

CLAIMS

What is claimed is:

1. A blockchain-based set exchange method for available resource quotas, ~~wherein a blockchain network comprises a management node and several object nodes, each object node performing copyright use transactions by using virtual resources issued by the management node as transaction media, and~~ the method comprises:

issuing, by a management node of a blockchain computer network, virtual resources to a plurality of object nodes through a blockchain as transaction media, wherein the blockchain is on the blockchain computer network;

performing, by one or more blockchain nodes of the blockchain computer network, consensus verification on a smart contract, wherein the smart contract comprises computer code executable to select a target object, wherein the computer code comprises a selection rule;

storing, by the one or more blockchain nodes, the smart contract on the blockchain;

selecting, by the management node, a plurality of object nodes and/or a plurality of sets of object nodes from the plurality of object nodes as target objects according to a the selection rule by invoking the smart contract stored on the blockchain, wherein the target object comprises the set of object nodes, each set of object nodes comprising more than one object node;

determining, by the management node for each of the object nodes in the target object, an amount of designated remaining virtual resources of the issued virtual resources corresponding to the each object node stored on the blockchain;

determining, by the management node for the target object, an amount of designated remaining virtual resources by accumulating the amounts of designated remaining virtual resources corresponding to each of the object nodes in the target object;

determining, by the management node for the target object, a resource quota based on the amount of designated remaining virtual resources corresponding to the target object;

determining, by the management node for each of the object nodes in the target object, virtual resource decrements corresponding to each of the object nodes based on the resource quota for the target object;

determining, for each target object, available resource quotas exchanged to each object node in the target object if the target object is a set of object nodes, wherein for each object node in the target object, the available resource quotas exchanged to the object node are used

~~for determining earning increments corresponding to the object node;~~

~~determining, for the each object node in the target object, virtual resources corresponding to the available resource quotas corresponding to the object node as virtual resource decrements corresponding to the object node; and~~

~~constructing, by the management node, a quota exchange transaction comprising the determined virtual resource decrements corresponding to the object node; and publishing the quota exchange transaction to a blockchain~~

~~sending, by the management node, the quota exchange transaction to the one or more blockchain nodes of the blockchain computer network;~~

~~performing, by the one or more blockchain nodes, consensus verification on the quota exchange transaction;~~

~~determining, by the one or more blockchain nodes, that the consensus verification on the quota exchange transaction succeeds; and~~

~~based on the determination that the consensus verification on the quota exchange transaction succeeds, deducting, by the one or more blockchain nodes of the blockchain network, the determined virtual resource decrements by executing the quota exchange transaction.~~

2. The method according to claim 1, wherein the determining ~~available~~-resource quotas ~~exchanged to each object node in the target object~~ comprises:

~~determining a total resource quota for the set of object nodes~~~~available resource quotas exchanged to the target object;~~

~~obtaining an earning ratio corresponding to the each of the object nodes in the target object; and~~

~~obtaining, according to the earning ratio, the resource quota for each of the object nodes in the target object; obtaining, according to the earning ratio corresponding to the object node and the available resource quotas exchanged to the target object, the available resource quotas exchanged to the object node.~~

3. The method according to claim 2, wherein the determining ~~available~~-resource quotas ~~exchanged to each object node in the target object~~ comprises:

~~determining an the amount of designated remaining virtual resources corresponding to the target object as the total resource quotas~~~~as the available resource quotas exchanged to the~~

~~target object;~~

the amount of designated remaining virtual resources corresponding to the target object is a sum of amounts of designated remaining virtual resources corresponding to the object nodes in the target object;

for the each of the object nodes in the target object, the amount of designated remaining virtual resources ~~corresponding to the object node is an amount that~~ is preassigned by a user corresponding to the each of the object nodes ~~and that is at least a portion of remaining virtual resources corresponding to the object node.~~

~~4. The method according to claim 2, wherein the determining available resource quotas exchanged to each object node in the target object comprises:~~

~~determining, for each target object, a minimum amount of remaining virtual resources as the available resource quotas exchanged to the target object, wherein~~

~~the minimum amount of remaining virtual resources is determined in the following manner:~~

~~determining a minimum amount of designated remaining virtual resources from a plurality of amounts of designated remaining virtual resources respectively corresponding to a plurality of target objects; and~~

~~selecting an amount not greater than the minimum amount of designated remaining virtual resources as the minimum amount.~~

~~54. The method according to claim 32, wherein the obtaining an the earning ratio ~~corresponding to each object node in the target object~~ comprises:~~

~~calculating determining, for each of the object nodes in the target object, a ratio of an the amount of designated remaining virtual resources corresponding to the each of the object nodes to an the amount of designated remaining virtual resources corresponding to the target object, as the earning ratio corresponding to the each of the object nodes in the target object.~~

5. The method according to claim 1, wherein:

each of the plurality of object nodes are configured to receive virtual resource increments through copyright use transactions.

6. The method according to claim 1, wherein:

the selection rule comprises a competitiveness representation value algorithm;

selecting the set of object nodes as the target object according to the selection rule comprises:

determining, by the management node for each of the object nodes, a competitiveness representation value by using the competitiveness representation value algorithm, and

selecting a preset quantity of object nodes as the target object according to the competitiveness representation value respectively corresponding to each of the object nodes; and

for each of the object nodes, a larger competitiveness representation value increases a chance of being selected.

67. A blockchain-based set exchange apparatus for available resource quotas, comprising one or more processors and one or more non-transitory computer-readable storage media storing instructions executable by the one or more processors, wherein execution of the instructions causes the one or more processors to perform operations comprising: wherein a blockchain network comprises the apparatus and several object nodes, each object node performing copyright use transactions by using virtual resources issued by the apparatus as transaction media, and the apparatus comprises:

issuing virtual resources to a plurality of object nodes through a blockchain as transaction media;

performing consensus verification on a smart contract, wherein the smart contract comprises computer code executable to select a target object, wherein the computer code comprises a selection rule;

storing the smart contract on the blockchain;

a selection module, configured to selecting a set of object nodes from the plurality of object nodes and/or a plurality of sets of object nodes as target objects according to a the selection rule by invoking the smart contract stored on the blockchain, wherein the target object comprises the set of object nodes, each set of object nodes comprising more than one object node;

determining, for each of the object nodes in the target object, an amount of designated remaining virtual resources of the issued virtual resources corresponding to the each object node stored on the blockchain;

determining, for the target object, an amount of designated remaining virtual resources by accumulating the amounts of designated remaining virtual resources corresponding to

each of the object nodes in the target object;

determining, for the target object, a resource quota based on the amount of designated remaining virtual resources corresponding to the target object;

determining, for each of the object nodes in the target object, virtual resource decrements corresponding to each of the object nodes based on the resource quota for the target object;

~~an available resource quota determining module, configured to determine, for each target object, available resource quotas exchanged to each object node in the target object if the target object is a set of object nodes, wherein for each object node in the target object, the available resource quotas exchanged to the object node are used for determining earning increments corresponding to the object node;~~

~~a virtual resource decrement determining module, configured to determine, for the each object node in the target object, virtual resources corresponding to the available resource quotas corresponding to the object node as virtual resource decrements corresponding to the object node; and~~

~~a construction and publishing module, configured to constructing a quota exchange transaction comprising the determined virtual resource decrements corresponding to each of the object nodes, and publishing the quota exchange transaction to a blockchain.;~~

sending the quota exchange transaction to one or more blockchain nodes;

performing consensus verification on the quota exchange transaction;

determining that the consensus verification on the quota exchange transaction succeeds;

and

based on the determination that the consensus verification on the quota exchange transaction succeeds, deducting the determined virtual resource decrements by executing the quota exchange transaction.

78. The apparatus according to claim 67, wherein when determining the resource quota, the one or more processors are configured to perform operations comprising:

determining a total resource quota for the set of object nodes;

obtaining an earning ratio corresponding to each of the object nodes in the target object;

and

obtaining, according to the earning ratio, the resource quota for the each of the object nodes in the target object~~the available resource quota determining module is configured to: determine available resource quotas exchanged to the target object; obtain an earning ratio~~

~~corresponding to the each object node in the target object; and for each object node in the target object, obtain, according to the earning ratio corresponding to the object node and the available resource quotas exchanged to the target object, the available resource quotas exchanged to the object node.~~

89. The apparatus according to claim 78, wherein when determining the resource quota, the one or more processors are configured to perform operations comprising:

determining the amount of designated remaining virtual resources corresponding to the target object as the total resource quota;

the amount of designated remaining virtual resources corresponding to the target object is a sum of amounts of designated remaining virtual resources corresponding to the object nodes in the target object; and

for each of the object nodes in the target object, the amount of designated remaining virtual resources is preassigned by a user corresponding to the each of the object nodes~~the available resource quota determining module is configured to determine an amount of designated remaining virtual resources corresponding to the target object as the available resource quotas exchanged to the target object; the amount of designated remaining virtual resources corresponding to the target object is a sum of amounts of designated remaining virtual resources corresponding to the object nodes in the target object; for the each object node, the amount of designated remaining virtual resources corresponding to the object node is an amount that is preassigned by a user corresponding to the object node and that is of at least a portion of remaining virtual resources corresponding to the object node.~~

9. The apparatus according to claim 7, wherein the available resource quota determining module is configured to determine, for each target object, a minimum amount of remaining virtual resources as the available resource quotas exchanged to the target object, wherein

~~the minimum amount of remaining virtual resources is determined in the following manner:~~

~~determining a minimum amount of designated remaining virtual resources from a plurality of amounts of designated remaining virtual resources respectively corresponding to a plurality of target objects; and~~

~~selecting an amount not greater than the minimum amount of designated remaining virtual resources as the minimum amount.~~

10. The apparatus according to claim 8, wherein when obtaining the earning ratio, the one or more processors are configured to perform operations comprising:

determining, for each of the object nodes in the target object, a ratio of the amount of designated remaining virtual resources corresponding to each of the object nodes to the amount of designated remaining virtual resources corresponding to the target object, as the earning ratio corresponding to the each of the object nodes in the target object.

~~the available resource quota determining module is configured to calculate, for each object node in the target object, a ratio of an amount of designated remaining virtual resources corresponding to the object node to an amount of designated remaining virtual resources corresponding to the target object, as the earning ratio corresponding to the object node.~~

11. The apparatus according to claim 7, wherein:

the selection rule comprises a competitiveness representation value algorithm;

wherein when selecting the set of object nodes as the target object according to the selection rule, the one or more processors are configured to perform operations comprising:

determining, for each of the object nodes, a competitiveness representation value by using the competitiveness representation value algorithm, and

selecting a preset quantity of object nodes as the target node object according to the competitiveness representation value respectively corresponding to each of the object nodes; and

for each of the object nodes, a larger competitiveness representation value increases a chance of being selected.

12. A blockchain-based set exchange system for available resource quotas, comprising a management node and several object nodes, wherein ~~each object node is configured to perform copyright use transactions by using virtual resources issued by the management node as transaction media; and~~

the management node is configured to:

issue virtual resources to a plurality of object nodes through a blockchain as transaction media;

perform consensus verification on a smart contract, wherein the smart contract comprises computer code executable to select a target object, wherein the computer code comprises a selection rule;

store the smart contract on the blockchain;

select a set of object nodes from the plurality of object nodes according to the selection rule by invoking the smart contract stored on the blockchain, wherein the target object comprises the set of object nodes;

determining, for each of the object nodes in the target object, an amount of designated remaining virtual resources of the issued virtual resources corresponding to the each object node stored on the blockchain;

determining, for the target object, an amount of designated remaining virtual resources by accumulating the amounts of designated remaining virtual resources corresponding to each of the object nodes in the target object;

determining, for the target object, a resource quota based on the amount of designated remaining virtual resources corresponding to the target object;

determining, for each of the object nodes in the target object, virtual resource decrements corresponding to each of the object nodes based on the resource quota for the target object;

constructing a quota exchange transaction comprising the determined virtual resource decrements corresponding to each of the object nodes,

sending the quota exchange transaction to one or more blockchain nodes;

performing consensus verification on the quota exchange transaction;

determining that the consensus verification on the quota exchange transaction succeeds; and

based on the determination that the consensus verification on the quota exchange transaction succeeds, deducting the determined virtual resource decrements by executing the quota exchange transaction.

~~select a plurality of object nodes and/or a plurality of sets of object nodes as target objects according to a selection rule, each set of object nodes comprising more than one object node; determine, for each target object, available resource quotas exchanged to each object node in the target object if the target object is a set of object nodes, wherein for each object node in the target object, the available resource quotas exchanged to the object node are used for determining earning increments corresponding to the object node; determine, for the each object node in the target object, virtual resources corresponding to the available resource quotas corresponding to the object node as virtual resource decrements corresponding to the object node; and construct a quota exchange transaction comprising the determined virtual resource decrements corresponding to the object node, and publishes the~~

~~quota exchange transactions to a blockchain.~~

~~42~~13. A computer device comprising a memory, a processor, and a computer program stored in the memory and executable on the processor, wherein when the processor executes the program, the blockchain-based exchange method for available resource quotas according to any one of claims 1 to 6 is implemented.