

Claims

1. A computer implemented method of providing a payment service for one or more clients for transactions associated with a blockchain, the method implemented by a payment processor and comprising the steps of:

receiving a first request from a client associated with mining a transaction in a blockchain;

sending a request for a fee quote to each miner among a plurality of miners communicatively coupled to the payment processor;

obtaining a fee quote from each miner for mining the transaction; and

providing the obtained fee quotes from the plurality of miners to the client, wherein a selected fee quote for mining the transaction is determined based on the obtained fee quotes; or

determining a selected fee quote for mining the transaction for the client based on the obtained fee quotes.

2. The method as claimed in claim 1 wherein the transaction associated with the first request includes a batch of multiple transactions.

3. The method as claimed in claims 1 or 2 comprising the steps of :

responsive to a second request from the client to submit a given transaction pertaining to the selected fee quote among the obtained fee quotes, sending a request to one or more miners among the plurality of miners for generating a blockchain transaction corresponding to the given transaction;

receiving an output script associated with the corresponding blockchain transaction from at least one miner among the plurality of miners that satisfies the selected fee quote; and

sending a result to the client, the result including a transaction identifier for the blockchain transaction corresponding to the given transaction.

4. The method as claimed in claim 3 wherein the given transaction includes a batch of multiple transactions.

5. The method as claimed in any preceding claim wherein the step of providing the obtained fee quotes further comprises determining a recommended fee quote based on the

average value of the obtained fee quotes or the maximum value among the obtained fee quotes.

6. The method as claimed in claim 5 further comprising providing the recommended fee quote or providing all the obtained fee quotes including the recommended fee quote, wherein the recommended fee quote includes an identifier.

7. The method as claimed in any one of claims 5 or 7 wherein the selected fee quote is the same as the recommended fee quote or different from the recommended fee quote, wherein the different fee quote is either predetermined or arbitrarily selected.

8. The method as claimed in any preceding claim wherein the step of determining a selected fee quote comprises assigning a service level among a plurality of service levels to each of the obtained fee quotes, each service level being associated with a respective selected fee quote for mining the transaction.

9. The method as claimed in claim 8 wherein the service level is assigned based on the obtained fee quote and a minimum relay fee associated with the miner pertaining to the respective fee quote.

10. The method as claimed in claim 8 or 9 wherein the assigned service level is indicative of a priority for mining the transaction and/or a level of protection against double spends associated with a transaction for the recommended fee.

11. The method as claimed in any one of claim 8 to 10 wherein the service level for the transaction to be mined is assigned based on one or more service requirements obtained from the client.

12. The method as claimed in any preceding claim comprising the step of verifying the identity of a given miner among the plurality miners, wherein the verification is based on a digital signature associated with the given miner, or based on an identifier pertaining to the given miner, said identifier being optionally associated with a reputation indicator for the given miner.

13. The method as claimed in any preceding claim comprising the step of validating a respective fee quote obtained from a given miner among the plurality of miners based on a miner signature, said miner signature serving as a commitment from the given miner to mine

the transaction for the respective fee quote, and optionally to reject any conflicting transactions(s).

14. The method as claimed in any preceding claim wherein the fee quote obtained from each miner is provided in a datatype, said datatype being in a JavaScript Object Notation (JSON) object format.

15. The method as claimed in any preceding claim wherein the received output script is an Unspent Transaction Output (UTXO) associated with a mempool for the at least one miner, the UTXO including the transaction identifier (TxID) for the blockchain transaction.

16. The method as claimed in any preceding claim comprising the steps of:
responsive to a status query associated with a transaction identifier from the client, sending a request to the plurality of miners for obtaining a blockchain transaction corresponding to the transaction identifier;
obtaining the corresponding blockchain transaction from at least one miner among the plurality of miners; and
sending a status result pertaining to the obtained blockchain transaction to the client.

17. The method as claimed in any preceding claim wherein the payment processor is implemented as a Representational State Transfer (REST) endpoint for the one or more clients, and wherein the method further comprises the step of providing an application programming interface (API) converter associated with the payment processor for performing the steps of:

receiving the first request and/or the second request and/or a status query pertaining to the given transaction from the client using a Hypertext Transfer Protocol Secure (HTTPS) transmission protocol format;

converting the respective request to a Remote procedure Call (RPC) format, and sending the RPC to one or more of the plurality of miners;

receiving responses associated with a corresponding blockchain transaction from one or more miners among the plurality of miners in an RPC format; and

converting the respective responses such that they may be sent to the client using the HTTPS transmission protocol.

18. A computer implemented method for processing transactions associated with a blockchain, the method implemented by one or more processors associated with a client, the

client being communicatively coupled to at least one payment processor implementing a payment service for the client, the method comprising the steps of:

 sending a first request to a payment processor among the at least one payment processors, the request pertaining to one or more fee quotes for mining a transaction, the transaction relating to a digital asset payment from a customer; and

 responsive to receipt of one or more fee quotes from the payment processor, selecting a fee quote among the one or more received fee quotes.

19. The method as claimed in claim 18 comprising the steps of:

 requesting and /or processing the digital asset payment from the customer, the request associated with the selected fee quote;

 sending a second request to submit to the blockchain a given transaction associated with the digital asset payment from the customer to the payment processor, the submission based on the selected fee quote for mining the given transaction; and

 obtaining a transaction identifier (TxID) for a blockchain transaction corresponding to the submitted transaction.

20. The method as claimed in claim 19 wherein the given transaction in the second request includes a batch of multiple transactions.

21. The method as claimed in any one of claims 18 to 20 comprising the steps of :

 sending a status query associated with the obtained transaction identifier; and

 obtaining a status result for the blockchain transaction corresponding to the transaction identifier.

22. The method as claimed in any one of claims 18 to 21 wherein the client includes or is communicatively coupled to the at least one payment processor configured to implement the method as claimed in any one of claims 1 to 17.

23. The method as claimed in any one of claims 18 to 22, wherein the first request and/or the status query is a HTTPS GET request, and wherein the second request is a HTTPS POST request.

24. The method as claimed in any one of claims 18 to 23 wherein the step of selecting a fee quote comprises determining an average value of the obtained fee quotes and selecting a fee quote based on the determined average.

25. The method as claimed in any one of claims 18 to 24 wherein the step of selecting a fee quote comprises determining the maximum value of a fee quote among the obtained fee quotes and selecting a fee quote based on the maximum value.

26. The method as claimed in any one of claims 18 to 25 wherein data associated with the first and/or second request and/or the status query is provided in a JavaScript Object Notation (JSON) object format.

27. A computer implemented method for processing transactions associated with a blockchain, the method implemented by one or more processors associated with a miner among a plurality of miners, the plurality of miners being communicatively coupled to at least one payment processor implementing a payment service for a client, the method comprising the steps of:

- receiving a first request from a payment processor for a fee quote for mining a transaction associated with the client; and

- providing a current fee quote pertaining to the miner for mining the transaction in the blockchain, wherein the current fee quote represents an undertaking to mine a transaction at the current fee quote.

28. The method as claimed in claim 27 comprising the steps of:

- responsive to a second request relating to submitting a given transaction associated with the client to the blockchain, the given transaction being based on a selected fee quote, the method further comprises the steps of:

- based on a determination that selected fee quote associated with the given transaction satisfies the current fee quote of the miner, generating a blockchain transaction corresponding with the given transaction;

- generating an output script(UTXO) for the blockchain transaction;

- adding the generated output script to a mempool associated with the miner;

- and

- sending the output script to the payment processor, wherein the output script includes a transaction identifier (TxID) associated with the corresponding blockchain transaction.

29. The method as claimed in claim 28 comprising, responsive to a request for a status associated with the transaction identifier, returning a result based on a mining status of the corresponding blockchain transaction.
30. The method as claimed in any one of claims 27 to 29 wherein the step of providing the current fee quote and/or the step of sending the output script and/or the step of returning the result are implemented as a Remote Procedure Call (RPC).
31. The method as claimed in claim 30 including the step of sending the RPCs from the miner to a node connector, and optionally a firewall for the plurality of miners, before propagating the RPCs through a wireless communication network to the payment processor for the client.
32. The method as claimed in any one of claims 27 to 31 wherein based on a determination that the selected fee quote associated with the given transaction does not satisfy the current fee quote for the miner, adding an output associated with a corresponding blockchain transaction to a secondary mempool associated with the miner.
33. The method as claimed in any one of claims 27 to 32 wherein the miner is communicatively coupled to at least one payment processor configured to implement the method as claimed in any one of claims 1 to 9, and wherein the at least one payment processor is associated with or is communicatively coupled to a client configured to implement the method as claimed in any one of claims 12 to 19.
34. A computer implemented method of providing a payment service for one or more clients for transactions associated with a blockchain, the method implemented by a payment processor and comprising the steps of:
- receiving or agreeing one or more service requirements from a client for transactions to be mined in a blockchain;
 - receiving a first request from a client for mining one or more transactions in a blockchain;
 - sending a request for a fee quote to each miner among a plurality of miners communicatively coupled to the payment processor;
 - obtaining a fee quote from each miner for mining the one or more transaction;
 - classifying the obtained fee quote into a given service level among a plurality of service levels offered for mining, each service level being associated with a set mining fee;

determining a service level for the client based on the one or more service requirements received; wherein the set mining fee associated with the determined service level is the selected fee quote for mining the one or more transactions associated with the client; and wherein the determined service level is indicative of a priority for mining the transaction and/or a level of protection against double spends.

35. A computing device comprising a processor and memory, the memory including executable instructions that, as a result of execution by the processor, causes the device to perform the computer-implemented method as claimed in any one of claims 1 to 17 and 33, the computing device pertaining to a payment processor.

36. A computing device comprising a processor and memory, the memory including executable instructions that, as a result of execution by the processor, causes the device to perform the computer-implemented method as claimed in any one of claims 18 to 26, the computing device pertaining to a client.

37. A computing device comprising a processor and memory, the memory including executable instructions that, as a result of execution by the processor, causes the device to perform the computer-implemented method as claimed in any one of claims 27 to 33, the computing device pertaining to a miner.

38. A computer system comprising:

- a payment processor communicatively coupled to at least one client and at least one miner via a wireless communication network, the payment processor optionally associated with an API convertor for conversion of HTTPS requests from the client to RPC requests for the miners and vice versa, wherein the payment processor is implemented in accordance with the computing device as claimed in claim 35;

- a client communicatively coupled to the payment processor via the wireless communication network, and being capable of communication with at least one customer; the client being implemented in accordance with the computing device as claimed in claim 36; and

- a plurality of miners communicatively coupled to the payment processor via the wireless communication network, each miner being implemented in accordance with the computing device as claimed in claim 37.

39. A computer-readable storage medium having stored thereon executable instructions that, as a result of being executed by a processor of a computer, cause the computer to perform the method of any one of claims 1 to 34.