WHAT IS CLAIMED IS:

1. A method comprising:

broadcasting, by a node computer, a propose message comprising a new block of transactions for a blockchain and a previous block certificate for a previous block to a plurality of node computers in a network shard, the previous block certificate including data indicating that the previous block was committed to the blockchain which comprises a threshold signature that was generated based on a quorum of signed vote messages for the previous block from nodes in the network shard, the plurality of node computers in the network shard being a sub-group of node computers in a computer network comprising a plurality of network shards including the network shard;

receiving, by the node computer, at least one vote message from the plurality of node computers after the plurality of node computers verify the previous block certificate, the at least one vote message indicating verification of the new block of transactions;

after a predetermined amount of time, receiving, by the node computer, a plurality of pre-commit messages comprising at least the new block of transactions and a new block certificate created based on the at least one vote message; and

if a number of received pre-commit messages of the plurality of pre-commit messages is greater than a quorum value associated with the network shard, committing, by the node computer, the new block of transactions to the blockchain.

2. The method of claim 1, wherein the propose message comprises a view number.

3. The method of claim 1, wherein the plurality of node computers in the network shard are a first plurality of node computers in a first network shard maintaining the blockchain which is a first blockchain, wherein the quorum value is a first quorum value, and wherein a second plurality of node computers in a second network shard maintaining a second blockchain is associated with a second quorum value.

4. The method of claim 3 further comprising:

generating, by the node computer, a shutdown message based on an inactivity timer associated with the first network shard; and

transmitting, by the node computer, the shutdown message to the second plurality of node computers in the second network shard, wherein the second network shard is a network reference shard, wherein the network reference shard determines to shutdown the first network shard and distributes the first plurality of node computers to a plurality of additional shards.

5. The method of claim 3, wherein prior to broadcasting the propose message, the method further comprises:

receiving, by the node computer, a commit interaction request message from a client device, the commit interaction request message comprising interaction data and one or more proof-of-inclusions created by one or more shards, wherein at least one proof-of-inclusion of the one or more proof-of-inclusions is created by the second network shard;

verifying, by the node computer, the one or more proof-of-inclusions; and

if the one or more proof-of-inclusions are valid, including, by the node computer, at least the interaction data in the new block.

6. The method of claim 1, wherein the new block comprises a block header and a block body, wherein the block header is a tuple comprising at least an accumulator value.

7. The method of claim 6, wherein after committing the new block to the blockchain the method further comprises:

removing, by the node computer, the block body from a memory of the node computer.

8. The method of claim 1, wherein the plurality of node computers in the network shard includes 20 to 200 node computers, and wherein the quorum value is in a range of 25 to 40.

9. The method of claim 1 further comprising:

after receiving, the plurality of pre-commit messages, verifying, by the node computer, the plurality of pre-commit messages.

10. The method of claim 1, wherein the transactions are payment transactions.

11. A node computer comprising:

a hardware processor, and

a non-transitory computer readable medium coupled to the hardware processor, the non-transitory computer readable medium comprising code, executable by the hardware processor, to implement a method comprising:

broadcasting a propose message comprising a new block of transactions for a blockchain and a previous block certificate for a previous block to a plurality of node computers in a network shard, the previous block certificate including data indicating that the previous block was committed to the blockchain which comprises a threshold signature that was generated based on a quorum of signed vote messages for the previous block from node computers in the network shard, the plurality of node computers in the network shard being a sub-group of node computers in a computer network comprising a plurality of network shards including the network shard;

receiving at least one vote message from the plurality of node computers after the plurality of node computers verify the previous block certificate, the at least one vote message indicating verification of the new block of transactions;

after a predetermined amount of time, receiving a plurality of pre-commit messages comprising at least the new block of transactions and a new block certificate created based on the at least one vote message; and

if a number of received pre-commit messages of the plurality of pre-commit messages is greater than a quorum value associated with the network shard, committing the new block of transactions to the blockchain.

12. The node computer of claim 11, wherein the propose message comprises a view number, wherein each pre-commit message of the plurality of pre-commit messages comprises the view number, and wherein the method further comprises:

after receiving, the plurality of pre-commit messages, verifying the plurality of pre-commit messages using at least the view number in each pre-commit message.

13. The node computer of claim 11, wherein prior to broadcasting the propose message, the method further comprises:

receiving a commit interaction request message from a client device, the commit interaction request message comprising interaction data and one or more proof-of-inclusions;

verifying, by the node computer, the one or more proof-of-inclusions; and

if the one or more proof-of-inclusions are valid, including, by the node computer, at least the interaction data in the new block.

14. The node computer of claim 11, wherein the network shard is a network reference shard and the node computer is a first node computer and is a current leader of the network reference shard maintaining a first blockchain, wherein a second plurality of node computers in a second network shard maintain a second blockchain, and wherein the method further comprises:

receiving one or more shutdown messages from the second plurality of node computers;

if a number of received shutdown messages of the one or more shutdown messages is greater than a shutdown threshold associated with the second network shard, assigning each node computer of the second plurality of node computers to a null network shard in a node-to-shard table for a present epoch; and

reassigning new transactions from the second network shard to a third shard.

15. The node computer of claim 14, wherein a network comprises a plurality of shards including the network reference shard and the second network shard, and wherein the method further comprises:

broadcasting a propose table update message comprising the node-to-shard table to the plurality of node computers in the network reference shard;

performing a commitment process to commit the network reference shard to the node-to-shard table; and

if the network reference shard commits to the node-to-shard table, broadcasting the node-to-shard table to the network, wherein after receiving the

node-to-shard table, the second plurality of node computers stop processing new blocks for the second blockchain.

16. The node computer of claim 11, wherein the method further comprises:

prior to broadcasting the propose message, generating the new block, wherein the new block comprises a block header and a block body.

17. The node computer of claim 16, wherein the block header is a tuple comprising at least an accumulator value, a block height, an epoch number, a root of a Merkle tree, and a digest of a previous block header of the previous block in the blockchain, wherein generating the new block comprises:

determining the accumulator value using an accumulator over one or more latest amounts of the blockchain.

18. The node computer of claim 17, wherein after committing the new block to the blockchain the method further comprises:

removing the block body from a memory of the node computer.

19. The node computer of claim 11, wherein the plurality of node computers in the network shard are a first plurality of node computers in a first network shard maintaining the blockchain which is a first blockchain, wherein the quorum value is a first quorum value, and wherein a second plurality of node computers in a second network shard maintaining a second blockchain is associated with a second quorum value, wherein the first network shard and the second network shard include a same number of node computers, and wherein the first quorum value is equal to the second quorum value.

20. The node computer of claim 11, wherein the quorum value is a predetermined value.