CLAIMS

What is claimed is:

1. A method for calculating and storing a flow graph, the flow graph comprising nodes and edges, with the edges indicating a flow direction of data flowing between the nodes, the method being performed by a fist calculation unit of a plurality of calculation units configured to collectively store the flow graph in a distributed manner, and comprising one or more rounds of processing respectively corresponding to one or more time periods of data flow, and a round of processing comprising:

obtaining a first graph data segment of a current subgraph based on newly added flow information in a current time period and storing the first graph data segment, so as to implement distributed storage of the current subgraph in collaboration with a second calculation unit of the plurality of calculation units; and

for a node in the first graph data segment of the current subgraph, obtaining a flow message of data corresponding to an ingress edge of the node from a source node on the ingress edge and storing the flow message, wherein the flow message includes a source link of the data,

wherein the first graph data segment includes a part of nodes of the current subgraph and edges of the part of nodes, and the obtaining the first graph data segment of the current subgraph based on the newly added flow information in the current time period and storing the first graph data segment include:

in response to that the current time period is a first time period, obtaining the first graph data segment of the current subgraph based on a determined allocation policy and storing the first graph data segment; and

in response to that the current time period is not the first time period,

including, in the first graph data segment of the current subgraph, an edge of a node in the current subgraph that has been stored in the first calculation unit; and

determining, based on the determined allocation policy, whether to include, in the first graph data segment of the current subgraph, a node in the current subgraph that has not been stored in any calculation unit and an edge of the node.

2. The method according to claim 1, further comprising:

for a node in the first graph data segment of the current subgraph, updating a flow message of the node based on an egress edge of the node, wherein the updating includes modifying data corresponding to one or more flow messages of the node, or deleting one or more flow messages of the node.

3. The method according to claim 2, wherein the modifying the data corresponding to the one or more flow messages of the node comprises: decreasing an amount of data corresponding to the one or more flow messages of the node.

4. The method according to claim 1, further comprising:

for a node in the first graph data segment of the current subgraph, generating a flow message of data corresponding to an egress edge of the node based on the egress edge, for a destination node on the egress edge to obtain the flow message corresponding to the egress edge.

5. The method according to claim 1, wherein attribute information of the edges includes data flow time, the data includes resource data, and the node corresponds to an account for resource storage.

6. The method of claim 1, wherein a second graph data segment of the current subgraph stored in the second calculation unit is different from the first graph data segment in the first calculation unit.

7. A computing system having one or more processors and one or more storage devices, the one or more storage device, individually or collectively, having computer executable instructions stored thereon, which when executed by the one or more processors, enable the one or more processors to, individually or collectively, implement a first calculation unit to process a flow graph, the flow graph including nodes and edges, with the edges indicating a flow direction of data flowing between the nodes, the processing the flow graph includes one or more rounds of processing

respectively corresponding to one or more time periods of data flow, and a round of processing comprising:

obtaining a first graph data segment of a current subgraph based on newly added flow information in a current time period and storing the first graph data segment, so as to implement distributed storage of the current subgraph in collaboration with a second calculation unit; and

for a node in the first graph data segment of the current subgraph, obtaining a flow message of data corresponding to an ingress edge of the node from a source node on the ingress edge and storing the flow message, wherein the flow message includes a source link of the data,

wherein the first graph data segment includes a part of nodes of the current subgraph and edges of the part of nodes, and the obtaining the first graph data segment of the current subgraph based on the newly added flow information in the current time period and storing the first graph data segment include:

in response to that the current time period is a first time period, obtaining the first graph data segment of the current subgraph based on a determined allocation policy and storing the first graph data segment; and

in response to that the current time period is not the first time period,

including, in the first graph data segment of the current subgraph, an edge of a node in the current subgraph that has been stored in the first calculation unit; and

determining, based on the determined allocation policy, whether to include, in the first graph data segment of the current subgraph, a node in the current subgraph that has not been stored in any calculation unit and an edge of the node.

8. The computing system according to claim 7, wherein a round of processing further comprises:

for a node in the first graph data segment of the current subgraph, updating a flow message of the node based on an egress edge of the node, wherein the updating includes modifying data corresponding to one or more flow messages of the node, or deleting one or more flow messages of the node.

9. The computing system according to claim 8, wherein the modifying the data corresponding to the one or more flow messages of the node comprises: decreasing an amount of data corresponding to the one or more flow messages of the node.

10. The computing system according to claim 7, wherein a round of processing further comprises:

for a node in the first graph data segment of the current subgraph, generating a flow message of data corresponding to an egress edge of the node based on the egress edge, for a destination node on the egress edge to obtain the flow message corresponding to the egress edge.

11. The computing system according to claim 7, wherein attribute information of the edges includes data flow time, the data includes resource data, and the node corresponds to an account for resource storage.

12. The computing system of claim 7, wherein a second graph data segment of the current subgraph stored in the second calculation unit is different from the first graph data segment in the first calculation unit.

13. A non-transitory storage medium having computer executable instructions stored thereon, the computer executable instructions, when executed by one or more processors, enabling the one or more processors to, individually or collectively, implement a first calculation unit to process a flow graph, the flow graph including nodes and edges, with the edges indicating a flow direction of data flowing between the nodes, the processing the flow graph includes one or more rounds of processing respectively corresponding to one or more time periods of data flow, and a round of processing comprising:

obtaining a first graph data segment of a current subgraph based on newly added flow information in a current time period and storing the first graph data segment, so as to implement distributed storage of the current subgraph in collaboration with a second calculation unit; and

for a node in the first graph data segment of the current subgraph, obtaining a

flow message of data corresponding to an ingress edge of the node from a source node on the ingress edge and storing the flow message, wherein the flow message includes a source link of the data,

wherein the first graph data segment includes a part of nodes of the current subgraph and edges of the part of nodes, and the obtaining the first graph data segment of the current subgraph based on the newly added flow information in the current time period and storing the first graph data segment include:

in response to that the current time period is a first time period, obtaining the first graph data segment of the current subgraph based on a determined allocation policy and storing the first graph data segment; and

in response to that the current time period is not the first time period,

including, in the first graph data segment of the current subgraph, an edge of a node in the current subgraph that has been stored in the first calculation unit; and

determining, based on the determined allocation policy, whether to include, in the first graph data segment of the current subgraph, a node in the current subgraph that has not been stored in any calculation unit and an edge of the node.

14. The non-transitory storage medium according to claim 13, wherein a round of processing further comprises:

for a node in the first graph data segment of the current subgraph, updating a flow message of the node based on an egress edge of the node, wherein the updating includes modifying data corresponding to one or more flow messages of the node, or deleting one or more flow messages of the node.

15. The non-transitory storage medium according to claim 14, wherein the modifying the data corresponding to the one or more flow messages of the node comprises: decreasing an amount of data corresponding to the one or more flow messages of the node.

16. The non-transitory storage medium according to claim 13, wherein a round of processing further comprises:

for a node in the first graph data segment of the current subgraph, generating a flow message of data corresponding to an egress edge of the node based on the egress edge, for a destination node on the egress edge to obtain the flow message corresponding to the egress edge.

17. The non-transitory storage medium of claim 13, wherein a second graph data segment of the current subgraph stored in the second calculation unit is different from the first graph data segment in the first calculation unit.