CLAIMS

1. A blockchain system, comprising: a blockchain relay communication network, blockchain nodes, and a historical block synchronization device, the blockchain nodes are respectively connected to corresponding relay nodes in the blockchain relay communication network, and the relay nodes are connected to the historical block synchronization device, wherein:

any relay node is configured to send a block obtaining request to the historical block synchronization device when receiving a block synchronization request initiated by any blockchain node connected thereto, wherein the block synchronization request includes a current maximum block height of blocks stored on the any blockchain node; and

the historical block synchronization device is configured to obtain block data from the blockchain nodes; and the historical block synchronization device is configured to compare the current maximum block height included in the block synchronization request with a maximum block height of locally stored blocks; and

the historical block synchronization device is configured to determine at least one block having a block height greater than the current maximum block height as the corresponding historical block, and return the corresponding historical block to the any relay node in response to the block obtaining request, to cause the any relay node to forward the historical block to the any blockchain node, to cause the any blockchain node to perform block synchronization on stored blocks based on the received historical block.

2. The blockchain system according to claim 1, wherein

quality of service (QoS) of network links between a plurality of relay nodes in the blockchain relay communication network is better than QoS of network links between the plurality of relay nodes and the historical block synchronization device.

3. The blockchain system according to claim 1, wherein

a maximum block height of blocks stored on the historical block synchronization device is kept in synchronization with a maximum block height of blocks stored on the blockchain nodes; or

the historical block synchronization device compares a maximum block height of the blockchain nodes with a maximum block height of locally stored blocks in response to the block obtaining request, to update the locally stored blocks according to a comparison result.

4. The blockchain system according to claim 1, wherein

the historical block synchronization device and the blockchain nodes exchange block data with each other by using a peer to peer (P2P) technology.

5. The blockchain system according to claim 1, wherein

if the any blockchain node is a non-newly added blockchain node in the blockchain system, the block synchronization request comprises a current maximum block height of blocks stored on the non-newly added blockchain node, and the historical block is an incremental block relative to the current maximum block height.

6. A blockchain relay communication network, comprising: a plurality of relay nodes and a historical block synchronization device, the relay nodes in the blockchain relay communication network are respectively connected to corresponding blockchain nodes in a blockchain network, wherein:

any relay node sends a block obtaining request to the historical block synchronization device when receiving a block synchronization request initiated by any blockchain node connected thereto, wherein the block synchronization request includes a current maximum block height of blocks stored on the any blockchain node; and

the historical block synchronization device compares the current maximum block height included in the block synchronization request with a maximum block height of locally stored blocks, determines at least one block having a block height greater than the current maximum block height as the historical block, and returns the historical block to the any relay node in response to the block obtaining request, to cause the any relay node to forward the historical block to the any blockchain node, to cause the any blockchain node to perform block synchronization on stored blocks based on the received historical block,

wherein the historical block is locally stored on the historical block synchronization device.

7. The blockchain relay communication network according to claim 6, wherein

quality of service (QoS) of network links between the plurality of relay nodes is better than QoS of network links between the plurality of relay nodes and the historical block synchronization device.

8. The blockchain relay communication network according to claim 6, wherein

a maximum block height of blocks stored on the historical block synchronization device is kept in synchronization with a maximum block height of blocks stored on the blockchain nodes in the blockchain network; or

the historical block synchronization device compares a maximum block height of the blockchain nodes in the blockchain network with a maximum block height of locally stored blocks in response to the block obtaining request, to update the locally stored blocks according to a comparison result.

9. The blockchain relay communication network according to claim 6, wherein

the historical block synchronization device and the blockchain nodes in the blockchain network exchange block data with each other by using a peer to peer (P2P) technology.

10. The blockchain relay communication network according to claim 6, wherein

if the blockchain node is a non-newly added node in the blockchain network, the block synchronization request comprises a current maximum block height of blocks stored on the non-newly added node, and the historical block is an incremental block relative to the current maximum block height.

11. A block synchronization method, applicable to any relay node in a blockchain relay communication network, relay nodes in the blockchain relay communication network are respectively connected to corresponding blockchain nodes in a blockchain network, the method comprising:

sending a block obtaining request to a historical block synchronization device in response to a block synchronization request sent by the any blockchain node connected thereto, wherein the block synchronization request includes a current maximum block height of blocks stored on the any blockchain node, to cause the historical block synchronization device to compare the current maximum block height included in the block synchronization request with a maximum block height of locally stored blocks, determine at least one block having a block height greater than the current maximum block height as the historical block, and return the historical block; and

forwarding the received historical block to the any blockchain node, to cause the any blockchain node to perform block synchronization on stored blocks based on the received historical block.

12. The method according to claim 11, wherein

quality of service (QoS) of network links between the relay nodes in the blockchain relay communication network is better than QoS of network links between the relay nodes and the historical block synchronization device.

13. The method according to claim 11, wherein

a maximum block height of blocks stored on the historical block synchronization device is kept in synchronization with a maximum block height of blocks stored on the blockchain nodes in the blockchain network; or

the block obtaining request is used for causing the historical block synchronization device to compare a maximum block height of the blockchain nodes in the blockchain network with a maximum block height of locally stored blocks, to perform block synchronization on the locally stored blocks according to a comparison result.

14. The method according to claim 13, wherein the maximum block height that is used for comparison with the maximum block height of the locally stored blocks is:

a maximum value of a plurality of maximum block heights returned by the blockchain nodes in the blockchain network according to respectively stored blocks.

15. The method according to claim 11, wherein

if the any blockchain node is a non-newly added node in the blockchain network, the block synchronization request comprises a current maximum block height of blocks stored on the non-newly added node, and the historical block is an incremental block relative to the current maximum block height.

16. The method according to claim 11, further comprising:

parsing all received requests; and

determining a request comprising a block synchronization identifier as the block synchronization request.

17. A block synchronization apparatus, applicable to any relay node in a blockchain relay communication network, relay nodes in the blockchain relay communication network are respectively connected to corresponding blockchain nodes in a blockchain network, the apparatus comprising:

a sending unit, configured to send a block obtaining request to a historical block synchronization device in response to a block synchronization request sent by the any blockchain node connected thereto, wherein the block synchronization request includes a current maximum block height of blocks stored on the any blockchain node, to cause the historical block synchronization device to compare the current maximum block height included in the block synchronization request with a maximum block height of locally stored blocks, determine at least one block having a block height greater than the current maximum block height as the historical block, and return the historical block; and

a forwarding unit, configured to forward the received historical block to the any blockchain node, to cause the any blockchain node to perform block synchronization on stored blocks based on the received historical block.

18. An electronic device, comprising:

a processor; and

a memory configured to store instructions executable by the processor, wherein

the processor executes the executable instructions to implement the method according to any one of claims 11 to 16.

19. A computer-readable storage medium, storing computer instructions, the instructions, when executed by a processor, implementing the steps of the method according to any one of claims 11 to 16.