Claims

1. A computer-implemented method for charging for a use of resources of a distributed network, the distributed network comprising a plurality of nodes, wherein each of the plurality of nodes is configured to run one or more computational units, the one or more computational units comprising one or more application units for providing application services to users of the distributed network; the method comprising

running, by a user of the network, one or more local user gas accounts at one or more of the application units; and

processing, via one or more local user gas accounts, charges for the use of the resources of the distributed network;

sending, by a user of the network, an ingress message for requesting a primary application service to a primary application unit of the one or more application units;

performing, by the primary application unit, the primary application service; and

processing, via the local user gas account of the user at the primary application unit, charges for the use of the resources by the primary application service,

wherein a local user gas account is a local user accounting unit configured to locally pay for the use of resources of the distributed network.

2. The computer-implemented method according to claim 1, wherein

performing the primary application service comprises issuing, by the primary application unit, one or more calls to one or more secondary application units; and

the method further comprises performing, by the one or more secondary application units, one or more secondary application services.

3. The computer-implemented method according to claim 2, wherein

performing the one or more secondary application services comprises issuing, by the one or more secondary application units, one or more calls to further secondary application units; and

the method further comprises performing, by the one or more further secondary application units, one or more further secondary application services.

4. The computer-implemented method according to claim 3, wherein the one or more calls are performed successively, thereby forming a call tree of arbitrary depth.

5. The computer-implemented method according to any of the preceding claims 2 to 4, further comprising

processing, via the local user gas account of the primary application unit, payments for the use of the resources by the one or more secondary application services.

6. The computer-implemented method according to any of the preceding claims 2 to 5, further comprising

running, by a user of the network, one or more local user gas accounts at the one or more secondary application units; and

processing, via one or more local user gas accounts of the secondary application units, payments for the use of the resources by the one or more secondary application services.

7. The computer-implemented method according to any of the preceding claims, further comprising

running, by one or more users of the network, in particular by each user of the network, a wallet computational unit, the wallet computational unit being configured to manage a user currency account for the user; and

sending a payment message from the wallet computational unit to a respective application unit to transfer a currency amount from the user currency account to the local user gas account at the respective application unit.

8. The method according to any of the preceding claims, further comprising

running, by each application unit, an application unit gas account.

9. The method according to claim 8, further comprising

sending a payment message between a first application unit of the one or more application units and a second application unit of the one or more application units to transfer a gas amount from the application unit gas account of the first application unit or a user gas account to the application unit gas account of the second application unit.

10. The method according to any of the preceding claims, further comprising

charging separately for an acceptance of ingress messages, for read queries, for the execution of accepted ingress messages and/or for the execution of accepted unit-to-unit messages.

11. The method according to claim 10, wherein each of the local user gas accounts comprises

an ingress sub-account configured to be charged for an acceptance of the ingress messages;

a read query sub-account configured to be charged for read queries; and

an execution sub-account configured to be charged for the execution of accepted ingress messages and/or the execution of accepted unit-to-unit messages.

12. The method according to claim 10 or claim 11, further comprising

applying different accounting periods and/or charging times for the ingress messages and the read queries, in particular

charging for the ingress messages upon accepting or rejecting them for execution;

charging for the read queries subsequently in a bundled way; and/or

charging for the execution of the ingress messages in advance, in particular after the issuing of the one or more calls to the secondary application units.

13. The method according to any of the preceding claims, further comprising

charging, by the distributed network, for the use of storage resources of the distributed network; and

debiting, from a respective application unit gas account, a fee for its use of the storage resources of the distributed network.

14. The method according to any of the preceding claims, further comprising

charging, by one or more of the application units, a fixed price for the use of the resources by the corresponding application service.

15. The method according to any of the preceding claims, further comprising

processing, by one or more of the application units, an advance payment for the use of the resources by the corresponding application service; and

reimbursing, by the one or more application units, unused parts of the advance payment,

the method preferably further comprising

topping up, from an application unit gas account of a respective primary and/or secondary application unit, the advance payment to ensure execution of the corresponding primary and/or secondary application service.

16. The method according to any of the preceding claims, wherein

each of the computational units comprises its own unit state;

the distributed network comprises a plurality of subnets;

each of the plurality of subnets comprises one or more of the plurality of nodes; the method further comprising

assigning each of the application units to one of the plurality of subnets; and

replicating the application units across the respective subnet,

the method preferably further comprising

providing, a separate read query sub-account for each node of a respective subnet.

17. A node for a distributed network, wherein the node is configured to

run one or more computational units, the one or more computational units comprising one or more application units for providing application services to users of the distributed network;

run one or more local user gas accounts at one or more of the application units;

process, via the one or more local user gas accounts, charges for the use of the resources of the distributed network;

receive, from a user of the network, an ingress message for requesting a primary application service to a primary application unit of the one or more application units;

perform, by the primary application unit, the primary application service; and

process, via the local user gas account of the user at the primary application unit, charges for the use of the resources by the primary application service,

wherein a local user gas account is a local user accounting unit configured to locally pay for the use of resources of the distributed network

18. A distributed network comprising a plurality of nodes according to claim 17.

19. A computer program product for operating a distributed network, the distributed network comprising a plurality of nodes, the computer program product comprising a computer readable storage medium having program instructions embodied therewith, the program instructions executable by one or more of the plurality of nodes to cause the one or more of the plurality of nodes to perform a method comprising

running, by the plurality of nodes, one or more computational units, the one or more computational units comprising one or more application units for providing application services to users of the distributed network;

running, by a user of the network, one or more local user gas accounts at one or more of the application units;

processing, via the one or more local user gas accounts, charges for the use of the resources of the distributed network;

receiving, by a user of the network, an ingress message for requesting a primary application service to a primary application unit of the one or more application units;

performing, by the primary application unit, the primary application service; and

processing, via the local user gas account of the user at the primary application unit, charges for the use of the resources by the primary application service;

wherein a local user gas account is a local user accounting unit configured to locally pay for the use of resources of the distributed network

20. A computer program product for operating a node of a distributed network, the computer program product comprising a computer readable storage medium having program instructions embodied therewith, the program instructions executable by the node to cause the node to perform a method comprising

running, by the node, one or more computational units, the one or more computational units comprising one or more application units for providing application services to users of the distributed network;

running, by the node, one or more local user gas accounts at one or more of the application units;

processing, via the one or more local user gas accounts, charges for the use of the resources of the distributed network;

receiving, from a user of the network, an ingress message for requesting a primary application service

to a primary application unit of the one or more application units;

performing, by the primary application unit, the primary application service; and

processing, via the local user gas account of the user at the primary application unit, charges for the use of the resources by the primary application service;

wherein a local user gas account is a local user accounting unit configured to locally pay for the use of resources of the distributed network.