the present application provide a resource transfer method, server, switching device, system and storage medium. The switching device receives the resource transfer-out request message sent by the server and sends the resource transfer-out request message to the determined transfer-out management subsystem according to the resource transfer-out request message. The resource transfer-out request message may include the resource transfer-out request identifier, the transfer-out resource account information and the first resource transfer amount. The resource transfer-out request message may instruct the transfer-out management subsystem to freeze the first resource transfer amount of resources corresponding to the resource transfer-out request identifier in the transfer-out resource account, so as to under a condition that it is subsequently required to transfer resources to the transfer-in resource account, at least part of the frozen resources are unfrozen and transferred to the transfer-in resource account. In the process of performing the resource transfer through the switching device, the resources are transferred between the transfer-out resource account and the transfer-in resource account without passing through the switching device, thereby the risk of the resource transfer is reduced.

BRIEF DESCRIPTION OF THE DRAWINGS

[0015] In order to illustrate the technical solutions of the embodiments of the present application more clearly, the drawings necessary for explaining the embodiments of the present application are introduced briefly below. For those of ordinary skills in the art, other drawings can be derived from these drawings without any creative work.

[0016] Fig. 1 shows a schematic diagram of an example of an application scenario of a resource transfer method provided by the embodiments of the present application;

[0017] Fig. 2 shows a flowchart of an embodiment of a resource transfer method provided by a first aspect of the present application;

[0018] Fig. 3 shows a flowchart of another embodiment of the resource transfer method provided by the first aspect of the present application;

[0019] Fig. 4 shows a flowchart of yet another embodiment of the resource transfer method

provided by the first aspect of the present application;

[0020] Fig. 5 shows a flowchart of yet another embodiment of the resource transfer method provided by the first aspect of the present application;

[0021] Fig. 6 shows a flowchart of an embodiment of a resource transfer method provided by a second aspect of the present application;

[0022] Fig. 7 shows a flowchart of another embodiment of the resource transfer method provided by the second aspect of the present application;

[0023] Fig. 8 shows a flowchart of yet another embodiment of the resource transfer method provided by the second aspect of the present application;

[0024] Fig. 9 shows a flowchart of yet another embodiment of the resource transfer method provided by the second aspect of the present application;

[0025] Fig. 10 shows a schematic diagram of an example of a resource transfer state change provided by the embodiments of the present application;

[0026] Fig. 11 shows a schematic diagram of another example of the resource transfer state change provided by the embodiments of the present application;

[0027] Fig. 12 shows a flowchart of an example of a resource transfer process provided by the embodiments of the present application;

[0028] Fig. 13 shows a flowchart of another example of the resource transfer process provided by the embodiments of the present application;

[0029] Fig. 14 shows a flowchart of yet another example of the resource transfer process provided by the embodiments of the present application;

[0030] Fig. 15 shows a flowchart of yet another example of the resource transfer process provided by the embodiments of the present application;

[0031] Fig. 16 shows a schematic structural diagram of an embodiment of a switching device provided by a third aspect of the present application;

[0032] Fig. 17 shows a schematic structural diagram of another embodiment of the switching device provided by the third aspect of the present application;

[0033] Fig. 18 shows a schematic structural diagram of an embodiment of a server provided by a fourth aspect of the present application;

[0034] Fig. 19 shows a schematic structural diagram of another embodiment of the server

provided by the fourth aspect of the present application;

[0035] Fig. 20 shows a schematic structural diagram of an embodiment of a switching device provided by a fifth aspect of the present application; and

[0036] Fig. 21 shows a schematic structural diagram of an embodiment of a server provided by a sixth aspect of the present application.

DETAILED DESCRIPTION

[0037] Features and exemplary embodiments of various aspects of the present application will be described in detail below. In order to make the objects, technical solutions and advantages of the present application clearer, the present application is further described in detail below with reference to the accompany drawings and specific embodiments. It should be understood that the specific embodiments described herein are only for illustration of the present application and are not for limiting the present application. For those skilled in the art, the present application can be implemented without some of those specific details. The below description of the embodiments is only for providing better understanding of the present application by illustrating examples of the present application.

[0038] With the development of information technology, there are more and more manners for payment transactions. In addition to the payment transactions between merchants and users (Business to Consumer, B2C), there are also transaction payments between users (Customer to Customer, C2C), such as the sending and receiving of red envelopes between users. The transaction payments between users can be achieved through applications such as electronic wallets. For example, the transfer-out user needs to transfer a part of the funds to his own electronic wallet first, and then transfer the part of the funds out of his electronic wallet; the funds transferred out of the electronic wallet of the transfer-out user are transferred into the electronic wallet of the transfer-in user to complete the payment transaction between the transfer-out user and the transfer-in user. Nonetheless, the transfer of the funds into the electronic wallet increases the risk in the process of fund transfer.

[0039] The present application provides a resource transfer method, server, switching device, system and storage medium, which can avoid the deposition of the transferred resources such as funds and electronic currency on the resource transfer platforms such as electronic wallets,

so that the resources are only transferred between the resource account of the transfer-out party and the resource account of the transfer-in party, thereby the risk of the resource transfer is reduced.

[0040] Fig. 1 shows a schematic diagram of an example of an application scenario of a resource transfer method provided by the embodiments of the present application. As shown in Fig. 1, the resource transfer method provided by the embodiments of the present application may involve a server 11, a switching device 12, a transfer-out management subsystem 13 and a transfer-in management subsystem 14, which is not limited herein.

[0041] The server 11 may be the background server of the application through which the transfer-out party and the transfer-in party perform the resource transfer. For example, the server 11 may be the background server of the electronic wallet through which the transfer-out party and the transfer-in party send and receive red envelopes. The server may include a transfer-out party service subsystem 111 and a transfer-in party service subsystem 112. The transfer-out party service subsystem 111 and the transfer-in party service subsystem 112 may be implemented by two subsystems or one subsystem, which is not limited herein. The server may display the state of the resource during the resource transfer process to the resource transfer-out party and the resource transfer-in party through an application.

[0042] The transfer-out party is the transfer-out party of the resource. The transfer-in party is the transfer-in party of the resource. The resource can be transferred from the resource account of the transfer-out party into the resource account of the transfer-in party. The resource may include funds, electronic currency, red envelopes, etc., which is not limited herein. The resource account may include a ledger-based account or a card-based account. One or more resource cards may be associated with the ledger-based account. The card-based account may be a resource card. Specifically, the resource card may be a bank card, which is not limited herein.

[0043] The transfer-out management subsystem 13 includes the management subsystem for the transfer-out resource account. For example, the transfer-out management subsystem 13 may include the bank management system of the depository bank of the transfer-out resource account. The transfer-in management subsystem 14 includes the management subsystem for the transfer-in resource account. For example, the transfer-in management subsystem 14 may include the bank management system of the depository bank of the transfer-in resource account.

[0044] The switching device 12 may be used as a management and control device for the resource transfer process between the server 11 and the transfer-out management subsystem 13, the transfer-in management subsystem 14. Resources are not deposited in the switching device 13.

[0045] The resource transfer method, server, switching device, system and storage medium provided by the present application will be described in detail below.

[0046] A first aspect of the present application provides a resource transfer method which may be applied to a switching device. Fig. 2 shows a flowchart of an embodiment of the resource transfer method provided by the first aspect of the present application. As shown in Fig. 2, the resource transfer method may include steps S201 to S203.

[0047] In step S201, a resource transfer-out request message sent by a server is received.

[0048] The resource transfer-out request message is configured to request to transfer out resources. The resource transfer-out request message may include, but is not limited to, a resource transfer-out request identifier, transfer-out resource account information and a first resource transfer amount, which is not limited herein. The resource transfer-out request identifier is configured to identify the resource transfer-out request. The resource transfer-out request may specifically refer to a request initiated by the owner of the transfer-out resource account. For example, in the scenario of red envelope sending and receiving, the resource transfer-out request may be a red envelope sending request initiated by the red envelope sending user. The transfer-out resource account information includes information related to the transfer-out resource account. In some examples, the transfer-out resource account information may include, but is not limited to, a transfer-out resource account identifier, transfer-out resource account owner information, a transfer-out resource account secret password and the like. The first resource transfer amount is the amount of resources required to be transferred out for the present resource transfer-out.

[0049] In some examples, the resource transfer-out request message may further include, but is not limited to, one or more of the following: a resource transfer-out request time and a server identifier. The resource transfer-out request time is configured to indicate the time of the resource transfer-out request indicated by the resource transfer-out request information, and its accuracy may be set according to scenarios and requirements, which is not limited herein. For

example, the resource transfer-out request time may be accurate in days. The server identifier is configured to identify the server or the organization to which the server belongs, which is not limited herein. The server may be located according to the server identifier.

[0050] Under a condition that the resource transfer-out request message includes the resource transfer-out request time, within the same resource transfer-out request time, the resource transfer-out request identifiers corresponding to different resource transfer-out requests are different. For example, the resource transfer-out request time is accurate in days, and within the day of November 10, the resource transfer-out request identifiers corresponding to various resource transfer-out requests are different.

[0051] The server sends the resource transfer-out request message to the switching device to request to transfer out resources. The switching device receives the resource transfer-out request message and may store the information in the resource transfer-out request message, so as to manage and control the resource transfer-out process.

[0052] In step S202, a transfer-out management subsystem is determined according to the resource transfer-out request message.

[0053] The transfer-out management subsystem includes the management subsystem for the transfer-out resource account indicated by the transfer-out resource account information. The transfer-out resource account may be determined according to the resource account information, so that the transfer-out management subsystem is determined according to the transfer-out resource account.

[0054] In step S203, the resource transfer-out request message is sent to the transfer-out management subsystem.

[0055] The resource transfer-out request message is configured to instruct the transfer-out management subsystem to freeze the first resource transfer amount of resources in the transfer-out resource account. The transfer-out management subsystem receives the resource transfer-out request, and may specifically determine the transfer-out resource account according to the resource account information in the resource transfer-out request message, and selects the first resource transfer amount of resources in the transfer-out resource account for freezing, and the currently frozen resources are corresponding to the information in the resource transfer-out request message. The frozen resources corresponding to the resource transfer-out request

identifier may be determined according to the resource transfer-out request identifier. The frozen resources cannot be transferred until they are unfrozen.

[0056] At least part of the first resource transfer amount of frozen resources in the transfer-out resource account are unfrozen and transferred to the transfer-in resource account under a condition that the transfer-out management subsystem receives an account-out request message. Under a condition the transfer-out management subsystem receives the resource transfer-out request message, the first resource transfer amount of resources in the transfer-out resource account are frozen, but the frozen resources are not transferred out of the transfer-out resource account. Under a condition the transfer-out management subsystem receives the account-out request message, it is indicated that a transfer-in resource party corresponding to the transfer-in resource account requests to transfer in the at least part of the frozen resources. When the account-out request message is received, the resources of the amount requested for account-out in the frozen resources are unfrozen.

[0057] For example, the resources are funds, the resource transfer-out request identifier included in the resource transfer-out request message is A1, the transfer-out resource account indicated by the transfer-out resource account information is B1, and the first resource transfer amount is 100 yuan. Under a condition that the resource transfer-out request message is received, the switching device sends the resource transfer-out request information to the management subsystem of the transfer-out resource account B1. The management subsystem of the transfer-out resource account B1 freezes the funds of 100 yuan in the transfer-out resource account, and at this time, the funds of 100 yuan are still in the transfer-out resource account B1. For the frozen funds of 100 yuan, under a condition that the management subsystem of the transfer-out resource account B1 receives the account-out request message, the funds of 50 yuan requested by the account-out request message are unfrozen and transferred to the transfer-in resource account for which the account-out request message requests account-in.

[0058] The amount of resources requested to be transferred in by the transfer-in resource party corresponding to the transfer-in resource account, that is, the amount of resources for which the account-out request message requests account-out, may be less than or equal to the first resource transfer amount. The resources transferred out of the transfer-out resource account

may be transferred in one transfer-in resource account or a plurality of different transfer-in resource accounts, which is not limited herein. For example, the resources are sent in the form of red envelopes, and one red envelope sent by the transfer-out resource account may be received by one transfer-in resource account. For another example, the resources are sent in the form of red envelopes, and one red envelope sent by the transfer-out resource account may be divided into a plurality of sub-red envelopes, which are received by a plurality of transfer-in resource accounts.

[0059] In some examples, the transfer-out resource account and the transfer-in resource account may specifically be card-based accounts. That is, the transfer-out resource account may specifically be a resource card performing the resource transfer-out, such as a bank card. The transfer-in resource account may specifically be a resource card performing the resource transfer-in, such as a bank card.

[0060] The transfer-out resource account may be a class I account, and the transfer-in resource account may be a class II account. The class I account and the class II account may be of the same class or different classes. Under a condition the classes of the class I account and the class II account are different, that is, the systems of the class I account and the class II account are different, the difference of the classes of the accounts may be embodied by the difference of the account opening parties or the difference of management parties to which the accounts belong. For example, specifically, the account is a bank card, and the transfer-out bank card, that is, the card-issuing bank of the resource transfer-out account, is different from the transfer-in bank card, that is, the card-issuing bank of the resource transfer-in account. For another example, specifically, the account is a payment account, the transfer-out payment account, that is, the account opening institution of the resource transfer-out account, is different from the transfer-in payment account, that is, the account opening institution of the resource transfer-in account, and under a condition the users use payment applications for the resource transfer, it may be further considered that the payment application of the transfers-out payment account is different from the payment application of the transfers-in payment account.

[0061] In the embodiments of the present application, the switching device receives the resource transfer-out request message sent by the server and sends the resource transfer-out request message to the determined transfer-out management subsystem according to the

resource transfer-out request message. The resource transfer-out request message may include the resource transfer-out request identifier, the transfer-out resource account information and the first resource transfer amount. The resource transfer-out request message may instruct the transfer-out management subsystem to freeze the first resource transfer amount of resources corresponding to the resource transfer-out request identifier in the transfer-out resource account, so as to under a condition that it is subsequently required to transfer resources to the transfer-in resource account, at least part of the frozen resources are unfrozen and transferred to the transfer-in resource account. In the process of performing the resource transfer through the switching device, the resources are transferred between the transfer-out resource account and the transfer-in resource account without passing through the switching device, thereby the risk of the resource transfer is reduced. Moreover, without a midway deposition of the resources, the switching device can further monitor the resource transfer process by receiving and sending the resource transfer-out request to ensure that the resource transfer process is controllable.

[0062] For convenience of description, the process for freezing the resources in the transfer-out resource account through the resource transfer-out request in the embodiments of the present application is referred to as a resource freeze process. A complete monitoring of the resource freeze process by the switching device can be achieved by receiving and sending various function messages. Fig. 3 shows a flowchart of another embodiment of the resource transfer method provided by the first aspect of the present application. Fig. 3 differs from Fig. 2 in that Fig. 3 may further include steps S204 and S205.

[0063] In step S204, a resource transfer-out response message sent by the transfer-out management subsystem is received.

[0064] The resource transfer-out response message is configured to indicate that the transfer-out management subsystem successfully freezes the first resource transfer amount of resources in the transfer-out resource account. That is, under a condition that the transfer-out management subsystem completes the freezing of the first resource transfer amount of resources in the transfer-out resource account, the resource transfer-out response message may be sent to the switching device to notify the switching device that the resources are successfully frozen.

[0065] The resource transfer-out response message may include the information in the resource transfer-out request message corresponding to the resource transfer-out response

message. Specifically, the resource transfer-out response message may include, but is not limited to, the resource transfer-out request identifier, the transfer-out resource account information and the first resource transfer amount. In some examples, the resource transfer-out response message may further include, but is not limited to, one or more of the following: the resource transfer-out request time and server identifier.

[0066] In step S205, the resource transfer-out response message is sent to the server.

[0067] The switching device achieves the monitoring of the resource freeze process through the resource transfer-out response message. For the server, the resource transfer-out response message indicates that the resources are in a to-be-transferred-in state. The switching device sends the resource transfer-out response message to the server to enable the server to obtain the state of the resources during the resource freeze process.

[0068] Anomalies may occur in the resource freeze process, resulting in that the server does not receive the resource transfer-out response message and cannot send a message indicating the state of the resources requested to be transferred out to a user terminal, and the user terminal cannot obtain the state of the resources requested to be transferred out, which may lead to a situation of unequal information to the server, the switching device and the transfer-out management subsystem. The above problems can be avoided through monitoring the reception of the resource transfer-out response message by the server and the switching device, combined with reversal means.

[0069] In some examples, it may happen that the server does not receive the resource transfer-out response message. Under a condition that the resource transfer-out response message is not received within a first preset time period, the server may send a first reversal message to the switching device. The switching device receives the first reversal message and sends, in response to the first reversal message, a resource freeze reversal message to the transfer-out management subsystem. The resource freeze reversal message is configured to instruct the transfer-out management subsystem to perform a freeze reversal. The freeze reversal includes reversing the freeze of the first resource transfer amount of resources in the transfer-out resource account. The freeze reversal performed by the transfer-out management subsystem in response to the resource freeze reversal message may specifically include canceling the freeze of the first resource transfer amount of resources corresponding to the resource transfer-out

request identifier in the transfer-out resource account.

[0070] The first preset time period may be set according to scenarios and requirements, which is not limited herein.

[0071] Under a condition that the freeze reversal of the transfer-out management subsystem is successful, the transfer-out management subsystem sends a resource freeze reversal response message to the switching device. The resource freeze reversal response message is configured to indicate that the freeze reversal is successful. The switching device receives the resource freeze reversal response message and sends the resource freeze reversal response message to the server.

[0072] In some other examples, it may happen that the switching device does not receive the resource transfer-out response message. Under a condition that the resource transfer-out response message is not received within a second preset time period, the switching device sends a resource freeze reversal message to the transfer-out management subsystem. Reference may be made to the relevant description in the above examples for the specific content of the resource freeze reversal message, which is not repeated herein. Under a condition that the resource transfer-out response message is not received within the second preset time period, the switching device may further send a resource transfer-out failure response message to the server. The resource transfer-out failure response message may be configured to indicate that the freeze of the first resource transfer amount of resources by the management subsystem is failed.

[0073] The second preset time period may be set according to scenarios and requirements, which is not limited herein.

[0074] Under a condition that the freeze reversal of the transfer-out management subsystem is successful, the transfer-out management subsystem sends the resource freeze reversal response message to the switching device. The resource freeze reversal response message is configured to indicate that the freeze reversal is successful. The switching device receives the resource freeze reversal response message and sends the resource freeze reversal response message to the server.

[0075] With the interaction among the server, the switching device and the transfer-out management subsystem, combined with the freeze reversal means of the transfer-out

management subsystem, equal information can be guaranteed for the server, the switching device and the transfer-out management subsystem, thereby avoiding problems in the settlement.

[0076] In still other embodiments, the account-out and account-in of resources may be further achieved among the server, the switching device and the transfer-out management subsystem. The account-out of resources means that the resources are transferred out of the transfer-out resource account, and the account-in of resources means that the resources are transferred into the transfer-in resource account. For convenience of description, the process for unfreezing the frozen resources in the transfer-out resource account and transferring the resources from the transfer-out resource account to the transfer-in resource account through a resource transfer-in request message, the account-out request message and an account-in request message and the like in the embodiments of the present application is referred to as a resource receive process. A complete monitoring of the resource receive process by the switching device can be achieved by receiving and sending various function messages. Fig. 4 shows a flowchart of yet another embodiment of the resource transfer method provided by the first aspect of the present application. Fig. 4 differs from Fig. 3 in that the resource transfer method of Fig. 4 may further include steps S206 to S213.

[0077] In step S206, a resource transfer-in request message sent by the server is received.

[0078] The resource transfer-in request message is configured to request to transfer in resources. The resource transfer-in request message may include, but is not limited to, the resource transfer-out request identifier, the transfer-out resource account information, transfer-in resource account information and a second resource transfer amount. Reference may be made to the relevant description in the above embodiments for the specific content of the resource transfer-out request identifier and the transfer-out resource account information, which is not repeated herein. The transfer-in resource account information includes information related to the transfer-in resource account. In some examples, the transfer-in resource account information may include, but is not limited to, a transfer-in resource account identifier, transfer-in resource account owner information, a transfer-in resource account secret password and the like, which is not limited herein. The second resource transfer amount is the amount of resources required to be transferred in for the present resource transfer-in.

[0079] In some examples, the resource transfer-in request message may further include, but is not limited to, one or more of the following: the resource transfer-out request time, the server identifier, a resource transfer-in request time and a resource transfer-in request identifier. Reference may be made to the relevant description in the above embodiments for the specific content of the resource transfer-out request time and the server identifier, which is not repeated herein. The resource transfer-in request time is configured to indicate the time of the resource transfer-in request indicated by the resource transfer-in request information, and its accuracy may be set according to scenarios and requirements, which is not limited herein. For example, the resource transfer-in request time may be accurate in days. The accuracy of the resource transfer-in request time may be the same as that of the resource transfer-out request time. The resource transfer-in request identifier is configured to identify the resource transfer-in request. The resource transfer-in request may specifically refer to a request initiated by the owner of the transfer-in resource account. For example, in the scenario of red envelope sending and receiving, the resource transfer-in request may be a red envelope receiving request initiated by the red envelope receiving user.

[0080] Under a condition that the resource transfer-in request message includes the resource transfer-in request time and the resource transfer-in request identifier, within the same resource transfer-in request time, the resource transfer-in request identifiers corresponding to different resource transfer-in requests are different. For example, the resource transfer-in request time is accurate in days, and within the day of November 10, the resource transfer-in request identifiers corresponding to various resource transfer-in requests are different.

[0081] In step S207, the transfer-out management subsystem is determined according to the resource transfer-in request message.

[0082] Specifically, the transfer-out management subsystem may be determined according to the transfer-out resource account information in the resource transfer-in request message. The switching device may generate the account-out request message based on the resource transfer-in request.

[0083] In step S208, the account-out request message is sent to the transfer-out management subsystem.

[0084] The account-out request message includes the resource transfer-out request identifier,

the transfer-out resource account information, the transfer-in resource account information and the second resource transfer amount. The account-out request message is configured to instruct the transfer-out management subsystem to unfreeze the second resource transfer amount of resources in frozen resources corresponding to the resource transfer-out request identifier and transfer the unfrozen resources out of the transfer-out resource account.

[0085] In some examples, the account-out request message may further include, but is not limited to, one or more of the following: the resource transfer-out request time, the server identifier, the resource transfer-in request time, the resource transfer-in request identifier and a settlement time. The settlement time is the time for settlement, and its accuracy may be set according to scenarios and requirements, for example, the settlement time is accurate in days.

[0086] The transfer-out management subsystem receives the account-out request message, finds the frozen resource corresponding to the resource transfer-out request identifier in the transfer-out resource account indicated by the transfer-out resource account information, unfreezes the second resource transfer amount of resources in the frozen resources, and transfer the second resource transfer amount of resources that are unfrozen out of the transfer-out resource account.

[0087] In order to facilitate the monitoring of the frozen resources in the transfer-out resource account, the switching device may store the frozen resource amount corresponding to each of the resource transfer-out request identifiers, in which the frozen resource amount corresponding to the resource transfer-out request identifier is the amount of transferable resources corresponding to the resource transfer-out request identifier. After receiving the resource transfer-in request message, the switching device may further detect whether the second resource transfer amount is greater than 0 and whether the second resource transfer amount is greater than the stored frozen resource amount. Under a condition that it is determined that the second resource transfer amount is greater than 0 and less than or equal to the stored frozen resource amount, the switching device sends the account-out request message to the transfer-out management subsystem. Under a condition that it is determined that the second resource transfer amount is less than or equal to 0, the switching device does not send the account-out request message to the transfer-out management subsystem. Under a condition that it is determined that the second resource transfer amount is greater than the stored frozen

resource amount, the switching device does not send the account-out request message to the transfer-out management subsystem.

[0088] After receiving the resource transfer-in request message, the switching device may further determine whether the transfer-out resource account information in the resource transfer-in request message is consistent with the transfer-out resource account information in the resource transfer-out request message with the same resource transfer-out request identifier. Under a condition that the transfer-out resource account information in the resource transfer-in request message is consistent with the transfer-out resource account information in the resource transfer-out request message with the same resource transfer-out request identifier, the switching device sends the account-out request message to the transfer-out management subsystem. Under a condition that the transfer-out resource account information in the resource transfer-in request message is not consistent with the transfer-out resource account information in the resource transfer-out request message with the same resource transfer-out request identifier, the switching device does not send the account-out request message to the transfer-out management subsystem.

[0089] In step S209, a stored frozen resource amount corresponding to the resource transfer-out request identifier in the transfer-out resource account is updated.

[0090] Under a condition that the switching device sends the account-out request message to the transfer-out management subsystem, the stored frozen resource amount corresponding to the resource transfer-out request identifier may be updated, and specifically, it may be updated to a difference between the previous frozen resource amount corresponding to the resource transfer-out request identifier and the second resource transfer amount, that is, the updated frozen resource amount = the un-updated frozen resource amount - the second resource transfer amount.

[0091] In step S210, an account-out success response message sent by the transfer-out management subsystem is received.

[0092] Under a condition that the transfer-out management subsystem successfully transfers the second resource transfer amount of resources that are unfrozen out of the transfer-out resource account, the transfer-out management subsystem may send the account-out success response message to the switching device. The account-out success response message may be

configured to indicate that the second resource transfer amount of resources that are unfrozen are successfully transferred out of the transfer-out resource account. The switching device determines that the account-out of the transfer-out resource account is successful by receiving the account-out success response message.

[0093] The account-out success response message may include information in the account-out request message corresponding to the account-out success response message. Specifically, the account-out success response message may include, but is not limited to, the resource transfer-out request identifier, the transfer-out resource account information, the transfer-in resource account information and the second resource transfer amount. In some examples, the account-out success response message may further include, but is not limited to, one or more of the following: the resource transfer-out request time, the server identifier, the resource transfer-in request time, the resource transfer-in request identifier and the settlement time.

[0094] In step S211, in response to the account-out success response message, an account-in request message is sent to the transfer-in management subsystem.

[0095] The transfer-in management subsystem includes a management subsystem for the transfer-in resource account indicated by the transfer-in resource account information.

[0096] The account-in request message includes the resource transfer-out request identifier, the transfer-out resource account information, the transfer-in resource account information and the second resource transfer amount. The account-in request message is configured to instruct the transfer-in management subsystem to transfer the second resource transfer amount of resources that are transferred out of the transfer-out resource account to the transfer-in resource account, so as to complete the transfer of the second resource transfer amount of resources from the transfer-out resource account to the transfer-in resource account.

[0097] In some examples, the account-in request message may further include, but is not limited to, one or more of the following: the resource transfer-out request time, the server identifier, the resource transfer-in request time, the resource transfer-in request identifier and the settlement time.

[0098] In step S212, an account-in success response message sent by the transfer-in management subsystem is received.

[0099] The account-in success response message is configured to indicate that the second

resource transfer amount of resources are successfully transferred to the transfer-in resource account. That is, under a condition the transfer-in management subsystem completes, in response to receiving the account-in request message, the transfer of the second resource transfer amount of resources to the transfer-in resource account, the account-in success response message may be sent to the switching device to notify the switching device that the resources are successfully transferred to the transfer-in resource account.

[00100] The account-in success response message may include the information in the account-in request message corresponding to the account-in success response message. Specifically, the account-in success response message may include, but is not limited to, the resource transfer-out request identifier, the transfer-out resource account information, the transfer-in resource account information and the second resource transfer amount. In some examples, the account-in request message may further include, but is not limited to, one or more of the following: the resource transfer-out request time, the server identifier, the resource transfer-in request time, the resource transfer-in request identifier and the settlement time.

[00101] In step S213, in response to the account-in success response message, a resource transfer-in success message is sent to the server.

[00102] The switching device may generate the resource transfer-in success message according to the account-in success response message and send the resource transfer-in success message to the server. For the server, the resource transfer-in success message indicates that the resources are in a transfer-in success state. The switching device sends the resource transfer-in success message to the server to enable the server to obtain the state of the resources during the resource receive process.

[00103] The resource transfer-in success message may include information in the account-in success response message corresponding to the resource transfer-in success message. Specifically, the resource transfer-in success message may include, but is not limited to, the resource transfer-out request identifier, the transfer-out resource account information, the transfer-in resource account information and the second resource transfer amount. In some examples, the resource transfer-in success message may further include, but is not limited to, one or more of the following: the resource transfer-out request time, the server identifier, the resource transfer-in request time, the resource transfer-in request identifier and the settlement

time.

[00104] Under a condition that the above messages include the resource transfer-in request identifier, the resource transfer-in request identifier may be used to prevent the resources from being transferred in repeatedly.

[00105] Anomalies may occur in the resource receive process, resulting in that the server does not receive the resource transfer-in success message and cannot send information indicating the state of the resources requested to be transferred in to a user terminal, and the user terminal cannot obtain the state of the resources requested to be transferred in, which may lead to a situation of unequal information to the server, the switching device, the transfer-out management subsystem and the transfer-in management subsystem. The above problems can be avoided through monitoring the reception of the account-in success response message and an account-in failure response message by the server and the switching device, combined with reversal means.

[00106] In some examples, it may happen that the switching device does not receive the account-out success response message. The switching device rolls back, under a condition that the account-out success response message is not received within a third preset time period, the stored frozen resource amount corresponding to the resource transfer-out request identifier in the transfer-out resource account. The stored frozen resource amount corresponding to the resource transfer-out request identifier in the transfer-out resource account has been updated in the above step S209, the rolling back the stored frozen resource amount corresponding to the resource transfer-out request identifier in the transfer-out resource account means rolling back the updated stored frozen resource amount corresponding to the resource transfer-out request identifier in the transfer-out resource account to the un-updated stored frozen resource amount corresponding to the resource transfer-out request identifier in the transfer-out resource account. Specifically, the frozen resource amount that has been rolled back = the updated frozen resource amount + the second resource transfer amount.

[00107] The third preset time period may be set according to scenarios and requirements, which is not limited herein.

[00108] The switching device sends, under a condition that the account-out success response message is not received within the third preset time period, a resource transfer-in failure

message to the server and an account-out reversal message to the transfer-out management subsystem. The account-out reversal message is configured to instruct the transfer-out management subsystem to perform an account-out reversal. The account-out reversal includes reversing the transfer of the second resource transfer amount of resources out of the transfer-out resource account and reversing the unfreeze of the second resource transfer amount of resources. Specifically, the reversing the transfer of the second resource transfer amount of resources out of the transfer-out resource account means transferring the second resource transfer amount of resources back to the transfer-out resource account. The reversing the unfreeze of the second resource transfer amount of resources means freezing the second resource transfer amount of resources that are transferred back to the transfer-out resource account.

[00109] Under a condition that the account-out reversal of the transfer-out management subsystem is successful, the transfer-out management subsystem sends an account-out reversal response message to the switching device. The switching device receives the account-out reversal response message. The account-out reversal response message is configured to indicate that the account-out reversal is successful.

[00110] In some other examples, it may happen that the switching device receives an account-in failure response message. Under a condition that the transfer-in management subsystem determines that the second resource transfer amount of resources are not successfully transferred to the transfer-in resource account, the transfer-in management subsystem send the account-in failure response message to the switching device. The switching device receives the account-in failure response message. The account-in failure response message is configured to indicate that the second resource transfer amount of resources are not successfully transferred to the transfer-in resource account.

[00111] The switching device rolls back, in response to the account-in failure response message, the stored frozen resource amount corresponding to the resource transfer-out request identifier in the transfer-out resource account. The stored frozen resource amount corresponding to the resource transfer-out request identifier in the transfer-out resource account has been updated in the above step S209, the rolling back the stored frozen resource amount corresponding to the resource transfer-out request identifier in the transfer-out resource account

means rolling back the updated stored frozen resource amount corresponding to the resource transfer-out request identifier in the transfer-out resource account to the un-updated stored frozen resource amount corresponding to the resource transfer-out request identifier in the transfer-out resource account. Specifically, the frozen resource amount that has been rolled back = the updated frozen resource amount + the second resource transfer amount.

[00112] In response to the account-in failure response message, the switching devices sends a resource transfer-in failure message to the server and an account-out reversal message to the transfer-out management subsystem. The account-out reversal message is configured to instruct the transfer-out management subsystem to perform an account-out reversal. The account-out reversal includes reversing the transfer of the second resource transfer amount of resources to the transfer-in resource account and reversing the unfreeze of the second resource transfer amount of resources. Specifically, the reversing the transfer of the second resource transfer amount of resources to the transfer-in resource account means transferring the second resource transfer amount of resources back to the transfer-out resource account. The reversing the unfreeze of the second resource transfer amount of resources means freezing the second resource transfer amount of resources that are transferred back to the transfer-out resource account.

[00113] Under a condition that the account-out reversal of the transfer-out management subsystem is successful, the transfer-out management subsystem sends an account-out reversal response message to the switching device. The switching device receives the account-out reversal response message. The account-out reversal response message is configured to indicate that the account-out reversal is successful.

[00114] In still other examples, it may happen that the switching device does not receive the account-in success response message. The switching device sends, under a condition that the account-in success response message is not received within a fourth preset time period, the resource transfer-in success message to the server and an account-in confirmation message to the transfer-in management subsystem. The account-in confirmation message is configured to transfer the second resource transfer amount of resources to the transfer-in resource account. Specifically, the transfer-in management subsystem receives the account-in confirmation message and may determine whether the second resource transfer amount of resources have

been transferred to the transfer-in resource account. Under a condition that the transfer-in management subsystem determines that the second resource transfer amount of resources have been transferred to the transfer-in resource account, the transfer-in management subsystem may do not perform any processing. Under a condition that the transfer-in management subsystem determines that the second resource transfer amount of resources have not been transferred to the transfer-in resource account, the transfer-in management subsystem directly transfers the second resource transfer amount of resources to the transfer-in resource account.

[00115] With the interaction among the server, the switching device, the transfer-out management subsystem and the transfer-in management subsystem, combined with the account-out reversal means of the transfer-out management subsystem, equal information can be guaranteed for the server, the switching device, the transfer-out management subsystem and the transfer-in management subsystem, thereby avoiding problems in the settlement.

[00116] In the above examples, if the server does not receive the resource transfer-in success message, the server may send a query message to the switching device. The query message is configured to instruct the switching device to query the transfer result of the resources corresponding to the resource transfer-out request identifier. In response to the query message, the switching device queries the transfer result of the resources corresponding to the resource transfer-out request identifier. During this query, the server and the switching device ensure that the same resources cannot be received repeatedly.

[00117] In still other embodiments, it may happen that the switching device has not received the resource transfer-in request message when the freeze of the frozen resources in the transfer-out resource account is timed out. In this case, it may be considered that the resources to be transferred out are not received by the due time and may be unfrozen for participating in other transactions to improve the flexibility of resource utilization. Fig. 5 shows a flowchart of yet another embodiment of the resource transfer method provided by the first aspect of the present application. Fig. 5 differs from Fig. 3 in that the resource transfer method of Fig. 5 may further include steps S214 to S217.

[00118] In step S214, a resource unfreeze request message sent by the server under a condition that a frozen time period of at least part of resources in the transfer-out resource account exceeds a frozen timeout period is received.

[00119] Under a condition the server does not send the resource transfer-in request message within the frozen timeout period, the frozen time period of the first resource transfer amount of resources that are frozen in the transfer-out resource account exceeds the frozen timeout period. Under a condition the server sends the resource transfer-in request message within the frozen timeout period, but a cumulative amount of the second resource transfer amount in the resource transfer-in request message within the frozen timeout period is less than the first resource transfer amount, the frozen time period of the remaining of the frozen resources in the transfer-out resource account exceeds the frozen timeout period. Under a condition that the frozen time period of at least part of the resources in the transfer-out resource account exceeds the frozen timeout period, the server sends the resource unfreeze request message to the switching device. The switching device receives the resource unfreeze request message. The resource unfreeze request message may include, but is not limited to, the resource transfer-out request identifier and the transfer-out resource account information. In some examples, the resource unfreeze request message may further include, but is not limited to, one or more of the following: the resource transfer-out request time, the server identifier, a resource unfreeze request time, a resource unfreeze request identifier and a resource amount not transferred out. The resource amount not transferred out is the resource amount of the resources corresponding to the resource transfer-out request identifier in the transfer-out resource account of which the frozen time period exceeds the frozen timeout period. The resource unfreeze request message is configured to instruct the transfer-out management subsystem to unfreeze the frozen resources corresponding to the resource transfer-out request identifier.

[00120] In step S215, the resource unfreeze request message is sent to the transfer-out management subsystem.

[00121] The switching device sends the resource unfreeze request message to the transfer-out management subsystem to cause the transfer-out management subsystem to unfreeze the corresponding frozen resources according to the resource unfreeze request message.

[00122] In step S216, a resource unfreeze response message sent by the transfer-out management subsystem is received.

[00123] Under a condition that the transfer-out management subsystem successfully unfreezes the frozen resources corresponding to the resource transfer-out request identifier, the transfer-

out management subsystem generates the resource unfreeze response message and sends it to the switching device. The switching device receives the resource unfreeze response message. The resource unfreeze response message is configured to indicate that the frozen resources corresponding to the resource transfer-out request identifier are successfully unfrozen.

[00124] In step S217, the resource unfreeze response message is sent to the server.

[00125] The resource unfreeze response message is used to notify the server that the frozen resources corresponding to the resource transfer-out request identifier are successfully unfrozen. The server may send a message indicating that the frozen resources corresponding to the resource transfer-out request identifier are successfully unfrozen to a user terminal to enable the user terminal to obtain the state of the resources and display the state of the resources to the user.

[00126] Under a condition that the frozen time period of at least part of the resources in the transfer-out resource account exceeds the frozen timeout period, but the transfer-out management subsystem does not receive the resource unfreeze request message, the transfer-out management subsystem automatically unfreezes the frozen resources.

[00127] In some embodiments, a settlement period may be further set. At the settlement time, the switching device may perform a settlement according to the account-out request message and the account-in request message within the settlement period to obtain a settlement result. The settlement result is configured to indicate the total resource transfer amount of the various management subsystems within the settlement period. The switching device sends the settlement result to the various management subsystems, so that the resources are transferred among the various management subsystems to achieve a resource settlement for the management subsystems. The switching device may also generate settlement detail information according to the account-out request message and the account-in request message within the settlement period. The settlement detail information includes the details of each of the resource transfers. The switching device sends the settlement detail information to the various management subsystems to cause the various management subsystems to perform a resource reconciliation, so as to detect and handle anomalies in time, thereby a complete monitoring of the entire business system for the resource transfers is achieved.

[00128] A second aspect of the present application provides a resource transfer method which

may be applied to a server. Fig. 6 shows a flowchart of an embodiment of the resource transfer method provided by the second aspect of the present application. As shown in Fig. 6, the resource transfer method may include steps S301 and S302.

[00129] In step S301, a resource transfer-out request message is sent to a switching device.

[00130] A user may initiate a resource transfer-out request through a user terminal. In response to the resource transfer-out request initiated by the user terminal, the server sends the resource transfer-out request message to the switching device.

[00131] The resource transfer-out request message may include, but is not limited to, a resource transfer-out request identifier, transfer-out resource account information and a first resource transfer amount. The resource transfer-out request message is configured to instruct a transfer-out management subsystem to freeze the first resource transfer amount of resources in a transfer-out resource account, and at least part of the frozen resources are unfrozen and transferred to a transfer-in resource account under a condition that the transfer-out management subsystem receives an account-out request message.

[00132] In some examples, the resource transfer-out request message may further include, but is not limited to, one or more of the following: a resource transfer-out request time and a server identifier.

[00133] Reference may be made to the relevant description in the above embodiments for the specific content of step S301, which is not repeated herein.

[00134] In step S302, a stored first resource transfer state is updated to a resource transfer-out request state.

[00135] The server records the state of the first resource transfer amount of resources in the transfer process through the first resource transfer state. The first resource transfer state includes a transfer state of the first resource transfer amount of resources. In the current situation, the first resource transfer amount of resources in the transfer-out resource account are requested to be frozen, and the stored first resource transfer state in the server is updated to the resource transfer-out request state, so as to indicate the current state of first resource transfer amount of resources in the transfer-out resource account. The specific form of the resource transfer-out request state is not limited herein, for example, the resource transfer-out request state may be represented by numbers, letters, Chinese characters and the like.

[00136] In some examples, the server may further send the updated first resource transfer state to the user terminal to enable the user terminal to display the updated first resource transfer state to the user.

[00137] In the embodiments of the present application, the server sends the resource transfer-out request message to the switching device. The resource transfer-out request message includes the resource transfer-out request identifier, the transfer-out resource account information and the first resource transfer amount. The resource transfer-out request message may cause the switching device to instruct the transfer-out management subsystem to freeze the first resource transfer amount of resources corresponding to the resource transfer-out request identifier in the transfer-out resource account, so as to under a condition that it is subsequently required to transfer resources to the transfer-in resource account, at least part of the frozen resources are unfrozen and transferred to the transfer-in resource account. In the process of performing the resource transfer through the interaction between the server and the switching device, the resources are directly transferred between the transfer-out resource account and the transfer-in resource account without passing through the switching device, thereby the risk of the resource transfer is reduced. Moreover, without a midway deposition of the resources, the server can monitor the resource transfer process by updating the stored first resource transfer state to ensure that the resource transfer process is controllable.

[00138] For convenience of description, the process for freezing the resources in the transfer-out resource account through the resource transfer-out request in the embodiments of the present application is referred to as a resource freeze process. A complete monitoring of the resource freeze process by the server can be achieved by receiving and sending various function messages and updating the resource transfer state. Fig. 7 shows a flowchart of another embodiment of the resource transfer method provided by the second aspect of the present application. Fig. 7 differs from Fig. 6 in that the resource transfer method of Fig. 7 may further include steps S303 and S304.

[00139] In step S303, a resource transfer-out response message sent by the switching device is received.

[00140] The resource transfer-out response message is configured to indicate that the transfer-out management subsystem successfully freezes the first resource transfer amount of resources

in the transfer-out resource account.

[00141] Reference may be made to the relevant description in the above embodiments for the specific content of step S303, which is not repeated herein.

[00142] In step S304, in response to the resource transfer-out response message, the first resource transfer state is updated to a resource-to-be-transferred-in state.

[00143] The first resource transfer state is updated to a resource-to-be-transferred-in state to indicate the current state of first resource transfer amount of resources in the transfer-out resource account. The specific form of the resource-to-be-transferred-in state is not limited herein, for example, the resource-to-be-transferred-in state may be represented by numbers, letters, Chinese characters and the like.

[00144] In some examples, the server may further send the updated first resource transfer state to the user terminal to enable the user terminal to display the updated first resource transfer state to the user.

[00145] Anomalies may occur in the resource freeze process, resulting in that the server does not receive the resource transfer-out response message and cannot send a message indicating the state of the resources requested to be transferred out to the user terminal, and the user terminal cannot obtain the state of the resources requested to be transferred out, which may lead to a situation of unequal information to the server, the switching device and the transfer-out management subsystem. The above problems can be avoided through monitoring the reception of the resource transfer-out response message by the server and the switching device, combined with reversal means.

[00146] In some examples, under a condition that the resource transfer-out response message is not received within a first preset time period, the server sends a first reversal message to the switching device. The first reversal message is configured to instruct the transfer-out management subsystem to perform a freeze reversal. The freeze reversal includes reversing the freeze of the first resource transfer amount of resources in the transfer-out resource account.

[00147] Reference may be made to the relevant description in the above embodiments for the specific content of the resource transfer-out response message, the first reversal message and the freeze reversal, which is not repeated herein.

[00148] The server updates, under a condition that the resource transfer-out response message

is not received within the first preset time period, the first resource transfer state to the resource transfer-out timeout state.

[00149] In some examples, the server may further send the updated first resource transfer state to the user terminal to enable the user terminal to display the updated first resource transfer state to the user.

[00150] Under a condition that the transfer-out management subsystem successfully performs the freeze reversal, the transfer-out management subsystem sends a resource freeze reversal response message to the switching device. The transfer-out management subsystem sends the resource freeze reversal response message to the server. The server receives the resource freeze reversal response message sent by the switching device. The resource freeze reversal response message is configured to indicate that the freeze reversal is successful. The server updates, in response to the resource freeze reversal response message, the first resource transfer state to a resource transfer-out failure state. The specific form of the resource transfer-out failure state is not limited herein, for example, the resource transfer-out failure state may be represented by numbers, letters, Chinese characters and the like.

[00151] In some examples, the server may further send the updated first resource transfer state to the user terminal to enable the user terminal to display the updated resource transfer state to the user.

[00152] In still other embodiments, the reception of resources may be further achieved among the server, the switching device, the transfer-out management subsystem and a transfer-in management subsystem. For convenience of description, the process for unfreezing the frozen resources in the transfer-out resource account and transferring the resources from the transfer-out resource account to the transfer-in resource account through a resource transfer-in request message in the embodiments of the present application is referred to as a resource receive process. A complete monitoring of the resource receive process by the server can be achieved by receiving and sending various function messages and updating the resource transfer state of the resources that are transferred out of the transfer-out resource account. Fig. 8 shows a flowchart of yet another embodiment of the resource transfer method provided by the second aspect of the present application. Fig. 8 differs from Fig. 7 in that the resource transfer method of Fig. 8 may further include steps S305 to S308.

[00153] In step S305, a resource transfer-in request message is sent to the switching device.

[00154] A user may initiate a resource transfer-in request through a user terminal. In response to the resource transfer-in request initiated by the user terminal, the server sends the resource transfer-in request message to the switching device.

[00155] The resource transfer-in request message may include, but is not limited to, the resource transfer-out request identifier, the transfer-out resource account information, transfer-in resource account information and a second resource transfer amount. The resource transfer-in request message is configured to instruct the transfer-out management subsystem to unfreeze the second resource transfer amount of resources in the frozen resources corresponding to the resource transfer-out request identifier and transfer the unfrozen resources to the transfer-in resource account indicated by the transfer-in resource account information.

[00156] In some examples, the resource transfer-in request message may further include, but is not limited to, one or more of the following: a resource transfer-out request time, a server identifier, a resource transfer-in request time and a resource transfer-in request identifier.

[00157] Reference may be made to the relevant description in the above embodiments for the specific content of step S305, which is not repeated herein.

[00158] In step S306, a second resource transfer state is updated from an initial state to a resource-being-transferred-in state.

[00159] The second resource transfer state includes a transfer state of the second resource transfer amount of resources. The second resource transfer amount is less than or equal to the first resource transfer amount.

[00160] Under a condition that the second resource transfer amount is equal to the first resource transfer amount, the second resource transfer state and the first resource transfer state are changed synchronously; correspondingly, both the first resource transfer state and the second resource transfer state are updated to the resource-being-transferred-in state.

[00161] Under a condition that the second resource transfer amount is less than the first resource transfer amount, the second resource transfer state and the first resource transfer state are independent of each other, that is, the transfer state of the second resource transfer amount of resources and the transfer state of the original first resource transfer amount of resources are independent of each other. Before the server sends the resource transfer-in request message to

the switching device, the initial state of the second resource transfer state is the same as the first resource transfer state, and specifically, the initial state of the second resource transfer state is the resource-to-be-transferred-in state. Under a condition the server sends the resource transfer-in request to the switching device, the second resource transfer state is updated from the resource-to-be-transferred-in state to the resource-being-transferred-in state, and the first resource transfer state remains unchanged and still is the resource-to-be-transferred-in state.

[00162] The second resource transfer state is updated from the initial state to the resource-being-transferred-in state to indicate the current state of second resource transfer amount of resources in the transfer-out resource account. The specific form of the resource-being-transferred-in state is not limited herein, for example, the resource-being-transferred-in state may be represented by numbers, letters, Chinese characters and the like.

[00163] In some examples, the server may further send the updated second resource transfer state to the user terminal to enable the user terminal to display the updated second resource transfer state to the user.

[00164] In step S307, a resource transfer-in success message sent by the switching device is received.

[00165] The resource transfer-in success message is configured to indicate that the second resource transfer amount of resources are successfully transferred to the transfer-in resource account.

[00166] Reference may be made to the relevant description in the above embodiments for the specific content of step S307, which is not repeated herein.

[00167] In step S308, in response to the resource transfer-in success message, the second resource transfer state is updated to a resource transfer-in success state.

[00168] Under a condition that the second resource transfer amount is equal to the first resource transfer amount, the second resource transfer state and the first resource transfer state are changed synchronously, that is, the first resource transfer state is also updated to the resource transfer-in success state. Under a condition that the second resource transfer amount is less than the first resource transfer amount, the second resource transfer state and the first resource transfer state are independent of each other, the second resource transfer state is updated to the resource transfer-in success state, and the first resource transfer state remains

unchanged and still is the resource-to-be-transferred-in state.

[00169] The second resource transfer state is updated to the resource transfer-in success state to indicate the current state of second resource transfer amount of resources in the transfer-out resource account. The specific form of the resource transfer-in success state is not limited herein, for example, the resource transfer-in success state may be represented by numbers, letters, Chinese characters and the like.

[00170] In some examples, the server may further send the updated second resource transfer state to the user terminal to enable the user terminal to display the updated second resource transfer state to the user.

[00171] Anomalies may occur in the resource receive process, resulting in that the server receives a resource transfer-in failure message, that is, the resource transfer-in is failed. In order to ensure a complete monitoring of the resource transfer process by the server, the server correspondingly updates the second resource transfer state.

[00172] In some examples, the resource transfer-in failure message sent by the switching device is received. In response to the resource transfer-in failure message, the second resource transfer state is updated to the resource-to-be-transferred-in state. The resource transfer-in failure message is configured to indicate that the second resource transfer amount of resources are not successfully transferred to the transfer-in resource account.

[00173] Under a condition that the second resource transfer amount is equal to the first resource transfer amount, the second resource transfer state and the first resource transfer state are changed synchronously. Under a condition that the second resource transfer amount is less than the first resource transfer amount, the second resource transfer state and the first resource transfer state are independent of each other, the second resource transfer state is updated to the resource-to-be-transferred-in state, and the first resource transfer state remains unchanged and still is the resource-to-be-transferred-in state.

[00174] The second resource transfer state is updated to the resource-to-be-transferred-in state means that under a condition the resource transfer-in is failed, the second resource transfer state is rolled back to the previous state, i.e., the resource-to-be-transferred-in state, so as to indicate the current state of second resource transfer amount of resources in the transfer-out resource account.

[00175] In some examples, the server may further send the updated second resource transfer state to the user terminal to enable the user terminal to display the updated second resource transfer state to the user.

[00176] In still other embodiments, it may happen that when the freeze of the frozen resources in the transfer-out resource account is timed out, no user has initiated the resource transfer-in request, and thus the server does not send the resource transfer-in request message. In this case, it may be considered that the resources to be transferred out are not received by the due time and may be unfrozen for participating in other transactions to improve the flexibility of resource utilization. Fig. 9 shows a flowchart of yet another embodiment of the resource transfer method provided by the second aspect of the present application. Fig. 9 differs from Fig. 7 in that the resource transfer method of Fig. 9 may further include steps S309 and S310.

[00177] In step S309, under a condition that a frozen time period of at least part of resources in the transfer-out resource account exceeds a frozen timeout period, a resource unfreeze request message is sent to the switching device.

[00178] The resource unfreeze request message may include, but is not limited to, the resource transfer-out request identifier and the transfer-out resource account information. The resource unfreeze request message is configured to instruct the transfer-out management subsystem to unfreeze the frozen resources corresponding to the resource transfer-out request identifier.

[00179] In some examples, the resource unfreeze request message may further include, but is not limited to, one or more of the following: the resource transfer-out request time, the server identifier, a resource unfreeze request time, a resource unfreeze request identifier and a resource amount not transferred out.

[00180] The server sends the resource unfreeze request message to the switching device without a trigger from the user terminal. The triggering of the processing of the resources under a condition that the resources to be transferred out are not received by the due time is imperceptible to the user.

[00181] In step S310, the first resource transfer state is updated to a resource transfer timeout state.

[00182] The first resource transfer state is updated to the resource transfer timeout state to indicate the current state of first resource transfer amount of resources in the transfer-out

resource account. The specific form of the resource transfer timeout state is not limited herein, for example, the resource transfer timeout state may be represented by numbers, letters, Chinese characters and the like.

[00183] In some examples, the server may further send the updated first resource transfer state to the user terminal to enable the user terminal to display the updated first resource transfer state to the user.

[00184] In the above embodiments, under a condition that the first resource transfer amount and the second resource transfer amount are the same, the first resource transfer state and the second resource transfer state may be represented by the same state.

[00185] Changes of the stored resource transfer states in the server will be specifically described below in which, for example, the resource transfer is the sending and receiving of electronic red envelopes.

[00186] In some examples, the red envelope sent by user 1 is received by one user, i.e., user 2. Correspondingly, the state of the red envelope is specific implementation of the first resource transfer state and the second resource transfer state in the above embodiments. A red envelope-being-requested corresponds to the resource transfer-out request state in the above embodiments; a red envelope-to-be-received corresponds to the resource-to-be-transferred-in state in the above embodiments; a red envelope send timeout corresponds to the resource transfer-out timeout state in the above embodiments; a red envelope send failure corresponds to the resource transfer-out failure state in the above embodiments; a red envelope-being-received corresponds to the resource-being-transferred-in state in the above embodiments; a red envelope receive success corresponds to the resource transfer-in success state in the above embodiments; and a red envelope timeout corresponds to the resource transfer timeout state in the above embodiments.

[00187] Fig. 10 shows a schematic diagram of an example of a resource transfer state change provided by the embodiments of the present application. Fig. 10 illustrates the changes of the resource transfer state, i.e., the state of the red envelope, under various conditions.

[00188] As shown in Fig. 10, under a condition that the server receives a red envelope send request initiated by a user, the state of the red envelope is updated to the red envelope-being-requested.

[00189] Under a condition that the state of the red envelope is the red envelope-being-requested, the server does not receive the resource transfer-out response message within the first preset time period, and the bank management system of the account sending the red envelope has not performed the freeze reversal, the state of the red envelope is updated from the red envelope-being-requested to the red envelope send timeout.

[00190] Under a condition that the state of the red envelope is the red envelope-being-requested, and the server determines that the funds corresponding to the red envelope in the account sending the red envelope are not successfully frozen, the state of the red envelope is updated from the red envelope-being-requested to the red envelope send failure.

[00191] Under a condition that the state of the red envelope is the red envelope send timeout, and the freeze reversal of the bank management system of the account sending the red envelope is successful or failed, the state of the red envelope is updated from the red envelope send timeout to the red envelope send failure.

[00192] Under a condition that the state of the red envelope is the red envelope send timeout, and the freeze reversal is timed out, the state of the red envelope remains the red envelope send timeout.

[00193] Under a condition that the state of the red envelope is the red envelope-being-requested and the server receives the resource transfer-out response message, the state of the red envelope is updated from the red envelope-being-requested to the red envelope-to-be-received.

[00194] Under a condition that the state of the red envelope is the red envelope-to-be-received and the server receives a red envelope receive request initiated by the user, the state of the red envelope is updated from the red envelope-to-be-received to the red envelope-being-received.

[00195] Under a condition that the state of the red envelope is the red envelope-to-be-received, and the server does not receive the red envelope receive request initiated by the user within the frozen timeout period, the state of the red envelope is updated from the red envelope-to-be-received to the red envelope timeout.

[00196] Under a condition that the state of the red envelope is the red envelope timeout, and the server does not receive a message indicating that the funds corresponding to the red envelope that is timed out have been unfrozen successfully, not successfully or timed out, the

state of the red envelope remains the red envelope timeout.

[00197] Under a condition that the state of the red envelope is the red envelope-being-received and the server receives the resource transfer-in failure message, the state of the red envelope is updated from the red envelope-being-received to the red envelope-to-be-received.

[00198] Under a condition that the state of the red envelope is the red envelope-being-received and the server receives the resource transfer-in success message, the state of the red envelope is updated from the red envelope-being-received to the red envelope receive success.

[00199] It should be noted that the user that receives the red envelope cannot receive the red envelope repeatedly.

[00200] In some other examples, the red envelope sent by user 1 is received by a plurality of users, i.e., user 2 to user N. Correspondingly, the state of the red envelope sent by the user is specific implementation of the first resource transfer state in the above embodiments, and the state of the red envelope received by the user is specific implementation of the second resource transfer state in the above embodiments. The red envelope-being-requested corresponds to the resource transfer-out request state in the above embodiments; the red envelope-to-be-received corresponds to the resource-to-be-transferred-in state in the above embodiments; the red envelope send timeout corresponds to the resource transfer-out timeout state in the above embodiments; the red envelope send failure corresponds to the resource transfer-out failure state in the above embodiments; the red envelope-being-received corresponds to the resource-being-transferred-in state in the above embodiments; the red envelope receive success corresponds to the resource transfer-in success state in the above embodiments; and the red envelope timeout corresponds to the resource transfer timeout state in the above embodiments.

[00201] Fig. 11 shows a schematic diagram of another example of the resource transfer state change provided by the embodiments of the present application. Fig. 11 illustrates the changes of the resource transfer state, i.e., the state of the red envelope, under various conditions. For convenience of explanation, the red envelope sent by user 1 is called a red envelope, and the red envelope received by users 2 to N is called a sub-red envelope. Herein, the funds corresponding to a sub-red envelope are less than the funds corresponding to a red envelope.

[00202] As shown in Fig. 11, under a condition that the server receives a red envelope send request initiated by a user, the state of the red envelope is updated to the red envelope-being-

requested.

[00203] Under a condition that the state of the red envelope is the red envelope-being-requested, the server does not receive the resource transfer-out response message within the first preset time period, and the bank management system of the account sending the red envelope has not performed the freeze reversal, the state of the red envelope is updated from the red envelope-being-requested to the red envelope send timeout.

[00204] Under a condition that the state of the red envelope is the red envelope-being-requested, and the server determines that the funds corresponding to the red envelope in the account sending the red envelope are not successfully frozen, the state of the red envelope is updated from the red envelope-being-requested to the red envelope send failure.

[00205] Under a condition that the state of the red envelope is the red envelope send timeout, and the freeze reversal of the bank management system of the account sending the red envelope is successful or failed, the state of the red envelope is updated from the red envelope send timeout to the red envelope send failure.

[00206] Under a condition that the state of the red envelope is the red envelope send timeout, and the freeze reversal is timed out, the state of the red envelope remains the red envelope send timeout.

[00207] Under a condition that the state of the red envelope is the red envelope-being-requested and the server receives the resource transfer-out response message, the state of the red envelope is updated from the red envelope-being-requested to the red envelope-to-be-received.

[00208] Under a condition that the state of the red envelope is the red envelope-to-be-received, and the server does not receive a red envelope receive request initiated by the user within the frozen timeout period, the state of the red envelope is updated from the red envelope-to-be-received to the red envelope timeout.

[00209] Under a condition that the state of the red envelope is the red envelope timeout, and the server does not receive a message indicating that the funds corresponding to the red envelope that is timed out have been unfrozen successfully, not successfully or timed out, the state of the red envelope remains the red envelope timeout.

[00210] The red envelope may be split into sub-red envelopes according to the red envelope

receive request, and the state of the sub-red envelope may be updated by the server. The sub-red envelope is a part of the red envelope. The state of the sub-red envelope that is split from the red envelope of which the state is the red envelope-to-be-received is also the red envelope-to-be-received.

[00211] Under a condition that the state of the sub-red envelope is the red envelope-to-be-received and the server receives the red envelope receive request initiated by the user, the state of the sub-red envelope is updated from the red envelope-to-be-received to the red envelope-being-received.

[00212] Under a condition that the state of the sub-red envelope is the red envelope-being-received and the server receives the resource transfer-in failure message, the state of the sub-red envelope is updated from the red envelope-being-received to the red envelope-to-be-received.

[00213] Under a condition that the state of the sub-red envelope is the red envelope-being-received and the server receives the resource transfer-in success message, the state of the sub-red envelope is updated from the red envelope-being-received to the red envelope receive success.

[00214] The state of the red envelope may be determined according to the states of the plurality of sub-red envelopes. Specifically, under a condition that all the states of the plurality of sub-red envelopes are the red envelope receive success, and a sum of the funds in the plurality of sub-red envelopes is equal to the funds in the red envelope, the state of the red envelope is updated to the red envelope receive success.

[00215] It should be noted that the user that receives the sub-red envelope cannot receive the sub-red envelope repeatedly.

[00216] The resource transfer process among the server, the switching device, the transfer-out management subsystem and the transfer-in management subsystem is described below.

[00217] Fig. 12 shows a flowchart of an example of a resource transfer process provided by the embodiments of the present application. As shown in Fig. 12, the resource transfer process may include steps S401 to S417, which illustrate a normal resource transfer process.

[00218] In step S401, the server receives the resource transfer-out request initiated by the user of the transfer-out party.

[00219] In step S402, the server sends the resource transfer-out request message to the switching device in response to the resource transfer-out request.

[00220] In step S403, the switching device determines the transfer-out management subsystem according to the resource transfer-out request message.

[00221] In step S404, the switching device sends the resource transfer-out request message to the transfer-out management subsystem.

[00222] In step S405, the transfer-out management subsystem freezes the first resource transfer amount of resources in the transfer-out resource account in response to the resource transfer-out request information.

[00223] In step S406, the transfer-out management subsystem sends the resource transfer-out response message to the switching device.

[00224] In step S407, the switching device sends the resource transfer-out response message to the server.

[00225] In step S408, the server receives the resource transfer-in request initiated by the user of the transfer-in party.

[00226] In step S409, the server sends the resource transfer-in request message to the switching device in response to the resource transfer-in request.

[00227] In step S410, the switching device determines the transfer-out management subsystem according to the resource transfer-in request message.

[00228] In step S411, the switching device sends the account-out request message to the transfer-out management subsystem.

[00229] In step S412, the transfer-out management subsystem unfreezes the second resource transfer amount of resources in the frozen resources corresponding to the resource transfer-out request identifier and transfers the unfrozen resources out of the transfer-out resource account in response to the account-out request message.

[00230] In step S413, under a condition that the resources are successfully unfrozen and transferred out, the transfer-out management subsystem sends the account-out success response message to the switching device.

[00231] In step S414, the switching device sends the account-in request message to the transfer-in management subsystem in response to the account-out success response message.

[00232] In step S415, the transfer-in management subsystem transfers the resources that are transferred out of the transfer-out resource account to the transfer-in resource account in response to the account-in request message.

[00233] In step S416, the transfer-in management subsystem sends the account-in success response message to the switching device under a condition that the resources are successfully transferred to the transfer-in resource account.

[00234] In step S417, the switching device sends the resource transfer-in success message to the server in response to the account-in success response message.

[00235] Fig. 13 shows a flowchart of another example of the resource transfer process provided by the embodiments of the present application. As shown in Fig. 13, the resource transfer process may include steps S501 to S512. The resource transfer process as shown in Fig. 13 is a process in which the resources are timed out and no user receives the resources.

[00236] In step S501, the server receives the resource transfer-out request initiated by the user of the transfer-out party.

[00237] In step S502, the server sends the resource transfer-out request message to the switching device in response to the resource transfer-out request.

[00238] In step S503, the switching device determines the transfer-out management subsystem according to the resource transfer-out request message.

[00239] In step S504, the switching device sends the resource transfer-out request message to the transfer-out management subsystem.

[00240] In step S505, the transfer-out management subsystem freezes the first resource transfer amount of resources in the transfer-out resource account in response to the resource transfer-out request information.

[00241] In step S506, the transfer-out management subsystem sends the resource transfer-out response message to the switching device.

[00242] In step S507, the switching device sends the resource transfer-out response message to the server.

[00243] In step S508, the server sends the resource unfreeze request message to the switching device under a condition the server does not receive the resource transfer-in request initiated by the user of the transfer-in party within the frozen timeout period.

[00244] In step S509, the switching device sends the resource unfreeze request message to the transfer-out management subsystem.

[00245] In step S510, the transfer-out management subsystem unfreezes the resources of which the frozen time period exceeds the frozen timeout period in response to the resource unfreeze request message.

[00246] In step S511, the transfer-out management subsystem sends the resource unfreeze response message to the switching device under a condition the unfreeze is successful.

[00247] In step S512, the switching device sends the resource unfreeze response message to the server.

[00248] Fig. 14 shows a flowchart of yet another example of the resource transfer process provided by the embodiments of the present application. As shown in Fig. 14, the resource transfer process may include steps S601 to S611. The resource transfer process as shown in Fig. 14 is a process in which a freeze normally occurs in the resource transfer process.

[00249] In step S601, the server receives the resource transfer-out request initiated by the user of the transfer-out party.

[00250] In step S602, the server sends the resource transfer-out request message to the switching device in response to the resource transfer-out request.

[00251] In step S603, the switching device determines the transfer-out management subsystem according to the resource transfer-out request message.

[00252] In step S604, the switching device sends the resource transfer-out request message to the transfer-out management subsystem.

[00253] In step S605, the transfer-out management subsystem freezes the first resource transfer amount of resources in the transfer-out resource account in response to the resource transfer-out request information. The freeze may be successful or failed, which is not limited herein.

[00254] In step S606, the transfer-out management subsystem sends the resource transfer-out response message to the switching device.

[00255] In step S607, the server sends the first reversal message to the switching device under a condition that the resource transfer-out response message is not received within the first preset time period.

[00256] In step S608, the switching device sends the resource freeze reversal message to the

transfer-out management subsystem in response to the first reversal message.

[00257] In step S609, the transfer-out management subsystem performs the freeze reversal in response to the resource freeze reversal message.

[00258] In step S610, the transfer-out management subsystem sends the resource freeze reversal response message to the switching device under a condition that the freeze reversal is successful.

[00259] In step S611, the switching device sends the resource freeze reversal response message to the server.

[00260] Fig. 15 shows a flowchart of yet another example of the resource transfer process provided by the embodiments of the present application. As shown in Fig. 15, the resource transfer process may include steps S701 to S716. The resource transfer process as shown in Fig. 15 is a process in which an account-out anomaly occurs in the resource transfer process.

[00261] In step S701, the server receives the resource transfer-out request initiated by the user of the transfer-out party.

[00262] In step S702, the server sends the resource transfer-out request message to the switching device in response to the resource transfer-out request.

[00263] In step S703, the switching device determines the transfer-out management subsystem according to the resource transfer-out request message.

[00264] In step S704, the switching device sends the resource transfer-out request message to the transfer-out management subsystem.

[00265] In step S705, the transfer-out management subsystem freezes the first resource transfer amount of resources in the transfer-out resource account in response to the resource transfer-out request information.

[00266] In step S706, the transfer-out management subsystem sends the resource transfer-out response message to the switching device.

[00267] In step S707, the switching device sends the resource transfer-out response message to the server.

[00268] In step S708, the server receives the resource transfer-in request initiated by the user of the transfer-in party.

[00269] In step S709, the server sends the resource transfer-in request message to the switching

device in response to the resource transfer-in request.

[00270] In step S710, the switching device determines the transfer-out management subsystem according to the resource transfer-in request message.

[00271] In step S711, the switching device sends the account-out request message to the transfer-out management subsystem.

[00272] In step S712, the transfer-out management subsystem unfreezes the second resource transfer amount of resources in the frozen resources corresponding to the resource transfer-out request identifier and transfers the unfrozen resources out of the transfer-out resource account in response to the account-out request message.

[00273] In step S713, the switching device sends the resource transfer-in failure message to the server under a condition that the account-out success response message is not received within the third preset time period.

[00274] In step S714, the switching device sends the account-out reversal message to the transfer-out management subsystem.

[00275] In step S715, the transfer-out management subsystem performs the account-out reversal in response to the account-out reversal message.

[00276] In step S716, the transfer-out management subsystem sends the account-out reversal response message to the switching device under a condition that the account-out reversal is successful.

[00277] Reference may be made to the relevant description in the above embodiments for the specific content of the various steps in the above resource transfer processes, which is not repeated herein.

[00278] A third aspect of the present application provides a switching device. Fig. 16 shows a schematic structural diagram of an embodiment of the switching device provided by the third aspect of the present application. As shown in Fig. 16, the switching device 800 may include a receiving module 801, a determining module 802 and a sending module 803.

[00279] The receiving module 801 may be configured to receive a resource transfer-out request message sent by a server.

[00280] The resource transfer-out request message includes a resource transfer-out request identifier, transfer-out resource account information and a first resource transfer amount.

[00281] Optionally, the resource transfer-out request message may further include one or more of the following: a resource transfer-out request time and a server identifier.

[00282] The determining module 802 may be configured to determine a transfer-out management subsystem according to the resource transfer-out request message.

[00283] The transfer-out management subsystem includes a management subsystem for a transfer-out resource account indicated by the transfer-out resource account information.

[00284] The sending module 803 may be configured to send the resource transfer-out request message to the transfer-out management subsystem.

[00285] The resource transfer-out request message is configured to instruct the transfer-out management subsystem to freeze the first resource transfer amount of resources in the transfer-out resource account, and at least part of the frozen resources are unfrozen and transferred to a transfer-in resource account under a condition that the transfer-out management subsystem receives an account-out request message.

[00286] In the embodiments of the present application, the switching device receives the resource transfer-out request message sent by the server and sends the resource transfer-out request message to the determined transfer-out management subsystem according to the resource transfer-out request message. The resource transfer-out request message may include the resource transfer-out request identifier, the transfer-out resource account information and the first resource transfer amount. The resource transfer-out request message may instruct the transfer-out management subsystem to freeze the first resource transfer amount of resources corresponding to the resource transfer-out request identifier in the transfer-out resource account, so as to under a condition that it is subsequently required to transfer resources to the transfer-in resource account, at least part of the frozen resources are unfrozen and transferred to the transfer-in resource account. In the process of performing the resource transfer through the switching device, the resources are transferred between the transfer-out resource account and the transfer-in resource account without passing through the switching device, thereby the risk of the resource transfer is reduced. Moreover, without a midway deposition of the resources, the switching device can further monitor the resource transfer process by receiving and sending the resource transfer-out request to ensure that the resource transfer process is controllable.

[00287] In some examples, the above receiving module 801 may be further configured to

receive a resource transfer-out response message sent by the transfer-out management subsystem.

[00288] The resource transfer-out response message is configured to indicate that the transfer-out management subsystem successfully freezes the first resource transfer amount of resources in the transfer-out resource account.

[00289] The above sending module 803 may be further configured to send the resource transfer-out response message to the server.

[00290] In some examples, the above receiving module 801 may be further configured to receive a first reversal message sent by the server under a condition that the resource transfer-out response message is not received within a first preset time period.

[00291] The above sending module 803 may be further configured to send, in response to the first reversal message, a resource freeze reversal message to the transfer-out management subsystem.

[00292] The resource freeze reversal message is configured to instruct the transfer-out management subsystem to perform a freeze reversal. The freeze reversal includes reversing the freeze of the first resource transfer amount of resources in the transfer-out resource account.

[00293] The above receiving module 801 may be further configured to receive a resource freeze reversal response message sent by the transfer-out management subsystem, and the resource freeze reversal response message is configured to indicate that the freeze reversal is successful.

[00294] The above sending module 803 may be further configured to send the resource freeze reversal response message to the server.

[00295] In some examples, the above sending module 803 may be further configured to send, under a condition that the resource transfer-out response message is not received within a second preset time period, a resource freeze reversal message to the transfer-out management subsystem and a resource transfer-out failure response message to the server.

[00296] The resource freeze reversal message is configured to instruct the transfer-out management subsystem to perform a freeze reversal. The freeze reversal includes reversing the freeze of the first resource transfer amount of resources in the transfer-out resource account.

[00297] The above receiving module 801 may be further configured to receiving a resource

freeze reversal response message sent by the transfer-out management subsystem.

[00298] The resource freeze reversal response message is configured to indicate that the freeze reversal is successful.

[00299] The above sending module 803 may be further configured to send the resource freeze reversal response message to the server.

[00300] Fig. 17 shows a schematic structural diagram of another embodiment of the switching device provided by the third aspect of the present application. Fig. 17 differs from Fig. 16 in that the switching device of Fig. 17 may further include an updating module 804.

[00301] The above receiving module 801 may be further configured to receive a resource transfer-in request message sent by the server.

[00302] The resource transfer-in request message includes the resource transfer-out request identifier, the transfer-out resource account information, transfer-in resource account information and a second resource transfer amount.

[00303] Optionally, the resource transfer-in request message may further include one or more of the following: the resource transfer-out request time, the server identifier, a resource transfer-in request time and a resource transfer-in request identifier.

[00304] The above determining module 802 may be further configured to determine the transfer-out management subsystem according to the resource transfer-in request message.

[00305] The above sending module 803 may be further configured to sending the account-out request message to the transfer-out management subsystem.

[00306] The account-out request message includes the resource transfer-out request identifier, the transfer-out resource account information, the transfer-in resource account information and the second resource transfer amount and is configured to instruct the transfer-out management subsystem to unfreeze the second resource transfer amount of resources in frozen resources corresponding to the resource transfer-out request identifier and transfer the unfrozen resources out of the transfer-out resource account.

[00307] Optionally, the account-out request message may further include one or more of the following: the resource transfer-out request time, the server identifier, the resource transfer-in request time, the resource transfer-in request identifier and a settlement time.

[00308] The updating module 804 may be configured to update a stored frozen resource

amount corresponding to the resource transfer-out request identifier in the transfer-out resource account.

[00309] In some examples, the above receiving module 801 may be further configured to receive an account-out success response message sent by the transfer-out management subsystem.

[00310] The account-out success response message is configured to indicate that the second resource transfer amount of resources that are unfrozen are successfully transferred out of the transfer-out resource account.

[00311] The above sending module 803 may be further configured to send, in response to the account-out success response message, an account-in request message to a transfer-in management subsystem.

[00312] The transfer-in management subsystem includes a management subsystem for the transfer-in resource account indicated by the transfer-in resource account information. The account-in request message includes the resource transfer-out request identifier, the transfer-out resource account information, the transfer-in resource account information and the second resource transfer amount and is configured to instruct the transfer-in management subsystem to transfer the second resource transfer amount of resources that are transferred out of the transfer-out resource account to the transfer-in resource account.

[00313] Optionally, the account-in request message may further include one or more of the following: the resource transfer-out request time, the server identifier, the resource transfer-in request time, the resource transfer-in request identifier and the settlement time.

[00314] In some examples, the above updating module 804 may be further configured to roll back, under a condition that the account-out success response message is not received within a third preset time period, the stored frozen resource amount corresponding to the resource transfer-out request identifier in the transfer-out resource account.

[00315] The above sending module 803 may be further configured to send a resource transfer-in failure message to the server and an account-out reversal message to the transfer-out management subsystem.

[00316] The account-out reversal message is configured to instruct the transfer-out management subsystem to perform an account-out reversal. The account-out reversal includes

reversing the transfer of the second resource transfer amount of resources out of the transfer-out resource account and reversing the unfreeze of the second resource transfer amount of resources.

[00317] The above receiving module 801 may be further configured to receive an account-out reversal response message sent by the transfer-out management subsystem.

[00318] The account-out reversal response message is configured to indicate that the account-out reversal is successful.

[00319] In some examples, the above receiving module 801 may be further configured to receive an account-in success response message sent by the transfer-in management subsystem.

[00320] The account-in success response message is configured to indicate that the second resource transfer amount of resources are successfully transferred to the transfer-in resource account.

[00321] The above sending module 803 may be further configured to send, in response to the account-in success response message, a resource transfer-in success message to the server.

[00322] In some examples, the above receiving module 801 may be further configured to receiving an account-in failure response message sent by the transfer-in management subsystem.

[00323] The account-in failure response message is configured to indicate that the second resource transfer amount of resources are not successfully transferred to the transfer-in resource account.

[00324] The above updating module 804 may be further configured to roll back, in response to the account-in failure response message, the stored frozen resource amount corresponding to the resource transfer-out request identifier in the transfer-out resource account.

[00325] The above sending module 803 may be further configured to send a resource transfer-in failure message to the server and an account-out reversal message to the transfer-out management subsystem.

[00326] The account-out reversal message is configured to instruct the transfer-out management subsystem to perform an account-out reversal. The account-out reversal includes reversing the transfer of the second resource transfer amount of resources to the transfer-in resource account and reversing the unfreeze of the second resource transfer amount of

resources.

[00327] The above receiving module 801 may be further configured to receive an account-out reversal response message sent by the transfer-out management subsystem.

[00328] The account-out reversal response message is configured to indicate that the account-out reversal is successful.

[00329] In some examples, the above sending module 803 may be further configured to send, under a condition that the account-in success response message is not received within a fourth preset time period, the resource transfer-in success message to the server and an account-in confirmation message to the transfer-in management subsystem.

[00330] The account-in confirmation message is configured to transfer the second resource transfer amount of resources to the transfer-in resource account.

[00331] In some examples, the above receiving module 801 may be further configured to receive a resource unfreeze request message sent by the server under a condition that a frozen time period of at least part of resources in the transfer-out resource account exceeds a frozen timeout period.

[00332] The resource unfreeze request message includes the resource transfer-out request identifier and the transfer-out resource account information.

[00333] Optionally, the resource unfreeze request message may further include one or more of the following: the resource transfer-out request time, the server identifier, a resource unfreeze request time, a resource unfreeze request identifier and a resource amount not transferred out.

[00334] The above sending module 803 may be further configured to send the resource unfreeze request message to the transfer-out management subsystem.

[00335] The resource unfreeze request message is configured to instruct the transfer-out management subsystem to unfreeze the frozen resources corresponding to the resource transfer-out request identifier.

[00336] The above receiving module 801 may be further configured to receive a resource unfreeze response message sent by the transfer-out management subsystem.

[00337] The resource unfreeze response message is configured to indicate that the frozen resources corresponding to the resource transfer-out request identifier are successfully unfrozen.

[00338] The above sending module 803 may be further configured to send the resource unfreeze response message to the server.

[00339] A fourth aspect of the present application provides a server. Fig. 18 shows a schematic structural diagram of an embodiment of the server provided by the fourth aspect of the present application. As shown in Fig. 18, the server 900 may include a sending module 901 and a state storing module 902.

[00340] The sending module 901 may be configured to send a resource transfer-out request message to a switching device.

[00341] The resource transfer-out request message includes a resource transfer-out request identifier, transfer-out resource account information and a first resource transfer amount and is configured to instruct a transfer-out management subsystem to freeze the first resource transfer amount of resources in a transfer-out resource account, and at least part of the frozen resources are unfrozen and transferred to a transfer-in resource account under a condition that the transfer-out management subsystem receives an account-out request message.

[00342] Optionally, the resource transfer-out request message may further include one or more of the following: a resource transfer-out request time and a server identifier.

[00343] The state storing module 902 may be configured to update a stored first resource transfer state to a resource transfer-out request state.

[00344] The first resource transfer state includes a transfer state of the first resource transfer amount of resources.

[00345] In the embodiments of the present application, the server sends the resource transfer-out request message to the switching device. The resource transfer-out request message includes the resource transfer-out request identifier, the transfer-out resource account information and the first resource transfer amount. The resource transfer-out request message may cause the switching device to instruct the transfer-out management subsystem to freeze the first resource transfer amount of resources corresponding to the resource transfer-out request identifier in the transfer-out resource account, so as to under a condition that it is subsequently required to transfer resources to the transfer-in resource account, at least part of the frozen resources are unfrozen and transferred to the transfer-in resource account. In the process of performing the resource transfer through the interaction between the server and the

switching device, the resources are directly transferred between the transfer-out resource account and the transfer-in resource account without passing through the switching device, thereby the risk of the resource transfer is reduced. Moreover, without a midway deposition of the resources, the server can monitor the resource transfer process by updating the stored first resource transfer state to ensure that the resource transfer process is controllable.

[00346] Fig. 19 shows a schematic structural diagram of another embodiment of the server provided by the fourth aspect of the present application. Fig. 19 differs from Fig. 18 in that the server 900 of Fig. 19 may further include a receiving module 903.

[00347] The receiving module 903 may be configured to receive a resource transfer-out response message sent by the switching device.

[00348] The resource transfer-out response message is configured to indicate that the transfer-out management subsystem successfully freezes the first resource transfer amount of resources in the transfer-out resource account.

[00349] The above state storing module 902 may be further configured to update, in response to the resource transfer-out response message, the first resource transfer state to a resource-to-be-transferred-in state.

[00350] In some examples, the above sending module 901 may be further configured to send, under a condition that the resource transfer-out response message is not received within a first preset time period, a first reversal message to the switching device.

[00351] The first reversal message is configured to instruct the transfer-out management subsystem to perform a freeze reversal. The freeze reversal includes reversing the freeze of the first resource transfer amount of resources in the transfer-out resource account.

[00352] The above state storing module 902 may be further configured to update the first resource transfer state to a resource transfer-out timeout state.

[00353] In some examples, the above receiving module 903 may be further configured to receive a resource freeze reversal response message sent by the switching device, and the resource freeze reversal response message is configured to indicate that the freeze reversal is successful.

[00354] The above state storing module 902 may be further configured to update, in response to the resource freeze reversal response message, the first resource transfer state to a resource

transfer-out failure state.

[00355] In some examples, the above sending module 901 may be further configured to send a resource transfer-in request message to the switching device.

[00356] The resource transfer-in request message includes the resource transfer-out request identifier, the transfer-out resource account information, transfer-in resource account information and a second resource transfer amount and is configured to instruct the transfer-out management subsystem to unfreeze the second resource transfer amount of resources in frozen resources corresponding to the resource transfer-out request identifier and transfer the unfrozen resources to the transfer-in resource account indicated by the transfer-in resource account information.

[00357] Optionally, the resource transfer-in request message may further include one or more of the following: the resource transfer-out request time, the server identifier, a resource transfer-in request time and a resource transfer-in request identifier.

[00358] The above state storing module 902 may be further configured to update a stored second resource transfer state from an initial state to a resource-being-transferred-in state.

[00359] The second resource transfer state includes a transfer state of the second resource transfer amount of resources. The initial state of the second resource transfer state is the same as the first resource transfer state.

[00360] In some examples, the above receiving module 903 may be further configured to receive a resource transfer-in success message sent by the switching device, and the resource transfer-in success message is configured to indicate that the second resource transfer amount of resources are successfully transferred to the transfer-in resource account.

[00361] The above state storing module 902 may be further configured to update, in response to the resource transfer-in success message, the second resource transfer state to a resource transfer-in success state.

[00362] In some examples, the above receiving module 903 may be further configured to receive a resource transfer-in failure message sent by the switching device.

[00363] The resource transfer-in failure message is configured to indicate that the second resource transfer amount of resources are not successfully transferred to the transfer-in resource account.

[00364] The above state storing module 902 may be further configured to update, in response to the resource transfer-in failure message, the second resource transfer state to a resource-to-be-transferred-in state.

[00365] In some examples, the above sending module 901 may be further configured to send, under a condition that a frozen time period of at least part of resources in the transfer-out resource account exceeds a frozen timeout period, a resource unfreeze request message to the switching device.

[00366] The resource unfreeze request message includes the resource transfer-out request identifier and the transfer-out resource account information and is configured to instruct the transfer-out management subsystem to unfreeze the frozen resources corresponding to the resource transfer-out request identifier.

[00367] Optionally, the resource unfreeze request message may further include one or more of the following: the resource transfer-out request time, the server identifier, a resource unfreeze request time, a resource unfreeze request identifier and a resource amount not transferred out.

[00368] The above state storing module 902 may be further configured to update the first resource transfer state to a resource transfer timeout state.

[00369] A fifth aspect of the present application further provides a switching device. Fig. 20 shows a schematic structural diagram of an embodiment of the switching device provided by the fifth aspect of the present application. As shown in Fig. 20, the switching device 1000 includes a memory 1001, a processor 1002, and a computer program stored on the memory 1001 and executable on the processor 1002.

[00370] In an example, the above processor 1002 may include a central processing unit (CPU) or a specific integrated circuit (Application Specific Integrated Circuit, ASIC), or may be configured to be one or more integrated circuits to implement the embodiments of the present application.

[00371] The memory 1001 may include Read-Only Memory (ROM), Random Access Memory (RAM), magnetic disk storage medium device, optical storage medium device, flash memory device, electrical, optical or other physical/tangible memory storage device. Thus, generally, the memory includes one or more tangible (non-transitory) computer-readable storage media (e.g., memory devices) encoded with software including computer-executable instructions, and

when executed (e.g., by one or more processors), the software is operable to perform the operations described with reference to the resource transfer method according to the first aspect of the present application.

[00372] The processor 1002 reads the executable program codes stored in the memory 1001 to execute a computer program corresponding to the executable program codes, so as to realize the resource transfer method according to the first aspect of the above embodiments.

[00373] In an example, the switching device 1000 may further include a communication interface 1003 and a bus 1004. As shown in Fig. 20, the memory 1001, the processor 1002 and the communication interface 1003 are connected through the bus 1004 to complete mutual communications.

[00374] The communication interface 1003 is mainly configured to implement communications among various modules, apparatus, units and/or devices in the embodiments of the present application. Input devices and/or output devices may be further accessed through the communication interface 1003.

[00375] The bus 1004 includes hardware, software, or both, and couples the components of the switching device 1000 together. By way of example and not limitation, the bus 1004 may include Accelerated Graphics Port (AGP) or other graphics buses, Enhanced Industry Standard Architecture (EISA) bus, Front Side Bus (FSB), Hyper Transport (HT) interconnection, Industrial Standard Architecture (ISA) bus, infinite bandwidth interconnection, Low pin count (LPC) bus, memory bus, Micro Channel Architecture (MCA) bus, Peripheral Component Interconnect (PCI) bus, PCI-Express (PCI-X) bus, Serial Advanced Technology Attachment (SATA) bus, Video Electronics Standards Association Local Bus (VLB) bus or other suitable buses, or a combination of two or more of them. Bus 1004 may include one or more buses where appropriate. Although the embodiments of the present application describe and illustrate particular buses, the present application contemplates any suitable bus or interconnection.

[00376] A sixth aspect of the present application further provides a server. Fig. 21 shows a schematic structural diagram of an embodiment of the server provided by the sixth aspect of the present application. As shown in Fig. 21, the server 1100 includes a memory 1101, a processor 1102, and a computer program stored on the memory 1101 and executable on the processor 1102.

[00377] In an example, the above processor 1102 may include a central processing unit (CPU) or a specific integrated circuit (Application Specific Integrated Circuit, ASIC), or may be configured to be one or more integrated circuits to implement the embodiments of the present application.

[00378] The memory 1101 may include Read-Only Memory (ROM), Random Access Memory (RAM), magnetic disk storage medium device, optical storage medium device, flash memory device, electrical, optical or other physical/tangible memory storage device. Thus, generally, the memory includes one or more tangible (non-transitory) computer-readable storage media (e.g., memory devices) encoded with software including computer-executable instructions, and when executed (e.g., by one or more processors), the software is operable to perform the operations described with reference to the resource transfer method according to the second aspect of the present application.

[00379] The processor 1102 reads the executable program codes stored in the memory 1101 to execute a computer program corresponding to the executable program codes, so as to realize the resource transfer method according to the second aspect of the above embodiments.

[00380] In an example, the server 1100 may further include a communication interface 1103 and a bus 1104. As shown in Fig. 21, the memory 1101, the processor 1102 and the communication interface 1103 are connected through the bus 1104 to complete mutual communications.

[00381] The communication interface 1103 is mainly configured to implement communications among various modules, apparatus, units and/or devices in the embodiments of the present application. Input devices and/or output devices may be further accessed through the communication interface 1103.

[00382] The bus 1104 includes hardware, software, or both, and couples the components of the server 1100 together. By way of example and not limitation, the bus 1104 may include Accelerated Graphics Port (AGP) or other graphics buses, Enhanced Industry Standard Architecture (EISA) bus, Front Side Bus (FSB), Hyper Transport (HT) interconnection, Industrial Standard Architecture (ISA) bus, infinite bandwidth interconnection, Low pin count (LPC) bus, memory bus, Micro Channel Architecture (MCA) bus, Peripheral Component Interconnect (PCI) bus, PCI-Express (PCI-X) bus, Serial Advanced Technology Attachment

(SATA) bus, Video Electronics Standards Association Local Bus (VLB) bus or other suitable buses, or a combination of two or more of them. Bus 1104 may include one or more buses where appropriate. Although the embodiments of the present application describe and illustrate particular buses, the present application contemplates any suitable bus or interconnection.

[00383] A seventh aspect of the present application further provides a resource transfer system. The resource transfer system may include the server and the switching device in the above embodiments, the specific content of which may refer to the relevant description in the above embodiments and will not be repeated herein.

[00384] In some examples, the resource transfer system may further include the transfer-out management subsystem in the above embodiments.

[00385] In some examples, the resource transfer system may further include the transfer-in management subsystem in the above embodiments.

[00386] Reference may be made to the relevant description in the above embodiments for the specific content of the transfer-out management subsystem and the transfer-in management subsystem, which is not repeated herein.

[00387] An eighth aspect of the present application further provides a computer storage medium having a computer program stored thereon. The computer program, when executed by a processor, can implement the resource transfer method in the above embodiments and achieve the same technical effects, which is not repeated herein to avoid redundancy. The computer storage medium may include a non-transitory computer readable storage medium, for example, Read Only Memory (ROM), Random Access Memory (RAM), magnetic disk or optical disk, etc., which is not limited herein.

[00388] It should be noted that the various embodiments in the specification are described in a progressive way, the same or similar parts of various embodiments can be described with reference to each other, and each of the embodiments focuses on the differences with other embodiments. For the switching device embodiment, the server embodiment and the computer storage medium embodiment, reference may be made to the description of the method embodiments for the related parts. The present application is not limited to the specific steps and structures described above and shown in the figures. Those skilled in the art can make various changes, modifications and additions, or change the order of the steps, after

understanding the gist of the present application. Further, for brevity, a detailed description of known methods and technologies is omitted herein.

[00389] Various aspects of the present application are described above with reference to flowcharts and/or block diagrams of methods, apparatus (systems) and computer program products according to embodiments of the present application. It should be understood that each block of the flowcharts and/or block diagrams, and a combination of blocks of the flowcharts and/or block diagrams, can be implemented by computer program instructions. These computer program instructions may be provided to a processor of a general purpose computer, a special purpose computer, or other programmable data processing apparatus to produce a machine, so that the computer program instructions can be executed by the processor of the computer or other programmable data processing apparatus to enable the functions/actions specified in one or more blocks of the flowcharts and/or block diagrams to be implemented. Such processor may be, but is not limited to, a general purpose processor, a special purpose processors, an application specific processor, or a field programmable logic circuit. It will also be understood that each block of the block diagrams and/or flowcharts and a combination of blocks in the block diagrams and/or flowcharts may be further implemented by special purpose hardware that performs the specified functions or actions, or a combination of the special purpose hardware and computer instructions.

[00390] Those skilled in the art would understand that all the above embodiments are illustrative and not limiting. Different technical features in different embodiments can be combined to achieve beneficial effects. Those skilled in the art would be able to understand and implement other modified embodiments of the disclosed embodiments on the basis of studying the drawings, the description, and the claims. In the claims, the term “comprising” does not exclude other means or steps, the quantifier “one” does not exclude multiple; the terms “first” and “second” are used to indicate names and not to indicate any particular order. Any reference signs in the claims should not be construed as limiting the protection scope. Functions of several parts in the claims can be realized by a single hardware or software module. The presence of certain technical features in different dependent claims does not mean that these technical features cannot be combined to obtain beneficial effects.

WHAT IS CLAIMED IS:

1. A resource transfer method applied to a switching device, the method comprising:

receiving a resource transfer-out request message sent by a server, the resource transfer-out request message comprising a resource transfer-out request identifier, transfer-out resource account information and a first resource transfer amount;

determining a transfer-out management subsystem according to the resource transfer-out request message, the transfer-out management subsystem comprising a management subsystem for a transfer-out resource account indicated by the transfer-out resource account information; and

sending the resource transfer-out request message to the transfer-out management subsystem, the resource transfer-out request message being configured to instruct the transfer-out management subsystem to freeze the first resource transfer amount of resources in the transfer-out resource account, and at least part of the frozen resources being unfrozen and transferred to a transfer-in resource account under a condition that the transfer-out management subsystem receives an account-out request message;

wherein the transfer-out resource account is a class I account and the transfer-in resource account is a class II account.

2. The method of claim 1, further comprising:

receiving a resource transfer-out response message sent by the transfer-out management subsystem, the resource transfer-out response message being configured to indicate that the transfer-out management subsystem successfully freezes the first resource transfer amount of resources in the transfer-out resource account; and

sending the resource transfer-out response message to the server.

3. The method of claim 2, further comprising:

receiving a first reversal message sent by the server under a condition that the resource transfer-out response message is not received within a first preset time period;

sending, in response to the first reversal message, a resource freeze reversal message to

the transfer-out management subsystem, the resource freeze reversal message being configured to instruct the transfer-out management subsystem to perform a freeze reversal comprising reversing the freeze of the first resource transfer amount of resources in the transfer-out resource account;

receiving a resource freeze reversal response message sent by the transfer-out management subsystem, the resource freeze reversal response message being configured to indicate that the freeze reversal is successful; and

sending the resource freeze reversal response message to the server.

4. The method of claim 2, further comprising:

sending, under a condition that the resource transfer-out response message is not received within a second preset time period, a resource freeze reversal message to the transfer-out management subsystem and a resource transfer-out failure response message to the server, the resource freeze reversal message being configured to instruct the transfer-out management subsystem to perform a freeze reversal comprising reversing the freeze of the first resource transfer amount of resources in the transfer-out resource account;

receiving a resource freeze reversal response message sent by the transfer-out management subsystem, the resource freeze reversal response message being configured to indicate that the freeze reversal is successful; and

sending the resource freeze reversal response message to the server.

5. The method of claim 1, further comprising:

receiving a resource transfer-in request message sent by the server, the resource transfer-in request message comprising the resource transfer-out request identifier, the transfer-out resource account information, transfer-in resource account information and a second resource transfer amount;

determining the transfer-out management subsystem according to the resource transfer-in request message;

sending the account-out request message to the transfer-out management subsystem, the account-out request message comprising the resource transfer-out request identifier, the

transfer-out resource account information, the transfer-in resource account information and the second resource transfer amount and being configured to instruct the transfer-out management subsystem to unfreeze the second resource transfer amount of resources in frozen resources corresponding to the resource transfer-out request identifier and transfer the unfrozen resources out of the transfer-out resource account; and

updating a stored frozen resource amount corresponding to the resource transfer-out request identifier in the transfer-out resource account.

6. The method of claim 5, further comprising:

receiving an account-out success response message sent by the transfer-out management subsystem, the account-out success response message being configured to indicate that the second resource transfer amount of resources that are unfrozen are successfully transferred out of the transfer-out resource account; and

sending, in response to the account-out success response message, an account-in request message to a transfer-in management subsystem comprising a management subsystem for the transfer-in resource account indicated by the transfer-in resource account information, the account-in request message comprising the resource transfer-out request identifier, the transfer-out resource account information, the transfer-in resource account information and the second resource transfer amount and being configured to instruct the transfer-in management subsystem to transfer the second resource transfer amount of resources that are transferred out of the transfer-out resource account to the transfer-in resource account.

7. The method of claim 6, further comprising:

rolling back, under a condition that the account-out success response message is not received within a third preset time period, the stored frozen resource amount corresponding to the resource transfer-out request identifier in the transfer-out resource account;

sending a resource transfer-in failure message to the server and an account-out reversal message to the transfer-out management subsystem, the account-out reversal message being configured to instruct the transfer-out management subsystem to perform an account-out reversal comprising reversing the transfer of the second resource transfer amount of resources

out of the transfer-out resource account and reversing the unfreeze of the second resource transfer amount of resources; and

receiving an account-out reversal response message sent by the transfer-out management subsystem, the account-out reversal response message being configured to indicate that the account-out reversal is successful.

8. The method of claim 6, further comprising:

receiving an account-in success response message sent by the transfer-in management subsystem, the account-in success response message being configured to indicate that the second resource transfer amount of resources are successfully transferred to the transfer-in resource account; and

sending, in response to the account-in success response message, a resource transfer-in success message to the server.

9. The method of claim 6, further comprising:

receiving an account-in failure response message sent by the transfer-in management subsystem, the account-in failure response message being configured to indicate that the second resource transfer amount of resources are not successfully transferred to the transfer-in resource account;

rolling back, in response to the account-in failure response message, the stored frozen resource amount corresponding to the resource transfer-out request identifier in the transfer-out resource account;

sending a resource transfer-in failure message to the server and an account-out reversal message to the transfer-out management subsystem, the account-out reversal message being configured to instruct the transfer-out management subsystem to perform an account-out reversal comprising reversing the transfer of the second resource transfer amount of resources to the transfer-in resource account and reversing the unfreeze of the second resource transfer amount of resources; and

receiving an account-out reversal response message sent by the transfer-out management subsystem, the account-out reversal response message being configured to indicate that the

account-out reversal is successful.

10. The method of claim 8, further comprising:

sending, under a condition that the account-in success response message is not received within a fourth preset time period, the resource transfer-in success message to the server and an account-in confirmation message to the transfer-in management subsystem, the account-in confirmation message being configured to transfer the second resource transfer amount of resources to the transfer-in resource account.

11. The method of claim 1, further comprising:

receiving a resource unfreeze request message sent by the server under a condition that a frozen time period of at least part of resources in the transfer-out resource account exceeds a frozen timeout period, the resource unfreeze request message comprising the resource transfer-out request identifier and the transfer-out resource account information;

sending the resource unfreeze request message to the transfer-out management subsystem, the resource unfreeze request message being configured to instruct the transfer-out management subsystem to unfreeze frozen resources corresponding to the resource transfer-out request identifier;

receiving a resource unfreeze response message sent by the transfer-out management subsystem, the resource unfreeze response message being configured to indicate that the frozen resources corresponding to the resource transfer-out request identifier are successfully unfrozen; and

sending the resource unfreeze response message to the server.

12. The method of claim 1, wherein

the resource transfer-out request message further comprises one or more of the following: a resource transfer-out request time and a server identifier.

13. The method of claim 5, wherein

the resource transfer-in request message further comprises one or more of the following:

a resource transfer-out request time, a server identifier, a resource transfer-in request time and a resource transfer-in request identifier; and

the account-out request message further comprises one or more of the following: the resource transfer-out request time, the server identifier, the resource transfer-in request time, the resource transfer-in request identifier and a settlement time.

14. The method of claim 6, wherein

the account-in request message further comprises one or more of the following: a resource transfer-out request time, a server identifier, a resource transfer-in request time, a resource transfer-in request identifier and a settlement time.

15. The method of claim 11, wherein

the resource unfreeze request message further comprises one or more of the following: a resource transfer-out request time, a server identifier, a resource unfreeze request time, a resource unfreeze request identifier and a resource amount not transferred out.

16. A resource transfer method applied to a server, the method comprising:

sending a resource transfer-out request message to a switching device, the resource transfer-out request message comprising a resource transfer-out request identifier, transfer-out resource account information and a first resource transfer amount and being configured to instruct a transfer-out management subsystem to freeze the first resource transfer amount of resources in a transfer-out resource account, and at least part of the frozen resources being unfrozen and transferred to a transfer-in resource account under a condition that the transfer-out management subsystem receives an account-out request message; and

updating a stored first resource transfer state to a resource transfer-out request state, and the first resource transfer state comprising a transfer state of the first resource transfer amount of resources.

17. The method of claim 16, further comprising:

receiving a resource transfer-out response message sent by the switching device, the

resource transfer-out response message being configured to indicate that the transfer-out management subsystem successfully freezes the first resource transfer amount of resources in the transfer-out resource account; and

updating, in response to the resource transfer-out response message, the first resource transfer state to a resource-to-be-transferred-in state.

18. The method of claim 17, further comprising:

sending, under a condition that the resource transfer-out response message is not received within a first preset time period, a first reversal message to the switching device, the first reversal message being configured to instruct the transfer-out management subsystem to perform a freeze reversal comprising reversing the freeze of the first resource transfer amount of resources in the transfer-out resource account; and

updating the first resource transfer state to a resource transfer-out timeout state.

19. The method of claim 18, further comprising:

receiving a resource freeze reversal response message sent by the switching device, the resource freeze reversal response message being configured to indicate that the freeze reversal is successful; and

updating, in response to the resource freeze reversal response message, the first resource transfer state to a resource transfer-out failure state.

20. The method of claim 16, further comprising:

sending a resource transfer-in request message to the switching device, the resource transfer-in request message comprising the resource transfer-out request identifier, the transfer-out resource account information, transfer-in resource account information and a second resource transfer amount and being configured to instruct the transfer-out management subsystem to unfreeze the second resource transfer amount of resources in frozen resources corresponding to the resource transfer-out request identifier and transfer the unfrozen resources to the transfer-in resource account indicated by the transfer-in resource account information; and

updating a stored second resource transfer state from an initial state to a resource-being-transferred-in state, the second resource transfer state comprising a transfer state of the second resource transfer amount of resources, and the initial state of the second resource transfer state being the same as the first resource transfer state.

21. The method of claim 20, further comprising:

receiving a resource transfer-in success message sent by the switching device, the resource transfer-in success message being configured to indicate that the second resource transfer amount of resources are successfully transferred to the transfer-in resource account; and

updating, in response to the resource transfer-in success message, the second resource transfer state to a resource transfer-in success state.

22. The method of claim 20, further comprising:

receiving a resource transfer-in failure message sent by the switching device, the resource transfer-in failure message being configured to indicate that the second resource transfer amount of resources are not successfully transferred to the transfer-in resource account; and

updating, in response to the resource transfer-in failure message, the second resource transfer state to a resource-to-be-transferred-in state.

23. The method of claim 16, further comprising:

sending, under a condition that a frozen time period of at least part of resources in the transfer-out resource account exceeds a frozen timeout period, a resource unfreeze request message to the switching device, the resource unfreeze request message comprising the resource transfer-out request identifier and the transfer-out resource account information and being configured to instruct the transfer-out management subsystem to unfreeze frozen resources corresponding to the resource transfer-out request identifier; and

updating the first resource transfer state to a resource transfer timeout state.

24. The method of claim 16, wherein

the resource transfer-out request message further comprises one or more of the following:

a resource transfer-out request time and a server identifier.

25. The method of claim 20, wherein

the resource transfer-in request message further comprises one or more of the following: a resource transfer-out request time, a server identifier, a resource transfer-in request time and a resource transfer-in request identifier.

26. The method of claim 23, wherein

the resource unfreeze request message further comprises one or more of the following: a resource transfer-out request time, a server identifier, a resource unfreeze request time, a resource unfreeze request identifier and a resource amount not transferred out.

27. A switching device comprising:

a receiving module configured to receive a resource transfer-out request message sent by a server, the resource transfer-out request message comprising a resource transfer-out request identifier, transfer-out resource account information and a first resource transfer amount;

a determining module configured to determine a transfer-out management subsystem according to the resource transfer-out request message, the transfer-out management subsystem comprising a management subsystem for a transfer-out resource account indicated by the transfer-out resource account information; and

a sending module configured to send the resource transfer-out request message to the transfer-out management subsystem, the resource transfer-out request message being configured to instruct the transfer-out management subsystem to freeze the first resource transfer amount of resources in the transfer-out resource account, and at least part of the frozen resources being unfrozen and transferred to a transfer-in resource account under a condition that the transfer-out management subsystem receives an account-out request message.

28. A server comprising:

a sending module configured to send a resource transfer-out request message to a switching device, the resource transfer-out request message comprising a resource transfer-out

request identifier, transfer-out resource account information and a first resource transfer amount and being configured to instruct a transfer-out management subsystem to freeze the first resource transfer amount of resources in a transfer-out resource account, and at least part of the frozen resources being unfrozen and transferred to a transfer-in resource account under a condition that the transfer-out management subsystem receives an account-out request message; and

a state storing module configured to update a stored first resource transfer state to a resource transfer-out request state, and the first resource transfer state comprising a transfer state of the first resource transfer amount of resources.

29. A switching device comprising: a processor and a memory storing computer program instructions, wherein

the processor, when executing the computer program instructions, implements the resource transfer method of any one of claims 1 to 15.

30. A server comprising: a processor and a memory storing computer program instructions, wherein

the processor, when executing the computer program instructions, implements the resource transfer method of any one of claims 16 to 26.

31. A resource transfer system comprising the switching device of claim 29 and the server of claim 30.

32. A computer storage medium storing computer program instructions thereon which, when executed by a processor, implement the resource transfer method of any one of claims 1 to 26.