

CLAIMS

1. A computer-implemented method for cross-chain communication, the method comprises:

receiving, by a first cross-chain communication component in a first blockchain network, a message comprising ledger data from a blockchain node in the first blockchain network;

determining, by the first cross-chain communication component, whether the ledger data is valid;

in response to determining that the ledger data is valid, generating, by the first cross-chain communication component, formatted ledger data based on the ledger data; and

sending, by the first cross-chain communication component, a cross-chain message comprising the formatted ledger data to a second cross-chain communication component in a second blockchain network.

2. The computer-implemented method of claim 1, wherein the blockchain node in the first blockchain network comprises a service smart contract and a cross-chain smart contract, and the method further comprises:

receiving, by the cross-chain smart contract, the message comprising the ledger data from the service smart contract; and

sending, by the cross-chain smart contract, the message to the first cross-chain communication component.

3. The computer-implemented method of any preceding claim, wherein the first cross-chain communication component comprises a relay component, and wherein receiving, by the first cross-chain communication component in the first blockchain network, the message comprising the ledger data from the blockchain node in the first blockchain network comprises:

receiving, by the first cross-chain communication component through the relay component, the message comprising the ledger data from the cross-chain smart contract of the blockchain node.

4. The computer-implemented method of claim 3, further comprising:
obtaining, by the relay component, the ledger data from the message; and
sending, by the relay component, the ledger data to an oracle machine.
5. The computer-implemented method of claim 4, wherein the first cross-chain communication component further comprises the oracle machine, and wherein determining, by the first cross-chain communication component, whether the ledger data is valid comprises:
receiving, by the oracle machine, the ledger data from the relay component; and
determining, by the oracle machine, whether the ledger data is valid.
6. The computer-implemented method of claim 5, wherein in response to determining that the ledger data is valid, generating, by the first cross-chain communication component, the formatted ledger data based on the ledger data comprises:
in response to determining that the ledger data is valid, generating, by the oracle machine, the formatted ledger data based on the ledger data; and
sending, by the oracle machine, the formatted ledger data to the relay component.
7. The computer-implemented method of claim 6, wherein sending, by the first cross-chain communication component, the cross-chain message comprising the formatted ledger data to the second cross-chain communication component in the second blockchain network comprises:
sending, by the relay component, the cross-chain message comprising the formatted ledger data to the second cross-chain communication component.
8. The computer-implemented method of claim 7, wherein the relay component is a first relay component, the second cross-chain communication component comprises a second relay component, the blockchain node in the first blockchain network is a first blockchain node, the second blockchain network comprises a second blockchain node, and the method further comprises:

receiving, by the second relay component, the cross-chain message from the first relay component;

obtaining, by the second relay component, the formatted ledger data from the cross-chain message; and

sending, by the second relay component, the formatted ledger data to the second blockchain node.

9. The computer-implemented method of claim 8, wherein the cross-chain smart contract is a first cross-chain smart contract, the service smart contract is a first service smart contract, the second blockchain node comprises a second cross-chain smart contract and a second service smart contract, and the method further comprises:

receiving, by the second cross-chain smart contract, the formatted ledger data from the second relay component;

determining, by the second cross-chain smart contract, whether the formatted ledger data is valid;

in response to determining that the formatted ledger data is valid, obtaining, by the second cross-chain smart contract, the ledger data from the formatted ledger data; and

sending, by the second cross-chain smart contract, the obtained ledger data to the service smart contract.

10. A system for cross-chain communication, comprising:

one or more processors; and

one or more computer-readable memories coupled to the one or more processors and having instructions stored thereon that are executable by the one or more processors to perform the method of any of claims 1 to 9.

11. An apparatus for cross-chain communication, the apparatus comprising a plurality of modules for performing the method of any of claims 1 to 9.