

CLAIMS

What is claimed is:

~~1. A method for recording data based on a plurality of blockchain networks, wherein a data recording system comprises at least two first type blockchain networks and one second type blockchain network; at least one node in each first type blockchain network is managed by a designated manager, and at least one node in the second type blockchain network is managed by the designated manager;~~

~~the method comprises:~~

~~when obtaining data to be stored, constructing, by a node in each first type blockchain network, a first type blockchain transaction comprising the obtained data to be stored, and broadcasting the constructed first type blockchain transaction to the first type blockchain network;~~

~~when needing to write data to a blockchain, packaging, by each node in the first type blockchain network based on a consensus algorithm, several first type blockchain transactions into a first type recording block and writing the first type recording block into a blockchain of the node itself;~~

~~obtaining, by a node managed by the designated manager in the second type blockchain network, the first type recording block and calculating a transaction hash of each first type blockchain transaction in the first type recording block; and constructing, for each transaction hash, a second type blockchain transaction comprising the transaction hash, and broadcasting each second type blockchain transaction to the second type blockchain network; and~~

~~when needing to write data to a blockchain, packaging, by each node in the second type blockchain network based on the consensus algorithm, several second type blockchain transactions into a second type recording block and writing the second type recording block into a blockchain of the node itself.~~

~~2. The method according to claim 1, wherein the broadcasting, by a node managed by the designated manager in the second type blockchain network, each second type blockchain transaction to the second type blockchain network specifically comprises:~~

~~successively broadcasting, by a node managed by the designated manager in the second type blockchain network, the second type blockchain transaction corresponding to each first type blockchain transaction to the second type blockchain network based on a sequence of the first type blockchain transactions in the first type recording block.~~

~~3. The method according to claim 1, wherein the data recording system further comprises at least one third type blockchain network;~~

~~the method further comprises:~~

~~when obtaining data to be stored, constructing, by a node in each third type blockchain network, a third type blockchain transaction comprising the obtained data to be stored, and broadcasting the constructed third type blockchain transaction to the third type blockchain network;~~

~~when needing to write data to a blockchain, packaging, by each node in the third type blockchain network based on the consensus algorithm, several third type blockchain transactions into a third type recording block and writing the third type recording block into a blockchain of the node itself;~~

~~calculating, by a node in the third type blockchain network, a transaction hash of each third type blockchain transaction in the third type recording block, and sending the transaction hash of each third type blockchain transaction to a target node in the second type blockchain network; and~~

~~for each received transaction hash, constructing, by the target node, a second type blockchain transaction comprising the transaction hash; and broadcasting the second type blockchain transaction corresponding to each transaction hash to the second type blockchain network.~~

~~4. The method according to claim 3, wherein the sending the transaction hash of each third type blockchain transaction to a target node in the second type blockchain network specifically comprises:~~

~~successively sending the transaction hash of each third type blockchain transaction to the target node in the second type blockchain network based on a sequence of third type blockchain transactions in the third type recording block; and~~

~~the broadcasting, by the target node, the second type blockchain transaction corresponding to each transaction hash to the second type blockchain network specifically comprises:~~

~~successively broadcasting, by the target node, the second type blockchain transaction corresponding to each transaction hash to the second type blockchain network based on a sequence of receiving the transaction hashes.~~

~~5. The method according to claim 1, wherein the method further comprises:~~

~~when obtaining data to be stored, constructing, by a node in the second type blockchain network, a second type blockchain transaction comprising the obtained data~~

to be stored, and broadcasting the constructed second type blockchain transaction to the second type blockchain network;

6. The method according to claim 1, wherein the constructing, for each transaction hash, a second type blockchain transaction comprising the transaction hash specifically comprises:

constructing, for each transaction hash, a second type blockchain transaction comprising the transaction hash and a network identifier of the first type blockchain network;

7. The method according to claim 3, wherein the constructing, by the target node for each received transaction hash, a second type blockchain transaction comprising the transaction hash specifically comprises:

constructing, by the target node for each received transaction hash, a second type blockchain transaction comprising the transaction hash and a network identifier of the third type blockchain network;

8. The method according to any one of claims 1 to 7, wherein each node in the second type blockchain network is managed by the designated manager;

9. A blockchain system, comprising at least two first type blockchain networks and one second type blockchain network, wherein at least one node in each first type blockchain network is managed by a designated manager, and at least one node in the second type blockchain network is managed by the designated manager;

when obtaining data to be stored, a node in each first type blockchain network constructs a first type blockchain transaction comprising the obtained data to be stored, and broadcasts the constructed first type blockchain transaction to the first type blockchain network; when needing to write data to a blockchain, each node in the first type blockchain network packages, based on a consensus algorithm, several first type blockchain transactions into a first type recording block and writes the first type recording block into a blockchain of the node itself; and

a node managed by the designated manager in the second type blockchain network obtains the first type recording block, and calculates a transaction hash of each first type blockchain transaction in the first type recording block; constructs, for each transaction hash, a second type blockchain transaction comprising the transaction hash, and broadcasts each second type blockchain transaction to the second type blockchain network; and when needing to write data to a blockchain, each node in the second type blockchain network packages, based on the consensus algorithm, several second type

~~blockchain transactions into a second type recording block and writes the second type recording block into a blockchain of the node itself.~~

~~10. A blockchain subsystem, comprising a plurality of nodes, wherein
a data recording system comprises at least two first type blockchain networks and the blockchain subsystem; at least one node in each first type blockchain network is managed by a designated manager, and at least one node in the blockchain subsystem is managed by the designated manager;~~

~~a node managed by the designated manager in the blockchain subsystem obtains a first type recording block and calculates a transaction hash of each first type blockchain transaction in the first type recording block; and constructs, for each transaction hash, a second type blockchain transaction comprising the transaction hash, and broadcasts each second type blockchain transaction to the second type blockchain network; and~~

~~when needing to write data to a blockchain, each node in the blockchain subsystem packages, based on a consensus algorithm, several second type blockchain transactions into a second type recording block and writes the second type recording block into a blockchain of the node itself; wherein~~

~~the first type recording block is obtained by packaging several first type blockchain transactions by any first type blockchain network, each first type blockchain transaction in the first type recording block comprises data to be stored, and the first type recording block has been written by the first type blockchain network into a blockchain of the first type blockchain network.~~

~~11. A computer device, comprising a memory, a processor, and a computer program that is stored in the memory and that can run on the processor, wherein when executing the program, the processor performs the method according to any one of claims 1 and 8.~~

1. A computer-implemented method for recording data, comprising:

in response to receiving data to be recorded, generating, by a node in a first-type blockchain network, a first-type blockchain transaction comprising the data;

transmitting, by the node in the first-type blockchain network, the first-type blockchain transaction to the first-type blockchain network;

recording, by the node in the first-type blockchain network based on a consensus algorithm, one or more first-type blockchain transactions into a first-type block;

recording, by the node in the first-type blockchain network, the first-type block on a blockchain of the first-type blockchain network;

obtaining, by a node in a second-type blockchain network, the first-type block, wherein the first-type blockchain network and the second-type blockchain network are comprised in a data recording system, and wherein the node in the first-type blockchain network and the node in the second-type blockchain network are managed by a management entity of the data recording system;

determining, by the node in the second-type blockchain network, a transaction hash of each of the one or more first-type blockchain transactions in the first-type block;

generating, by the node in the second-type blockchain network for each transaction hash, a second-type blockchain transaction comprising the transaction hash and a network identifier of the first-type blockchain network;

transmitting, by the node in the second-type blockchain network, each second-type blockchain transaction to the second-type blockchain network;

recording, by the node in the second-type blockchain network based on the consensus algorithm, one or more second-type blockchain transactions into a second-type block;

recording, by the node in the second-type blockchain network, the second-type block on a blockchain of the second-type blockchain network;

receiving, by the node in the second-type blockchain network and not by the node in the first-type blockchain network, a verification request that has been generated by a user based on a transaction hash of a to-be-verified first-type blockchain transaction; and

providing, by the node in the second-type blockchain network and in response to determining that a second-type blockchain transaction that includes the transaction hash of the to-be-verified first-type blockchain transaction has been recorded in the second-type blockchain network, an indication to the user that the to-be-verified first-type blockchain transaction has been recorded in the blockchain of the first-type blockchain network.

2. The computer-implemented method according to claim 1, wherein the one or more first-type blockchain transactions correspond to the one or more second-type blockchain transactions, the transmitting, by the node in the second-type blockchain network, each second-type blockchain transaction to the second-type blockchain network comprises:

transmitting each of the one or more second-type blockchain transactions corresponding to each of the one or more first-type blockchain transactions based on an

order of the one or more first-type blockchain transactions recorded in a first-type recording block.

3. The computer-implemented method according to claim 1, wherein the data recording system further comprises at least one third-type blockchain network, and wherein the method further comprises:

in response to receiving data to be recorded, generating, by a node in the third-type blockchain network, a third-type blockchain transaction comprising the data;

transmitting the third-type blockchain transaction to the third-type blockchain network;

recording, by the node in the third-type blockchain network based on the consensus algorithm, one or more third-type blockchain transactions into a third-type block;

recording, by the node in the third-type blockchain network, the third-type block on a blockchain of the third-type blockchain network;

determining, by the node in the third-type blockchain network, a transaction hash of each of the one or more third-type blockchain transactions in the third-type block;

sending, by the node in the third-type blockchain network, the transaction hash of each of the one or more third-type blockchain transactions to a target node in the second-type blockchain network;

generating, by the target node for each transaction hash, a second-type blockchain transaction comprising the transaction hash; and

transmitting, by the target node, the second-type blockchain transaction corresponding to each transaction hash to the second-type blockchain network.

4. The computer-implemented method according to claim 3, wherein sending the transaction hash of each of the one or more third-type blockchain transactions to the target node in the second-type blockchain network comprises

sending the transaction hash of each of the one or more third-type blockchain transactions to the target node in the second-type blockchain network based on an order of the one or more third-type blockchain transactions in a third-type recording block;
and

wherein transmitting the second-type blockchain transaction corresponding to each transaction hash to the second-type blockchain network comprises transmitting each of the one or more second-type blockchain transactions corresponding to the

transaction hash of each of the one or more second-type blockchain transactions based on an order that the transaction hash is received.

5. The computer-implemented method according to claim 3, wherein generating the second-type blockchain transaction comprises:

generating, for each transaction hash, a second-type blockchain transaction comprising the transaction hash and a network identifier of the third-type blockchain network.

6. The computer-implemented method according to claim 1, wherein the method further comprising:

generating, by a node in the second-type blockchain network, a second-type blockchain transaction comprising the data to be recorded; and

transmitting, by the node in the second-type blockchain network, the second-type blockchain transaction to the second-type blockchain network.

7. The computer-implemented method according to claim 1, herein each node in the second-type blockchain network is managed by the management entity of the data recording system.

8. A non-transitory, computer-readable medium storing one or more instructions executable by a computer system to perform operations comprising:

in response to receiving data to be recorded, generating, by a node in a first-type blockchain network, a first-type blockchain transaction comprising the data;

transmitting, by the node in the first-type blockchain network, the first-type blockchain transaction to the first-type blockchain network;

recording, by the node in the first-type blockchain network based on a consensus algorithm, one or more first-type blockchain transactions into a first-type block;

recording, by the node in the first-type blockchain network, the first-type block on a blockchain of the first-type blockchain network;

obtaining, by a node in a second-type blockchain network, the first-type block, wherein the first-type blockchain network and the second-type blockchain network are comprised in a data recording system, and wherein the node in the first-type blockchain network and the node in the second-type blockchain network are managed by a management entity of the data recording system;

determining, by the node in the second-type blockchain network, a transaction hash of each of the one or more first-type blockchain transactions in the first-type block;

generating, by the node in the second-type blockchain network for each

transaction hash, a second-type blockchain transaction comprising the transaction hash and a network identifier of the first-type blockchain network;

transmitting, by the node in the second-type blockchain network, each second-type blockchain transaction to the second-type blockchain network;

recording, by the node in the second-type blockchain network based on the consensus algorithm, one or more second-type blockchain transactions into a second-type block;

recording, by the node in the second-type blockchain network, the second-type block on a blockchain of the second-type blockchain network;

receiving, by the node in the second-type blockchain network and not by the node in the first-type blockchain network, a verification request that has been generated by a user based on a transaction hash of a to-be-verified first-type blockchain transaction; and

providing, by the node in the second-type blockchain network and in response to determining that a second-type blockchain transaction that includes the transaction hash of the to-be-verified first-type blockchain transaction has been recorded in the second-type blockchain network, an indication to the user that the to-be-verified first-type blockchain transaction has been recorded in the blockchain of the first-type blockchain network.

9. The non-transitory, computer-readable medium according to claim 8, wherein the one or more first-type blockchain transactions correspond to the one or more second-type blockchain transactions, the transmitting, by the node in the second-type blockchain network, each second-type blockchain transaction to the second-type blockchain network comprises:

transmitting each of the one or more second-type blockchain transactions corresponding to each of the one or more first-type blockchain transactions based on an order of the one or more first-type blockchain transactions recorded in a first-type recording block.

10. The non-transitory, computer-readable medium according to claim 8, wherein the data recording system further comprises at least one third-type blockchain network, and wherein the operations further comprises:

in response to receiving data to be recorded, generating, by a node in the third-type blockchain network, a third-type blockchain transaction comprising the data;

transmitting the third-type blockchain transaction to the third-type blockchain

network;

recording, by the node in the third-type blockchain network based on the consensus algorithm, one or more third-type blockchain transactions into a third-type block;

recording, by the node in the third-type blockchain network, the third-type block on a blockchain of the third-type blockchain network;

determining, by the node in the third-type blockchain network, a transaction hash of each of the one or more third-type blockchain transactions in the third-type block;

sending, by the node in the third-type blockchain network, the transaction hash of each of the one or more third-type blockchain transactions to a target node in the second-type blockchain network;

generating, by the target node for each transaction hash, a second-type blockchain transaction comprising the transaction hash; and

transmitting, by the target node, the second-type blockchain transaction corresponding to each transaction hash to the second-type blockchain network.

11. The non-transitory, computer-readable medium according to claim 10, wherein sending the transaction hash of each of the one or more third-type blockchain transactions to the target node in the second-type blockchain network comprises

sending the transaction hash of each of the one or more third-type blockchain transactions to the target node in the second-type blockchain network based on an order of the one or more third-type blockchain transactions in a third-type recording block; and

wherein the transmitting the second-type blockchain transaction corresponding to each transaction hash to the second-type blockchain network comprises transmitting each of the one or more second-type blockchain transactions corresponding to the transaction hash of each of the one or more second-type blockchain transactions based on an order that the transaction hash is received.

12. A computer-implemented system, comprising:

a first-type blockchain network;

a second-type blockchain network;

a management entity; and

one or more computer memory devices interoperably coupled with one or more computers in the first-type blockchain network and the second-type blockchain network,

the one or more computer memory devices having tangible, non-transitory, machine-readable media storing one or more instructions that, when executed by the one or more computers, perform one or more operations comprising:

in response to receiving data to be recorded, generating, by a node in the first-type blockchain network, a first-type blockchain transaction comprising the data;

transmitting, by the node in the first-type blockchain network, the first-type blockchain transaction to the first-type blockchain network;

recording, by the node in the first-type blockchain network based on a consensus algorithm, one or more first-type blockchain transactions into a first-type block;

recording, by the node in the first-type blockchain network, the first-type block on a blockchain of the first-type blockchain network;

obtaining, by a node in the second-type blockchain network, the first-type block, wherein the node in the first-type blockchain network and the node in the second-type blockchain network are managed by the management entity;

determining, by the node in the second-type blockchain network, a transaction hash of each of the one or more first-type blockchain transactions in the first-type block;

generating, by the node in the second-type blockchain network for each transaction hash, a second-type blockchain transaction comprising the transaction hash and a network identifier of the first-type blockchain network;

transmitting, by the node in the second-type blockchain network, each second-type blockchain transaction to the second-type blockchain network;

recording, by the node in the second-type blockchain network based on the consensus algorithm, one or more second-type blockchain transactions into a second-type block;

recording, by the node in the second-type blockchain network, the second-type block on a blockchain of the second-type blockchain network;

receiving, by the node in the second-type blockchain network and not by the node in the first-type blockchain network, a verification request that has been generated by a user based on a transaction hash of a to-be-verified first-type blockchain transaction; and

providing, by the node in the second-type blockchain network and in response to determining that a second-type blockchain transaction that includes the transaction hash of the to-be-verified first-type blockchain transaction has been recorded in the second-type blockchain network, an indication to the user that the to-be-verified first-

type blockchain transaction has been recorded in the blockchain of the first-type blockchain network.

13. The computer-implemented system according to claim 12, wherein the one or more first-type blockchain transactions correspond to the one or more second-type blockchain transactions, the transmitting, by the node in the second-type blockchain network, each second-type blockchain transaction to the second-type blockchain network comprises:

transmitting each of the one or more second-type blockchain transactions corresponding to each of the one or more first-type blockchain transactions based on an order of the one or more first-type blockchain transactions recorded in a first-type recording block.

14. The computer-implemented system according to claim 12, further comprises at least one third-type blockchain network, and wherein the one or more operations further comprises:

in response to receiving data to be recorded, generating, by a node in the third-type blockchain network, a third-type blockchain transaction comprising the data;

transmitting the third-type blockchain transaction to the third-type blockchain network;

recording, by the node in the third-type blockchain network based on the consensus algorithm, one or more third-type blockchain transactions into a third-type block;

recording, by the node in the third-type blockchain network, the third-type block on a blockchain of the third-type blockchain network;

determining, by the node in the third-type blockchain network, a transaction hash of each of the one or more third-type blockchain transactions in the third-type block;

sending, by the node in the third-type blockchain network, the transaction hash of each of the one or more third-type blockchain transactions to a target node in the second-type blockchain network;

generating, by the target node for each transaction hash, a second-type blockchain transaction comprising the transaction hash; and

transmitting, by the target node, the second-type blockchain transaction corresponding to each transaction hash to the second-type blockchain network.

15. The computer-implemented system according to claim 14, wherein sending the

transaction hash of each of the one or more third-type blockchain transactions to the target node in the second-type blockchain network comprises

sending the transaction hash of each of the one or more third-type blockchain transactions to the target node in the second-type blockchain network based on an order of the one or more third-type blockchain transactions in a third-type recording block; and

wherein the transmitting the second-type blockchain transaction corresponding to each transaction hash to the second-type blockchain network comprises transmitting each of the one or more second-type blockchain transactions corresponding to the transaction hash of each of the one or more second-type blockchain transactions based on an order that the transaction hash is received.

16. The computer-implemented system according to claim 14, wherein generating the second-type blockchain transaction comprises:

generating, for each transaction hash, a second-type blockchain transaction comprising the transaction hash and a network identifier of the third-type blockchain network.

17. The computer-implemented system according to claim 12, wherein the one or more operations further comprises:

generating, by a node in the second-type blockchain network, a second-type blockchain transaction comprising the data to be recorded; and

transmitting, by the node in the second-type blockchain network, the second-type blockchain transaction to the second-type blockchain network.

18. The computer-implemented system according to claim 12, herein each node in the second-type blockchain network is managed by the management entity.